

# HI-FI MONO/ STEREO FM TRANSMITTERS

## *LX-75 Series*

### INSTRUCTION MANUAL

#### **CANADA**

" Operation of this device 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 the device."

#### **USA**

This device complies with Part 73-74 of the FCC rules. Operation of this  
device 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."

9804-75

# DECADE

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## **SECTION 1**

### **GENERAL INFORMATIONS**

#### **A) Introduction**

Thank you for purchasing one of the fine products made by **DECADE** Transmitters. Before using it, please read this manual carefully in order to obtain the best possible results from your transmitter. This manual contains installation, operation and adjustment procedures for **DECADE LX-75 series** FM Transmitters.

#### **B) Description**

**LX-75 series** transmitters include a crystal controlled VCO and an RF power amplifier. The LX-75 series are offered in five different audio configurations. The **LX-75** (mono) accepts audio signals via the front panel (2X) RCA jacks. The **LX-75B** (mono) has an additional balanced 600 ohms XLR-3 type input jack (line level) and an additional input level control. The **LX-75M** (mono) has an additional balanced 950 ohms XLR-3 type with phantom power (microphone level) jack with an additional input level control. This option is well suited for any type of balanced microphones (Electret or dynamic). The **LX-75S** shares the same type of inputs as the LX-75 but does broadcast in stereo or mono mode. The **LX-75SM** shares the same type of inputs as the LX-75M but does broadcast in stereo or mono.

Each inputs type are associated to an individual volume control on the front panel, in order to get optimum modulation level. This useful feature makes Decade transmitters very versatile, allowing them to accept audio signals from many sources like: CD or DVD players, tape decks, microphones and audio mixing boards. Please refer to section 3-c.

#### **C) Warranty**

**LX-75 series** transmitters come with a one (1) year warranty that covers parts replacement and labor, required to repair any defects resulting from the manufacturing process. All claims must be authorized by **DECADE** prior to shipment of a faulty unit for repairs, and a copy of the invoice must be included in the shipment. Shipping fees are assumed by the client and **DECADE** will pay for the return of the repaired unit.

D) **Warning**

**DECADE** transmitters operate on the 88.1 MHz - 107.5 MHz commercial FM broadcast band, so signals transmitted can be received on any standard FM receiver. Thus, some care should be taken in the use made out of these transmitters.

**DECADE transmitters inc. is not responsible for any financial loss or violation of local laws during the utilisation of their transmitters.**

The **FCC** (Federal Communications Commission) and the **DOC** (Department Of Communications,Canada) legislate the use of FM transmitters operating in the commercial FM band.A broadcast license could be required in your concerned Country.

E) **Technical specifications**

Refer to supplement, Technical specifications of LX-75 series.

***SECTION 2  
INSTALLATION***

A) **Introduction**

Installation of a **DECADE** FM transmitter includes the following steps:  
1) receiving inspection; 2) mounting on a shelf; 3) connecting the audio source.

B) **Receiving inspection**

Check the transmitter packaging for any damage that could have occurred during shipping. If you find any damage to the transmitter, keep the packaging for claims purposes with the freight company. Any damage should be noted on the receiving slip at the time of delivery and the freight company advised within 5 working days following the delivery of damaged units.

C) **Connections**

After installation of the transmitter on a shelf, plug the AC wall adaptor in the AC wall receptacle. An RCA to RCA audio cable is furnished for linking your audio source to the **LX-75** RCA audio inputs.

D) **Location of the transmitter**

**DECADE** transmitters are designed for indoor or outdoor use in a dry environment, in temperatures ranging from -50°C to + 50°C). **In order to obtain optimum performances, it is recommended to place them far from any electromagnetic noise source (transformers, motors, etc.).**

Transmitters should be located as close to the center of the hall or coverage area as possible, and at a sufficient height to give the transmitted signal an unobstructed path to every seat or receiving point. Transmitted signal paths will be weakened by concrete walls or steel beams or metal sheets placed around them. On the other hand, windows are very permeable to radio waves, so avoid locating the transmitter near them if you wish to restrain the coverage to the interior of a building.

***SECTION 3  
OPERATION***

A) **Controls and indicators**

Input level is controlled by an associated potentiometer located on the front panel. A power indicator and over modulation LEDs are also located on the front panel. The power switch is located on the rear panel.

B) **Input and output connectors**

The LX-75 series are offered in five (5) different audio configurations so inputs type may vary from model to model. Please refer to: **Section**

**1-B (page 2).** The **LX-75 series** RF output signal is either routed to a fixed telescopic antenna or an SO-239 (UHF female type) connector that enables the transmitter RF output to be linked to a remote antenna

( **Decade model # GP-32 or LGP-FM,optional**) for better coverage.

**Note:** The original configuration features a fixed telescopic antenna.

C) **Optimal input level (VERY IMPORTANT)**

Optimal input level is reached when the audio level at the receiver end is equal to the level of a standard FM broadcast station. To obtain this result it is mandatory to compress the audio input signal (between your audio source output and the inputs of the LX-75). The over modulation LED on the front panel shall never or rarely lit up. The level has to be adjusted in a maner to avoid over modulation.

**SECTION 4  
MAINTENANCE AND ALIGNMENT**

A) **Maintenance**

No maintenance is required to keep the transmitter in top operating condition. If an external cleaning appears necessary, use a soft, damp cloth and mild soap only.

B) **Frequency selection**

The transmitting frequency is user programmable via a set of two Hex switches (**F1 - F2**). **Your LX-75 is factory preset to 98.5MHz.**

1) From the «Hex switches» codes table (**page 8**),select the appropriate «Hex switch» code for your chosen frequency and set the «Hex switches» accordingly.

**IMPORTANT:** The **LX-75S** and **LX-75SM** are provided with an additional Bit switch ( **ST - BB** ) that allows to boradcast in mono or stereo (**ST**)( Stereo = ON) and to add a bass boost of 6dB from 0 Hz to100Hz ( **BB** )(Bass Boost = ON). Please see rear panel.

**NOTES:** 1) The frequency range of the **LX-75 series** are 88.1 to 107.5 MHz.

2) If your application requires more than one **LX-75** ,it is mandatory to leave some space between the two chosen frequencies in a manner to avoid channel scrambling or intermodulation products.Ex; If the first chosen freq is **88.5MHz**, then the second chosen frequency shall be **89.1MHz**. The chosen frequencies shall not interfere with local FM broadcast stations. If you intend to use more than two LX-75 in the same restricted area,Decade company offers a free assistance service that will guide you thru the steps of multiple frequencies setup.**Please call our service dept at: 1-819-563-4323**. Hours are 8.30 AM to 5.00 PM, Eastern time.

C) **RF power programming**

With the help of Hex switches ( **P1 - P2** ), it is possible to digitally control the RF output in increment of 5 miliWatts.**Please refer to the Hex code on page 9**.The power range of the LX-75 is: 0 miliWatts to 80 miliWatts.  
**Your LX-75 is factory preset to 80 miliWatts.**

***HELPFULL NOTES:***

The LX-75 series are not equipped with frequency and RF power readouts. It is possible to read the frequency of your LX-75 when a digital frequency counter (100 to 500MHz range) is used. There are two ways to hook a digital frequency counter to your LX-75.

**1) LX-75 with fixed telescopic antenna:**

Select the 1M $\Omega$  input range on your frequency counter. Use a BNC to aligator clips type of coax cable;insert the BNC connector to the frequency counter's input and tie both aligator clips together. By doing so,this coax cable will act as a loop antenna and will enable the frequency counter to pickup the LX-75 RF frequency.

**2) LX-75 with UHF type connector:**

Select the 50 $\Omega$  input range on your frequency counter.

Use a BNC to UHF type of coax cable. Link the coax cable to the LX-75 and frequency counter. By doing so, the frequency counter will directly read the frequency of your LX-75. **Warning:** Please make sure that your frequency counter's input sensitivity is at least 2 Volts peak minimum, otherwise you may damage the unit.

## ***SECTION 5 APPLICATIONS***

Applications for **DECADE** transmitters are almost unlimited, but here are a few very popular ones. With **DECADE** transmitters, a whole new world opens up for hearing impaired people, and most of all for people demanding the best sound reproduction possible, regardless of the environment.

**CHURCHES:** Connected to the church sound system, the transmitter broadcasts the oral and musical content of the celebrations to the attendants, using a standard FM Walkman (hearing impaired or not).

**THEATRES:** With one microphone installed on the stage and fed to the transmitter through a mixing board, you will have the sensation of being seated right next to the actors, even if you are actually sitting in the last row. The receiver is again an FM Walkman.

**CONFERENCE HALLS:** Many transmitters can be used as part of a simultaneous translation scheme, where attendants can listen to the conference in the language of their choice. A single transmitter can also be used as an aid for hearing impaired persons.

**CABLEVISION:** Many transmitters can be combined and used as FM modulators for FM cable broadcasting.

A)

**HEX SWITCH CODES TABLE****FREQUENCY PROGRAMMATION**

Freq MHz	F1	F2	Freq MHz	F1	F2
-	-	-	97.9	1	6
88.1	4	7	98.1	1	5
88.3	4	6	98.3	1	4
88.5	4	5	98.5	1	3
88.7	4	4	98.7	1	2
88.9	4	3	98.9	1	1
89.1	4	2	99.1	1	0
89.3	4	1	99.3	0	F
89.5	4	0	99.5	0	E
89.7	3	F	99.7	0	D
89.9	3	E	99.9	0	C
90.1	3	D	100.1	0	B
90.3	3	C	100.3	0	A
90.5	3	B	100.5	0	9
90.7	3	A	100.7	0	8
90.9	3	9	100.9	0	7
91.1	3	8	101.1	0	6
91.3	3	7	101.3	0	5
91.5	3	6	101.5	0	4
91.7	3	5	101.7	0	3
91.9	3	4	101.9	0	2
92.1	3	3	102.1	0	1
92.3	3	2	102.3	0	0
92.5	3	1	102.5	F	F
92.7	3	0	102.7	F	E
92.9	2	F	102.9	F	D
93.1	2	E	103.1	F	C
93.3	2	D	103.3	F	B
93.5	2	C	103.5	F	A
93.7	2	B	103.7	F	9
93.9	2	A	103.9	F	8
94.1	2	9	104.1	F	7
94.3	2	8	104.3	F	6
94.5	2	7	104.5	F	5
94.7	2	6	104.7	F	4

94.9	2	5	104.9	F	3
95.1	2	4	105.1	F	2

## ***HEX SWITCH CODES TABLE***

### FREQUENCY PROGRAMMATION (Cont.)

<i>Freq MHz</i>	<i>F1</i>	<i>F2</i>	<i>Freq MHz</i>	<i>F1</i>	<i>F2</i>
95.3	2	3	105.3	F	1
95.5	2	2	105.5	F	0
95.7	2	1	105.7	E	F
95.9	2	0	105.9	E	E
96.1	1	F	106.1	E	D
96.3	1	E	106.3	E	C
96.5	1	D	106.5	E	B
96.7	1	C	106.7	E	A
96.9	1	B	106.9	E	9
97.1	1	A	107.1	E	8
97.3	1	9	107.3	E	7
97.5	1	8	107.5	E	6
97.7	1	7	-	-	-
-	-	-	-	-	-

## B) ***HEX SWITCH CODES TABLE***

### RF POWER PROGRAMMATION

<b>RF Power miliWatts</b>	<b>P1 (HI)</b>	<b>P2 (LO)</b>	<b>RF Power miliWatts</b>	<b>P1 (HI)</b>	<b>P2 (LO)</b>
0	0	0	35	A	3
1	1	F	40	B	0
2	2	8	45	B	B
3	3	0	50	C	6
5	3	D	55	D	0
10	5	6	60	D	A
15	6	9	65	E	4
20	7	A	70	E	D
25	8	9	75	F	6
30	9	7	80	F	F

## TECHNICAL SPECIFICATIONS

### ***LX-75 SERIES***

#### ***RF SECTION (All models)***

**MODULATION:** FM, 75KHz deviation  
**FREQUENCY SELECTION:** 88.1 to 107.5 MHz (digitally programmable)  
**FREQUENCY PRECISION:** .005% (-50 degC to + 50 degC)  
**RF OUTPUT POWER:** 0 miliWatts to 80 miliWatts (digitally programmable)  
**RF OUTPUT LINEARITY vs FREQ:** +/- 2% (5-20mW), +/- 1% (20-80mW)  
**RF OUTPUT LINEARITY vs TEMPERATURE:** +/- 5% (0 degC to 50 degC)  
**SPURIOUS REJECTION:** 40 dB min , 45 dB typical (2nd harmonic).  
**FREQUENCY STABILISATION DELAY:** 4 Seconds (88.1 to 107.5MHz)  
**CONTROLS:** - Digital frequency selection: Hex switches(X2)(rear panel)  
- Digital RF power selection: Hex switches(X2)(rear panel)

#### ***AUDIO SECTION***

**FREQUENCY RESPONSE:** 20 - 20KHz (LX-75,LX-75B,LX-75M)  
20 - 15KHz (LX-75S,LX-75SM)\* Standard FM broadcast\*  
**HARMONIC DISTORTION:** 0.05% max (All models).  
**SIGNAL TO NOISE RATIO:** 70 dB min (All models).  
**DYNAMIC RANGE:** 80 dB min (All models).  
**STEREO SEPARATION:** 35dB (min) , 45dB (typ) (LX-75S , LX-75SM)  
**INDICATORS:** Power status, over modulation status (All models).  
**INPUT SENSITIVITY:** -15 dBm to + 15dBm, 6K $\Omega$  (unbalanced line level RCA jacks)(All models).  
- 9dBm to + 21dBm , 600 $\Omega$ (balanced line level XLR-3 jack)(LX-75B)  
-50dBm to -10dBm , 950 $\Omega$ (balanced mic level XLR-3 jack)  
Phantom power: + 15Vdc (Open load) (LX-75M , LX-75SM).

#### ***MISC & ACCESSORIES***

**POWER SUPPLY:** 115/16vAC @ 500 mA (AC wall type transformer).  
**DIMENSIONS:** 1.6"high X 7.8" large X 11" deep.  
**WEIGHT:** 5 pounds (with shipping box)  
**AUDIO CABLE:** 1 RCA-RCA audio stereo cable,6 feet lenght (furnished).

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