

REMOTE SIGNAL TORQUE WRENCH MODEL FH256MC

OPERATING INSTRUCTION

FH256MC **FH256MC Model**



To use this product properly and safely, please read this manual carefully before use. If you have any question about the product and its operations, please contact your nearest distributor or TOHNICHI MFG. CO., LTD.


Safety Precautions

To customers: Before using this product, please read this operating instruction carefully to use it properly.

If you have any question, please contact your nearest distributor or TOHNICHI MFG. CO., LTD.

This operating instruction should be stored in a safe place.

Safety Symbol



This symbol is used for drawing attention to "safety precautions". If you see this symbol in this operating instruction, attention should be paid to safety. Take preventative actions according to the description and conduct "safe operations and proper control".

Signal Words

The signal words are the headers which indicate the level of hazard that should be known for human safety and in handling devices. The signal words for safety are "Danger", "Warning" and "Caution" depending on the level of hazard to human. The signal words are used with the safety symbol to indicate the following situations.

"⚠ Danger": Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

"⚠ Warning": Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

"⚠ Caution": Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

 Warning

- The receiver can be operated only with the power voltage of AC100V to 240V±10% specified in this operating instruction.
- Do not drop water or oil on this instrument. Do not use this instrument in an atmosphere of flammable gas and steam.
Use in such an atmosphere may result in fire.
- Avoid shock or vibration to this instrument. It may cause a damage or failure.
- Before use, make a pre-operation inspection and check the settings.
- Be sure to conduct a periodic inspection of torque wrenches.
- Use a torque wrench within the measurement range specified in the operating instruction.

Should this instrument give out abnormal smell or catch fire during use, stop using it immediately and remove the AC adapter from the outlet. Then, move the instrument to a safe place and contact TOHNICHI MFG. CO., LTD.

 **Caution**

- Be sure to use an AAA alkaline battery for power supply to the transmitter (T-FH256MC).
- Be sure to use a 9V alkaline battery for power supply to the Setting BOX (SB-FH256).
- Be sure to use a coin type lithium battery (CR2032) for power supply to the transmitter (T-FHSL256).
- Avoid using the instrument in a place where there are metal structures around it.
- Do not install the antenna for the receiver close to any metal pole, electric wire, iron piping, etc.
 - * Especially, if the antenna and piping are positioned in parallel, the communication status may be worsened.
- Avoid using the instrument near welding machines, electric discharge machines or machines producing electromagnetic noise such as PC.
- If the receiver is placed adjacent to the transmitter, different groups must be set between the receiver and the transmitter.
 - * If the receiver where the ID is set on a different channel in the same group is placed adjacent to the transmitter, in extremely rare cases when "simultaneous transmission" occurs, a communication error may be caused.
- Before wiring, check that the power of the device to be connected to the receiver is in the OFF position.
- For wiring to the OUTPUT terminal, connect a 2-wire shielded cable to the GND terminal of the receiver for grounding.
- Do not handle the torque wrench roughly.
- Be sure to read the operating instruction of the torque wrench.
- When the adjusting screw of a preset or pre-lock type torque wrench is adjusted, the switch function of the transmitter may not operate properly.

In that case, the stud of the torque wrench must be changed. Contact your nearest distributor or TOHNICHI MFG. CO., LTD.

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1 Outline

This Remote Signal Torque Wrench FH256MC, in combination with a Tohnichi torque wrench, can send tightening completion signals by radio waves, and it is superior to wired LS torque wrenches in workability.

The FH256MC outputs signals received by the receiver to the Poka Patrol CNA-4mk3 (option) or outputs ID data through RS232C. Therefore, a tightening omission prevention system can be established with PC, PLC, etc.

2 Features

- FHSS (Frequency Hopping Spread Spectrum) enhances reliability.

With the application of radio equipment technologies such as Bluetooth, radio signals are received or transmitted while the frequency is switched at a high speed. If noise or interference with other radio equipment occurs at a certain frequency, the frequency is automatically switched to make it possible to receive a high reliable tightening completion signal.

- Simultaneous transmission of 256 transmitters

With the conventional model, simultaneous transmission of up to 12 transmitters was possible. With this model, adoption of FHSS realizes simultaneous transmission of 256 transmitters.

(Only when 256 receiver groups are set without being overlapped.)

A single receiver can control the almost infinite number of transmitters.

(Only when simultaneous transmission in the same group does not occur.)

- Minimum management cost

On the conventional model, each device supports individual frequencies. On the model FH256MC, each one transmitter and receiver can support settings for all groups (256 models). Therefore, a minimum number of spare devices is required.

- Easy transmitter/receiver setting

Without removing the transmitter from the torque wrench or removing the receiver panel, the group and ID can be set and checked by wireless on the Setting BOX (option).

Group and ID

[Group] There are 256 groups in total, with one group comprising 5ch extracted from the 78ch frequencies of 2.402GHz to 2.479GHz (at an interval of 1 MHz). 5ch frequencies in a group are used to send or receive radio waves.

[ID] 000 to 999 and 7-digit alphanumeric characters can be set. According to the ID, the receiver identifies a torque wrench.

- Traceability

The serial or reference number of a torque wrench (7-digitalphanumeric characters) can be set as an ID and transmitted. The tightening bolt (portion) and the manufacturing number (reference number) are managed in combination, to ensure traceability: "Which torque wrench was used to tighten this bolt (portion)?" → "Which torque wrench tester was used to calibrate this torque wrench?" → "Which...was used to calibrate this torque wrench tester?"

- Adoption of answer back system enables the operator to check the communication status at hand.

With the conventional model, the communication status must be judged by checking the receive light or the display on the control device connected to the contact output. The FH256MC adopts the answer back system. Therefore, the operator can check the communication status by the LED mounted on the transmitter, without checking the receiver or the control device.

- Reduction of causes of damages

With the conventional model, a lead wire was used for the antenna. The FH256MC has a built-in antenna, which does not cause a breaking of wire. The case made of aluminum is robust. Unlike a resin case, it does not damage the substrate due to a break of the case.

- Lead switch realizes a long life.

The standard LS torque switch uses a mechanical limit switch. This model adopts a non-contact lead switch, resulting in a long life.

- Installation on LS torque wrench is possible. (T-FH256MCLS)

With the model T-FH256MCLS, your LS torque wrench in present use can be easily modified by using the spacer and the limit switch in the accessories.

- Installation on LS torque wrench is possible. (T-FHSLS256)

With the model T-FHSLS256, your LS torque wrench in present use can be easily modified. (Cannot be mounted to the MS type torque wrench, and the SPLS8N and RSPLS8N.)

- The battery life for over 480 thousand shots. Easy to change the battery.

Use of an alkaline battery provides 3600 shots per day for 6 months or more. (The battery life is about twice longer than that of the conventional model.)

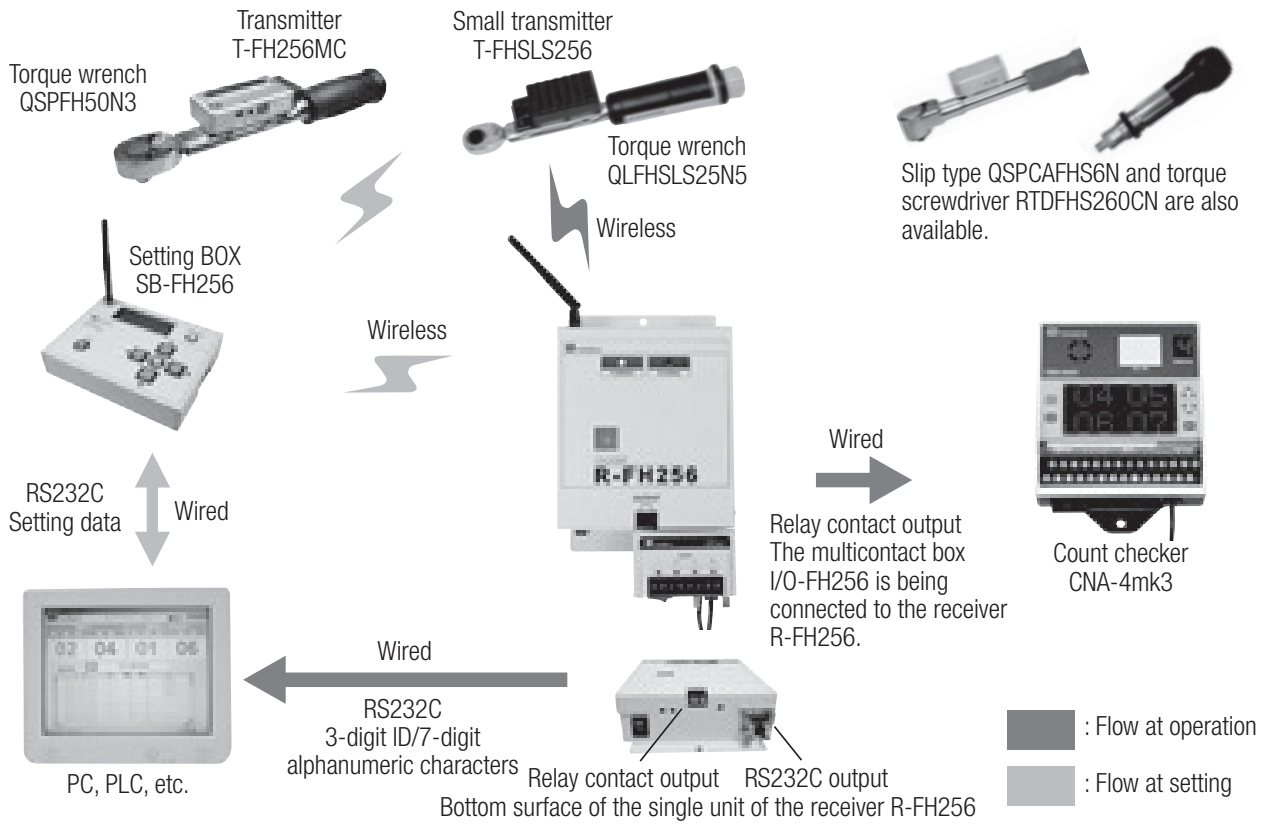
With the conventional model, the transmitter must be removed from the torque wrench when the battery is changed. With the FH256MC, the battery can be easily changed with only the battery cover removed.

- Use of the universal 2.4 GHz frequency band (ISM band)

The FH256MC meets various standards such as TELEC (Technical Regulations Conformity Certification) in Japan, FCC in North America, IC in Canada, EU (R&TTE directive for CE marking) and SRRRC in China, and it can be used in foreign countries without problem.

* Concerning other standards, contact us.

3 Components



4 Specifications

| | Transmitter | Receiver | Setting BOX | Transmitter (for LS) |
|------------------------------------|---|---|----------------------------|---|
| Model | T-FH256MC | R-FH256 | SB-FH256 | T-FHSL256 |
| Frequency Band | 2.4 GHz band (2.402 GHz to 2.479 GHz, 1 MHz interval, 78 kinds) | | | |
| Output Power | 2mW | 2mW | 1.5mW | 2mW |
| Communication System | Spread spectrum (frequency hopping system) | | | |
| Modulation System | GFSK | | | |
| Modulation Rate | 1Mbps | | | |
| Group Channel | Gr000 to 255 | | | |
| ID | 3-digit (000 to 999), 7-digit (alphanumeric) | | | 3-digit (000 to 999), 7-digit (alphanumeric) |
| Input/Output | | No voltage contact output (1a) RS232C output | RS232C input | |
| Power | DC1.5V (AAA alkaline battery) | AC100 to 240V, 47 to 63Hz 0.3A | DC9V (alkaline battery) | DC3V (CR2032 coin battery) |
| Antenna | Chip antenna | Dipole antenna | | Patern antenna |
| Display | Communication status check LED | Power LED, Receiving LED | Power LED, LCD | Communication status check LED |
| Operating Temperature Range | -10 to 50°C | | | |
| Transmitting/Receiving Distance | About 10 to 20m *1 | | | |

Note 1) The transmitting/receiving distance may be shortened depending on the surrounding radio environment.

* Radio frequency communication errors may be caused by noise or a shield placed between the transmitter and the receiver. In addition, radio waves reflected by metal, concrete, etc. may interfere with radio waves directly sent to the antenna of the receiver and a dead point occurs, resulting in communication error.

Note 2) With a brand-new alkaline battery, about 480 thousand tightening operations can be conducted.

Note 3) For the battery life of the transmitter (T-FHSL256), tightening operation can be performed approx. 300,000 times with a new Panasonic-made coin type lithium battery CR2032.

Note 4) The antenna is not user selectable and the product may be used only with the antenna provided.

Note 5) The length of RS232 cable should be less than 3m.

당해 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없음.

기기의 명칭: 무선데이터통신시스템용 특정소출력 무선기기

모델명: R-FH256 인증번호: TOH-RFH256 (한국 전파법 대응 모델은 주문 제작품입니다.)

모델명: SB-FH256 인증번호: TOH-SBFH256

모델명: T-FH256MC 인증번호: TOH-TFH256MC

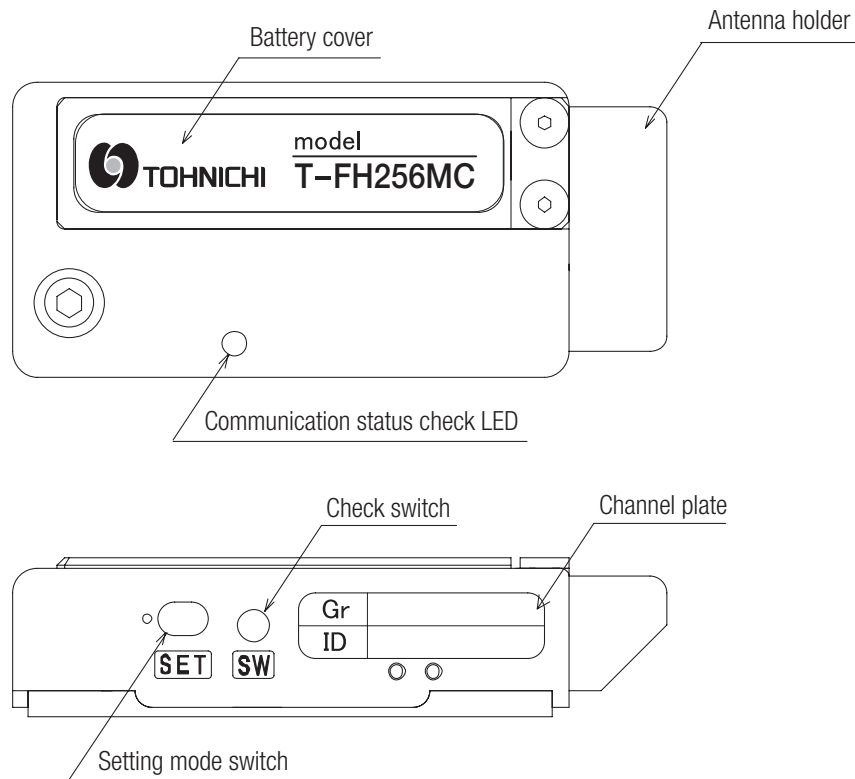
인증 받은자의 상호: TOHNICHI Mfg. CO., LTD.

제조년월: 2008

제조사/제조국가: Omori Factory / 일본

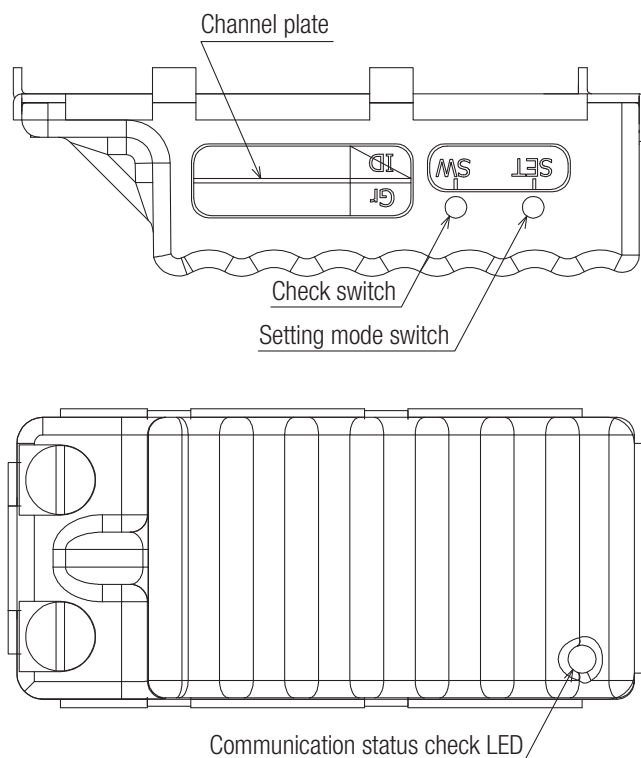
5 External View and Each Part Name

5-1. External view of transmitter (T-FH256MC) and each part name



- Battery cover
The battery cover is removed before the battery is changed.
- Antenna holder
A chip antenna is contained.
- Communication status check LED
When communication with the receiver is normal, the LED lights up in blue. When a communication error occurs, the LED flashes on and off in red 3 times.
- Check switch
This is used to check the remaining battery life and for communication test.
- Setting mode switch
This is used to set the setting mode to check or change the group/judgment code/ID.
- Channel plate
If channels are specified when you order, the group and ID will be marked on the plate.

5-2. External view of transmitter (T-FHSL256) and each function



- Communication status check LED

When communication with the receiver is normal, the LED lights up in blue. When a communication error occurs, the LED flashes on and off in red 3 times.
- Check switch

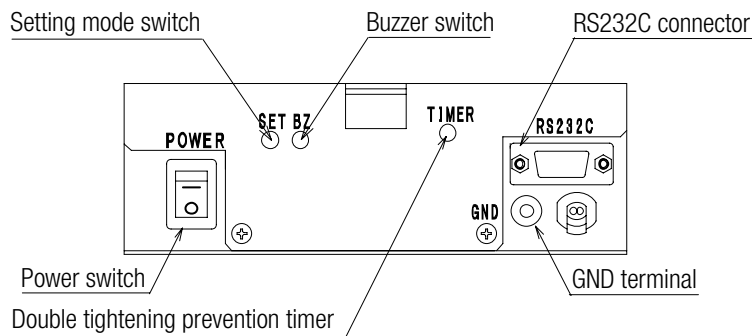
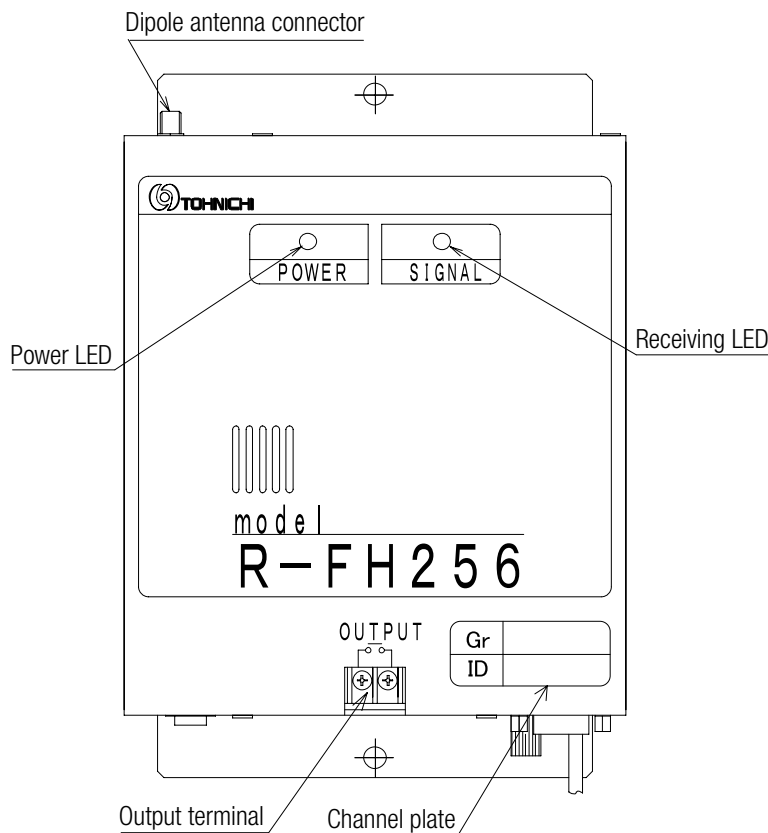
This is used for communication test. If the LED is lit up in blue while pressing the check switch, the transmitter is available as it is. If lit up in red, replace the battery.
- Setting mode switch

This is used to set the setting mode to check or change the group/judgment code/ID. If the switch is held down for 1 second, control shifts to the setting mode, starting red flashing. To return to the normal mode, press the setting mode switch again.
- Channel plate

If channels are specified when you order, the group and ID will be marked on the plate.
- Remaining battery life notification function

When the battery level falls, LED flashes 3 times alternately blue and red after regular operation. Recommend battery exchange.

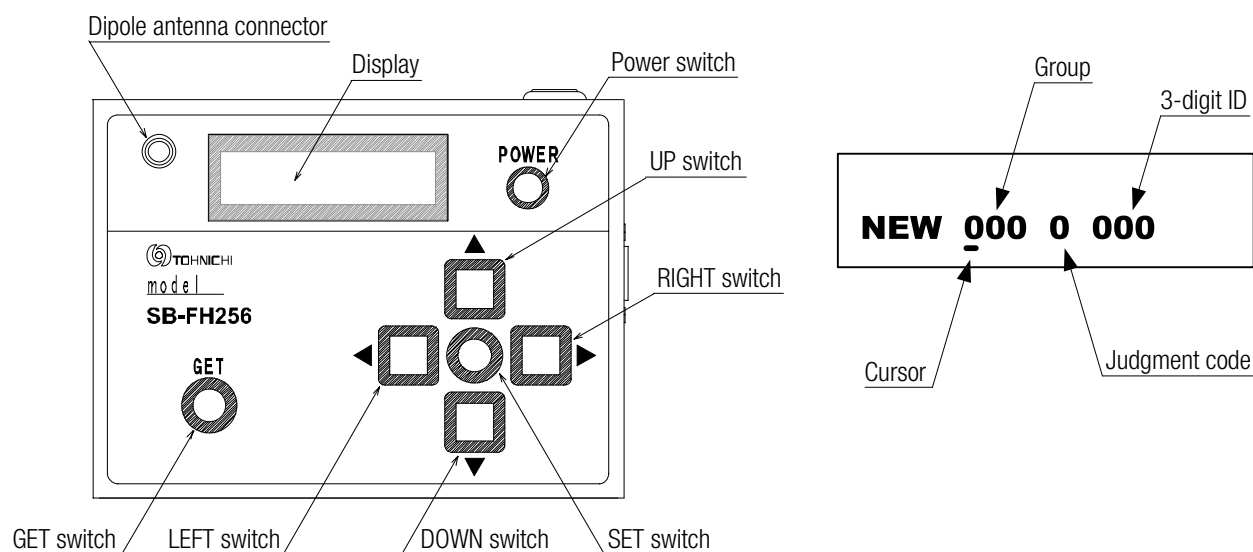
5-3. External view of receiver (R-FH256) and each part name



- Dipole Antenna connector
This is used to connect a dipole antenna.
- Power LED
When the power switch is turned ON, the LED lights up.
- Receiving LED
When a signal from the torque wrench is received, the LED lights up.
- Output terminal
This is used for relay output of signals received from the torque wrench.
- Channel plate
If channels are specified when you order, the group and ID are marked on the plate.
- Power switch
This is the switch for turning ON the main unit.
- GND terminal
This is used to connect with the POKA PATROL (CNA-4mk3).

- Setting mode switch
This is used to set the setting mode to check or change the group/judging code/ID.
- Buzzer switch
This is the switch for setting whether a buzzer is sounded when a signal is received.
- Double tightening prevention timer
This is the timer for setting the time so that only the first tightening is received when a worker conducts double tightening.
- RS232C connector
This is used for output of ID received from the torque wrench.

5-4. External view of setting BOX (SB-FH256) and each part name



- Dipole antenna connector
This is used to connect the dipole antenna.
- Power switch
This is the switch for turning ON the main unit.
- GET switch
This is used to check the data (group, judgment code or 3-digit ID) currently set on the Transmitter (T-FH256MC, T-FHSL256) and the Receiver (R-FH256).
- SET switch
This is used to send new data (group, judgment code, 3-digit ID) to be set to the Transmitter (T-FH256MC, T-FHSL256) or the Receiver (R-FH256).
- LEFT switch
This is used to move the cursor to the left.
- RIGHT switch
This is used to move the cursor to the right.
- UP switch
This is used to move up the cursor.
- DOWN switch
This is used to move down the cursor.

6 Precautions for Use

6-1. Power source

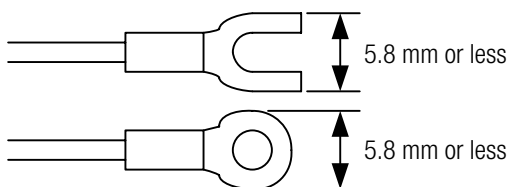
- (1) Be sure to use an AAA alkaline battery for the Transmitter (T-FH256MC).
Be sure to use the Panasonic-made coin type lithium battery CR2032 as a power supply to the transmitter (T-FH256MC).
- (2) Be sure to use the Receiver (R-FH256) within the range of AC100 to 240V (50/60Hz).
- (3) Be sure to use a 9V alkaline battery for the Setting BOX (SB-FH256).

6-2. Operating environment

- (1) Use the device at a place where no metal structure exists nearby wherever possible.
- (2) Do not set the antenna for the receiver close to any metal pole, wire, iron pipe, etc.
* Especially, if the antenna and piping are positioned in parallel, the communication status may be worsened.
- (3) Do not use the device around welding machines, electric discharge machines or any machine producing electromagnetic noise such as PC.
- (4) If the receiver is placed adjacent to the transmitter, set different groups between the receiver and the transmitter.
* If the receiver where the ID is set to a different channel in the same group is placed adjacent to the transmitter, in extremely rare cases, when "simultaneous transmission" occurs, a communication error may be caused.

6-3. Connection with other apparatus

- (1) Before wiring, check that the power of the device to be connected with the receiver is in the OFF position.
- (2) To wire to the OUTPUT terminal, use a 2-wire shielded cable, and connect a shielded wire to the GND terminal of the receiver for grounding.
- (3) Use a solderless terminal of the size as shown below.
* The tightening torque of the terminal block screw is $T=50\text{cN}\cdot\text{m}$.



(4) Set the load of the contact output within the rated load. (Relay output rating: DC30V 1A, AC125V 0.5A)

The above rated contact capacity is according to resistance load. Some kinds of loads have a big difference between the steady-state current and the inrush current. Typical loads and inrush currents are as follows:

| Kind of load | Inrush current |
|-------------------------|---|
| Resistance load | 1 time as large as the steady-state current |
| Solenoid load | 10 to 20 times as large as the steady-state current |
| Motor load | 5 to 10 times as large as the steady-state current |
| Incandescent lamp load | 10 to 15 times as large as the steady-state current |
| Mercury vapor lamp load | About 3 times as large as the steady-state current |
| Sodium-vapor lamp load | 1 to 3 times as large as the steady-state current |
| Capacitor load | 20 to 40 times as large as the steady-state current |
| Trans load | 5 to 15 times as large as the steady-state current |

(5) When the inductive load is opened or closed, a counter-electromotive voltage is generated and causes a heavy damage to the contact, resulting in a significant shortening of operating life. Therefore, a contact protection circuit is required. The examples of contact protection circuits are as shown in the table below.

| Circuit example | Applicability | | Features/others | Selection of element |
|-------------------|---------------|----|--|---|
| | AC | DC | | |
| <p>CR type</p> | △* | ○ | <p>If this circuit is used for timer loads, leakage current flowing through cr cause faulty operation.* If used with AC voltage, impedance of the load should be lower than impedance of cr.</p> <p>If the load is a relay or solenoid, the reset time is delayed. It is effective to connect between the loads when the power supply voltage is 24 or 48V and to connect between the contacts when the power supply voltage is 100 to 200V.</p> | <p>The standard c and r are as follows:c: 0.5 to 1 (μF) per contact current (1A): 0.5 to 1(Ω) per contact voltage (1V)The above values vary depending on the property of load or variations in relay characteristic.Considering that the capacitor "c" has the effect of controlling the discharge when the contacts are open and the resistor "r" plays the role of controlling the current at the next power-on, check through experiments is required. Normally, use a capacitor with a dielectric strength between 200 to 300V.In an AC circuit, use a capacitor for AC (with no polarity).</p> |
| <p>Diode type</p> | × | ○ | <p>Energy stored in the coil is discharged to the coil by flow of current by the diode connected in parallel to the load and is consumed by joule heat of the resistance of the inductive load. The reset time delay in this type is longer than that of the CR type.</p> | <p>Use a diode with a peak inverse voltage 10 times higher than the circuit voltage and a forward current as high as or higher than the load current.In an electronic circuit where the circuit voltage is not so high, a diode with a peak inverse voltage about 2 to 3 times higher than the power voltage may be used.</p> |

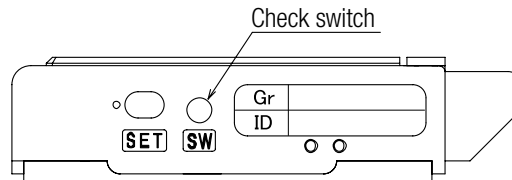
7 Handling

7-1. Precautions for handling of torque wrench

- (1) Do not handle the torque wrench roughly.
- (2) Be sure to read the operation manual of the torque wrench.
- (3) When the adjusting screw of a preset and pre-lock type torque wrench is adjusted, the switch function of the transmitter may not operate properly. The stud of the torque wrench must be changed. Contact your nearest distributor or TOHNICHI MFG. CO., LTD.

7-2. Check of battery life and communication test of transmitter (T-FH256MC)

- (1) Press the Check switch on the side panel of the transmitter using a thin rod to turn ON.



- (2) When the communication status check LED lights in blue while the Check switch is ON, the transmitter can be used. When it lights in red, the battery must be changed. (For details of battery change, see 7-3. Change of battery for transmitter.)
- (3) Following the battery life check, a communication test is performed. When the Check switch is turned OFF, test transmission is conducted.

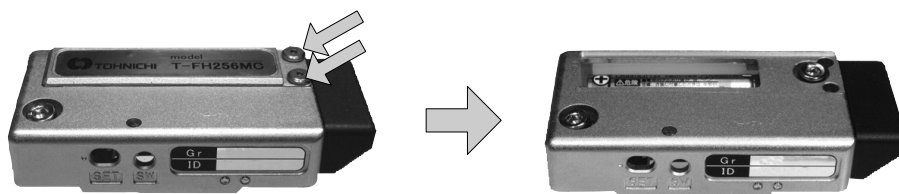
*For communication test, turn ON the power of the receiver to be subjected to communication test.

- (4) If the communication status is normal, the communication status check LED lights in blue. If an error occurs in communications, the communication status check LED flashes on and off 3 times.

7-3. Change of battery for transmitter (T-FH256MC)

Preparation

Torque screwdriver (Ex. RTD120CN (Hex bit B-W1.5...Catalog No.57))



(1) Loosen the 2 screws on the battery cover and remove the battery cover.

* The 2 screws are not detached from the battery cover.

(2) Remove the old battery and insert a new battery in the correct direction of polarity.

* Be sure to use an AAA alkaline battery.

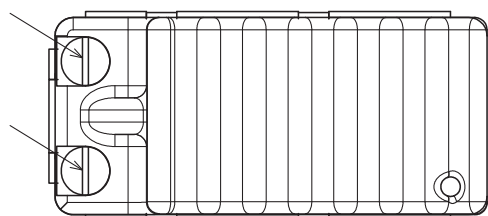
(3) Attach the battery cover and tighten the 2 screws.

* Be sure to use the torque screwdriver and tighten with the tightening torque $T=63\text{cN}\cdot\text{m}$.

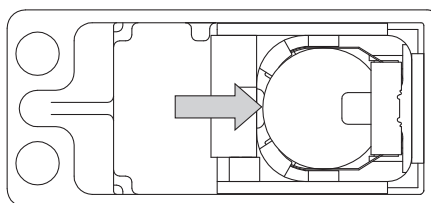
7-4. Change of battery of transmitter (T-FHSL256)

Preparation

Torque screwdriver (Ex. RTD500CN (Minus bit 0.9mm (Catalog No.89))



(1) Loosen the 2 screws on the case and remove the case.



(2) Remove the old battery and insert a new battery.

* Be sure to use Panasonic-made coin type lithium battery CR2032.

* To remove the battery, push it in the arrow direction and shift upward.

(3) Attach the case and tighten the 2 screws. Use a torque screwdriver to tighten. ($T=150\text{cN}\cdot\text{m}$)

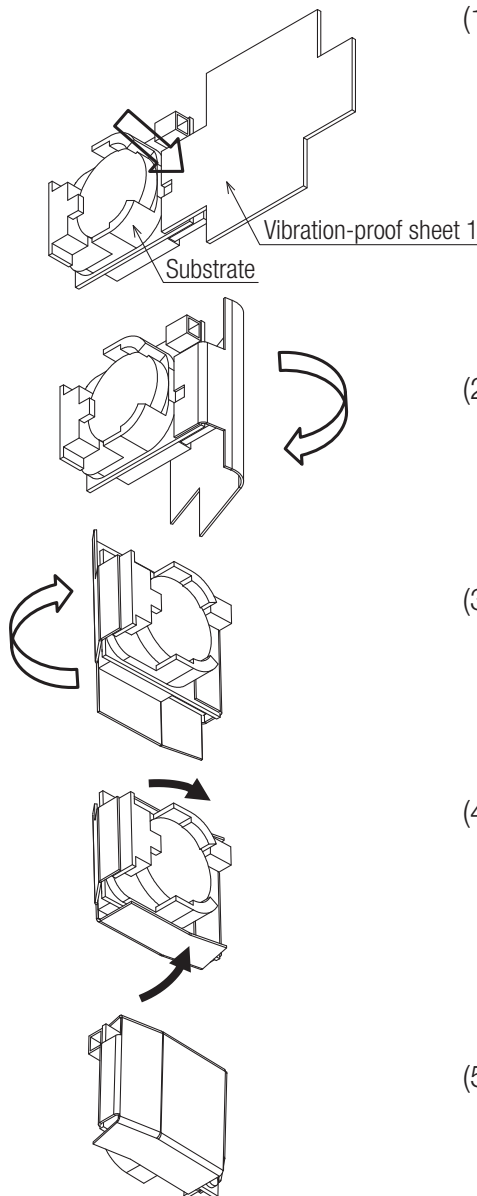
7-5. Replacement of vibration-proof sheets for transmitter (T-FHSL256)

The T-FHSL256 uses vibration-proof sheets in order to alleviate an impact to the substrate. To maintain shock resistance, it is necessary to replace the vibration-proof sheets every 3 years.

Vibration-proof sheet 1 (for pasting to the substrate): 01T201218

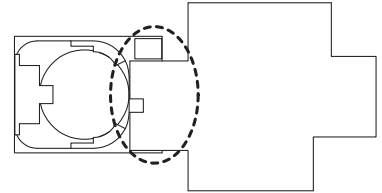
Vibration-proof sheet 2 (for pasting to the base): 02T201218

1. Replacement of vibration-proof sheet 1



(1) Remove an old vibration-proof sheet from the substrate and paste new one to the illustrated position.

As shown in the figure below, align the notched side of the vibration-proof sheet with the near part of the battery holder on the back of the substrate, and paste.



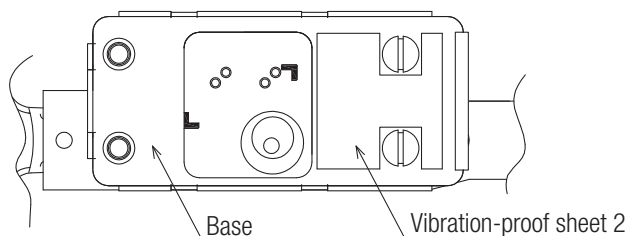
(2) As illustrated, paste the vibration-proof sheet onto the substrate without flexure.

(3) Paste the vibration-proof sheet onto the back of the battery holder as well.

(4) Finally, fold the remaining parts on both sides to paste them onto the substrate.

(5) Now, you are finished with replacement.

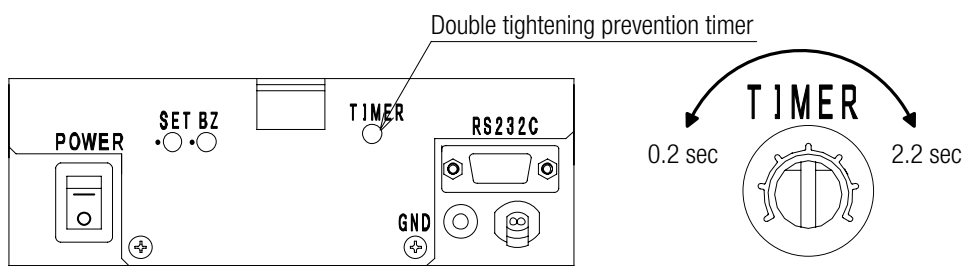
2. Replacement of vibration-proof sheet 2



(1) Remove an old vibration-proof sheet from the base and paste new one to the illustrated position.

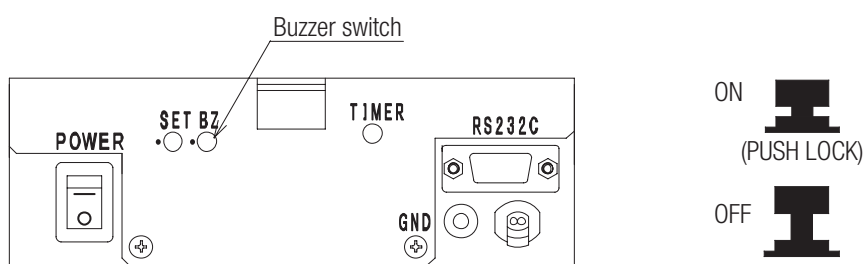
7-6. Setting of double tightening prevention timer of receiver (R-FH256)

- (1) Before shipment, the double tightening prevention timer of the Receiver is set at about 1 second.
- (2) To change the timer setting, turn the volume on the underside of the Receiver.
- (3) Time can be set in the range of 0.2 to 2.2 seconds.



7-7. Setting of buzzer ON/OFF of receiver (R-FH256)

- (1) Using the buzzer switch on the underside of the Receiver, the buzzer ON/OFF can be switched.



7-8. Handling of RS232C output on receiver (R-FH256)

- (1) Communication condition

| | |
|--------------|---------|
| Baud rate | 9600bps |
| Parity | None |
| Data length | 8bit |
| Stop bit | 1bit |
| Flow control | CTS/RTS |

* Any setting other than the above is available. For details, contact your nearest distributor or TOHNICHI MFG. CO., LTD.

- (2) Data Format

| | | | | | | | | | | | | | | | |
|--------|---|---|--------------------|---|---|---|--|---|---|---|---|---|---|-----------|----|
| R | E | , | 0 | 0 | 1 | , | 1 | 2 | 3 | 4 | 5 | 6 | A | CR | LF |
| Header | | | ID (000 to 999) | | | | 7-digit alphanumeric (blank when not set) | | | | | | | Delimiter | |

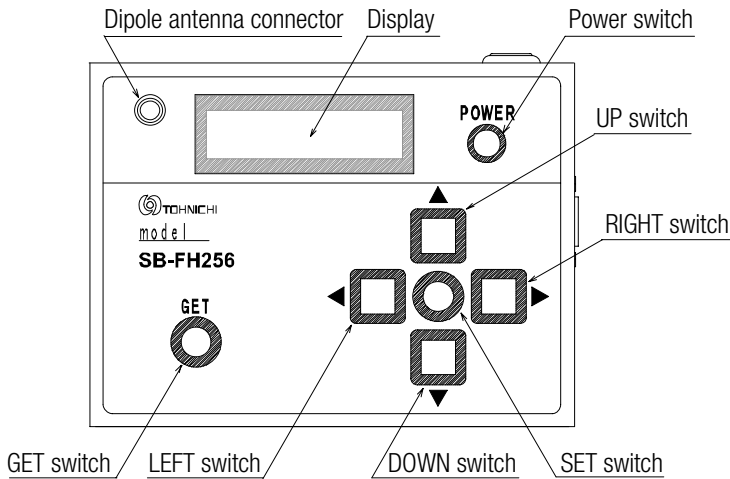
- (3) Connection cable

For connection with PC, PLC, etc. use a commercially available straight cable of D-Sub 9 pin female.

7-9. Handling of setting BOX (SB-FH256) (Check and change of group, judgment code and ID)

* Do not simultaneously operate the Transmitter (T-FH256MC,T-FHSL256) and the Receiver (R-FH256).

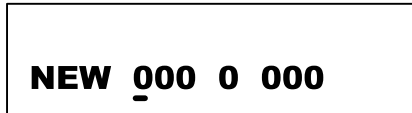
7-9-1. Preparation of setting BOX



- (1) Attach the dipole antenna (accessory) to the setting BOX.
- (2) Press the Power switch and check that the display is as shown below.

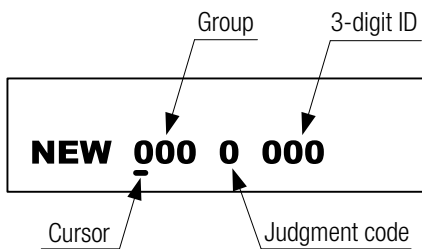


Display appearing when the power is turned on



Display appearing one second after the power is turned on

Explanation of display



- Group
Groups from 000 to 255 can be set.
- 3-digit ID
IDs from 000 to 999 can be set.
- Cursor
With the RIGHT switch and the LEFT switch, the cursor can be moved to change the digit.

• Judgment code:

0: 3-digit ID, 7-digit alphanumeric characters without identification

→ When multiple torque wrenches are used with one receiver (applicable only when simultaneous transmission is not performed)

1: 3-digit ID with identification (factory setting)

2: 7-digit alphanumeric characters with identification

3: 3-digit ID, 7-digit alphanumeric characters with identification

*1. Set the same judgment code for the transmitter and the receiver.

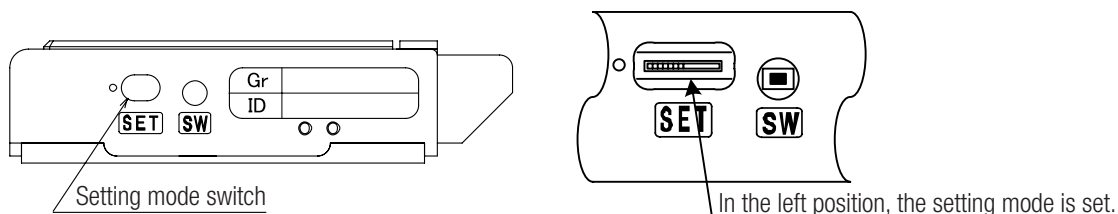
*2. Setting of 7-digit alphanumeric requires the separate application software.

For details, contact your nearest distributor or TOHNICHI MFG. CO., LTD.

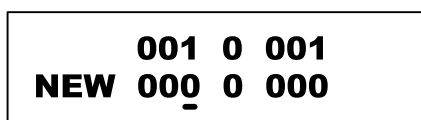
7-9-2. Check and change of transmitter

(1) Set the setting mode switch of the Transmitter to the setting mode position.

(The communication status check LED flashes in red.)

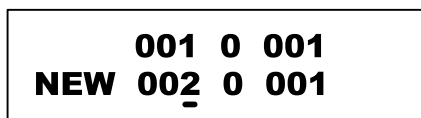


(2) Press the GET switch to display the current setting status.



Upper column: Current setting

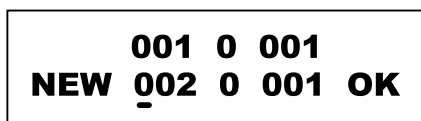
(3) To change the settings, change the Group, judgment code and ID (3-digit) using the direction switches.



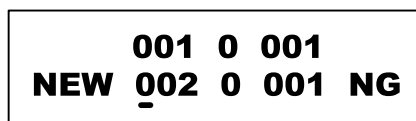
Upper column: Current setting
Lower column: New setting

(4) Press the SET switch.

After the setting is completed normally, the communication status check LED of the Transmitter is lighted in blue for about 1 second, and then, "OK" is displayed on the right of the lower column on the display. If an error occurs in setting, "NG" is displayed.

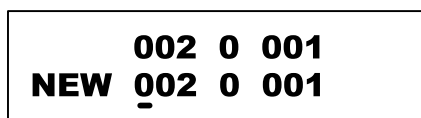


Normal



Abnormal

(5) To check that the setting has been completed normally, press the GET switch and confirm that the same data is displayed on the upper and lower columns.



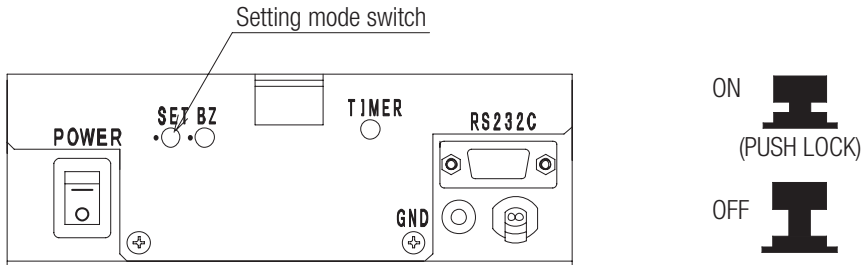
(6) After the completion of setting, return the setting mode switch of the Transmitter to the original position.

(The flashing communication status check LED goes out and the device is ready for tightening work.)

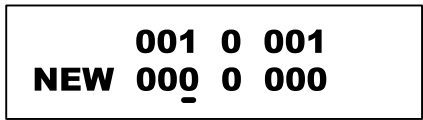
7-9-3. Check and change of receiver

- (1) Set the setting mode switch of the Receiver to the setting mode position.

(The SIGNAL LED will flash on and off.)

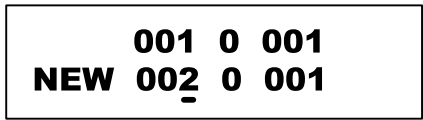


- (2) Press the GET switch to display the current setting status.



Upper column: Current setting

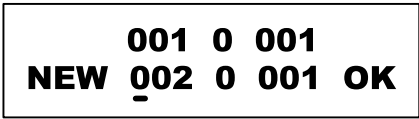
- (3) To change the setting, change the Group, judgment code or ID (3-digit) using the direction switches.



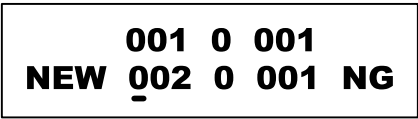
Upper column: Current setting
Lower column: New setting

- (4) Press the SET switch.

When the setting is completed normally, the buzzer of the Receiver sounds and "OK" is displayed on the right of the lower column on the display. If an error occurs in setting, "NG" is displayed. (If the buzzer switch of the Receiver is in the OFF position, the buzzer does not sound.)

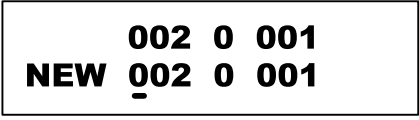


Normal



Abnormal

- (5) To check that the setting has been completed normally, press the GET switch and confirm that the same data is displayed on the upper and lower columns.



- (6) After the completion of setting, return the setting mode switch of the Receiver to the original position.

(The flashing SIGNAL LED goes out, and the device is ready for tightening work.)

7-10. Change of battery of setting BOX (SB-FH256)

- (1) Remove the 4 screws on the side panel of the unit.
- (2) Open the cover and change the battery. * Be sure to use a 9V alkaline battery.
- (3) Return the cover and tighten the 4 screws on the side panel.

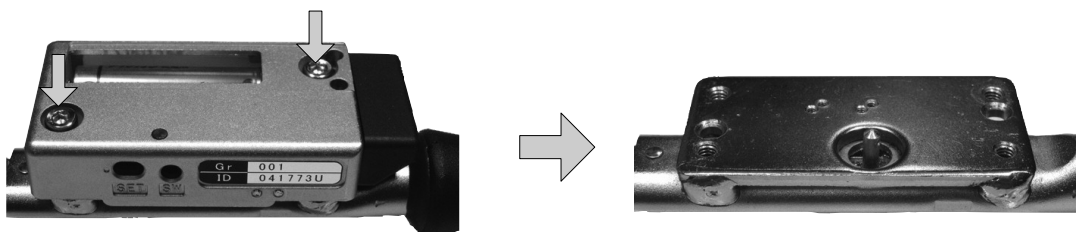
7-11. Installation of transmitter (T-FH256MC) to your torque wrench

Preparation

1. Your FH torque wrench
2. Transmitter T-FH256MC
3. Receiver R-FH256
4. Torque screwdriver (Ex. RTD120CN (Hex bit B-W1.5...Catalog No.57))
5. Torque screwdriver (Ex. RTD500CN (Hex bit B-W3...Catalog No.60))

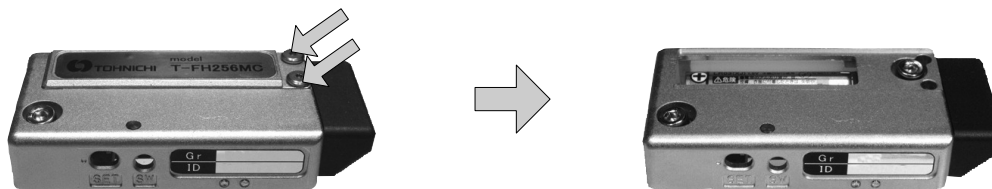
(1) Remove the battery cover of the transmitter on your FH torque wrench, loosen the 2 mounting screws and remove the transmitter.

* The 2 screws are not detached from the transmitter case.



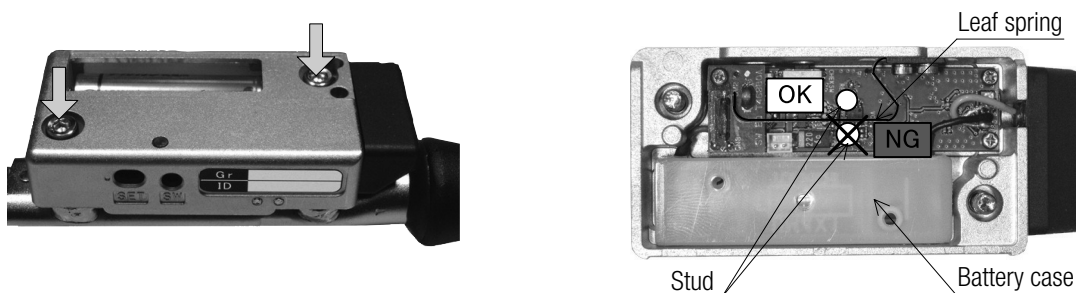
(2) Remove the battery cover of the Transmitter T-FH256MC to be installed.

* The 2 screws are not detached from the battery cover.



(3) Install the Transmitter T-FH256MC and tighten the 2 mounting screws using the torque screwdriver. (Tightening torque: $T=270\text{cN}\cdot\text{m}$)

* When installing the Transmitter, be careful that the stud is not placed between the leaf spring and the battery case.



(4) Attach the battery cover and tighten the 2 screws with the torque screwdriver. (Tightening torque: $T=63\text{cN}\cdot\text{m}$)

(5) Activate the torque wrench. After you hear it click, check that the communication status check LED flashes in red. In addition, check the following points:

1. The LED does not light up when the torque wrench is turned to the right and left while it is not activated.
2. The LED does light up when the torque wrench is activated while it is turned to the right and left.

(6) Turn on the Receiver, activate the torque wrench, and check that the communication status check LED lights up in blue.



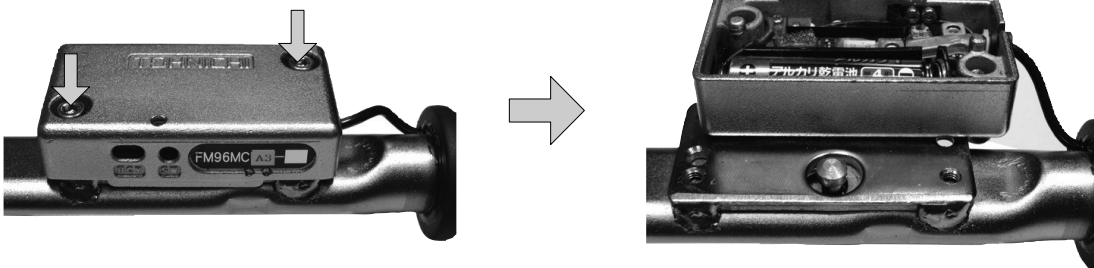
7-12. Replacement of old model transmitter (F-FM96MC)

Preparation

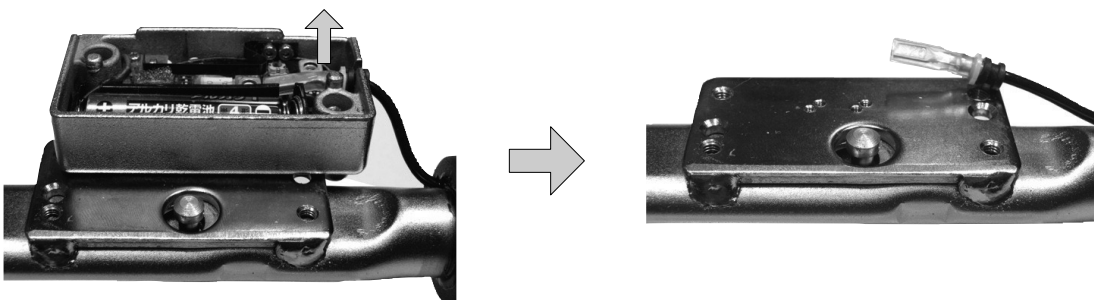
1. Your FM torque wrench
2. Transmitter T-FH256MC
3. Receiver R-FH256
4. Torque screwdriver (Ex. RTD120CN (Hex bit B-W1.5...Catalog No.57))
5. Torque screwdriver (Ex. RTD500CN (Hex bit B-W3...Catalog No.60))

(1) Loosen the 2 mounting screws on the old transmitter and remove the old transmitter.

* The 2 screws are not detached from the transmitter case.

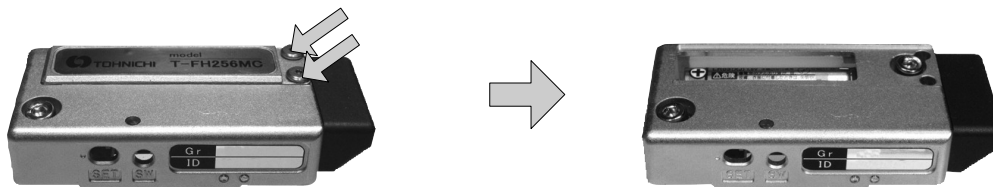


(2) Lift up the antenna connector and pull it out. (Cut the antenna with nippers or a similar tool.)



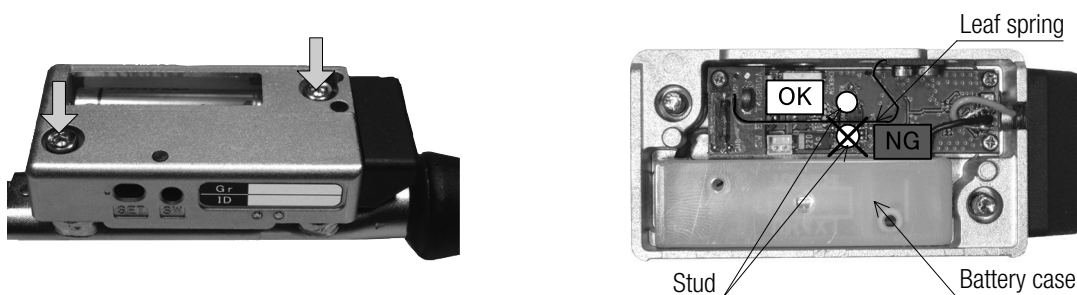
(3) Remove the battery cover of the new Transmitter T-FH256MC to be installed.

* The 2 screws are not detached from the battery cover.



(4) Install the new Transmitter T-FH256MC and tighten the 2 mounting screws with the torque screwdriver. (Tightening torque: $T=270\text{cN}\cdot\text{m}$)

* When installing the Transmitter, be careful that the stud is not placed between the leaf spring and the battery case.



(5) Attach the battery cover and tighten the 2 screws with the torque screwdriver. (Tightening torque: $T=63\text{cN}\cdot\text{m}$)



(6) Activate the torque wrench. After you hear it click, check that the communication status check LED flashes in red. In addition, check the following points:

1. The LED does not light up when the torque wrench is turned to the right and left while it is not activated.
2. The LED does light up when the torque wrench is activated while it is turned to the right and left.

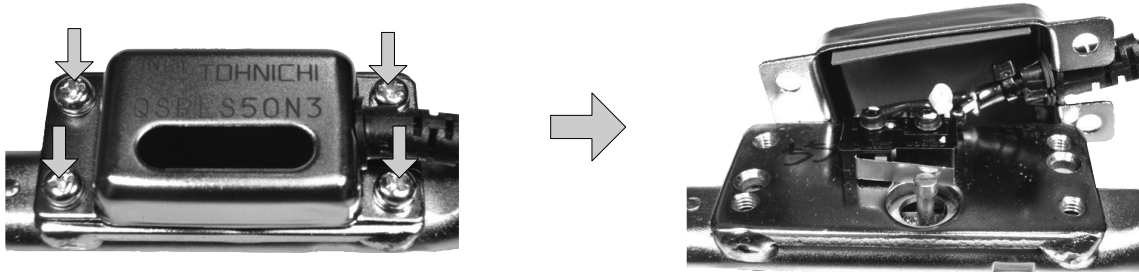
(7) Turn on the Receiver, activate the torque wrench, and check that the communication status check LED lights up in blue.

7-13. Installation on LS torque wrench (T-FH256MCLS)

Preparation

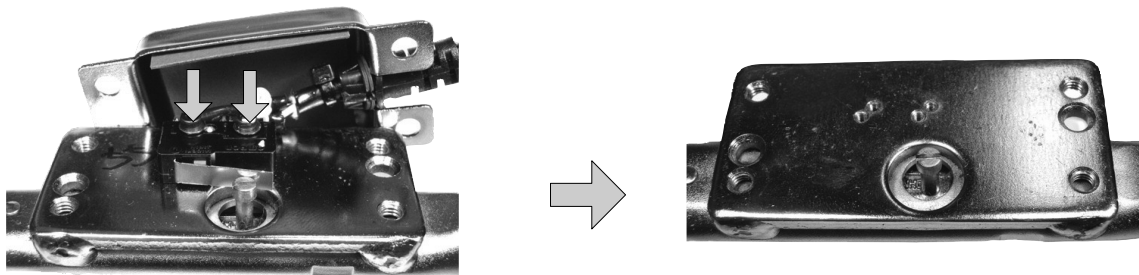
1. Your LS torque wrench
2. Transmitter T-FH256MC
3. Receiver R-FH256
4. Torque screwdriver (Ex. RTD120CN (Hex bit B-W1.5...Catalog No.57))
5. Torque screwdriver (Ex. RTD500CN (Hex bit B-W3...Catalog No.60))
6. Phillips-head screwdriver

(1) Loosen the 4 mounting screws on the LS switch cover and remove the LS switch cover.



(2) Loosen the 2 mounting screws on the Limit switch and remove the Limit switch.

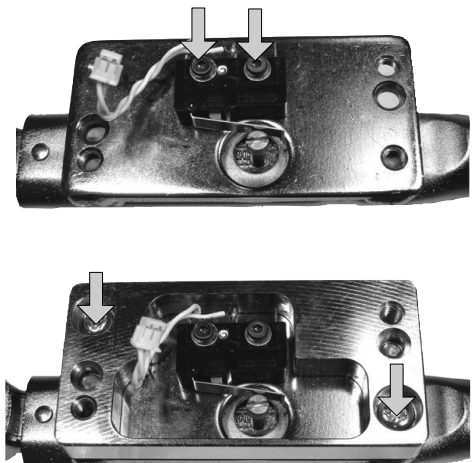
* There are 2 screw holes for installing the Limit switch. Remember the position where it was installed.



(3) Using 2 pieces of M2 hexagon socket head cap screws (option), install the Limit switch with a connector (option) to the original position where it was installed. (Tightening torque: $T=25\text{cN}\cdot\text{m}$)

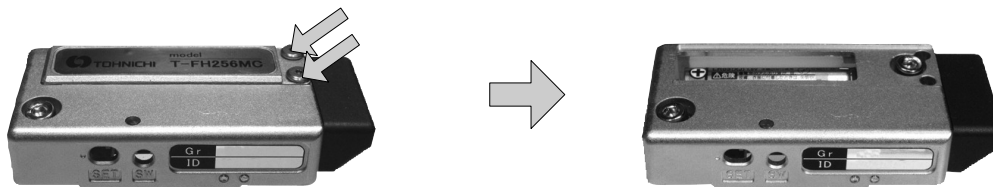
* Be sure to insert washers between the Limit switch and the bolts.

(4) Using 2 pieces of M4 hexagon socket head cap screws (option), install the spacer (option) to the torque wrench. (Tightening torque: $T=270\text{cN}\cdot\text{m}$)

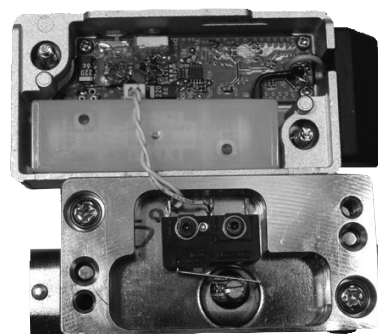


(5) Remove the battery cover of the Transmitter to be installed.

* The 2 screws are not detached from the battery cover.

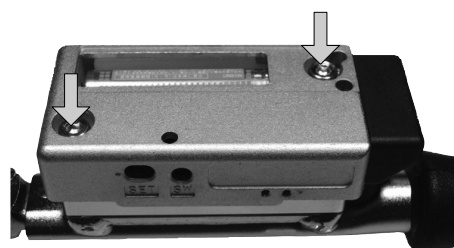


(6) Insert the connector of the Limit switch to the connector on the Transmitter substrate.

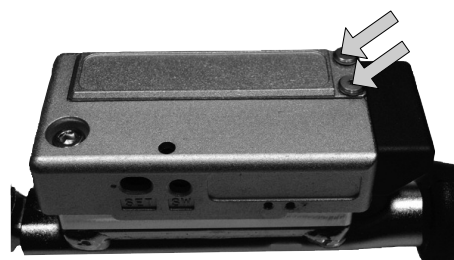


(7) Install the Transmitter and tighten the 2 mounting screws with the torque screwdriver. (Tightening torque: $T=270\text{cN}\cdot\text{m}$)

* When installing the Transmitter, be careful that the stud is not placed between the leaf spring and the battery case.



(8) Attach the battery cover and tighten the 2 screws with the torque screwdriver. (Tightening torque: $T=63\text{cN}\cdot\text{m}$)



(9) Activate the torque wrench. After you hear it click, check that the communication status check LED flashes in red. In addition, check the following points:

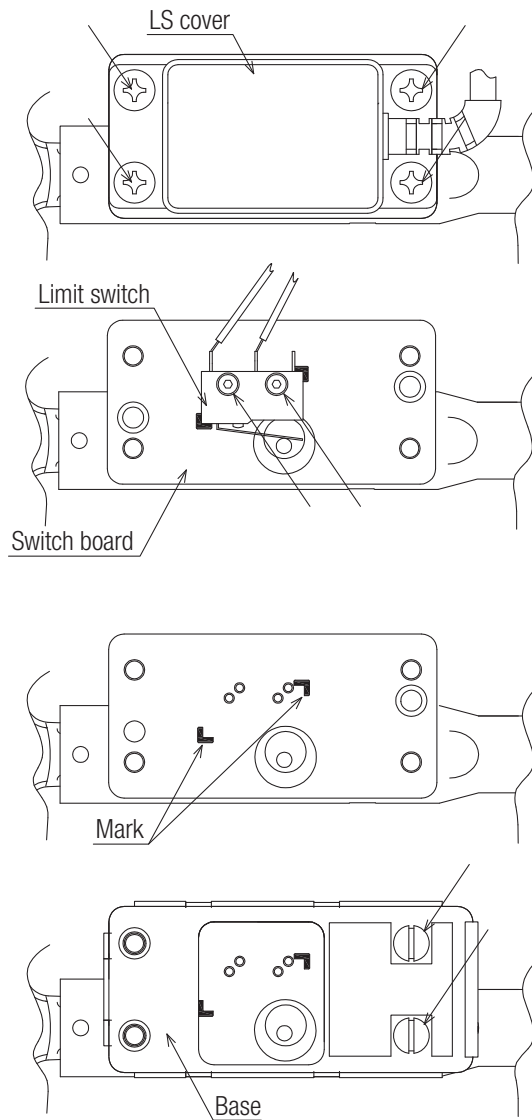
1. The LED does not light up when the torque wrench is turned to the right and left while it is not activated.
2. The LED does light up when the torque wrench is activated while it is turned to the right and left.

(10) Turn on the Receiver, activate the torque wrench, and check that the communication status check LED lights up in blue.

7-14. Installation on LS torque wrench (T-FHSL256)

Preparation

1. Your LS torque wrench
2. Transmitter T-FHSL256
3. Receiver R-FH256
4. Setting BOX SB-FH256
5. Torque screwdriver (Ex. RTD120CN (Hex bit W1.5 (Catalog No.57))
6. Torque screwdriver (Ex. RTD500CN (Minus bit 0.9mm (Catalog No.89))
7. Philips-head screwdriver



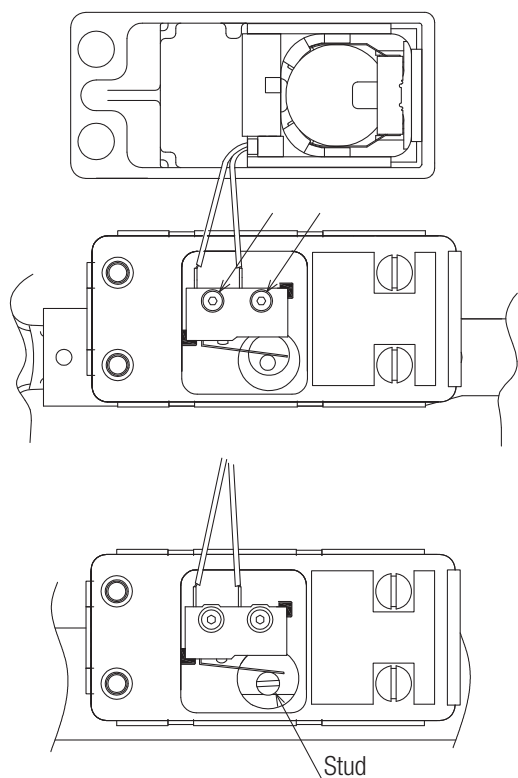
(1) Loosen the 4 mounting screws on the LS cover and remove the LS cover.

(2) There are 2 screw holes for installing the Limit switch. As shown in the left figure, mark the Limit switch installed position on the switch board and loosen the 2 mounting screws on the Limit switch and remove the Limit switch.

(3) View with the Limit switch removed

(4) Use base mounting screws (accessories) to attach the base (accessory). Apply a screw locking agent (TB1324N made by ThreeBond recommended) to the threads and use the torque screwdriver to tighten. (T=150cN·m)

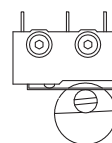
(5) Attach a Transmitter Limit switch (accessory) in alignment with the marked position, using switch mounting screws and washers (accessories). Apply a screw locking agent (TB1324N



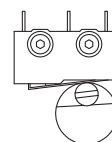
Before activation

Click!

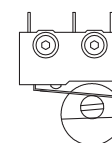
OK
(Adequate)



NG
(Pressed too much)

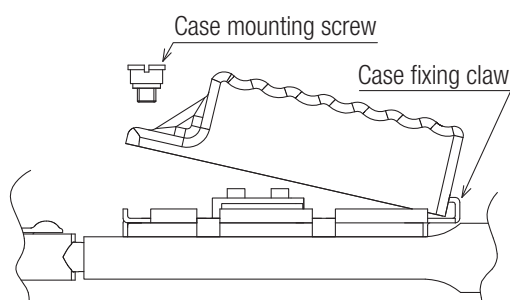


NG
(Not pressed enough)



After activation

(6) After attaching the Transmitter Limit switch, click the torque wrench. If a Limit switch lever is pressed too much by the stud, the switch may be damaged, and if not pressed enough, it does not function successfully.



(7) Hook the Transmitter body onto the fixing claw of the base and attach the case, taking care not to catch a Limit switch wire. Use case mounting screws (accessories) to attach the case. Use the torque screwdriver to tighten. ($T=150cN\cdot m$)

(8) Activate the torque wrench. After you hear it click, check that the communication status check LED flashes. In addition, check the following points:

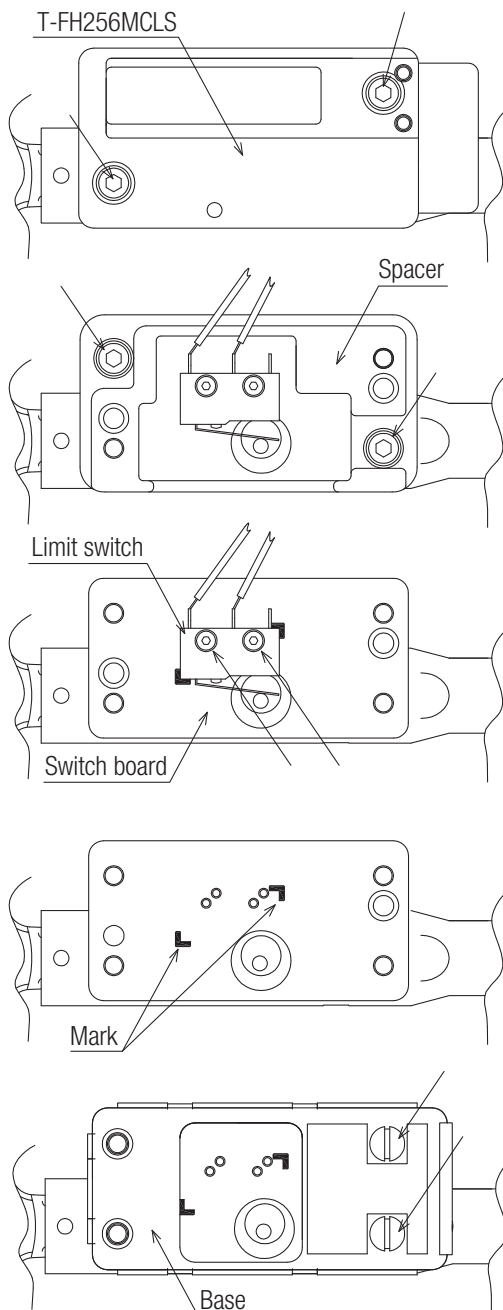
1. The LED does not light up when the torque wrench is turned to the right and left while it is not activated.
2. The LED does light up when the torque wrench is activated while it is turned to the right and left.

(9) After using the setting BOX to set the transmitter and receiver to the same group, activate the torque wrench and check that the communication status check LED is lit up in blue.

7-15. Installation from transmitter (T-FH256MCLS)

Preparation

1. Your torque wrench on which the T-FH256MCLS has been installed
2. Transmitter T-FH256MCLS
3. Receiver R-FH256
4. Setting BOX SB-FH256
5. Torque screwdriver (Ex. RTD120CN (Hex bit W1.5 (Catalog No.57))
6. Torque screwdriver (Ex. RTD500CN (Minus bit 0.9mm (Catalog No.89))
7. Hex bit W3 (Catalog No.60)



(1) Remove the battery cover of the Transmitter (T-FH256MCLS) and loosen the 2 mounting screws to remove the Transmitter.

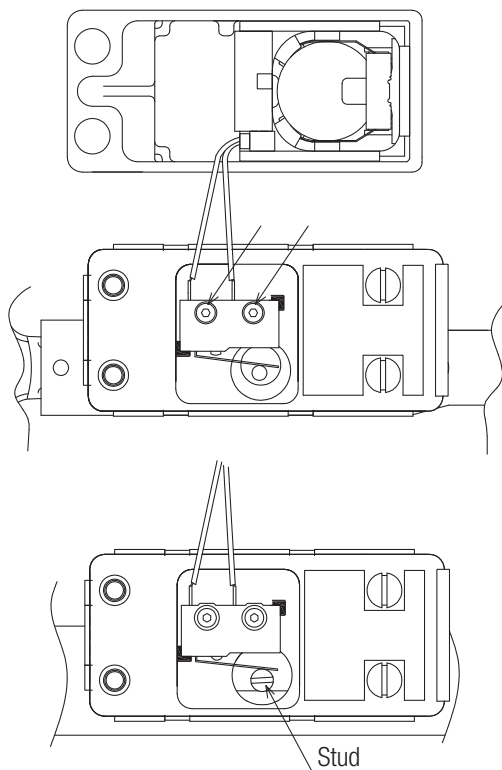
(2) Loosen the 2 mounting screws on the spacer and remove the spacer.

(3) There are 2 screw holes for installing the Limit switch. As shown in the left figure, mark the Limit switch installed position on the switch board and loosen the 2 mounting screws on the Limit switch and remove the Limit switch.

(4) View with the Limit switch removed

(5) Use base mounting screws (accessories) to attach the base (accessory). Apply a screw locking agent (TB1324N made by ThreeBond recommended) to the threads and use the torque screwdriver to tighten. (T=150cN·m)

(6) Attach a Transmitter Limit switch (accessory) in alignment with the marked position, using switch mounting screws and washers (accessories). Apply a screw locking agent (TB1324N made by ThreeBond recommended) to the threads and use the torque screwdriver to tighten. (T=25cN·m)



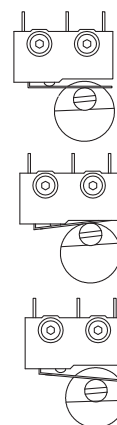
Before activation

Click!

OK
(Adequate)

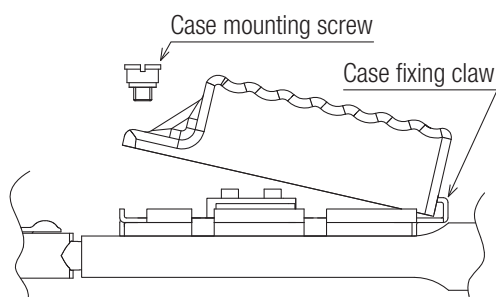
NG
(Pressed too much)

NG
(Not pressed enough)



After activation

(7) After attaching the Transmitter Limit switch, click the torque wrench. If a Limit switch lever is pressed too much by the stud, the switch may be damaged, and if not pressed enough, it does not function successfully.



(8) Hook the Transmitter body onto the fixing claw of the base and attach the case, taking care not to catch a Limit switch wire. Use case mounting screws (accessories) to attach the case. Use the torque screwdriver to tighten. (T=150cN·m)

(9) Activate the torque wrench. After you hear it click, check that the communication status check LED flashes. In addition, check the following points:

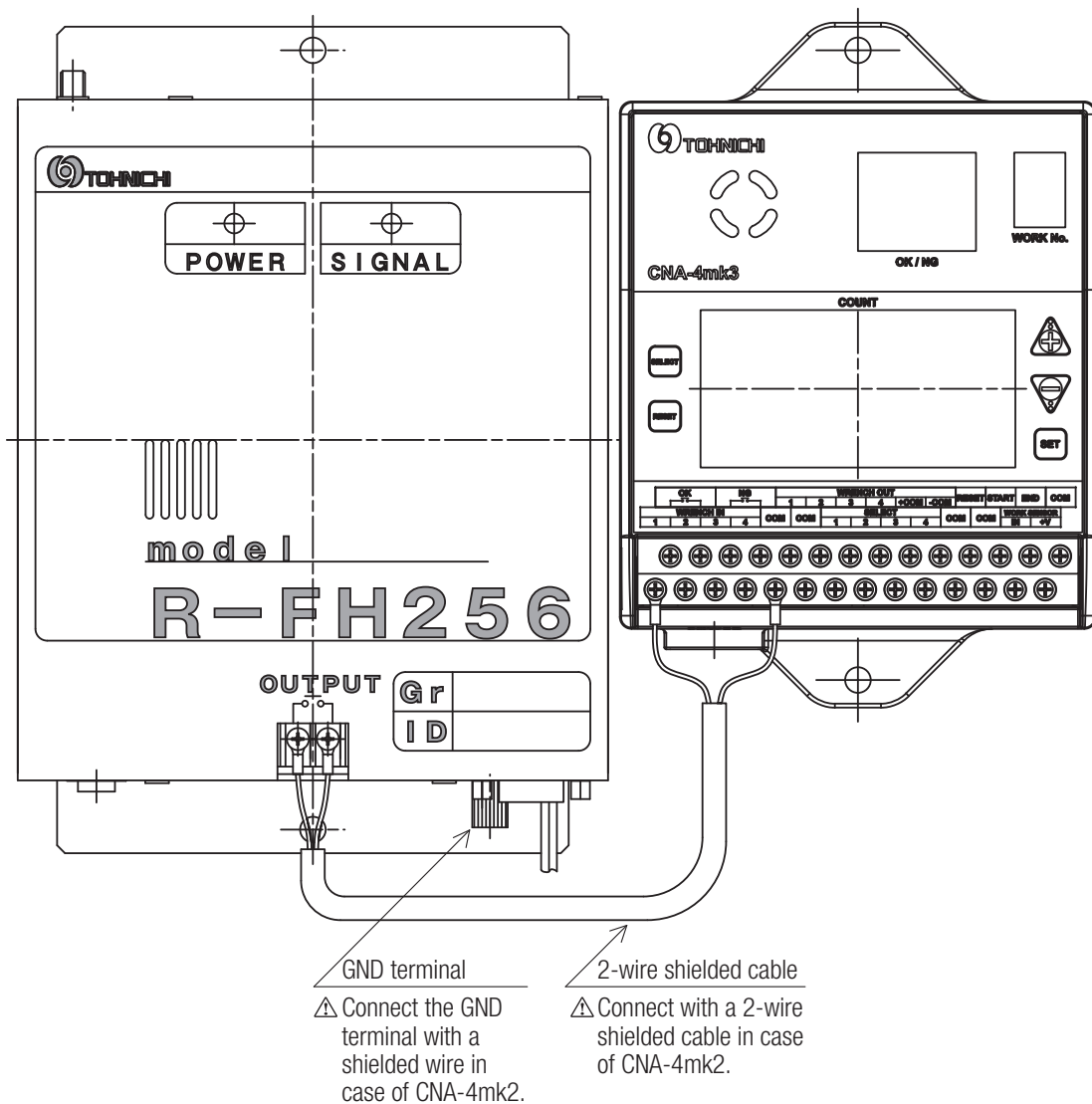
1. The LED does not light up when the torque wrench is turned to the right and left while it is not activated.
2. The LED does light up when the torque wrench is activated while it is turned to the right and left.

(10) After using the setting BOX to set the transmitter and receiver to the same group, activate the torque wrench and check that the communication status check LED is lit up in blue.

7-16. Connection with POKA PATROL CNA-4mk3

To connect the Receiver with the multi-functional counter POKA PATROL (CNA-4mk3), connect the OUTPUT terminal of the Receiver and the WRENCH No. terminal (one of Nos.1 to 4) and the COM terminal of the CNA-4mk3 using a 2-wire shielded cable. (Connect the shield wires to the GND terminals of the respective cases.)

* The tightening torque of the terminal block is $T=50\text{cN}\cdot\text{m}$.



8 Troubleshooting

Check the items in the table below before judging that the device has a breakdown.

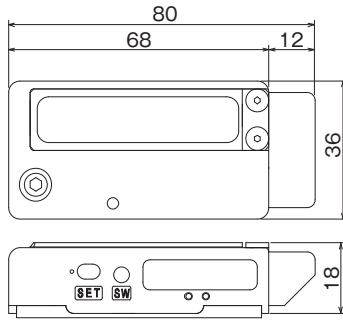
After checking the items, if the device still has a trouble, contact your nearest distributor or TOHNICHI MFG. CO., LTD.

| Symptoms | Causes | Corrective actions |
|---|--|---|
| The communication status check LED does not light up after the torque wrench is activated. | The battery is dead. | Check the remaining battery life. If the communication status check LED is red, replace the battery with a new one. |
| | No battery is put in the case. | Place a battery. |
| | The switch function is abnormal. | Check the remaining battery life. If the communication status check LED is blue, there is a trouble in the switch function. Send it for repair. |
| After the torque wrench is activated, the communication status check LED flashes on and off in red 3 times. | The set group is wrong. | Check the settings on the setting BOX. If there is any wrong setting, reset it. |
| | The set ID is wrong. | |
| | The judgment code is wrong. | |
| | The Receiver is not powered on. | Turn the Power switch of the Receiver to ON. |
| | Radio wave environment problem | Change the group. |
| The receiving distance is short. | There is a poor connection of the antenna for the receiver. | Ensure that the antenna for the receiver is installed to the connector. |
| | The installation location of the receiver is improper. | If there is a metal pole or iron piping close to the antenna for the receiver, move the receiver to a different place. |
| | There is a shield between the transmitter and the receiver. | Move the shield or the receiver to a different place. |
| | Radio wave environment problem | Change the group. |
| The receiving status is not stable. | The setting of the double tightening prevention timer is not proper. | Readjust the double tightening prevention timer. |
| | Radio wave environment problem | Change the group. |
| The settings cannot be changed. | The unit is not in the setting mode. | Set the setting mode switch to the setting mode position. |
| | Multiple models are set in the setting mode. | Set only one model to the setting mode. |

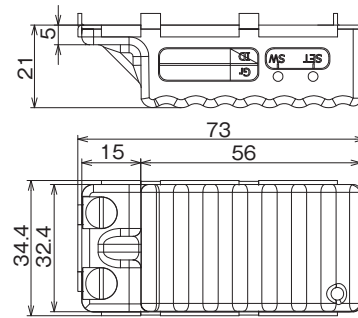
* Periodically check the transmitting and receiving status.

* If you have any question, contact your nearest distributor or TOHNICHI MFG. CO., LTD.

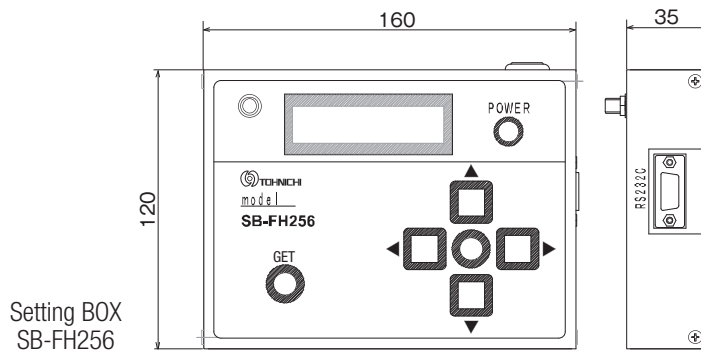
9 Dimensions



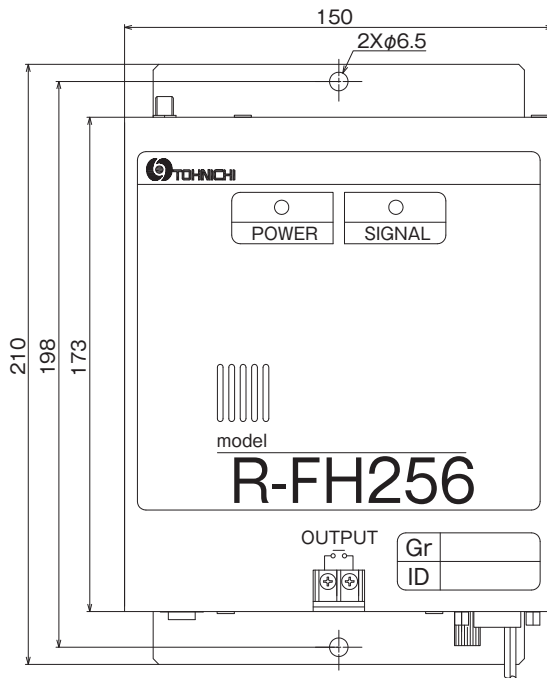
Transmitter
T-FH256MC



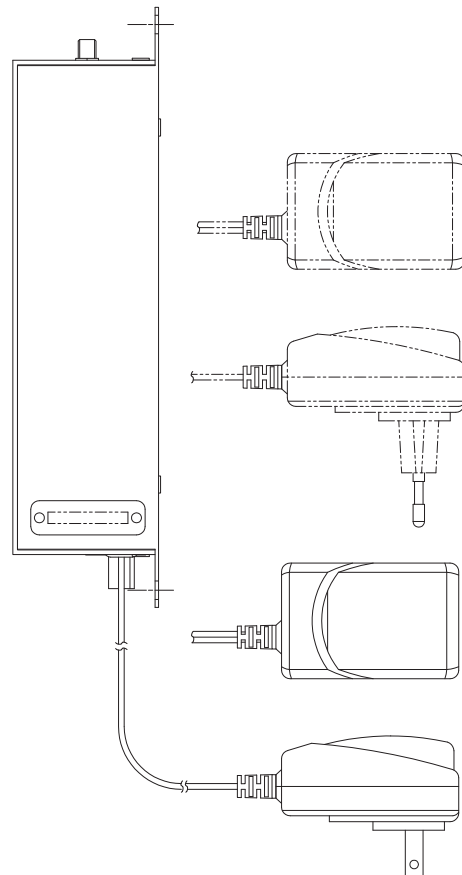
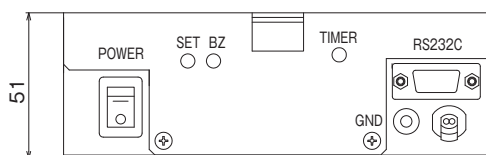
Transmitter
T-FHLS256



Setting BOX
SB-FH256



Receiver
R-FH256



10 Appendix

Federal Communication Commission Declaration of Conformity (DoC) Statement



Model No: R-FH256, SB-FH256

| | |
|-------------------|---|
| Trade Name | TOHNICHI |
| Responsible Party | Tohnichi America Corp. |
| Address | 1303 Barclay Blvd., Buffalo Grove, IL 60089 |
| Telephone No | 847-947-8560 |

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution:

Any changes or modifications not expressly approved by the party responsible for product compliance could void the user's authority to operate the equipment.

To comply with FCC RF exposure compliance requirements, this device must not be co-located or operating in conjunction with any other antenna or transmitter.

For T-FH256MC RF TRANSCEIVER

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Canada Regulatory Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

For Customers in Canada

This device complies with RSS 210 of Industry Canada (IC).

Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of this device.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes:

- (1) il ne doit pas produire de brouillage et
- (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

Exposure to radio frequency radiation

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website at www.hc-sc.gc.ca/rpb.

Declaration of Conformity

We, the under signed, Tohnichi Mfg. Co., Ltd., hereby declare that the following product:

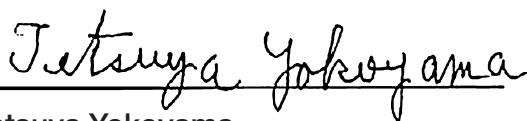
| | |
|---------------------|-------------------------|
| Description | RF TRANSCEIVER |
| Manufacturer | TOHNICHI MFG. CO., LTD. |
| Brand | TOHNICHI |
| Type | T-FH256MC |

Is in conformity with all the provisions of the following EC directive(s) with meeting the related test standards:

Directive 1999/5/EC (R&TTE Directive):

| | |
|----------------------------|---------------------|
| EN 301 489-3 v1.4.1 | 2002-08 |
| EN 300 440-2 v1.1.2 | 2004-07 |
| EN 60950-1 | 2001: First Edition |

Hereunder, that this declaration is based on the above standards have been complied fully, constructing into a Technical File (OT-00113-01).



Tetsuya Yokoyama

Director

TOHNICHI MFG. CO., LTD.

2-12, Omori-kita 2-Chome, Ota-ku,

Tokyo 143-0016 Japan

September 7, 2007

Declaration of Conformity

We, the under signed, Tohnichi Mfg. Co., Ltd., hereby declare that the following product:

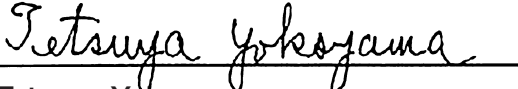
| | |
|---------------------|-------------------------|
| Description | RF TERMINAL |
| Manufacturer | TOHNICHI MFG. CO., LTD. |
| Brand | TOHNICHI |
| Type | R-FH256 |

Is in conformity with all the provisions of the following EC directive(s) with meeting the related test standards:

Directive 1999/5/EC (R&TTE Directive):

| | |
|----------------------------|---------------------|
| EN 301 489-3 v1.4.1 | 2002-08 |
| EN 300 440-2 v1.1.2 | 2004-07 |
| EN 60950-1 | 2001: First Edition |

Hereunder, that this declaration is based on the above standards have been complied fully, constructing into a Technical File (OT-00114-01).


 Tetsuya Yokoyama

Director

TOHNICHI MFG. CO., LTD.

2-12, Omori-kita 2-Chome, Ota-ku,

Tokyo 143-0016 Japan

September 7, 2007

Declaration of Conformity

We, the under signed, Tohnichi Mfg. Co., Ltd., hereby declare that the following product:

| | |
|---------------------|-------------------------|
| Description | RF SETTING BOX |
| Manufacturer | TOHNICHI MFG. CO., LTD. |
| Brand | TOHNICHI |
| Type | SB-FH256 |

Is in conformity with all the provisions of the following EC directive(s) with meeting the related test standards:

Directive 1999/5/EC (R&TTE Directive):

| | |
|----------------------------|---------------------|
| EN 301 489-3 v1.4.1 | 2002-08 |
| EN 300 440-2 v1.1.2 | 2004-07 |
| EN 60950-1 | 2001: First Edition |

Hereunder, that this declaration is based on the above standards have been complied fully, constructing into a Technical File (OT-00115-01).

Tetsuya Yokoyama

Tetsuya Yokoyama

Director

TOHNICHI MFG. CO., LTD.

2-12, Omori-kita 2-Chome, Ota-ku,

Tokyo 143-0016 Japan

September 7, 2007

Designs and specifications are subject to change without notice.



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Website: <http://tohnichi.jp>

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Industrieweg 27 Boortmeerbeek, B-3190 Belgium
E-mail: tohnichi-europe@online.be
Website: <http://www.tohnichi.be>

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E-mail: inquiry@tohnichi.com
Website: <http://tohnichi.com>

■ **TOHNICHI AMERICA CORP. - Atlanta Office**

TEL: +1-(0)678-423-5777 FAX: +1-(0)678-423-1333
4046 Hwy. 154 Suite 103 Newnan, GA 30265

■ **TOHNICHI SHANGHAI MFG. CO., LTD.**

东仁扭矩仪器(上海)有限公司
TEL: +86-(021)3407-4008 FAX: +86-(021)3407-4135
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Minhang. Shanghai. P.R. China