

LEETEK Model LTK-1000 Transmitter

Operating Manual

R020420

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WARRANTY

LEETEK Warrants that this product will be free from defects in materials and workmanship for a period of one year from the date of shipment. During the warranty period, LEETEK Company will, at its option, either repair or replace products that prove to be defective.

For warranty service or repair, Customer must notify LEETEK of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by LEETEK. Customer shall prepay shipping charge to LEETEK designated service center and LEETEK shall pay shipping charge to return the product to customer. If customer is located outside of Korea and returning it to LEETEK for the service, customer is responsible for all shipping charges including freight, taxes, and any other charge.

This warranty shall not apply to any failure or damage caused by improper use or unauthorized service. In such cases, LEETEK may refuse to furnish service under the warranty.

LEETEK Sales and Service Office

If you have a problem with your Pager Transmitter, call or write to our Technical Support specialists.

Product Support

LEETEK Company Limited

TEL : 82-32-678-8605~6 FAX : 82-32-682-8605

E-mail : leetek2001@yahoo.co.kr

#24-2 Samjeong-dong, Ojeong-gu, Puchon-city, Kyunggi-do, Korea.

Appearance and Accessory Check

When Pager Transmitter is delivered, check for damage in appearance that could have occurred during its transportation.

Next, check for the standard accessories, table below, supplied with Pager Transmitter.

NO.	Name	Specification	Q'ty
1	Adapter	DC 9V, 1A	1
2	RS-232C Connection Cable 2m	D-SUB 9S-9S	1
3	Antenna	Helical	1
4	Operating Manual		1

Operating Environment

Refrain from using this equipment in a place subject to much vibration, direct sunlight, and where corrosive gas is generated. Also, do not use it where the ambient temperature is outside -10 °C to 50 °C and relative humidity is more than 85%.

Storage and Shipment

Storage

The storage temperature range for this equipment is -20 °C to 70 °C. When this equipment is not used for a long period of time, covered with vinyl or placed in a cardboard box, store it in a dry place away from direct sunlight.

Shipment

When shipping this equipment, use the original packing materials. If they are not available, pack the equipment as follows :

- a. Wrap this equipment, in appropriate shock absorbing materials and put it in a corrugated cardboard box at least 5 mm thick. (If shipping to a LEETEK Service Office, attach a tag indicating the type of service required, return address, model number and full serial number.)
- b. Wrap its accessories separately in the same shock absorbing material and put them in the same corrugated cardboard box together with this equipment.
- c. Fasten the corrugated cardboard box with packing strings.
- d. Mark the shipping container FRAGILE to assume careful handling.

CAUTION: *Never use any cleaner other than alcohol for the maintenance of this equipment. Organic solvent such as benzene, toluene or acetone may spoil the plastic parts of this equipment.*

CAUTION:

Changes or modifications made to this equipment not expressly approved by **LEETEK Company Limited** may void the FCC authorization to operate this equipment.

RF Radiation Exposure

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Specification

Carrier Frequency:

457.575MHz +/-200Hz

Stability : +/-1.5ppm -10? to 50? , +/-1.0ppm/year Aging

FM Modulation:

Deviation: 4.5kHz

FM Accuracy: +/-5% 4.275 < 4.5 < 4.725 kHz

Data Rate: 1200 BPS → 600Hz +/- 5Hz

512 BPS → 256Hz +/- 5Hz

Residual FM: Less than 5Hz, 300Hz HPF and 3kHz LPF

RF Output: 26dBm +/-1dB Maximum (0.4W)

Message: Numeric, 7digit Maximum

Address Range: 0000008-0009992 .capcode 7 figure (increase multiple of 8)

Frequency and data rate setting: Through RS-232C connector. Computer program is included.

Address Abbreviation: Pager Addresses are shortened to 3 digit through RS-232C connector. Computer program is included.

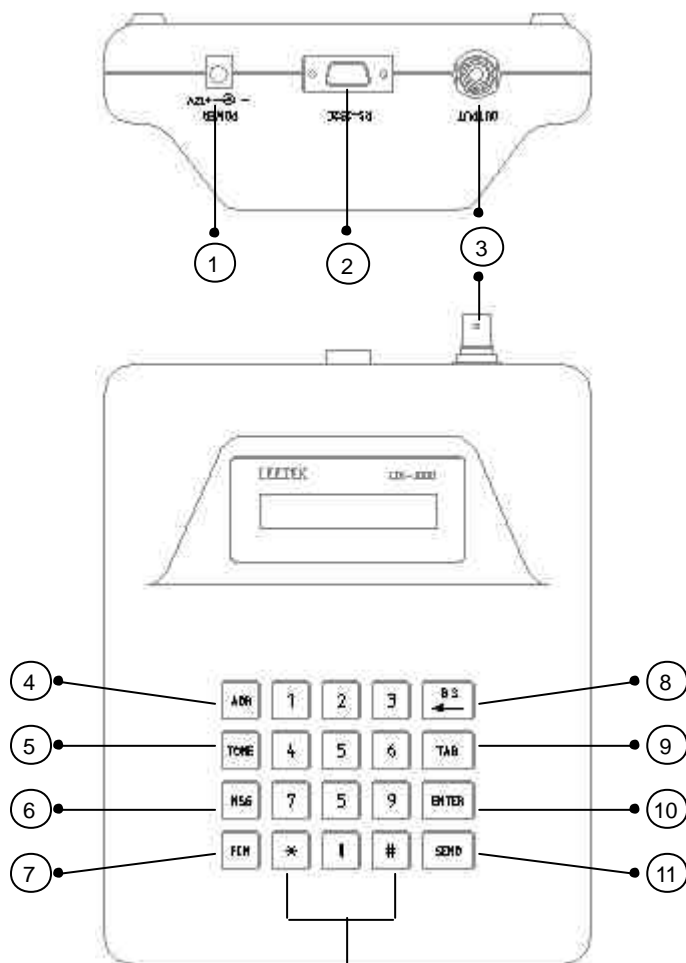
RF ON/OFF: RF is ON only during the message transmission, ADDRESS entered and SEND key pressed.

Power: DC 9V, 1A, AC Adapter

Dimension: W(170) x D(210) x H(67)

Weight: 0.7kg

Key Functions



- 1 DC Input Connector (9 Adapter Input)
- 2 RS-232C Connector (12 for PC connection)
- 3 RF Output (Connect to Helical Antenna)
- 4 **ADR** : Address (CAP Code) entry mode. (0 ~ 1248)
- 5 **TONE** : Alert Tone entry mode. (A, B, C, D)
- 6 **MSG** : Message entry mode. (24 digits max)
- 7 **FCN** : Access 2nd key Function of a key when **FCN** key is pressed first.
 - FCN** + **1** : Select "Pulse Vibe 1sec On(3times) 5sec Off 1n Cycle" Mode
 - FCN** + **2** : Select "Flashing Lights & Beep(10sec Only)" Mode
 - FCN** + **3** : Select "Vibe & Flashing 1sec On(3times) 5sec Off in Cycle" Mode
 - FCN** + **4** : Select "Flashing Lights Only" Mode
 - FCN** + **5** : Select "Flash & Vibe & Beep 1sec On(3times) 5sec Off in Cycle" Mode

- [FCN] + [6] : Select "Out of Range: On" Mode (Pager Mode)
- [FCN] + [7] : Select "Out of Range: Off" Mode (Pager Mode)
- [FCN] + [8] : Sleep Mode all "Off"
- [FCN] + [9] : Select "Out of Range On/Off" Mode (Transmitter Mode)
- [FCN] + [0] : Set value "Transmitter Interval(Out of Range)" 01~15 sec
- [FCN] + [*] : Select "baud rate 1200/512 BPS"

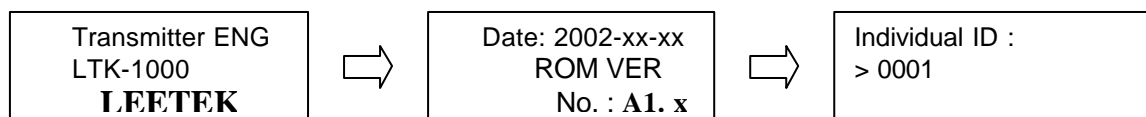
- 8 [BS] : During numeric entry from key pad, [↵] key works as Back Space.
- 9 [TAB] : Move the parameter
- 10 [ENTER] : During numeric data entry, [Enter] key completes the data entry.
If the key is pressed other times, it works as the Send key.
- 11 [SEND] : Completes the data entry and start data transmission
- 12 [0] ~ [9], [*], [#] : Data input keys

Operation Procedure

LTK-1000 allows and PC RS-232C control. RS-232C operation is explained in chapter 10, page 12. In remote mode, the front panel operation is not available. The front panel operation use : 1) direct key entry of numeric data and functions, 2) Tab, and 3) Back Space

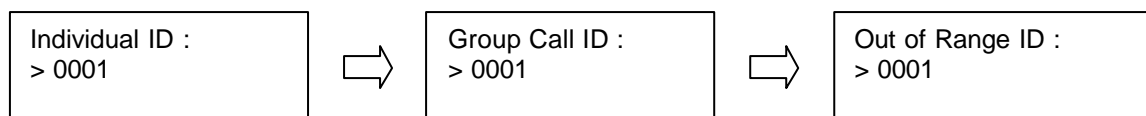
Step 1. Power On and Entering Address

Connect the Power Adapter to AC outlet, and DC output connector of the Adapter to LTK-1000 rear panel DC input connector. When the power is connected to LTK-1000 the system will display the following.



The cursor invites you to enter a pager address (this is any number between 0000 and 1248). Enter 4 digit receiver unit address and press [ENTER].

- 1) Press [ADR] key + [Number keys] (Address) + [ENTER] Key.
- 2) Address Range : 0000 ~ 1248



Use Tab key to set ID Mode . If LTK-1000 power is initialized, Individual ID Mode

- When select "Out Of Range ID" Mode, don't access "Signal Transmitting"

Note: While entering numeric data from the key pad, **[BS]** Key deletes 1 digit. Actually, the receiver unit address is 7 digits. 3 digits from the front is "fixed address", which can be used "Receiver group index". You can change "Fixed address" by pressing **[FCN]**+**[#]**+**[8]**+**[0]**. Refer to "Function Key Operation", page 14.

Step 2. Entering Message

After selecting the address, press **[MSG]**. The screen will now prompt for you to enter a message of up to 24 digits, including the spaces.

Message:12345678
9012345678901234

- 1) Press **[MSG]** key + **[Number key]** (Message) + **[ENTER]** Key.
- 2) Message Max. Length : 24 digits

Note: While entering numeric data from the key pad, **[BS]** Key deletes 1 digit ...

Step 3. Alert Tone (Tone Type: A, B, C, D)

After pressing **[TONE]**, the following screen appears to offer the selection of the tone types. Again, the cursor invites you to enter a selection, 0 thru 3.

BEEP TYPE (0 ~ 3) :
> A

- 1) Press **[TONE]** key + **[Number key]** (0~3) + **[ENTER]**
- 2) 0 = A, 1 = B, 2 = C, 3 = D

Step 4. Sending Message

After entering the message, press **[SEND]** to send the message. The call will now be transmitted to the receiver unit. Following display will appear on screen during the message transmission.

Sending Message
Please wait

Function Key Operation

Function Selection Key, **[FCN]** key + Number Key select a function.

Function	Key	Description	Sending Message
Pulse Vibe 1SEC	[FCN] + [1]	Pulse Vibe 1sec ON(3 times) 5sec OFF in Cycle	9292
Lights and Beep	[FCN] + [2]	Flashing Lights and Beep(10 Sec Only)	9595
Vibe and Lights	[FCN] + [3]	Vibe and Flashing 1sec ON(3 times) 5sec OFF in Cycle	9696
Lights Only	[FCN] + [4]	Flash Lights Only	9797
Lights, Vibe, Beep	[FCN] + [5]	Flashing and Vibe and Beep 1sec ON (3 times) 5sec OFF in Cycle	9898
Out of Range "ON"	[FCN] + [6]	Out of Range "ON" (Pager Mode)	9494
Out of Range "OFF"	[FCN] + [7]	Out of Range "OFF" (Pager Mode)	9393
Sleep Mode	[FCN] + [8]	Sleep Mode all "OFF"	99
Out of Range ON/OFF	[FCN] + [9]	Select "Out of Range ON/OFF" (Transmitter Mode)	
Repeat Time : XX	[FCN] + [0]	Set Value "Transmitter Interval 01~15 sec" (Transmitter Mode)	
Data Rate 1200/512	[FCN] + [*]	Select "Baud Rate 1200/512 BPS" (Transmitter Mode)	
Group Index (Fixed Address)	[FCN] + [#] + [8] + [0]	Select Group Index (Fixed Address, 3 digits from the front of "Full address"). Receiver full address: xxx (fixed address) + xxxx	

Remote Operation Using PC

LTK-1000 supports high speed RS-232C serial interface for remote operation under PC control. A standard 9-pin RS-232C connector is located at the left side. Any communication program (such as WINDOW 95/98 Hyper Terminal) could be used for simple tasks. Complex tasks can be automated using PC programming.

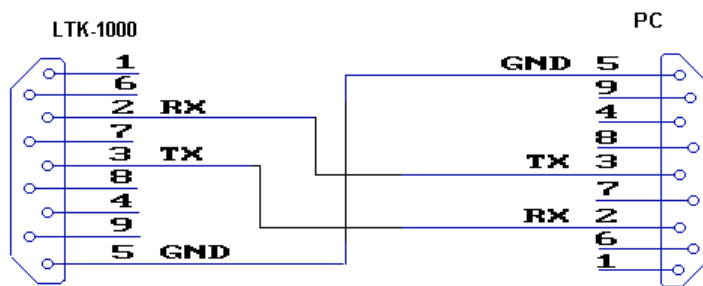
Remote/Local mode

Control Mode can be changed by RS-232C command, "REMOTE" or "LOCAL".

- Remote Mode: RS-232C PC Control is only available. Front panel control is not allowed to operate LTK-1000.
- Local Mode: Both operation methods are available. If LTK-1000 power is initialized, Control Mode is set to Local Mode.

RS-232C Connection

A 9-pin standard connector is used in the LTK-1000 for a RS-232C connection. To make a connection to the 25-pin RS-232C connector, a 9-pin to 25-pin adapter can be used. The cable pin configuration is shown below.



PC Contr

Windows 95/98 Hyper Terminal

1. PC Setup

- A. Check for the Hyper Terminal installation on your PC. Click Start → Program → Accessories → (Communications). If Hyper Terminal folder is not found in the Accessories list, it must be installed. Insert Windows 95 or 98 CD ROM and install Hyperterminal program.
- B. Start Hyper Terminal: Click Start → Program → Accessories → (Communications) and then click "Hyper Terminal".
- C. On "Hyper Terminal" screen, double click "Hypertrm" icon.
- D. In "Name" block, on "New Connections" screen, enter "LTK1000". Select a desired icon and click "OK".
- E. On "Connect To" screen, click ☒ in "Connect Using:" block, select "Direct to COM1" and then click "OK".
- F. On "COM1 Property" screen, select as following. And then click "OK".

Bits per Second	Data bits	Parity	Stop bits	Flow control
9600 bps	8 bit	None	1 bit	None

- G. Click "FILE" on menu bar and select "Property". You should see the "LTK-1000 Properties" screen. Select "Setting" tab. Click "ASCII Setup" button and check "Echo typed characters locally" and click "OK". Click "OK" again.

2. LTK-1000 Remote Control.

- A. Connect 9 pin D type RS-232 cable between PC COM 1 port and LTK-1000.
- B. Turn LTK-1000 power on.
- C. Type in a RS-232 command (Ex: "Remote") on "LTK-1000 Hyper Terminal" screen and press Enter on PC keyboard. LTK-1000 returns "OK" or Error Data signal.

Programming in Windows 95/98

1 Programming Procedure

- A. Port select(COM1-COM4)
- B. Set-up Baud Rate(9600 bps), Parity Bit(None), Data Bit(8 bit), Stop Bit(1 bit)
- C. Open selected COM Port.
- D. Send RS-232C Command string to the COM Port.
- E. Wait until the response data is received.
- F. When confirmed, send the next command

NOTE: Another option is to program sufficient wait time between commands

2 Command and Response Message

- LTK-1000 returns the response message (Response Data + \$0A + \$0D) after some delay.
- In case of error, LTK-1000 returns the error message (Error Data + \$0A + \$0D).

Error Data List

Error Data	Description
ERR10	Syntax error
ERR20	Out of range

3 Commands

ID xxxx	OK	Address
RS-232C Commands	Response Data	Description
MSG xxxxxxxxxxxx...	OK	Message
LOCAL	OK	Local Mode
REMOTE	OK	Remote Mode

RS-232C Commands

4 Programming Example

The following examples are written in Visual Basic.

Example 1) Set REMOTE mode

```
Private Sub Form_Load()  
    MSComm1.Rthreshold = 1  
    MSComm1.CommPort = 1      ' select COM1  
    MSComm1.Settings = "9600, N, 8, 1"  
        ' Baud Rate(9600 bps), Parity Bit(None), Data Bit(8 bit), Stop Bit(1 bit)  
    MSComm1.PortOpen = True    ' Open Com Port.  
    MSComm1.Output = "REMOTE" + Chr(13) ' send command .  
    MSComm1.PortOpen = False   ' Close Com Port.  
End Sub
```

Example 2) Check "OK" is received in input Buffer

```
Private Sub MSComm1_OnComm()  
    ` Triggers when TX or RX event occurs  
    If MSComm1.CommEvent = 2 Then ` event in input Buffer  
        Text1.Text = MSComm1.Input ` read the input string and check later if it is "OK"  
    End If  
End Sub
```