

OPERATING INSTRUCTIONS

MULTI-MESSAGE RECORDER

STOP AND LISTEN INC.



CONTENTS

Configuration	pg 1
Product Overview	pg 2
Making the Right Connections	pg 3
Recording Made Easy	pg 4-5
Playback!	pg 6
Care and Cleaning	pg 7
Specifications	pg 8
CSA/FCC Notification	pg 8
TroubleShooting Guide	pg 9
Wiring Harness Color Coding	pg 10
Connections Diagram	pg 11

CONFIGURATION

Your new MMR can be configured in various different ways, depending on how a series of internal dip switches in the DMR II base unit have been set during manufacture. These switches are used to select digital sampling rate and maximum message duration. This unit has been pre-configured as indicated below:

SERIAL NUMBER (MMR)	_____
SERIAL NUMBER (base unit)	_____
MAX. MESSAGE DURATION PER SLOT	40 / 60 / 80 / 120 (sec.)
DIGITAL SAMPLING RATE (kbps)	32 / 37 / 50 / 70

Dip settings should only be changed by a qualified service technician. Refer to the Internal Select Table on the CONNECTIONS DIAGRAM for switch settings options within the DMR base unit. There is also an internal tone control that should be re-adjusted for audio fidelity if the above settings are changed.

OVERVIEW

The MMR is a solid-state monaural audio recording and playback device that operates much the same as a tape recorder. Because it is solid state there are no parts to wear out, ensuring year after year of trouble free service, with no loss in fidelity. The MMR system uses a Digital Message Recorder as a base unit and is connected via a 25 pin data connector. The MMR unit itself contains the actual memory chips that store the audio information, while the DMR base unit handles digital conversion, audio amplification and memory 'housekeeping' tasks.

The MMR is capable of recording and storing 8 separate audio tracks of up to 2 minutes duration each, depending on how a series of internal dip switches in the base unit have been set. Though capable of storing 8 messages, only one can play back at a time.

Audio is loaded into the MMR from an audio source with a line level or headphone output and is then converted into a digital format and stored on state-of-the-art DRAM memory chips. On playback audio is converted back into it's original (analog) form.

An internal memory backup battery maintains standby power to the memory, ensuring that messages are safe even after a long power failure. An automatic float-charging system is built-in to maintain the internal battery in peak condition.

The internal amplifier allows the base unit to play back directly into an external speaker with no need for additional equipment. A line level output is provided for applications where the audio will be played back through other equipment.

Playback is initiated using a number of different methods, whether from the front control panel or from a variety of external switches or triggering devices.

At Stop and Listen we have gone to great lengths to ensure that your new MMR represents the ultimate in durability and ease of use. As you become more familiar with the MMR you will find that the on-board recording features can add a whole new dimension to your application. You will soon be able to communicate much more effectively with your audience.

BEFORE YOU BEGIN:

Prior to connecting your Multi-Message Recorder (MMR) we recommended that you read through these instructions from beginning to end to familiarize yourself with the installation and operation of the device. Remember to keep these instructions (along with the original shipping cartons) in a safe place for future reference. Notify your shipping company or your dealer immediately if any shipping damage is evident.

In the package(s) you will find:

- Pkg #1 - the Digital Message Recorder Base Unit
- Pkg #1 - Power Adapter - 12 volt DC, 1000 mA
- Pkg #1 - Audio Input Cord - 1/8" stereo mini plug to phono (RCA) plug
- Pkg #1 - Audio Patch Cord - phono (RCA) plug to phono (RCA) plug
- Pkg #1 - Auto-Repeat (looping) Jumper
- Pkg #1 - These instructions
- Pkg #2 - the Multi-Message Recorder Module
- Pkg #2 - DB25 pin male x DB25 pin male Interconnect Cable
- Pkg #2 - Switch Harness Connector (DB25 male one end)

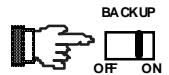
SECTION 1: MAKING THE RIGHT CONNECTIONS

Check with your supplier to ensure that the Digital Message Recorder that you will be using as the base unit has been configured properly for operation with a Multi-Message Recorder. This consists of removing the memory chips and re-setting the DIP switches internally in the Digital Message Recorder. Re-configuring should be done **only by a qualified service technician**.

1.1 Ensure that the (Memory) Backup switches on the back of the units are in the OFF position and power is disconnected. Connect the Interconnect Cable from Port A on the base unit (DMR) to Port A on the Multi-Message Recorder (press firmly) and secure with the captive screws - do NOT over tighten.

1.2 Plug the power adapter (supplied) into an unswitched 120 volt wall outlet and plug it into the power jack on the back of either the DMR base unit OR the MMR. Power will be supplied to the other unit via the Interconnect Cable. The LED indicator lights on the front panels will be illuminated indicating that there is power.

1.3 Make sure the battery BACKUP switches on both units, located on the rear panels, are in the ON position. This will ensure that messages won't be accidentally erased, even during extended power disruptions (or as long as 12 days). Once power is re-established, the internal backup system will recharge automatically. If you plan to store the units for longer periods, these switches should be turned OFF to preserve the internal batteries. Remember to turn them back ON before putting the units back into service.



1.4 Leave the units plugged in overnight with the BACKUP switches ON to ensure the backup system is fully charged. (The system will act erratically if they have not been sufficiently charged.) It is advisable to allow the units to charge in this manner after any extended period that they have not been plugged in.

1.5 Prior to connecting the Switch Harness Connector to the MMR, ensure that all switch connections have been made in strict accordance with the color coding chart provided, and that there are no shorted wires or exposed conductors.

It may be necessary to pigtail more than one switch to the +5 volt feed wires if more than 4 external switches will be used. Ensure that this harness is installed with suitable strain relief's to avoid putting undue strain on the wire connections.

If you wish, we can pre-assemble and test switch harnesses to your specification. Please call for assistance.

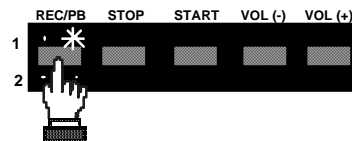
1.6 If you are using optional equipment such as triggering devices, usage counters, etc., refer to the literature supplied with that equipment for additional connection details.

1.7 For speakers, connect positive lead to the terminal marked SPKR (+) on the base unit and the negative lead to the terminal marked SPKR (-).

SECTION 2 - RECORDING MADE EASY

2.1 Ensure that the audio source is connected to the LINE IN jack of the base unit as shown in the CONNECTIONS DIAGRAM and that the external start switches have been temporarily disconnected or disabled

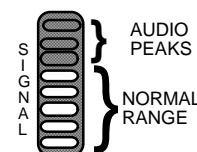
2.2 Press the REC/PB (record/playback) button on the DMR base unit until the red (record) indicator light turns on.



NOTE The START and STOP buttons on the MMR unit itself take precedence over the START and STOP buttons on the DMR base unit, which are used only for stand alone applications.



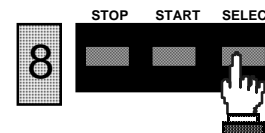
2.3 Set the output level of the Source (typically a cassette recorder is used). Only peak levels of audio should light up the top sectors of the SIGNAL indicator on the DMR base unit. Normally only the bottom 3-5 sectors will stay lit continuously. Note that the volume setting on the DMR base unit has no bearing on the incoming (source) level.



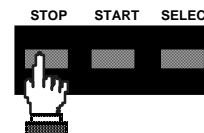
The MMR system has a monitor feature that allows you to hear what is being recorded through the external speaker. If distortion is apparent through the monitor feature, the input level is too high and should be reduced accordingly. (Otherwise extreme distortion may occur on playback due to “digital clipping”).

TIP A good rule of thumb is to use as much input level as possible without going into clipping. It is not possible to damage the unit by overdriving the input.

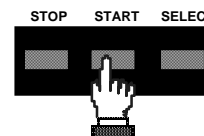
2.4 Press the SELECT button on the MMR until the indicator shows the track that you wish to record (1-8). Tracks do not have to be recorded in any particular order: eg. you can record track 6 before track 3, etc.



2.5 Press the STOP button on the MMR - this prepares the MMR for recording. Cue the audio source to the point at which you wish the recording to begin.



2.6 Press the START button on the MMR to begin the recording process and start the audio source. (Any new recording will overwrite any existing recording on that track). When you have finished recording the message press the STOP button on the MMR to end the recording process. (the START and STOP buttons on the DMR base unit are not used).



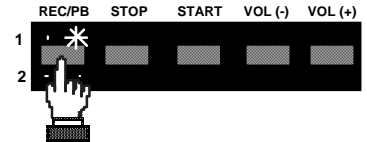
.....Continues

Section 2 - Recording Made Easy (cont'd)

2.7 Additional tracks are recorded by repeating steps 2.4 through 2.6. Re-recording over any one track will not affect the contents of other tracks.

N.B. - Unused tracks should be recorded with a bit of blank using the above procedures to ensure the memory chips are not left in a 'null' state.

2.8 Press the REC/PB button on the DMR base unit to put the system back into the Playback mode.



Your recordings are now held in digital memory and will remain so until you wish to record something else. The Multi-Message Recorder will retain these messages in memory indefinitely unless the power to the unit is disconnected for a period of longer than 12 days.

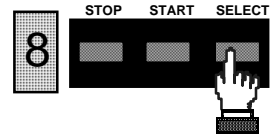
Should the units be left unplugged for a long period it is recommended the unit be plugged in for a minimum of 24 hours prior to re-recording to ensure the internal backup system is adequately charged.

SECTION 3 - PLAYBACK !

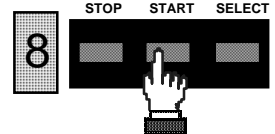
3.1 Press the REC/PB button on the DMR base unit until the green playback indicator light is selected.



3.2 Press the SELECT button on the MMR unit to select the track you wish to play.



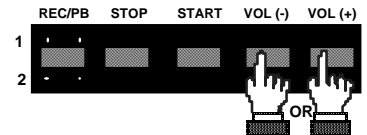
3.2 Press the START button on the MMR unit to begin playback and set the VOLUME controls to the desired listening level. The external start switches can also be used to start playback at this point.



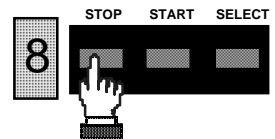
NOTE The START and STOP buttons on the MMR unit itself take precedence over the START and STOP buttons on the DMR base unit, which are used only for stand alone applications.



3.3 Press VOL(+) to increase the volume and VOL(-) to decrease the volume. Small increments in volume can be attained by using short taps on the buttons. The volume setting is displayed in the VOLUME indicator. (The DMR base unit will “remember” the volume setting you have selected on every subsequent playback, even if the DMR II remains unplugged over a period of time.)



3.4 The message can be stopped during playback by pressing STOP on the front panel of the MMR unit.



Note The Multi-Message Recorder has been designed so that message(s) can not be stopped or interrupted from any external start switches to avoid any interruptions during playback.

TIP If a delay is desired before the audio track begins, simply leave a bit of blank space at the beginning of the audio track when making the recording.

DIFFICULTIES?? - CALL OUR TECHNICAL SUPPORT LINE

TOLL FREE

1-800-387-2365

CARE AND CLEANING

Your new Multi-Message Recorder has been designed and constructed for the utmost in quality and durability. Because of its 100% solid-state design, the only thing you should ever have to do is dust it with a dry cloth. A cloth dampened with a mild soapy water solution can also be used. Do not immerse the unit in water.

If any of the cords become damaged or frayed they should be replaced immediately to avoid damage to the equipment or any peripheral devices. Contact your nearest dealer or Stop and Listen for replacements.

The units should be plugged-in to the power source even when not in use to maintain the internal batteries in peak condition. To protect the internal memory backup batteries for long term storage, ensure that they have been sufficiently charged by leaving the units plugged in with the (Memory) Backup switches turned ON for 48 hours, then turn the (Memory) Backup switches OFF and unplug the units.

N.B. It is recommended that the 120 volt power outlet used for the equipment be uninterruptable (unswitched) to avoid damage to the equipment due to 'power spikes'.

SPECIAL NOTE: OUTDOOR APPLICATIONS

This equipment has been designed for ruggedness and is suitable for operation in almost any climate, from minus 30°F to plus 140°F. There are a few precautions ,however, which should be followed to prolong the service life of the units where they are exposed to environmental extremes:

Where the equipment may be subject to extreme humidity or free standing water the unit should be enclosed in a water tight and dust-proof enclosure. These can be found (typically stocked) at an electrical supply store or ordered through Stop and Listen. All connections to outside equipment should be through the bottom of the enclosure through a "gland nut" packing or equivalent water-tight connector.

Equipment can be special ordered with a protective (conformal) coating for situations where exposure to corrosive liquids or gasses is anticipated.

Where extreme cold temperatures are expected (colder than minus 30°F) the equipment enclosure should be suitably insulated. Where a battery is used in conjunction with the units, such as in winter solar applications, consideration should also be given to keeping the battery at suitable operating temperatures.

Where substantial vibration is anticipated the units should be shock-mounted using appropriate fasteners and all associated wiring and connections should be well secured.

SPECIFICATIONS: Multi-Message Recorder

The Multi-Message Recorder (MMR) is an 8 message Recordable Playback device and is designed for use with the Digital Message Recorder II (DMR II). The specifications listed reflect this. The MMR can be ordered c/w the DMR II, or as an upgrade to an existing DMR.

Digital Sampling Rate is internally selectable and effects Frequency Response and Max. Recording Time as outlined. Max. Recording Time is per message. Higher frequency responses are preferable for music.

Max. Recording Time (per message, min:sec)	0:40	1:00	1:20	2:00
Frequency Response (@-30dB input)	50-15KHz	50-12KHz	50-6.8KHz	50-4.5KHz

Message Capability	8 Separate Messages, Individually Accessed, 1 at a time
Audio Input	Line Level (200 mV p-p sensitivity), 10 K impedance
Audio Output - Line Level	200 mV p-p to 1V p-p adjustable, 10 K impedance
- Speaker Level	6 watts @ 4 ohms
Memory Type	80nS Fast Page Dynamic RAM
Digital Sampling Rate	70, 50, 37, 32 (Kbps, peak ADPCM)
Memory Backup	14 day capacity, 3.2A-hr storage cell, float charging
A/D Conversion	Adaptive Delta Pulse Code Modulation, Flash Approximation
Indicators (3)	VU (record/playback level), Volume Setting, Message Number (1-8)
Start Inputs(8)	One per message, momentary contact closure, via DB25 connector (included)
Lighting Outputs(8)	One per message, active while playing, +5VDC, 20mA, via DB25 connector
Power Consumption	450 mA @ 12 VDC (typical, average)
Power Supply	12 VDC output nominal @ 1000 mA, 120 VAC source
Approvals	CSA, UL, FCC CLASS A Tested and Approved
Construction Standard	Industrial/Commercial, carbon steel enclosure
Operating Temp	-20°F to +130°F (-30°C to +55°C)
Dimensions, Weight	6.5"w x10.0"d x1.5"h, 6.5 lbs (16.5w x 25.5d x 3.8h cm., 3 kg) (x 2 units)

FCC, CSA NOTIFICATION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference in which case the user will be required to correct the interference at his own expense. Equipment changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment does not exceed Class A limits for radio noise emissions as set out in Schedule V to VIII of the Radio Interference Regulations of Communications Canada.

WARRANTY

This Stop and Listen Inc. product is warranted against defects in workmanship and materials. If any failure resulting from a defect in either workmanship or material shall occur under normal use within **one year** from the original date of purchase, such failure shall be corrected free of charge to the original purchaser by repair or, at Stop and Listen Inc.'s sole option, replacement of the defective part or parts. No charge shall be made for labor or services performed during said one year period providing the product is delivered to an Authorized Service Center in the original shipping carton. This warranty does not cover equipment which has been tampered with in any way, or damage caused by accident, negligence, alteration, or misapplication. This product must be returned transportation prepaid, properly packed and insured. This warranty applies only to the original purchaser. NO OTHER WARRANTIES ARE EXPRESSED OR IMPLIED. STOP AND LISTEN INC. IS NOT LIABLE FOR CONSEQUENTIAL DAMAGES.

TROUBLE SHOOTING GUIDE

Please take a few minutes to review the Operating Instructions and to check that all connections have been made in accordance with the CONNECTIONS DIAGRAM. The most common source of problems with electronic equipment is due to faults in the external wiring and connections. It is rare that the electronic component itself will develop a fault.

Following the instructions in a step-by-step manner helps pinpoint the source of any problems and helps to eliminate procedural problems. Once you are confident of the connections and have reviewed the instructions, the following guidelines may prove helpful. Effective trouble shooting is best done by using a process of elimination.

No Power, lights don't come on: make sure the unit has been plugged into a working power outlet (the outlet can be checked with a lamp). Check the internal fuse and replace with a 1 Amp, Type 3AG if required

Erratic Operation- microprocessor fault - reset the microprocessor by disconnecting the power and turning the BACKUP switch OFF for a minimum 10 seconds. Turn the BACKUP switch back on and plug the unit in, re-record the audio track. Ensure the unit has been adequately charged by leaving it plugged in overnight with the BACKUP switch turned ON.

Erratic Operation - EOS register null - ensure all unused tracks have been recorded with a 'blank' message as per Section 2.8 Recording instructions

Doesn't Record, monitor feature doesn't work- check all connections, ensure that the source output is OK. Try connecting the monitor speaker to a source that is known to be working.

Doesn't Record but monitor feature works - check with dealer to confirm that unit has been configured for use with MMR

Can't Record Whole Message(s) - ensure the unit has been sufficiently charged with the BACKUP switch ON, check configuration on PG1 to ensure dip switches have been set correctly.

Audio Crackles or Breaks Up during high volume sections of audio track- review instructions under recording, reduce input signal level

Severe Distortion on Playback- try recording with no input signal (Line In disconnected). This will quickly determine whether the problem is with the source material or with the equipment itself. If using a compact disc or DAT tape player there may be digital 'beating through the output that interferes with the DMR. Try using a conventional tape player.

Low Playback Volume - check to see that source has adequate drive for recording (see RECORDING section). Check to see that external speakers are connected in parallel, not series.

Message is Frequently Lost - check that the BACKUP switch is in the ON position. Check to ensure that the unit is plugged into continuous, unswitched power and has been plugged in long enough to recharge internal battery (24 hrs)

If you still experience difficulties after going through the steps outlined above, give our **Technical Support Hotline** a call TOLL FREE **1-800-387-2365**. Please have a complete description of the problem along with the model and serial numbers handy.

MULTI-MESSAGE RECORDER

SWITCH/LIGHTING WIRING HARNESS COLOUR CODING

FORM A, FORM B CABLE ASSEMBLIES

FORM A CABLE COLOR/stripe	FORM B CABLE COLOR/stripe	CONNECT TO	FUNCTION	DB25 PIN-OUT
BLACK	BLACK	LED/RELAY #5	LIGHTING OUTPUT #5	1
BLACK / white	BROWN	LED/RELAY #7	LIGHTING OUTPUT #7	2
BROWN	BROWN / black	LED/RELAY #4	LIGHTING OUTPUT #4	3
BROWN / white	RED	LED/RELAY #2	LIGHTING OUTPUT #2	4
RED	RED / black	LED's/RELAYS	GROUND	5
RED / white	DK ORANGE	LED's/RELAYS	GROUND	6
RED / black	DK ORANGE / black	SWITCHES	+5 VOLT	7
ORANGE	YELLOW	SWITCHES	+5 VOLT	8
ORANGE / white	YELLOW / black	SWITCH #8	SW8	9
ORANGE/ black	DK GREEN	SWITCH #6	SW6	10
YELLOW	DK GREEN / black	SWITCH #4	SW4	11
YELLOW / black	AQUA	SWITCH #2	SW2	12
LIGHT GREEN	AQUA / black	N/C	EXTERNAL SYNC	13
DK GREEN	DK BLUE	LED/RELAY #6	LIGHTING OUTPUT #6	14
DK GREEN / white	DK BLUE / black	LED/RELAY #8	LIGHTING OUTPUT #8	15
DK GREEN / black	LT BLUE	LED/RELAY #3	LIGHTING OUTPUT #3	16
BLUE	LT BLUE / black	LED/RELAY #1	LIGHTING OUTPUT #1	17
BLUE / white	VIOLET	LED's/RELAYS	GROUND	18
VIOLET	VIOLET / black	LED's/RELAYS	GROUND	19
VIOLET / white	GREY	SWITCHES	+5 VOLT	20
GREY	GREY / black	SWITCHES	+5 VOLT	21
GREY / black	WHITE	SWITCH #7	SW7	22
WHITE	WHITE / black	SWITCH #5	SW5	23
PINK	LT PINK	SWITCH #3	SW3	24
PINK/ black	LT PINK / black	SWITCH #1	SW1	25

SWITCHES must be momentary contact, normally open, tied to +5V common
 LED/LIGHTING outputs can supply a maximum of 20 mA at 5 volts DC, tied to GND common
 Where LED's are used, they should be connected in series with a 220 ohm 1/2 watt resistor
 LED's are polarity sensitive - reverse the connections if LED's fail to light
 Wiring must be adequately supported and secured to prevent strain on connections
 When using more than 4 external start switches the +5V lines should be pigtailed
 When using more than 4 lighting outputs the GROUND lines should be pigtailed
 Consult a qualified electrician or technician

STOP AND LISTEN INC
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