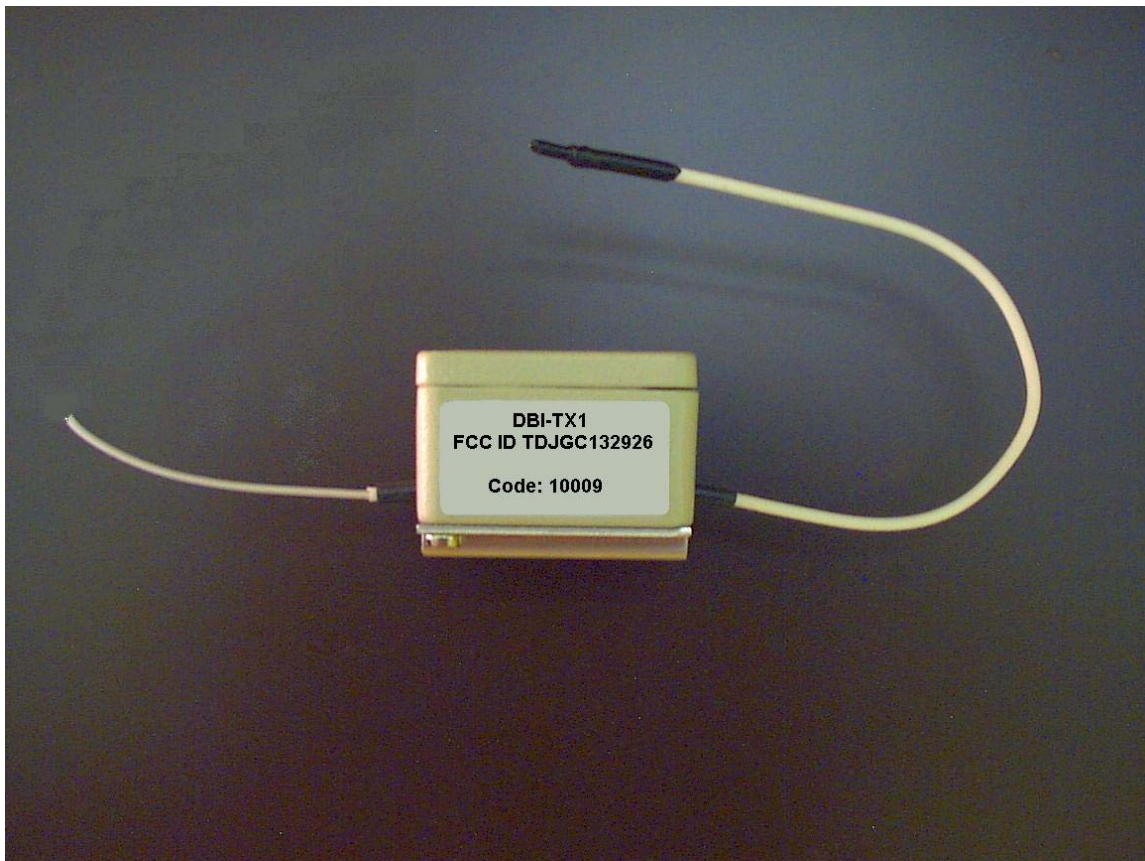# DBI-TX1 User Manual
U.S. Version

Free Balloon Envelope Temperature Wireless Transmitter

Safety

The manufacturer has designed this instrument to be safe when operated. Do not use this instrument for any other purpose than stated.

Operating restrictions

- This instrument should ONLY be used in ships referred as *free manned balloons*.
- The DBI-TX1 must be mounted in the balloon exactly as shown in this manual. The responsibility however for the safety of the mounting of the sender is not a subject for the manufacturer or their representatives.

Abbreviations

| DBI-002	DigiTool Instruments Free Balloon Flight Instrument
DBI-TX1	DigiTool Instruments Envelope Temperature Transmitter.
RF	Radio Frequency

Table of Contents

1. Description

1.1. General

- The DBI-TX1 is a wire less transmitter monitoring free hot air balloon envelope top temperature. It transmits data to the DBI-002 flight instrument where temperature is displayed.

- The unit consists of a sturdy aluminum enclosure fitted with a load tape slot attachment, exiting antenna and temperature probe wires.

- The unit is power supplied with a replaceable long life lithium battery. Battery replacement interval is typically four years.

- Power on/off is controlled automatic by the difference of box (outside envelope) and temp probe (inside envelope) temperatures. No operator action is required.

- Each unit has a unique serial code that is matched with the receiver DBI-002. DBI-002 data reception is qualified by serial code and comprehensive transmission error detection.

- Short duty cycle and low RF power data transmission enables interference free operation and multiple units to operate in close proximity.

- Conforms to FCC part 15.249

- FCC approval identification: **TDJGC132926**

1.2. DBI-TX1 Photo

DBI-TX1
FCC ID TDJGC132926

Code: 10009
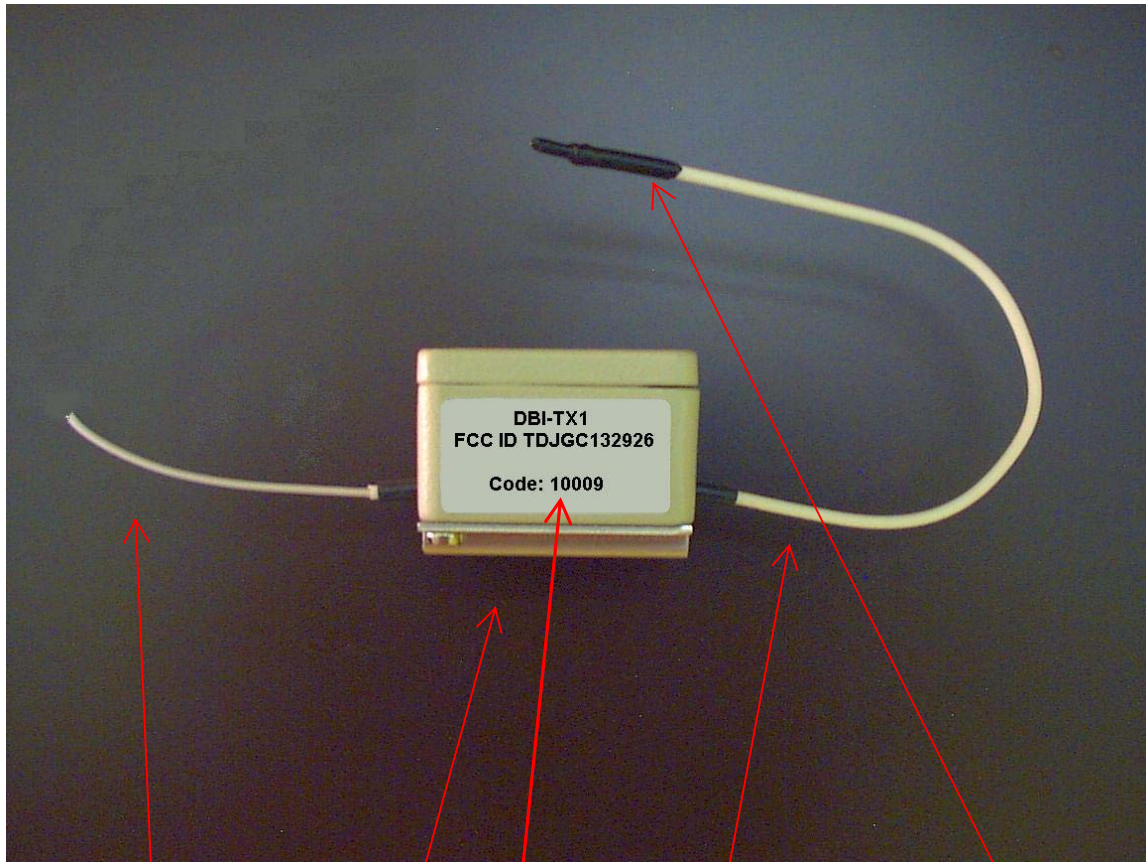
Antenna wire

Box with attachment

Temperature probe wire

Temperature probe

ID label and location

2. Specification

2.1. Envelope thermometer accuracy

Range °F	Total error +/- °F
-15 to 32	7
32 to 122	5
122 to 167	4
167 to 257	2
257 to 302	4
302 to 347	5
347 to 392	7

2.2. Physical dimensions

Item	Value	Value
Box Length	50 mm	2.00 inch
Box Height	30 mm	1.18 inch
Box Width	45 mm	1.77 inch
Antenna wire length	90 mm	3.50 inch
Temperature wire length	254 mm	10.00 inch
Total weight	110 gram	3.9 ounce

2.3. Environmental ratings

Item	Value
Box sealing class	IP65
Box temperature High	257 °F
Box temperature Low	-22 °F

2.4. Radio frequency transmission

Item	Data
Frequency	914.5 MHz
RF Power	+0 dBm (1mW)
Modulation	FM, deviation +/- 30 kHz
Type Approval	
EMC conformity	FCC part 15.249
Placard marking	DBI-TX1 FCC ID: TDJGC132926 Code: NNNNN
Transmit duration	37 milliseconds
Transmit repetition interval	2.3 seconds
Transmit duty cycle	0.016

2.5. Power supply

Power supply	CR2450 3 Volt Lithium Cell
Cell life (on)	> 4000 hours
Cell life (off)	> 40000 hours
Lithium cell replace interval	4 years

2.6. RF transmit control

Transmit on differential temperature threshold, (probe – box).	> 10 °F
Transmit off differential temperature threshold, (probe – box).	<= 10 °F
Transmit on minimum duration	5 minutes

3.Installation

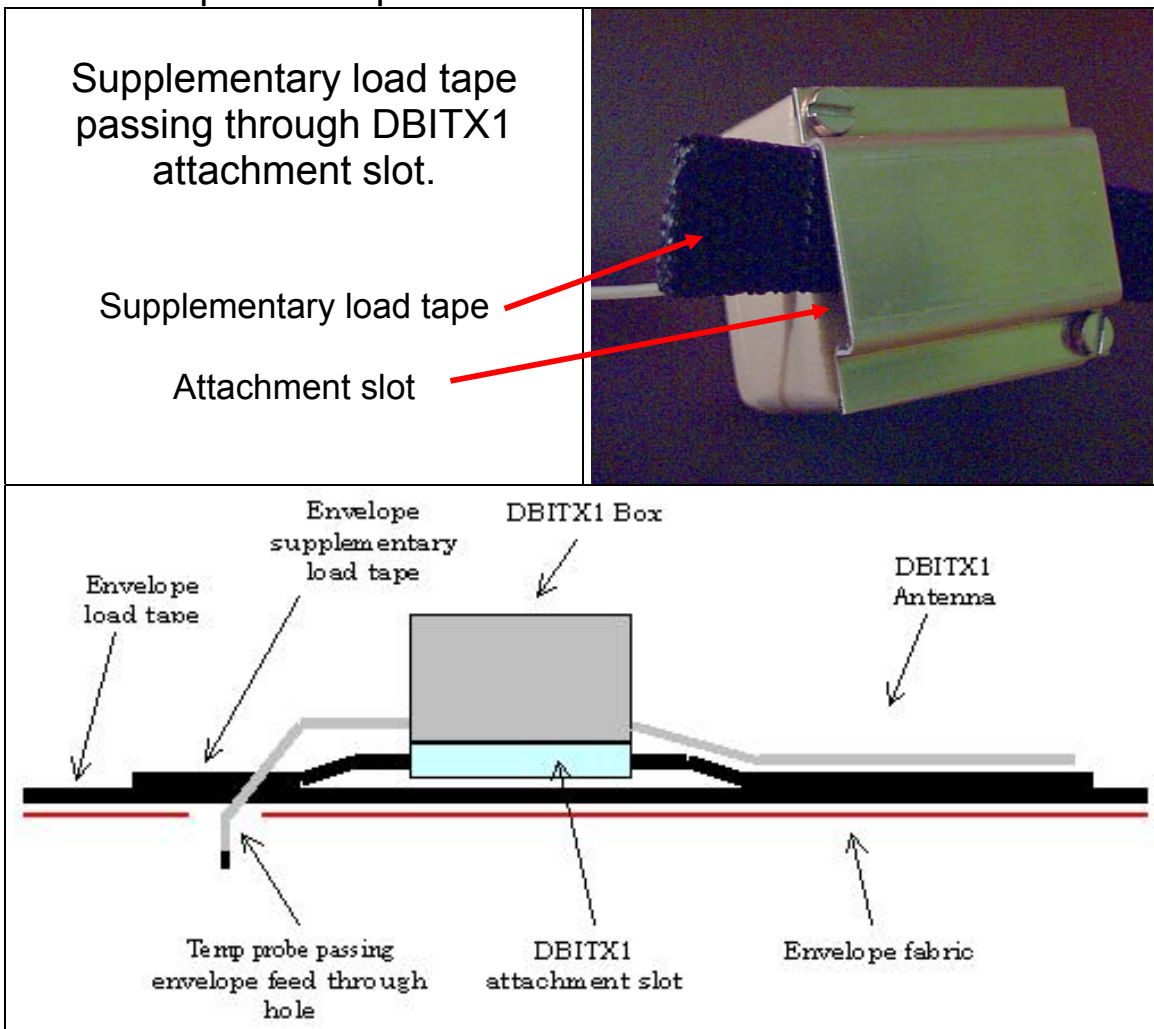## 3.1. Safety
Always consult corresponding envelope flight manual for safe attachment.

3.2. Attachment
The DBITX1 attaches on one supplementary load tape piece close to the top, outside of the envelope.
The supplementary load tape is stitched or velcro mounted on the envelope load tape.

Supplementary load tape passing through DBITX1 attachment slot.

Supplementary load tape

Attachment slot

Envelope supplementary load tape

DBITX1 Box

DBITX1 Antenna

Envelope load tape

Temp probe passing envelope feed through hole

DBITX1 attachment slot

Envelope fabric

3.3. Antenna
Align the antenna wire straight out horizontally along the supplementary load tape piece and secure the position. Avoid metallic parts in the antenna proximity (2 meters).

3.4. Envelope temperature probe
Mount the temperature probe wire through the envelope fabric to the inside of the envelope.

4. Operation

4.1. DBITX1 identification code

Transmitter identification code is marked on the box placard.
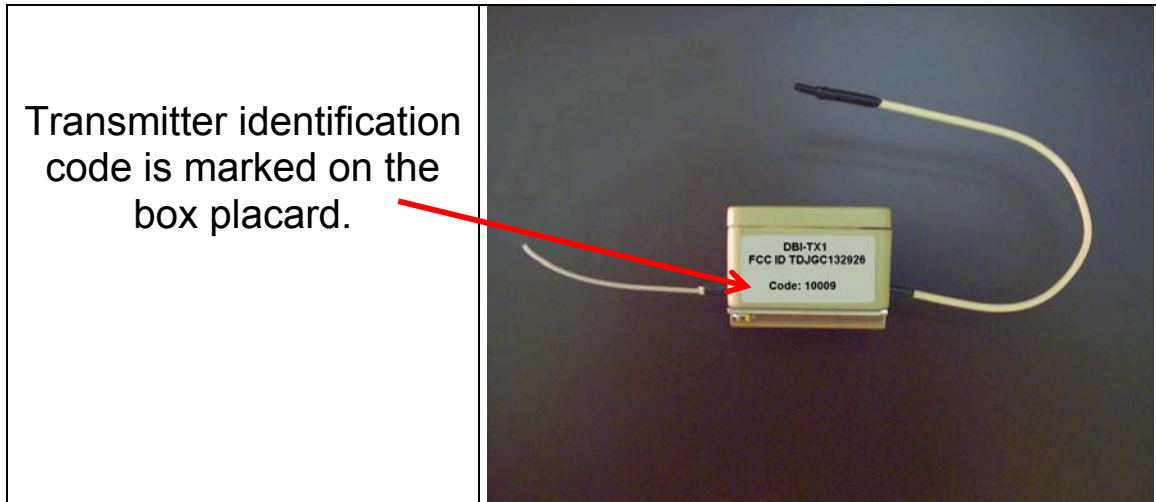
4.2. DBITX1 identification code programming

Program the DBITX1 identification code to the DBI-002 flight instrument by using the DBI-002 PC application software. Refer to "DBI-002 User Manual".
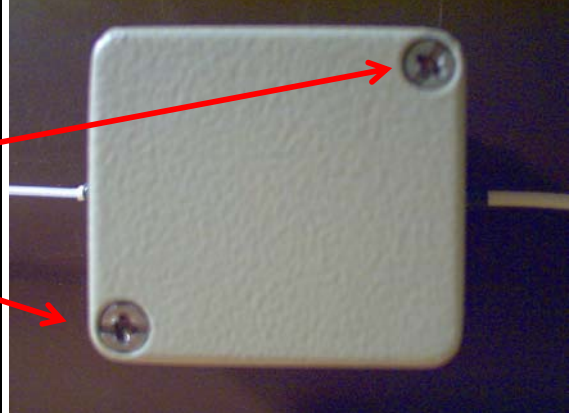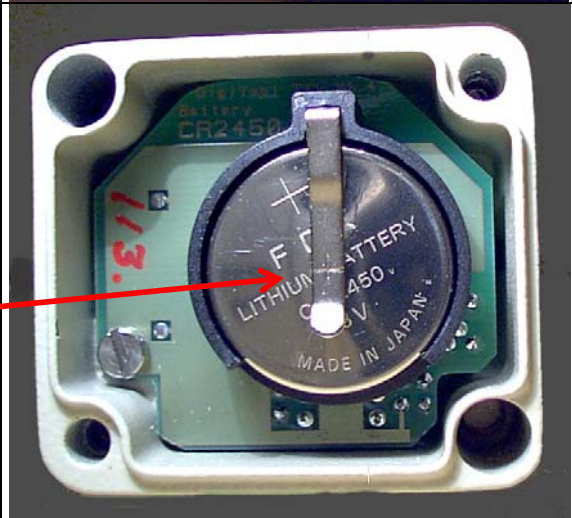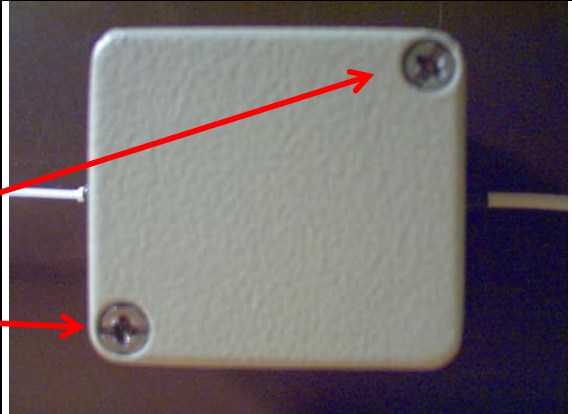
4.3. Power On / Off

The power on / off is automatic:

- The DBITX1 will start transmission when a temperature difference between the box and the temperature probe is greater than 10 °F.

- The DBITX1 will stop transmit after 5 minutes when a temperature difference between the box and the temperature probe is less than 10 °F.

- For permanent power off, remove internal battery coin cell. See "5.2 Battery replacement".

5. Maintenance

5.1. Battery (Lithium cell) replacement

- During normal operation, the internal battery will last for typical 10 years. Recommended replace interval is 4 years.
- Replace battery if DBITX1 does not operate properly.

Unmount the top lid attached by the two bolts. Unmount CCW.	
Replace the coin cell: - Replace type is "CR2450". - Positive terminal facing up. - Inspect for clean battery holder metal surface. Clean with soft cloth if dirty.	
Mount the top lid: - Make sure seal is correctly placed in lid groove. - Tighten bolts firmly. Mount CW.	

5.2. Approved service agents

Name	Location	Contact
DigiTool AB	Box 6190 100 00 Stockholm Sweden	tel +46 8 343410 Email service@digitool.se