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MAPS Programmer Operating Instructions
Playback Card Programmer Unit v1.8

Technical Specification

Case Dimensions - W 340 mm / H 70 mm / D 225 mm
Power Requirement - 12 volts D.C. Regulated 250 mA
D.C. input Fuse Rating - 1AT
Battery Backup Fuse Rating - 500 mA F
Backup Battery - Nicad PCB mounted 3.6v 100 mAh
Max. External clock input - 200 Hz

Max. run time with internal clock (25 Hz)
Banks 1 to 7 @ 11 minutes per bank

Programming Resolution
Digital - 25 frames per sec / Ext clock - 200 Kz Max
Analogue - 12.5 frames per sec / Ext clock - 100 Kz Max

Keys and controls

Status Display
Offers visual feed back of system status, channels
selected to Record or Play back and menu options avail-
able.

Cursor Control Section
Used to move around menu options displayed on the
Status Display and to answer YES, NO prompts. The main
ENTER button is located in the centre of the cursor keys.

Digital Programming Keypad
Used to set record / play back status of the 8 digital
channels, and directly program the channels numbered 1
through 8. Each of the 8 buttons has one red and green
LED directly above to indicate the channels current status
i.e. If it is set to record or playback.

Analogue Sections
These sections allow the user to Program and monitor the
two Analogue channels. The Control knobs are used to set
the output level required while the Bar Graph meters
indicate the current output level.

PLAY, **RECORD** and **STOP** Buttons
Play and Record buttons start their stated functions once
channels have been set to Record or Play. STOP exits
Play or Record functions once started.

Clock and Trip/Loop Indicators
The Clock indicator shows if an external clock is being
received from the MAPS card being programmed.
The Trip / Loop indicator gives a visual indication that an
external Trip has been received from the MAPS card being
programmed. It will also indicate the loop point of a
recorded program being played back in continuous loop
mode.

Cursor Control and moving around the Menu System
The majority of functions on the programmer are set up
via displayed menus. Options are selected by moving the
flashing cursor to the first letter of the required function
and pressing the **ENTER** key. In some cases prompted
questions have to be answered YES or NO. The LEFT and
RIGHT cursor keys are marked up with YES and NO to
perform this operation when required

Rear panel inputs and outputs

D.C input socket
Supplies the unit with power via an external power supply.
(12v regulated)

Power On/Off switch - as indicated.

Interface Port
25 way D-Type socket which has all the connections to
allow the programmer to be interfaced with external
equipment (not supported on this version.)

Remote Control
Input socket, which allows PUNCH IN recording functions
via an external switch.

Analogue Port socket
An external joystick or potentiometer can be used to
program the two analogue channels.

Maps Link socket
This is the main connection from the programmer to the
MAPS card being programmed.

Memory Backup Switch
A memory backup system has been incorporated in the
programmer and when switched on protects the
programmers memory from being lost in the event of
mains power failure. The internal NICAD is trickle charged
when the main unit is powered up regardless of the
Backup switch position.
The backup switch should be left in the OFF position if the
unit is not used on regular intervals. The NICAD when fully
charged will maintain the programmers memory content
for several days. However care must be taken not to leave
the backup switch in the ON position for more than 3 to 5
days without the unit being plugged in and switched on for
a period of time to maintain the batteries charge.

Note:
Leaving the backup switch in the on position without the programmer
being switched on over long periods could damage the internal Nicad
battery.

GOLDING AUDIO LTD

MAPS Programmer Operating Instructions
Playback Card Programmer Unit v1.8

Power up mode

When power is applied to the unit after displaying the Software Version within the unit the following will be displayed: "Would you like to erase the buffer ?"

Pressing YES at this point will erase the internal memory. Under normal circumstances you would press YES, however if you have been programming with the backup system switched on and suffer a power failure you should press NO to retain your program.

The main system menu will now be displayed

Using the programmer in stand alone mode
(No MAPS card connected)
This can be useful to learn how the programmer operates.

From the Main system menu

STEP 1 -   select **Trip mode** and press **ENTER**

STEP 2 -   select **Manual run/stop** and press **ENTER**

STEP 3 -   select **Clock source** and press **ENTER**

STEP 4 -   answer **NO**

STEP 5 -   select **Free mode** and press **ENTER**

STEP 6 -   answer **YES**

STEP 7 -   select **Program** and press **ENTER**

STEP 8 -   Press **ENTER** to select digital recording

STEP 9 -   Press any number of keys on the Programming keypad to set channels to be recorded

STEP 10 -   Press **ENTER** to set your selected channels for recording

STEP 11 -   Press **RECORD** (the unit will start) and start programming your selected channels

STEP 12 -   Press **STOP** to exit recording

STEP 13 -   Press **STOP** again

REPEAT STEPS 8,9,10, and then press **PLAY**

Selecting the clock source

From the main system menu select **Clock source** and press **ENTER** "Clock source form MAPS or Programmer" is displayed and this must be answered **YES** or **NO**.

Clock source from MAPS, mainly used when a number of MAPS cards are being run together in sync via one card configured as the master clock source. All the cards in this situation are programmed via this clock to maintain sychronisation.

Clock source from PROGRAMMER, used when synchronisation with other cards is not required, or the Programmer is run in FREE MODE i.e. no MAPS card is connected.

Selecting a Trip option

From the main system menu select **Trip mode** and press **ENTER**, four options are then displayed as follows:

Manual run/stop
This enables the RECORD , PLAY and STOP buttons on the programmer to start and stop recording or playback.

Run/Stop from MAPS
This option enables the TRIP input lines from the MAPS card being programmed to start the programmer recording or playing back. The STOP line from the MAPS card is also enabled as the STOP for the Programmer. (Useful in situations when recording has to be initiated via an external event e.g. Infra red break beam.)

Run/Stop from DSU
This option enables the RUN output line from a DSU sound store to initiate recording (used when programming in sync with sound stores.)

Cont loop playback
When enabled this option will play back any recorded program in a continuous loop from start to end, or to a stored END POINT set by the user (see Save end option.)

Test option

From the main system menu select **Test** and press **ENTER**. This option is useful when testing and setting up external devices prior to programming. With a MAPS card connected and a link established this option allows you to test all MAPS card outputs by pressing digital programming key 1 to 8 or turning the two analogue programming pots.

GOLDING AUDIO LTD

MAPS Programmer Operating Instructions
Playback Card Programmer Unit v1.8

Save end option

Save end
From the main system menu select **Save End** the message "Save end point when MAPS is stopped" is displayed, this prompts for YES, NO or ERASE (ENTER)

If **YES** is selected
The next recording run, when stopped, will save the end at that point. This option will also move any previously set end point to the new position.

If **NO** is selected
If NO is selected, there will be no change to the current save end settings.

If **Erase** is selected
Any stored END POINT is erased. The programmer will run to the end of memory on the next program.

Free mode option

From the main system menu select **Free mode.** You are then prompted "Turn off MAPS link YES or NO"

If **YES** is selected
The programmer will operate without any MAPS card connected (provided internal clock is selected.)

If **NO** is selected
The programmer will not operate without a MAPS card being plugged in, and a link established between the MAPS card and Programmer.

Recording and Playback of Digital Program

Selecting Digital Record mode
STEP 1 - From the main system menu select **Program** You are then prompted "Digital, Analogue or Quit" Press **ENTER** to select Digital, the main programming display will now be shown.

Selecting channels to record
STEP 2 - Select any number of channels you wish to program by pressing the relevant key numbers on the Digital Programming Keypad. Channels set to record will show a RED LED above the relevant channel key and an "R" is displayed on the LCD display above the relevant channels number. Channels showing GREEN LED's and "P" on the LCD display are set to playback and will not be effected by any recording.

The **NO** key will exit the menu at any stage.

Starting to Record / Play back

STEP 3 - Once happy with the combination of channels set to Record or Play back press the **ENTER** key. The programmer is now waiting for a start signal to begin Recording or Playback. The source of the start signal is dependant on your selected trip option.

Examples of Digital Recording / Playback with various Trip Options set

EXAMPLE 1
If "Trip option" is set to **Manual Run/Stop**, pressing **RECORD** will start the programmer. Channels set to Record "R" can now be programmed. Channels set to Playback "P" will playback previously recorded data if any. Recording will continue until either the **STOP** button is Pressed, or a stored END POINT, or the end of the memory Bank is reached. Pressing **PLAY** will only playback previously recorded data, channels set to record "R" will not be over written or recorded. Play is used mainly to monitor data recorded so far on a card or PUNCH IN recording see page 4/6.

EXAMPLE 2
If "Trip option" is set to **Run/Stop from MAPS**, pressing **RECORD** will put the programmer into paused record mode. When a trip is received by the MAPS card, recording will start. When the trip is received channels set to Record "R" can be programmed. Channels set to Playback "P" will playback previously recorded data if any. Recording will continue until either the **STOP** button is pressed, or a stored END POINT, or the end of the memory Bank is reached. Pressing **PLAY** will only playback previously recorded data, channels set to record "R" will not be over written or recorded. Play is used mainly to monitor data recorded so far on a card or PUNCH IN recording see page 4/6.

EXAMPLE 3
If Trip option is set to **Run/Stop from DSU**, pressing **RECORD** will put the programmer into paused record mode. When a trip is received by the DSU Sound Store card, recording will start. When the trip is received channels set to Record "R" can be programmed. Channels set to Playback "P" will playback previously recorded data if any. Recording will continue until either the **STOP** button is pressed, or a stored END POINT, or the end of Bank memory is reached. Pressing **PLAY** will only playback previously recorded data, channels set to record "R" will not be over written or recorded. Play is used mainly to monitor data recorded so far on a card or PUNCH IN recording see page 4/6.

GOLDING AUDIO LTD

MAPS Programmer Operating Instructions
Playback Card Programmer Unit v1.8

Recording and Playback of Analogue Programs

Programming of the Analogue channels is done via the Potentiometers on the Analogue Channel 1 and 2 sections of the programmer.

Selecting Analogue Record mode
STEP 1 - From the main system menu select **Program**. You are then prompted "Digital, Analogue or Quit" Press **YES** to select Analogue. The main programming display will be shown.

Selecting channels to record
STEP 2 - Select the channels you wish to program by pressing the relevant key numbers on the Digital Programming Keypad. Channels set to record will show a RED LED above the relevant channel key and an "R" is displayed on the LCD display above the relevant channel number. Channels showing Green LED's and "P" on the LCD display are set to playback and will not be effected by any recording. The **NO** key will exit the menu at any stage.

Starting to Record / Play back
STEP 3 - Once happy with the combination of channels set to Record or Playback press the **ENTER** key. The programmer is now waiting for a start signal to begin Recording or Playback. The source of the start signal is dependant on your selected trip option.

Examples of Analogue Recording / Playback with various Trip Options set

EXAMPLE 1
If "Trip option" is set to **Manual Run/Stop**, pressing **RECORD** will start the programmer. Channels set to Record "R" can now be programmed. Channels set to Playback "P" will playback previously recorded data if any. Recording will continue until either the **STOP** button is Pressed, or a stored END POINT, or the end of the memory Bank is reached. Pressing **PLAY** will only playback previously recorded data, channels set to record "R" will not be over written or recorded. Play is used mainly to monitor data recorded so far on a card or PUNCH IN recording see page 4/6.

EXAMPLE 2
If "Trip option" is set to **Run/Stop from MAPS**, pressing **RECORD** will put the programmer into paused record mode. When a trip is received by the MAPS card, recording will start. When the trip is received channels set to Record "R" can be programmed. Channels set to Playback "P" will playback previously recorded data if any. Recording will continue until either the **STOP** button is pressed, or a stored END POINT, or the end of the memory Bank is reached. Pressing **PLAY** will only playback previously recorded data, channels set to record "R" will not be over written or recorded. Play is used mainly to monitor data recorded so far on a card or PUNCH IN recording see page 4/6.

EXAMPLE 3
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Punch in Recording

This procedure assumes you have read the sections covering Recording on the Programmer.

Punch in recording is a very useful method of replacing sections of recorded data within a program, without having to re-record the entire program. The same basic principals are used for both Digital and Analogue Recordings.

STEP 1 - From the main systems menu select **Program**
STEP 2 - Select either **Digital** or **Analogue** from the menu.
STEP 3 - Select the Channel you wish to edit .
STEP 4 - Press **PLAY** on the programmer. Depending on your Trip Mode setting, the unit will start to Playback when it receives a Trip from the relevant source as with normal record and playback procedure covered earlier.
STEP 5 - Once running, previously recorded data will be played back on all channels. At the point you wish to PUNCH IN press **RECORD**. The unit will enter record mode and channels set record "R" can now be recorded. Pressing **PLAY** will exit Punch in Record mode and continue playback, pressing **STOP** will exit to the main menu.

GOLDING AUDIO LTD

MAPS Programmer Operating Instructions
Playback Card Programmer Unit v1.8

Blower functions

This section of the programmer in used to blow the recorded data from the programmer into the MAPS card being programmed. Once done the MAPS card is no longer reliant on the programmer and will replay it's recorded data on demand. In addition this section allows MAPS cards already recorded to be reloaded into the programmers memory for editing or copying.

From the main system menu select **Blower**. You will then be prompted   "BLOW - ERASE - READBACK"

Selecting Erase
Will prompt you to enter the MAPS card memory bank you wish to erase. After selecting either memory bank 1-7 via the digital programming keys, press **ENTER**. You are then prompted to confirm your request, answering **YES** will then erase the currently selected memory bank from the MAPS card memory.

Selecting Read back
Will prompt you to enter the MAPS card memory bank you wish to read back 1 to 7, after selecting the memory bank number via the digital programming keys 1 to 7 and pressing **ENTER** you are prompted to confirm your request, answering **YES** will then read back the currently selected memory bank from the MAPS card into the programmers memory for editing etc .

Selecting Blow
You will be prompted "Digital - Analogue - Quit"
Press **ENTER** to select Digital or **YES** to select Analogue depending of which type of program you wish to blow. You are then prompted to select which bank of MAPS card memory to blow into. Select the bank you require to blow your data to via the programming keypad and press **ENTER**. You are then prompted to confirm your request, answering **YES** will then blow the currently selected memory bank on the **MAPS** card. Any existing data present in the selected MAPS card memory bank will be erased and replaced.

Card Memory Banks 1 to 7
MAPS card memory banks and trip inputs

MAPS card Memory Bank 1 is replayed via Maps card Trip Input No: 1 (Digital or Analogue Programs)
MAPS card Memory Bank 2 is replayed via Maps card Trip Input No: 2 (Digital or Analogue Programs)
MAPS card Memory Bank 3 is replayed via Maps card Trip Input No: 3 (Digital or Analogue Programs)
MAPS card Memory Bank 4 is replayed via Maps card Trip Input No: 4 (Digital or Analogue Programs)

MAPS card Memory Bank 5 is replayed via Maps card Trip Input No: 5 (Digital or Analogue Programs)
MAPS card Memory Bank 6 is replayed via Maps card Trip Input No: 6 (Digital or Analogue Programs)

MAPS card Memory Bank 7 is replayed simultaneously with Trip Inputs No: 1 to 6 (COMMON Digital or Analogue Program.) Hence digital or analogue data blown in any particular MAPS card memory bank 1 to 6 will be played back when it's relevant trip number it called on the Maps card. This allows any mixture of 6 programs digital and analogue to be stored on each Maps Card.

CAUTION when using Memory bank 7

Memory bank 7 is a common program location it can contain a Digital or Analogue program, its program will be replayed when any trip input 1 to 6 is called PROVIDED the tripped memory location 1 to 6 contains program data of the opposite type. See Examples below

Example assumes Bank 7 Contains a Digital program

Bank 1 Digital program stored. When trip 1 is called Digital program from Bank 1 is replayed (not 7.)

Bank 2 Digital program stored. When trip 2 is called Digital program from Bank 2 is replayed (not 7.)

Bank 3 Analogue program stored. When trip 3 is called Analogue program from Bank 3 and the Digital program from Bank 7 will be replayed.

Bank 4 Analogue program stored. When trip 4 is called Analogue program from Bank 4 and the Digital program from Bank 7 will be replayed.

Bank 5 Analogue program stored. When trip 5 is called Analogue program from Bank 5 and Digital program from Bank 7 will be replayed.

Bank 6 Digital program stored .When trip 6 is called Digital program from Bank 6 is replayed (not 7.)

If memory bank 7 contained an Analogue program the example above would be the inverse in each case.

GOLDING AUDIO LTD

MAPS Programmer Operating Instructions
Playback Card Programmer Unit v1.8

Editor Functions - Digital programs only

Entering Edit Mode
From the main menu screen select **Editor** and press **ENTER** the following options will be displayed "advance - retard - wipe channel - invert" selecting one of the four options with the cursor keys and then press **ENTER** to select that operation.

Selecting Advance
Will display the message "Select channels to advance by 2 Clocks" Press **ENTER** to save. Select any number of channels to be advanced by pressing the relevant key numbers on the Digital Programming Keypad. Channels set to be advanced will show the RED LED above the relevant channel key, Channels still showing GREEN LED's will not be effected by this editing operation. Press the **ENTER** key to start the operation, after a short delay the programmer will return to the Main Menu, the operation is now complete.

Selecting Retard
Will display the message "Select channels to delay by 2 Clocks" Press **ENTER** to save. Select any number of channels to be delayed by pressing the relevant key numbers on the Digital Programming Keypad. Channels set to be delayed will show the RED LED above the relevant channel key, Channels still showing GREEN LED's will not be effected by this editing operation. Press the **ENTER** key to start the operation, after a short delay the programmer will return to the Main Menu, the operation is now complete.

Note:
Retard and Advance of data by 2 Clocks. This operation when used with the Programmer as the Clock Sources i.e.. 25 Hz will move data in selected channels by 80 mS.

Selecting Wipe Channel
Will display the message "Select channels to Erase" Press **ENTER** to save. Select any number of channels to be erased by pressing the relevant key numbers on the Digital Programming Keypad. Channels set to be erased will show the RED LED above the relevant channel key, Channels still showing GREEN LED's will not be effected by this editing operation. Press the **ENTER** key to start the operation, after a short delay the programmer will return to the Main menu, the operation is now complete.

Note:
This operation only erases the data from the selected digital channels in the currently selected digital memory bank (not all 6.)

Selecting Invert
Will display the message "Select channels to Invert" Press **ENTER** to save. Select any number of channels to be inverted by pressing the relevant key numbers on the Digital Programming Keypad. Channels set to be inverted will show the RED LED above the relevant channel key, Channels still showing GREEN LED's will not be effected by this editing operation. Press the **ENTER** key to start the operation, after a short delay the programmer will return to the Main Menu, the operation is now complete.

Socket Information

D.C. Input - DIN 5 pin Domino

Pins 2 and 4 = 0 volts
Pins 3 and 5 = 12 volts D.C.

Maps Link Port - DIN 5 pin 180 deg

Pin 1 = TX data	Pin 4 = RX data
Pin 2 = GND	Pin 5 = CLK
Pin 3 - PRGM	

Remote Control Port - DIN 5 pin 270 deg

Pin 1 = N/C	Pin 4 = START/STOP
Pin 2 = REC/PLAY	Pin 5 = +5v
Pin 3 = GND	

Analogue Port - DIN 8 pin

Pin 1 = REC/PLAY	Pin 5 = Ch 2 in
Pin 2 = GND	Pin 6 = Ch 1 out
Pin 3 = +5v	Pin 7 = Ch 2 out
Pin 4 = Ch 1 in	Pin 8 = START/STOP

Interface Port 25 way D-type

Pin 1 = GND	Pin 14 = N/C
Pin 2 = TXD	Pin 15 = N/C
Pin 3 = RXD	Pin 16 = N/C
Pin 4 = RTS	Pin 17 = N/C
Pin 5 = CTS	Pin 18 = N/C
Pin 6 = N/C	Pin 19 = N/C
Pin 7 = GND	Pin 20 = +5v
Pin 8 = N/C	Pin 21 = I/O 10
Pin 9 = I/O 9	Pin 22 = I/O 8
Pin 10 = I/O 7	Pin 23 = I/O 6
Pin 11 = I/O 5	Pin 24 = I/O 4
Pin 12 = I/O 3	Pin 25 = I/O 2
Pin 13 = I/O 1	