
MASTER 2002
MICROPHONE





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DESCRIPTION

MASTER 2002 is the first microphone of its characteristics on the market. It is a modular base microphone which may be configured by the user.

The microphone series includes an adjustable gain preamplifier, a compressor, a three-band equalizer, outputs to connect three emitters and an input for data link.

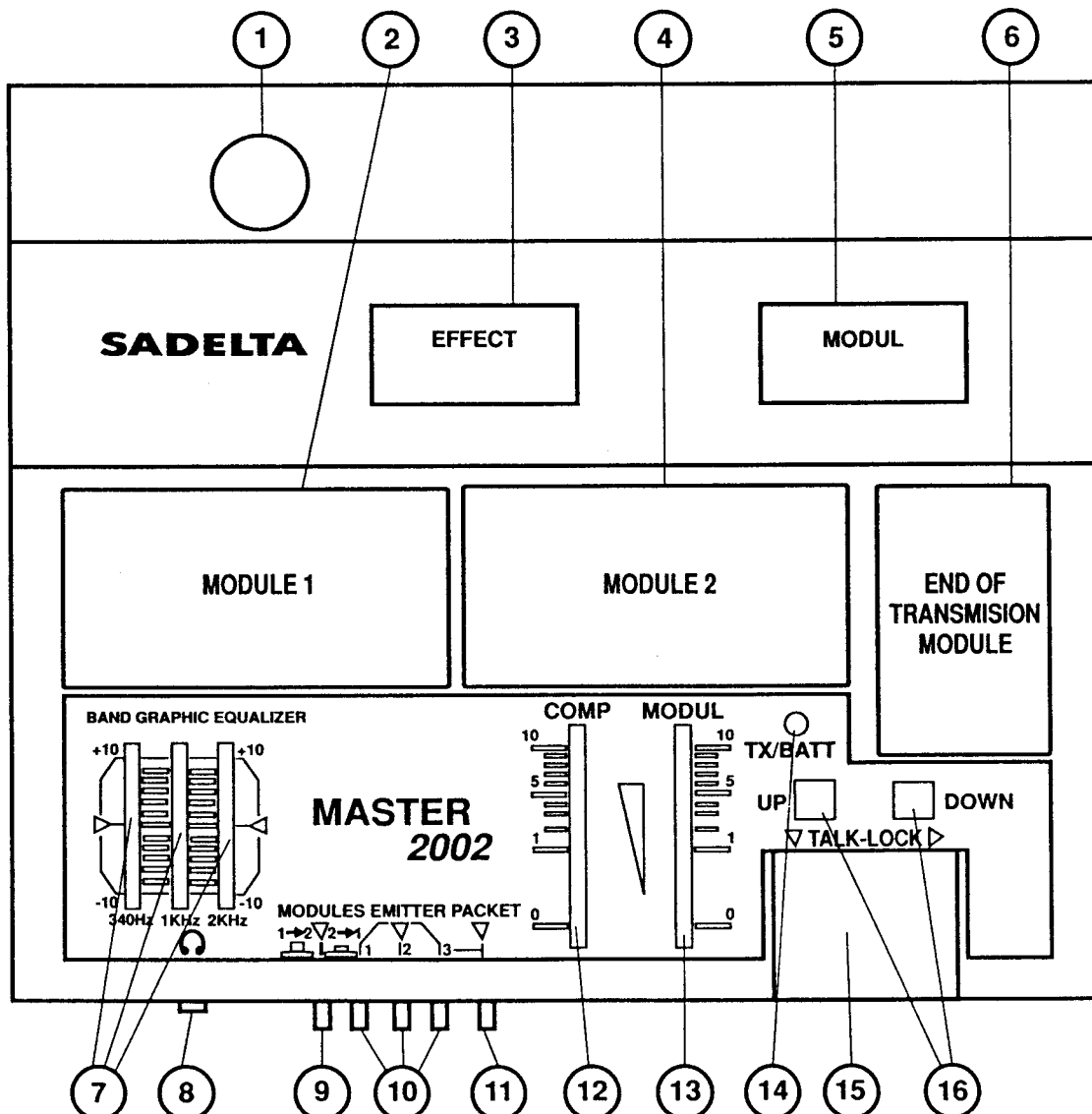
The microphone has three compartments available in which optional modules may be installed, this way it can be adapted to user's requirements.

TECHNICAL SPECIFICATIONS

Type of capsule:	Electret
Sensitivity:	-22 dB (equalizer controls to 0)
Gain:	40 dB (equalizer controls to 0)
Output level:	0 to 2 Vpp without load (equalizer and compression controls to 0)
Output impedance:	1 K Ω
Compressor:	Adjustable from 0 to 25 dB
Frequency response:	400 Hz to 10 KHz (equalizer controls to 0)
Equalizer:	Adjustable frequency response by means of three controls (see graphics)
Earphone output:	Adjustable from 0 to 180 mW for a 8 Ω
Supply:	9V cell 6F22 type or external from 8 to 16VDC
Consumption:	12 mA with 9V cell 100 mA with 12V external supply add 27 mA when you are using the earphone.

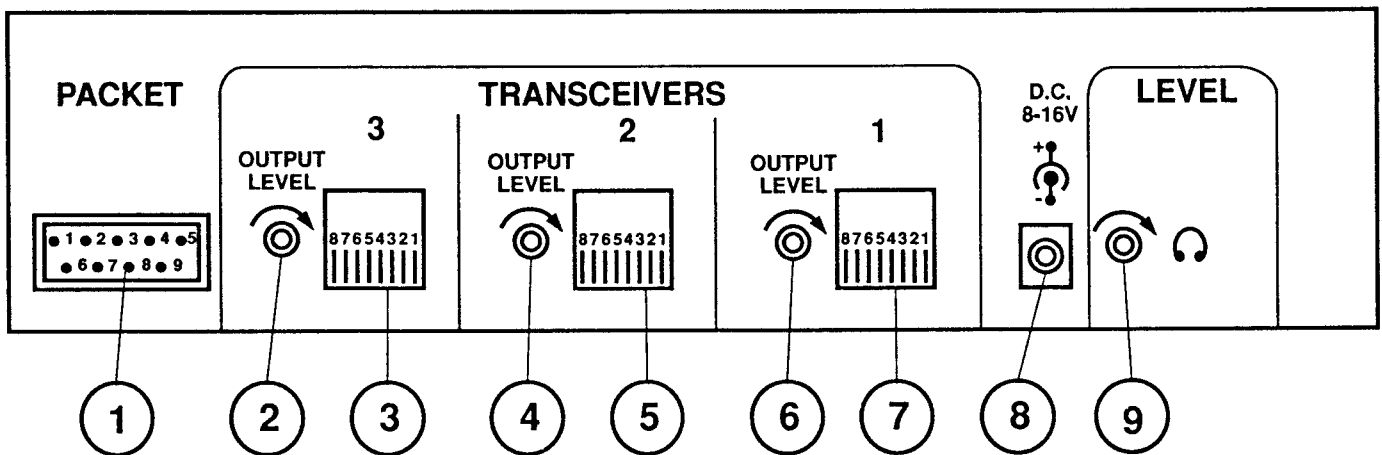
FRONT PANEL DESCRIPTION

1. Gooseneck with microphone capsule.
2. Compartment to insert module n° 1.
3. Effect level indicator (echo, recording...). It only operates when related module is incorporated.
4. Compartment to insert module n° 2.
5. Modulation level indicator.
6. Compartment to insert end of transmission module.
7. Equalizer controls.
8. Earphones output. 3.5 mm male jack connector.
9. Modules switch.
10. Emitter (transceiver) output selecting switch.
11. Packet input selecting switch.
12. Compression level control.
13. Modulation level control.
14. Transmission indicator/supply indicator
15. Transmission pushbutton (PTT)
16. Channel change pushbutton (UP/DOWN)



BACK PANEL DESCRIPTION

1. Packet input. 9-channel-sub-D connector.
2. Emitter (transceiver) n° 3 audio output level adjustment.
3. Emitter (transceiver) n° 3 connection. 8-pin-telephone connector.
4. Emitter (transceiver) n° 2 audio output level adjustment.
5. Emitter (transceiver) n° 2 connection. 8-pin-telephone connector.
6. Emitter (transceiver) n° 1 connection. 8-pin-telephone connector.
7. Emitter (transceiver) n° 1 connection. 8-pin-telephone connector.
8. External supply input. 1.9 mm diameter central pin connector.
9. Earphone audio level adjustment.



TRANSCEIVERS WIRING /COLOUR

- | | |
|-----------------|--------|
| 1. GROUND | SHIELD |
| 2. AUDIO | WHITE |
| 3. COMMON (PTT) | YELLOW |
| 4. TX (PTT) | BROWN |
| 5. RX (PTT) | GREEN |
| 6. DOWN | GREY |
| 7. UP | BLUE |
| 8. SUPPLY | RED |

PACKET WIRING

- | |
|------------------|
| 4. RX (PTT) |
| 5. AUDIO (INPUT) |
| 6. TX (PTT) |
| 8. COMMON (PTT) |
| 9. GROUND |

Terminals left without connection

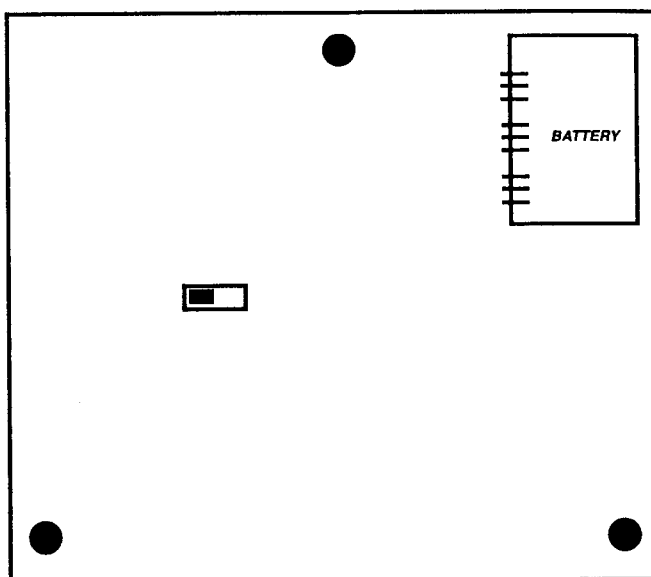
SUPPLY

The microphone can be supplied by an internal cell or by means of external mains.

Supply with cell: It is supplied by a 9V alkaline cell, 6F22 type, housed in the compartment located at the bottom of the box (see drawing).

To install the cell, withdraw the screw fastening the compartment cover, insert the cell in the cover clip and connect supply terminals. Fasten back the cover with its screw.

Led TX/BATT lights up when TALK key is pushed down. If the cell is near to be exhausted, the led will not light up and then said cell must be replaced.



External supply: The microphone can be externally supplied through the emitter (transceiver) connector itself (pin 8). The supply can come from any of the three emitters (transceivers) and there is no problem if more than one emitter (transceiver) is supplying power at same time. Supply margin must range between 8 and 16 VDC and the emitter (transceiver) must be capable to supply a minimum 200 mA current.

It can also be externally supplied through the jack located at the back panel. Use a power supply capable to supply a continuous voltage ranging from 8 to 16V with a 200 mA minimum current. Use a connector with correct polarity (central pin to negative.) The microphone is protected against polarity reversal, although in this case the microphone does not operate, VU meters light up.

Note: There is a cell protection circuit against external supply. Any way, when using external supply, it is advised to disconnect the cell, because in certain conditions of voltage level, the microphone consumes cell current.

GAIN

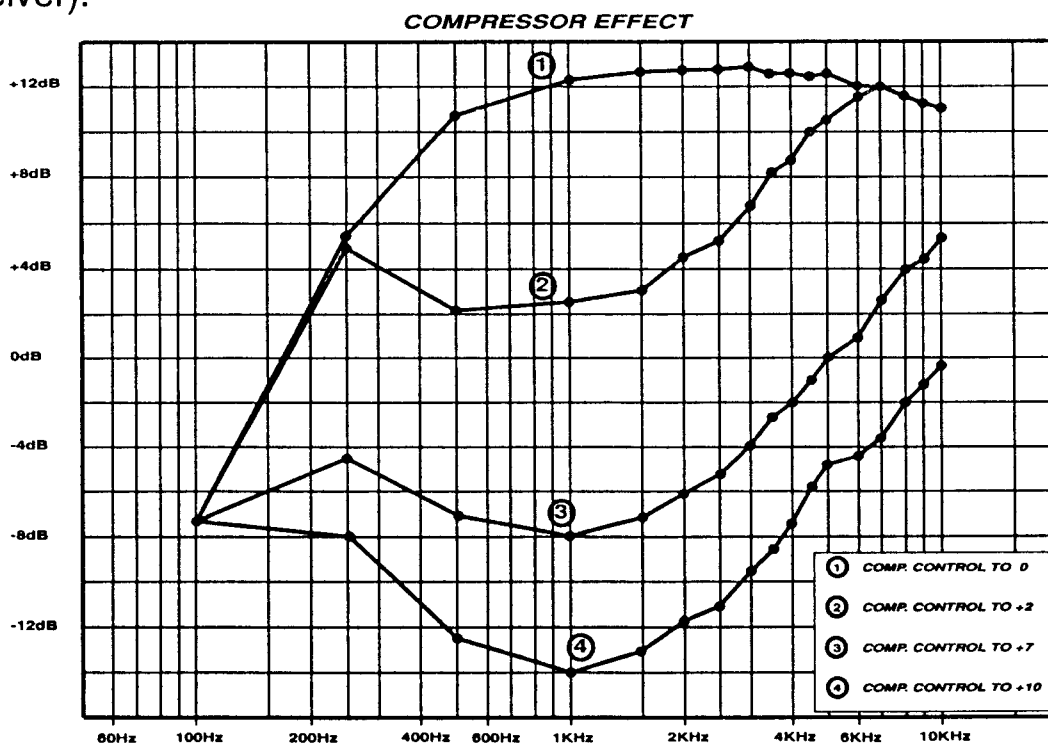
MODULE potentiometer controls audio level which reaches microphone emitter (transceiver) outputs, this potentiometer simultaneously act on the emitter (transceiver) three outputs and its action is reflected on modulation VU meter. In addition, each emitter (transceiver) output has available its own individual audio level adjustment located at the back of the microphone.

This double gain control has two great advantages. On the other hand, when there is a modulation in excess at the emitter (transceiver) with MODULE potentiometer to its maximum, to reduce microphone total gain by adjusting back panel to the level in which MODULE potentiometer can be used at its whole margin. On the other hand, when two or three different emitters (tranceivers) are connected to the microphone, the user can make them be even by means of each emitter modulation individual adjustment.

COMPRESSOR

The microphone includes a compressor by means of which we can adjust a constant and independent output regardless of the voice volume or the distance from which one is speaking. To set the audio level from which the microphone starts compressing, a suitable ratio must be set between MODULE and COMP. potentiometers.

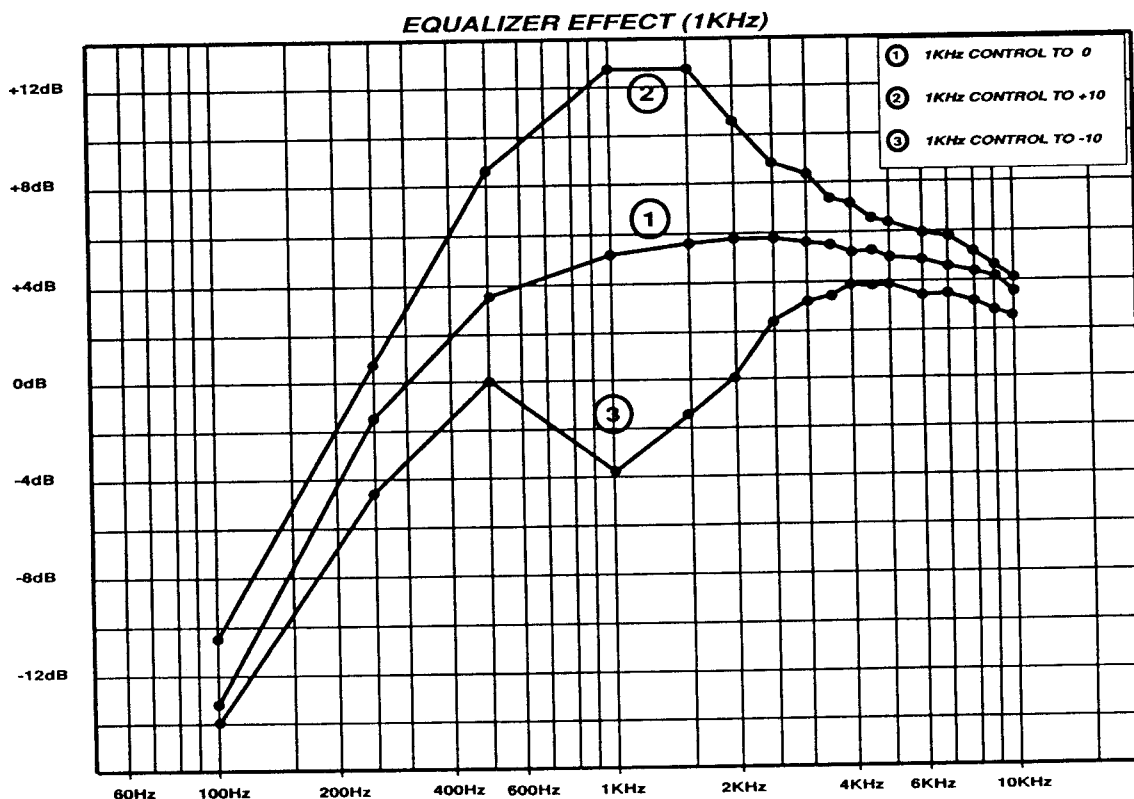
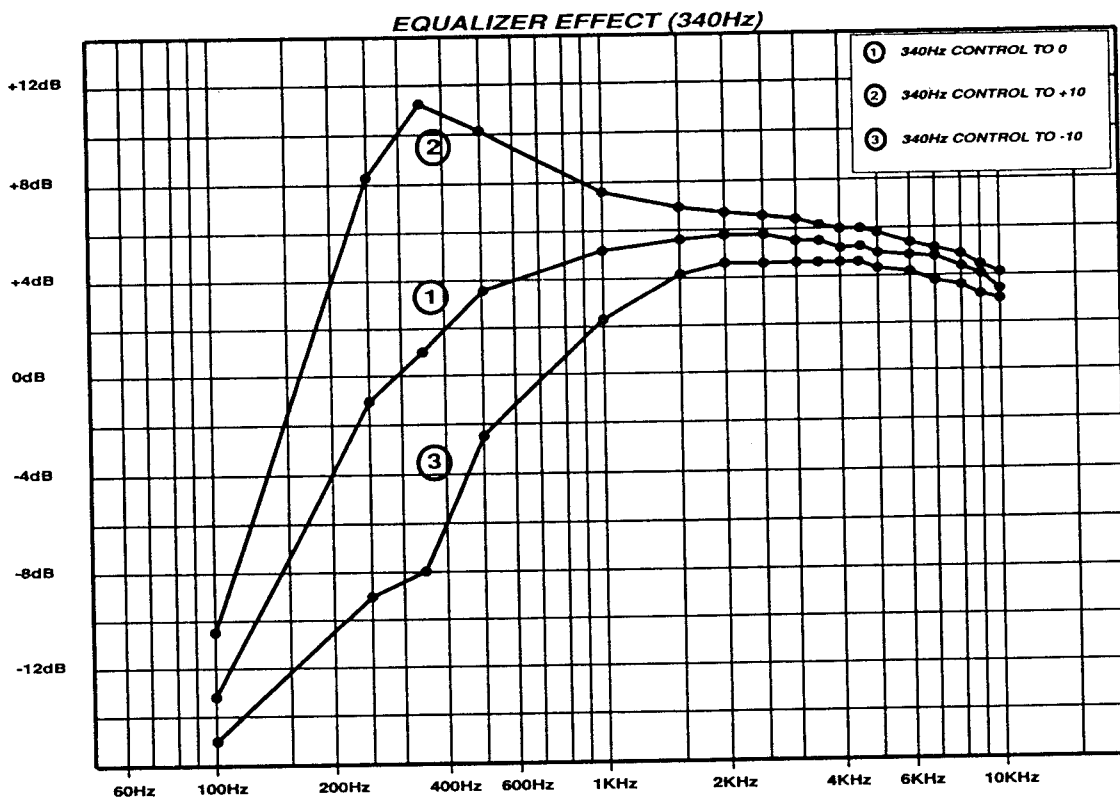
COMP potentiometer at the position of minimum level, produces no compression. As we are moving said potentiometer, compression effect on audio output increases. One has to bear in mind that with COMP potentiometer to the maximum, the compression is very strong and audio output signal decrease very much and it can become insufficient for properly modulated the emitter (transceiver).



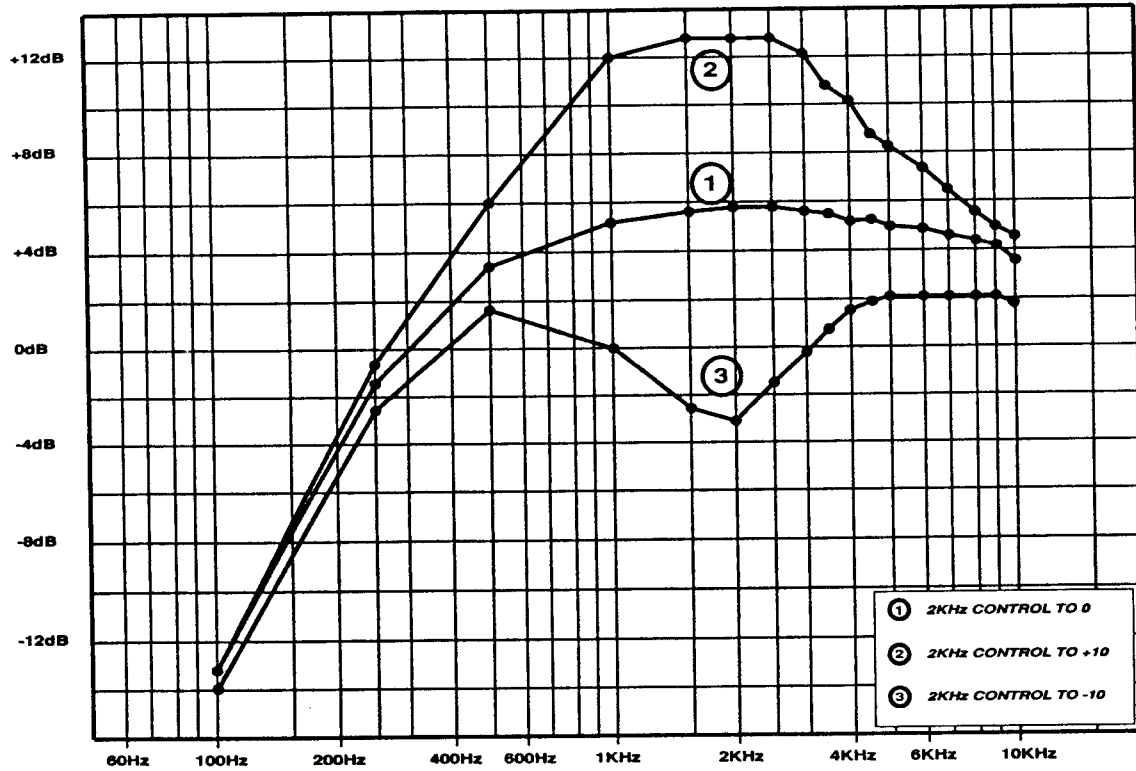
EQUALIZER

This microphone includes an equalizer which allows the user to adapt audio frequency response at his choice.

There is three frequency controls located at 340 Hz, 1 KHz and 2 KHz. Each of them enhances or attenuates the frequency band located around each frequency (see graphics).



EQUALIZER EFFECT (2KHz)

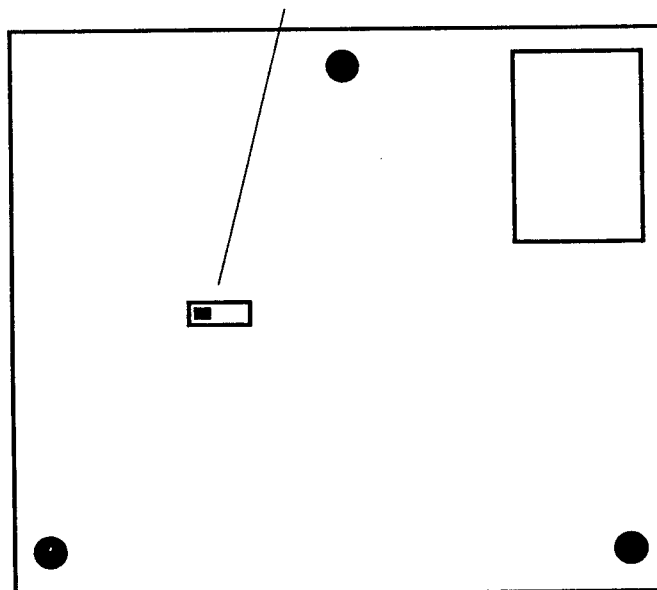


VU METERS

The microphone has two VU meters available the lighting of which is activated when we provide it with external supply.

The modulation VU meter informs us on modulation level. Effects VU meter informs us on effects amplitude level, of course it will only operate when effects module is inserted. Within the microphone there is a switch selecting which of the two modules is connected to the effect V.U. meter. This switch is located at the lower part of the microphone (see drawing) and access to it is available through a small slot. At the right position, module nº 1 is connected, at left position, module nº 2 is connected.

EFFECT VUMETER SWITCH



MODULES

The microphone has three compartments available to insert the different modules. The smaller compartment is reserved to end of transmission modules. The other two compartments having same size, which we call MODULE 1 and MODULE 2 are reserved for audio modification modules.

The audio signal issued by the microphone bottom successively pass through MODULE 1 and MODULE 2 until reaching the emitter (transceiver) connector. However, if MODULES key were pushed down, audio signal would first pass through MODULE 2 and then through MODULE 1; this way when we have installed two effects modules we can enlarge total effects amplitude depending on the position of MODULES key. These two modules must always be installed (either effects module or blind module), if not the audio signal would never reach the emitter (transceiver). The modules are composed of a printed close circuit locked to a metallic plate with two separators which will in addition serve to lock it to the microphone bottom. Its installation is very easy and it only requires a screwdriver.

To withdraw the modules, loosen the two screws without withdrawing them (3 or 4 turns) from the microphone bottom which support said module. Strongly press upwards the two screws. Now that the module protrudes from its compartment, finish full screw withdrawal.

To insert the module position the separators in bottom centring devices and strongly push downwards the module until it remains level with the panel. Fasten the strongly the module with the two lower screws. The correct position of the module is with it screen-silk print having same direction as the rest of the microphone.

NOTE: When the blind module is removed, it is also required to remove (pulling the thread ring) the connector located in the printed circuit. When effect module has been removed and blind module is replaced, it is required to replace former connector (locate it at the left end of base connector).

EARPHONES

MASTER 2002 has an output for earphones located at the front part which allows us to listen the audio produced by the microphone. Connect monaural earphones with a 3,5 mm mono male jack and adjust the volume you wish by means of the potentiometer located at the back. Audio gain potentiometers have no influence on this output. In the event that you have stereo earphone available, intercalate a mono or stereo adapter.

Earphone output is very useful to monitor audio effects of different optional modules. The end of transmission tone cannot be heard through then earphones. To lengthen cell life, it is advisable to connect earphones only when they are used.

CHANNEL CHANGE

From the microphone itself, it is possible to change emitter (transceiver) channel number by means of UP and DOWN pushbuttons. UP to rise the channel, DOWN to get it down.

The microphone allows two different UP/DOWN operation ways depending on how the jumpers are located in the cell department (see drawing). Each emitter output from the microphone has its own UP/DOWN circuit with its related jumper, although drive pushbuttons are common for the three.

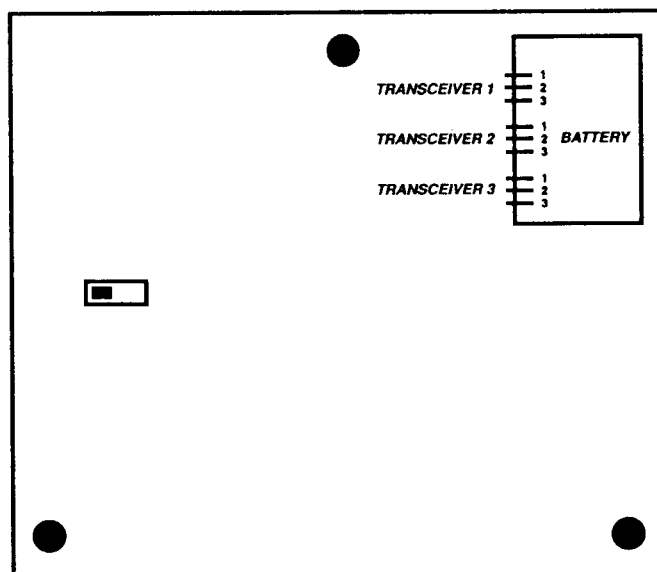
If we locate the jumper at 1-2 position and we join UP and DOWN output cables, we have following operations:

- when pushing down UP key, common UP and DOWN cables are connected to positive through a 5K6Ω resistor
- when pushing down DOWN key, common UP and DOWN cables are connected to the earth.

If we locate the jumper at 2-3 position, we have following operation:

- when pushing down UP key, UP output cable is connected to the earth.
- when pushing down DOWN key, DOWN output cable is connected to the earth.

NOTE: Make sure UP/DOWN selected system is the one which corresponds to your transceiver, if not the transceiver could be damaged.



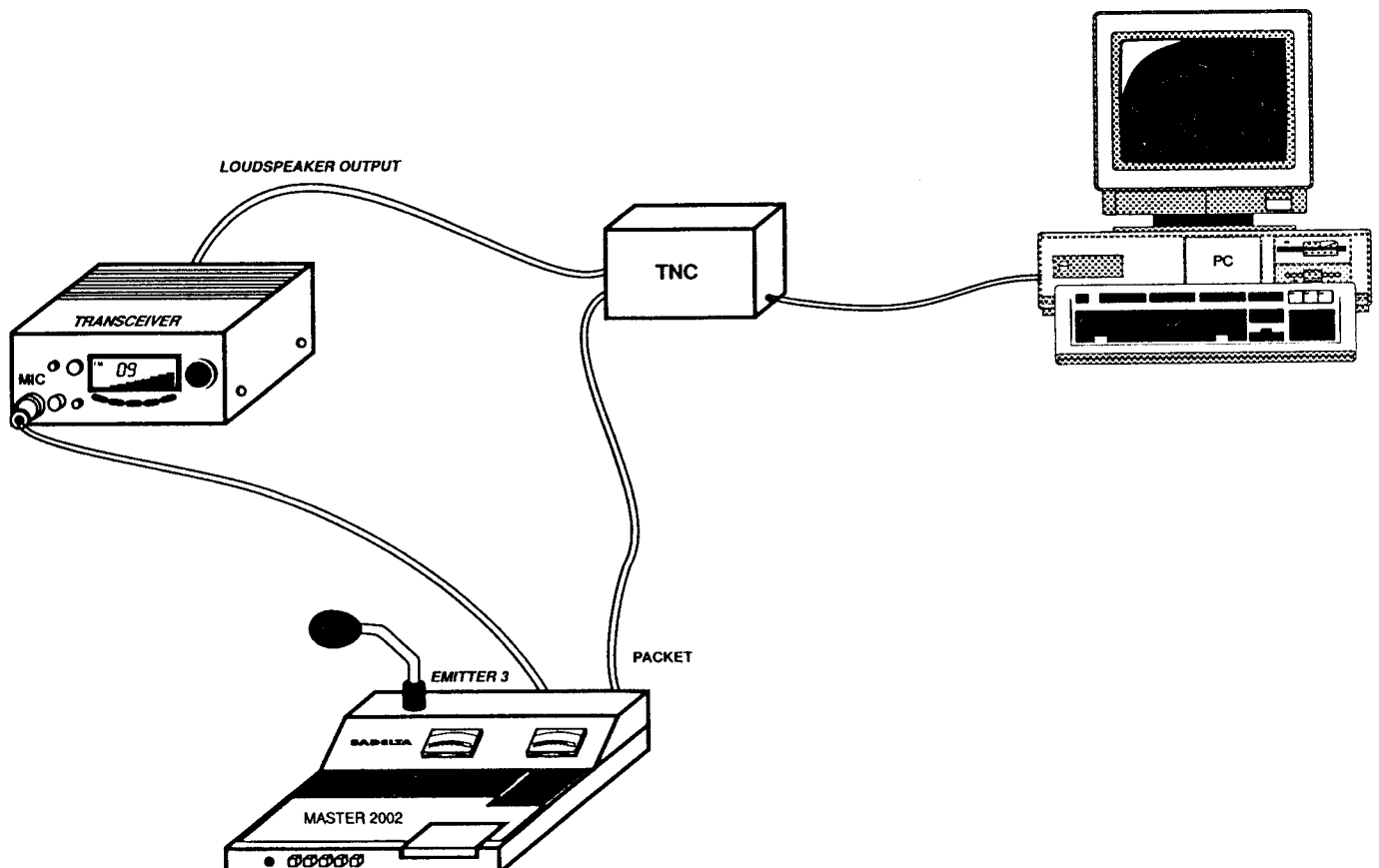
EMITTERS (TRANSCIVERS) OUTPUT

Three emitters (transceivers) can be simultaneously be connected to the microphone. The connection is made by means of a cable having a 8-pin telephone connector. There is available on order, several types, as well straight as knurled cables having different lengths. To select the emitter (transceiver) through which you are willing to transmit, push down related key of the EMITTER 1/2/3 pushbutton station.

PACKET

An external connection called PACKET is available which allows us to transmit external data through one of the emitters (transceivers). When pushing down PACKET front key, PACKET connector signals are directly connected to emitter n^o 3 output connector. If in addition we select emitters (transceivers) 1 or 2, we will be able to transmit through them at same time that data are transmitted through emitter n^o 3. If we had selected emitter n^o 3, we could not speak through it because it is being used as PACKET input.

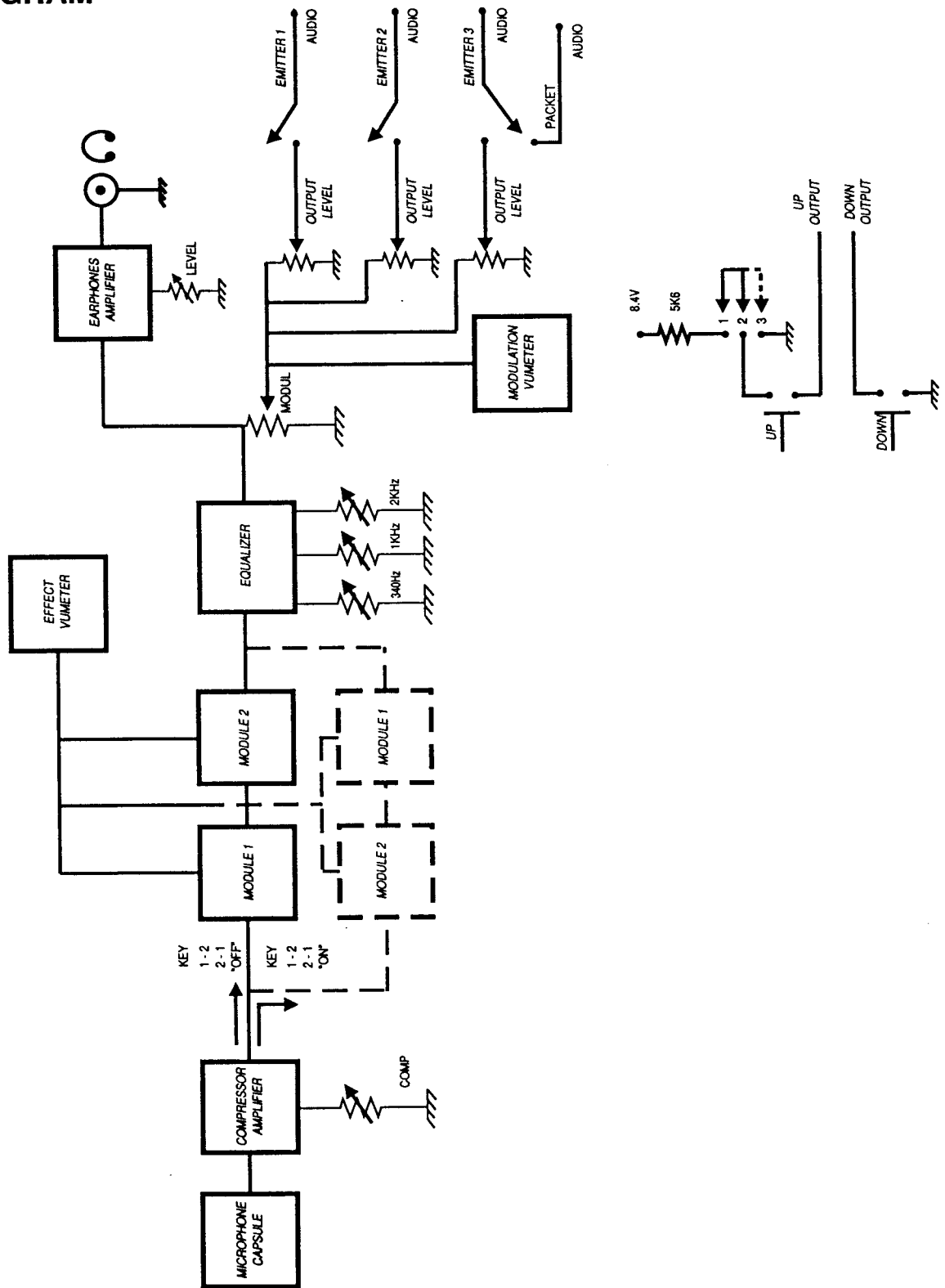
To establish the link via radio between computers, microphone-emitter set has to be connected to the computer through a TNC (terminal node controller) as shown in drawing attached. The TNC is connected to a computer link channel to the microphone and to the emitter (transceiver) loudspeaker output.



PTT

Microphone emitter (transceiver) outputs have available three terminals to activate emitters (transceivers) transmission. The three terminals are called Tx, Rx and Common, their commutation mechanically occurs. With microphone TALK key at rest, Rx and Common terminals join each other. When TALK key is pushed, Tx and Common terminals join each other, Rx remains open. For emitters (transceivers) the transmission starting of which is made through the earth, connect Common terminal cable to earth cable. For emitters (transceivers) without Rx connection, leave this terminal not connected.

BLOCK DIAGRAM



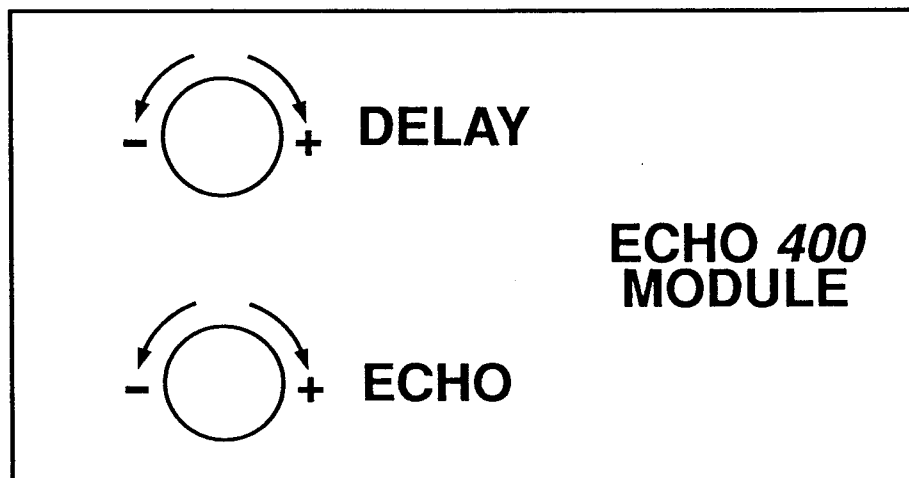
DESCRIPTION

With this module we can modify the voice to create echo and reverberation effects, because when speaking the words are repeated and they decrease in volume until they vanish. Time lag between echoes is adjusted by means of DELAY potentiometer. With ECHO potentiometer echoes amplitude level is adjusted. To achieve reverberation effect, select short time lags.

To adjust the potentiometers it is rather useful to listen one own voice through the earphones.

TECHNICAL CHARACTERISTICS

Gain:	0 dB
Maximum input amplitude:	2 Vpp
Echoes frequency response:	300 - 3000 Hz
Time lag:	adjustable from 30 to 400 msec.
Consumption:	2.5 mA



DESCRIPTION

This module issues tones which are transmitted as end of transmission warning signals when TALK key is released.

Two different frequency tones are issued the duration of which is adjustable by means of internal potentiometers TONE 1 and TONE 2, externally retrievable. With potentiometer TONE 1, the duration of first tone is adjusted and with potentiometer TONE 2 total duration of both tones is adjusted. To adjust them, introduce a small screwdriver in related hole, to increase duration times rotate the potentiometers to the right.

To cancel end of transmission function in the microphone, place the switch at OFF position.

TECHNICAL CHARACTERISTICS

Consumption:	1.5 mA (without transmission and module in ON)
Duration first tone:	adjustable 170 to 270 msec.
Total tones duration:	adjustable from 225 to 670 msec.

