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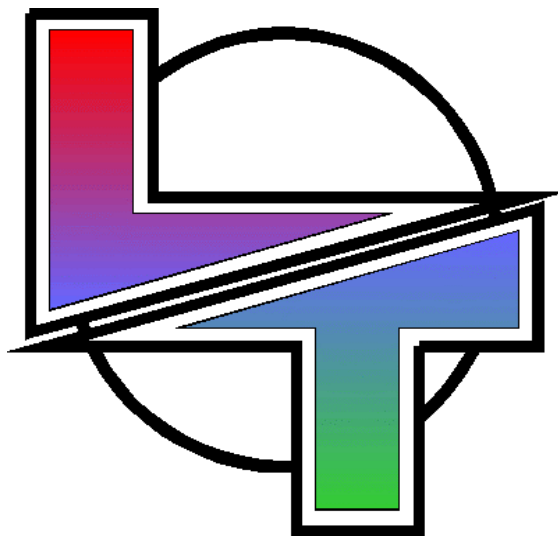
# DAC PLUS

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[www.lt-light.com](http://www.lt-light.com)

## PROGRAMMABLE DIGITAL DEMULTIPLEXER

60 CH / 120 CH // 0+10V / 0-10V



## USER MANUAL

Version 1.9



**INDEX**

INDEX ..... 1

DAC Plus ..... 3

TECHNICALS CHARACTERISTIC ..... 4

CONNECTIONS ..... 5

    MAIN SUPPLY ..... 5

    DIGITAL INPUT ..... 5

    OUTPUT SIGNAL (SUBD OPTION) ..... 6

    OUTPUT SIGNAL (SOCAPEX OPTION) ..... 6

OPERATING ..... 8

    INSTALLATION ..... 8

    SWITCH ON ..... 8

    THE DISPLAY AND THE FUNCTION KEYS ..... 9

MAIN MENU ..... 10

SETUP [F6] ..... 11

    SETUP ⇒ SERIAL [F1] ..... 11

    SETUP ⇒ LEVELS [F2] ..... 12

    SETUP ⇒ PATCH [F3] ..... 13

    SETUP ⇒ LIMIT [F4] ..... 14

    SETUP ⇒ CURVES [F5] ..... 15

    SETUP ⇒ NEXT [F6] ⇒ LANGUAGE [F1] ..... 16

    SETUP ⇒ NEXT [F6] ⇒ RESET [F5] ..... 16

TEST [F5] ..... 17

    TEST ⇒ INPUT [F1] ..... 17

    TEST ⇒ OUTPUT [F3] ..... 18

    TEST ⇒ VER [F6] ..... 19

MAN [F1] ..... 20

PRESET [F2] ..... 21

SEQ [F3] ..... 23

    SEQ ⇒ MAKE [F1] ..... 23

    SEQ ⇒ USE [F4] ..... 26

    SEQ ⇒ DEL [F6] ..... 28

TECHNICAL SERVICE ..... 29

DAC Plus- User Manual

## DAC Plus

The digital demultiplexer, DAC PLUS, is a powerful interfaces.

The DAC plus converts the DMX digital input to 60/120 analog channels (0 +10V or 0 –10V) and permits us create presets and one sequence.

Some of its functions are similar to the control desk functions:

- Presets storing.
- Sequence...
- Test functions.
- Setup.



Also we have attempted that the use of the equipment will be simple, quick and effective, continuing with the philosophy of all the **LT** products.

## TECHNICALS CHARACTERISTIC

- Output channels: 60 or 120.
- Digital input protocols: DMX-512 (1990) & AVAB.
- Analog output signal:
  - 0 +10V or
  - 0 – 10V
- Special functions:
  - Selection of the input digital protocol.
  - Adjustment of the maximum and minimum levels for the analog output (0 ±10V).
  - Channels Test.
  - Frontal fader.
  - Manual control of the outputs.
  - 99 presets.
  - Sequence of 99 steps, with crossfade and delay times.
  - Selection of the language (Spanish and English).
  - Curves.
  - Patch.
  - Limit level...
- 2 x 40 alphanumeric characters display in the frontal panel.
- 10 function keys for menus.
- Microprocessor H8/510 at 20MHz.
- Main supply: 230V~ 50/60 Hz. (Phase + Neutral + Ground).
- Consumption: 180mA.
- Protection: 2 fuses of 1 A/250V type F
- Category: CAT II.
- Ambient: Operating temperature: -40°C at 80°C.  
Relative humidity of the air (without condensation): 80%
- Size: 483 mm x 350 mm x 88 mm. (2U x 19”).
- 6 Kg.

## CONNECTIONS



## MAIN SUPPLY

IEC base. 230 V~ 50/60Hz. Phase + neutral + ground. In=180mA. In the IEC base there are 2 fuses of 1 A/250V type F.

## DIGITAL INPUT

2 XLR-5 standard DMX connectors, male and female, linked between them to permit the connection to others DMX receptors.

Protocols: DMX-512 (1990) & AVAB-256.

Code:

- Pin 1 .- Shield (0V ref).
- Pin 2 .- Data -
- Pin 3 .- Data +
- Pin 4.- N.C.
- Pin 5.- N.C.

**Note:** Don't use audio cables to transmit DMX signal. Always use a data cable, with twister pairs and shield, with characteristic impedance of 120  $\Omega$  and low capacitance. The cable shield is connected to the pin 1 of the XLR-5, and the DATA+ & DATA- in the same twister pair.

**OUTPUT SIGNAL (SUBD OPTION)**

0 + 10 V signal or 0 – 10V signal.

5 SUBD-15 female connectors for 60 output channels or 10 SUBD-15 female connectors for 120 output channels. Code:

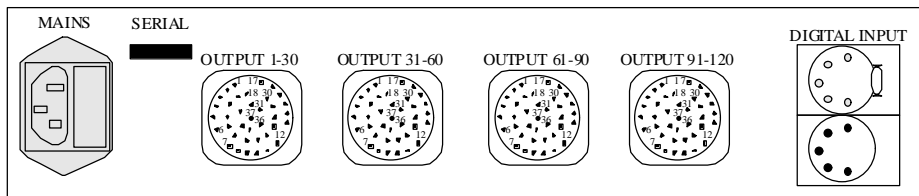
OUTPUT 1-12		OUTPUT 13-24		OUTPUT 25-36		OUTPUT 37-48		OUTPUT 49-60	
Pin	Channel	Pin	Channel	Pin	Channel	Pin	Channel	Pin	Channel
1	1	1	13	1	25	1	37	1	49
2	2	2	14	2	26	2	38	2	50
...	...	...	...	...	...	...	...	...	...
12	12	12	24	12	36	12	48	12	60
13	N.C.	13	N.C.	13	N.C.	13	N.C.	13	N.C.
14	0V ref	14	0V ref	14	0V ref	14	0V ref	14	0V ref
15	N.C.	15	N.C.	15	N.C.	15	N.C.	15	N.C.

OUTPUT 61-72		OUTPUT 73-84		OUTPUT 85-96		OUTPUT 97-108		OUTPUT 109-120	
Pin	Channel	Pin	Channel	Pin	Channel	Pin	Channel	Pin	Channel
1	61	73	13	1	85	1	97	1	109
2	62	74	14	2	86	2	98	2	110
...	...	...	...	...	...	...	...	...	...
12	72	84	24	12	96	12	108	12	120
13	N.C.	13	N.C.	13	N.C.	13	N.C.	13	N.C.
14	0V ref	14	0V ref	14	0V ref	14	0V ref	14	0V ref
15	N.C.	15	N.C.	15	N.C.	15	N.C.	15	N.C.

**OUTPUT SIGNAL (SOCAPEX OPTION)**

0 + 10 V signal or 0 – 10V signal.

2/4 Socapex-37 female connectors for the 60/120 channels.



Code:

<b>OUTPUT 1-30</b>		<b>OUTPUT 31-60</b>	
Pin	Channel	Pin	Channel
1	1	1	13
2	2	2	14
...	...	...	...
30	12	30	24
31-35	0V ref	31-35	0V ref
36-37	N.C.	36-37	N.C.

<b>OUTPUT 61-90</b>		<b>OUTPUT 91-120</b>	
Pin	Channel	Pin	Channel
1	37	1	49
2	38	2	50
...	...	...	...
30	48	30	60
31-35	0V ref	31-35	0V ref
36-37	N.C.	36-37	N.C.

## **OPERATING**

### **INSTALLATION**

The **DAC Plus** is ready to work. The unit doesn't need adjustments.

The DAC Plus can work inside a standard rack (19") with others control and dimming units or work independently. To install it:

- The DAC Plus frontal panel must be visible, with the main switcher accessible.
- Input - outputs connections accessible for possible maintenance.
- Maintain the ventilation grids protected to avoid the possible introduction of external matters to the DAC Plus.
- Always connect the ground to the DAC Plus.

Connect the needed signal cables (input and output). Always use normalised DMX data cables: cables for EIA485, of twister pairs, with shield and with characteristic impedance about 120 ohmios and with low capacitance.

Connect the main normalised cable: phase + neutral + ground.

Switch on the DAC. (Position I).

Switch on the DAC before the dimmers.

**Note:** If the user uses the equipment in a way unspecified by the manufacturer, the protection of the equipment can result committed.

### **SWITCH ON**

To switch on the DAC Plus press the MAINS switcher, located in the frontal panel. Before press this switcher is recommended test all connections.

## THE DISPLAY AND THE FUNCTION KEYS

All functions of the **DAC Plus** are based in the function keys (10 keys) and in the alphanumeric display. There are 5 basics menus.

At the same moment that you switch on the DAC Plus, the unit is working, and in thie outputs we have the converted input. (This conversion is the conversion by default). The display shows us the main menu with the 5 basics menus.

Main Menu MAN PRESET SEQ    TEST    SETUP
--

The upper line is the general information line.

The second line is the line of the functions. Each function is located over the function key that it activate this function [F1..F6].

There are 4 defined function keys:

- MENU:**     Exist to the previous menu. To exit to the main menu press this key as many times as will be necessary.
- ↔:            To edit the numeric data. Moves the cursor by the number digits that we want edit.
- ↑:            To edit the numeric data. Increases the numeric data digit that it is selected by the cursor.
- ↓:            To edit the numeric data. Decreases the numeric data digit that it is selected by the cursor.

## MAIN MENU

Basics menus and their associated functions keys:

Main Menu
MAN PRESET SEQ TEST SETUP

**MAN:** Selected with **F1**.

Access to the **manual control** of the outputs.

**PRESET:** Selected with **F2**.

Permits us store, playback, modify and erase the **presets**.

**SEQ:** Selected with **F3**.

Permits us create and playback a 99 steps sequence.

**TEST:** Selected with **F4**.

Tests the output and input data buffers, and other channels test functions.

**SETUP:** Selected with **F6**.

To configure the system:

- Input protocol.
- Channels Patch.
- Limit levels for output channel.
- Working language
- Curves by output channel.
- Adjustment of the analog output (maximum and minimum levels).
- Warm reset.

(In the main menu, the function key: **F5** has no assigned function).

## SETUP [F6]

Select the **SETUP** menu pressing the **F6** key. The display shows us the submenus for the SETUP menu.

```
Setup menu
SERIAL LEVELS PATCH LIMIT CURVES NEXT
```

At any time, pressing the **MENU** key, the system returns to the previous menu, in this case the system returns to the main menu.

The submenus for the SETUP menu are:

- **SERIAL [F1]**: Permits us select the desired protocol for the digital input, DMX or AVAB
- **LEVELS [F2]**: Permits us adjustment the maximum and minimum levels for the analog output.
- **PATCH [F3]**: No-linear channels patch for the 60/120 output channels with the input channels.
- **LIMIT [F4]**: Limit level for each output channel.
- **CURVES [F5]**: Permits us assign a curve to each output channel.
- **NEXT [F6]**: Access to the second page of the Setup menu:

```
Setup menu
LANGUAGE RESET NEXT
```

- **LANGUAGE [F1]**: Chooses between the English and Spanish languages for the information lines. The submenu Language doesn't affect to the commands.
- **RESET [F5]**: Warm reset.
- **NEXT [F6]**: Return to the first page of the Setup menu.

## SETUP ⇒ SERIAL [F1]

The display shows us:

```
Serial Input Protocol Menu
DMX* AVAB OFF
```

The demultiplexer can work with the next lighting protocols:

- DMX-512 (1990): Standard lighting protocol, by U.S.I.T.T. This protocol works with 512 channels.
- AVAB: Created by AVAB company. This protocol works with 256 channels.

The selected protocol is marked with an asterisk, \*, showed in the display. By default the selected protocol is DMX-512.

### Selecting the desired protocol

- To select DMX-512, press **F1**. Note the asterisk near the **DMX** command.
- To select AVAB, press **F2**. Note the asterisk near the **AVAB** command.
- It is possible to deactivate the digital input pressing **F6** command. Note the asterisk near the **OFF** command.

## **SETUP** ⇒ **LEVELS [F2]**

This option permits us select the maximum and minimum levels for the analog outputs. The standard levels for these outputs are:

Minimum level = 0.0 Voltios.

Maximum level = ± 10 Voltios.

Levels by default in the demultiplexer.

To select this level, the user enters the new levels in positive valours (for 0 +10V demultiplexers and for 0 – 10V demultiplexers).

The user can enter the data with a precision of 0.1 V, between the 0V ans 10V, for the maximum and minimum levels.

The display shows us:

Analog Output Valours	0.0
MIN=0.0	MAX=10 CLEAR

Example:

We have an analog dimmer connectes to the demultiplexer. The minimum level that the dimmer can read is 0.8V and the maximum level that the dimmer can read is 9.2V (For this inpu level its dimmer channel is at 100%). For this example:

- Enter the data: 0.8 (In the upper right corner, with the arrow keys and the cursor).
- Press the **MIN [F1]**. In the display you can see MIN=0.8.
- Enter the data: 9.2 (In the upper right corner, with the arrow keys and the cursor).
- Press the **MAX [F4]**. In the display you can see MAX=9.2.

In this moment the demultiplexer is working from 0.8V (0%) to 9.2 (100%).

The **CLEAR [F6]** command permits us erase the numerical data of the display.

**SETUP ⇒ PATCH [F3]**

Channel patch in no-linear mode. The patch, by default, assigns the first 60/120 digital channels to the output channels in linear mode. (Output channel = Input channel):

1=1 2=2 3=3 4=4 5=5 6=6 7=7 8=8 9=9 ... .. 119=119 120=120

The display shows us:

1=1	2=2	3=3	4=4	5=5	6=6	7=7	8=8	9=9	0.0
CH	CH-IN				ALL	UP-DSP	CLEAR		

The upper line shows us the current assignments, in format: output channel = input channel, for the first channels. To see the next channels, press **UP-DSP [F5]**.

When you select one output channel the system shows it in the display.

**The DAC Plus Patch is a patch no linear, in others words, any input channel can be associated with any output channel or any output channels group.**

Commands in this menu:

- In the upper right corner of the display you can see the **numerical data**, with 3 digits and editable with the arrow keys and cursor key.
- **CH [F1]**: Selects the output channels, from 1 to 60/120.
- **CH-IN [F2]**: Selects the input channels, from 1 to 512 (or 256 in AVAB), that we want assigned to the selected output channel.
- **ALL [F4]**: Permits us do a linear patch from the selected output channel to the last system output channel (60/120), entering only the first input channel.
- **UP-DSP [F5]**: Page-up.
- **CLEAR [F6]**: Permits us erase the numerical data of the display.

Examples:

- **Edit by default patch: The demultiplexer will be controlled from the input dmx channel 399**
  1. Select the output channel: 1. Enter the numerical data, 1 and press **CH [F1]**
  2. Enter the numerical data: 399, (with the arrow keys and the cursor key).
  3. Press **ALL [F4]**.

Results:

1=399 2=400 3=401 4=402 5=403 ... 113=512 114=1 ... .. 119=6 120=7

Note that the 144 output channel is assigned to the 1 input channel. The ALL function is a cyclic function.

- **From by default patch, the output channel 4 will be controlled by the input channel 3.**
  1. Enter the numerical data of the output channel (4).
  2. Press **CH [F1]**.
  3. Enter the number of the input channel (3).
  4. Press **CH-IN [F2]**.

Results:

1=1 2=2 3=3 **4=3** 5=5 ... 113=113 114=114 ... .. 119=119 120=120

Repeat this process as many times as it is wished

Input channels: 1 - 60/120.

Output channels for AVAB signal: 1 - 256.

Output channels for DMX signal: 1 - 512.

- **Return to the patch by default.**
  1. Enter the numerical data **1** and press **CH [F1]**.

**SETUP ⇒ LIMIT [F4]**

The **LIMIT [F4]** menu permits us assign a maximum output level for each output channel. By default the LIMIT function is the 100% (full) for all channels. In others words the outputs aren't limited.

When we select the LIMIT menu, the display shows us:

1=F	2=F	3=F	4=F	5=F	6=F	7=F	0.0
CH	LEVEL	100%	ALL	UP-DSP	CLEAR		

In LIMIT menu, we can find the commands:

- **CH [F1]:** Selects the output channel that you want limit:

- Enter the number of the output channel and press **CH [F1]**.
- **LEVEL [F2]**: Assigns to the selected channel the maximum level entered in the display:  
Enter the maximum level and press **LEVEL [F2]**.
  - **100% [F3]**: Selects the maximum level like a level 100% (full, no-limit).
  - **ALL [F4]**: Assigns to the selected channel and successive, up to the last system channel, the entered limit.
  - **UP-DSP [F5]**: Page up. Permits us see the next channels in the display.
  - **CLEAR [F6]**: Permits us erase the numerical data of the display.

**SETUP ⇒ CURVES [F5]**

The **DAC Plus** has 5 curves. One response curve can be assigned to any output channel. The curves are:

1. Standard curve
2. Lineal curve
3. Square curve
4. Fluorescence curve
5. ON/OFF curve (non-dim)

By default, all channel have assigned the curve 1:

1=1 2=1 3=1 4=1 5=1 6=1 ... 119=1 120=1

1=1 2=1 3=1 4=1 5=1 6=1 7=1 8=1 9=1 0.0  
CH CURVE ALL UP-DSP CLEAR

The next commands: **CH [F1]**, **ALL [F4]**, **UP-DSP [F5]** & **CLEAR [F6]** are similars to the commands to the previous menu.

The **CURVE [F2]** command permits us assign the desired curve to the selected channel.

Examples:

- **Assign the curve 2 to the channels 4, 5, 6, 7, 8 y 9; and the curve 3, to the others output channels:**
  1. Enter the number 3 (curve 3) and press **ALL [F4]**. In the display:  
1=3 2=3 3=3 4=3 5=3 6=3 7=3 8=3 9=3 10=3 11=3 ... 119=3 120=3
  2. Enter the number 4 (channel 4) and press **CH [F1]**.
  3. Enter the number 2 (curve 2) and press **ALL [F4]**.  
1=3 2=3 3=3 **4=2** 5=2 6=2 7=2 8=2 9=2 10=2 11=2 ... 119=2 120=2
  4. Enter the number 10 (channel 10) and press **CH [F1]**.
  5. Enter the number 3 (curve 3) and press **ALL [F4]**.  
1=3 2=3 3=3 4=2 5=2 6=2 7=2 8=2 9=2 **10=3** 11=3 ... 119=3 120=3

- **Assign the curve 5 to the output channel 6:**

1. Enter the number 6 (channel 6) and press **CH [F1]**.

2. Enter the number 5 (curve 5) and press **CURVE [F2]**.

1=3 2=3 3=3 4=2 5=2 **6=5** 7=2 8=2 9=2 10=3 11=3 ... 119=3 120=3

**SETUP ⇒ NEXT [F6] ⇒ LANGUAGE [F1]**

The **DAC Plus** can work in English or in Spanish.

To select the desired language, select the **LANGUAGE [F1]** option, in the second pages of the Setup menu. (**NEXT [F6]**).

Language menu
CASTELLANO*                      ENGLISH

The selected language affects only to the information lines and messages. The language by default is the **CASTELLANO [F1]**. (Note that the selected language is marked with an asterisk (\*)).

**To select other language**

Press the function key located under the desired language. **[F1]** to select CASTELLANO & **[F4]** to select ENGLISH.

Note: This selection isn't affected for the Cold Reset.

**SETUP ⇒ NEXT [F6] ⇒ RESET [F5]**

This is the Warm Reset of the **DAC Plus**.

The **RESET [F5]** menu is located in the second page of the Setup menu (**NEXT [F6]**).

After a Warm Reset the system is in a known status. The entered and stored data are preserved in a Warm Reset. This Warm Reset:

- Preserves the stored preset and sequence, but now they are inactive.
- The output of the MAN menu is erased.

The **DAC Plus** has a Cold Reset:

- All stored data are erased (presets, sequence, setup parameters...).
- Patch by default.

- Limit function by default.
- Curve by default.
- Levels for the analog output by default - 0V (min) & 10V (max.).
- The selected protocol (SERIAL) and the selected language are maintained (LANGUAGE).

Cold Reset:

- Switch off the DAC Plus.
- Press and hold down the **MENU** key, and switch on the unit, **MAINS**. After release the **MENU** key.

## TEST [F5]

The **TEST** menu is located in the Main menu. Press the **MENU** key until that this menu appears in the display.

Select the **TEST [F5]**, in the display:

Test Menu		
INPUT	OUTPUT	VER

There are three submenus:

- **INPUT [F1]**: Shows us the digital input, in format: Channel/Level.
- **OUTPUT [F3]**: Shows us the analog output and tests these outputs.
- **VER [F6]**: Shows us the current software version.

## TEST ⇒ INPUT [F1]

When you select the **INPUT [F1]** option, the digital input is showed in the display. In the upper line are the channel numbers and in the second line are their corresponded levels, under the channel number:

Dmx	1	2	3	4	5	6	7	8	9	10	11	12
In	0	0	34	50	0	0	0	F	0	50	0	0

With the arrow keys you can move the page in the display to see the desired channel.

In the upper left corner you can see the current signal protocol DMX (**Dmx**), AVAB (**Ava**), or Buffer (**Buf**) like the last valid input signal received and stored by the DAC

Plus when the control line is broken. To erase the buffer information you can switch off the unit or can solve the control line problems.

If there is no digital input, or this digital input isn't correct. the system shows us:

**No digital input**  
**See the buffer?    SI    NO**

To see the buffer press the **SI [F5]** option.

To exit of this test press **NO [F6]**.

**TEST ⇒ OUTPUT [F3]**

In this submenu there are three options:

Output Test Menu	000
UP-DOWN    CH-BLINK    BUFFER	CLEAR

- **UP-DOWN [F1]:** When you start this test, all output channels take a 0% level. And, beginning for the selected channel and finished for the last system channel, fades up the first channel and fades down this channel, jumps to the next channel and repeat the same fades... as so on until the last system channel.

The display shows us the status of this function.

To exit of this test, press **MENU**:

This test switch off all channel and in order Fades up and down ->    CH 1
---

- **CH-BLINK [F3]:** The selected channels blinks. **### CH-BLINK**. This function maintained the level of the output channels rest. This function is very used to find a channel in stage. In the display:

This test does blink to the channel    1
--

To exit of this test, press **MENU**.

- **BUFFER [F4]:** Shows us the output buffer in the display, here you can see the levels of the analog outputs.

With the arrow keys you can move the page in the display to see the desired channel.

Anl	1	2	3	4	5	6	7	8	9	10	11	12
Out	0	0	50	0	36	F	0	0	0	20	20	0

- **CLEAR [F6]:** Erases the current numerical data, located in the upper right corner of the display.

**TEST ⇒ VER [F6]**

This function shows us the presentation page. In this page you can see the current software version:

LT	COPYRIGHT 1992-1997
Demultiplexer 120 CH version 1.7	

## MAN [F1]

The **MAN** menu is located in the Main menu. This menu is formed for the basic functions that they permit us control the demultiplexer channels manually. From this menu you can select channels groups and assign them output levels.

This menu has two pages, to switch between them press the **NEXT [F6]** key.

1=0	2=0	3=0	4=0	5=0	6=0	7=0	000
CH	CH+	CH-	THRU	ALL	NEXT		

1=0	2=0	3=0	4=0	5=0	6=0	7=0	000
LEVEL	100%	50%	UP-DSP	CLEAR	NEXT		

In the first page:

- **CH [F1]**: Select the entered number like a channel, ### CH, and deselects the previous selected channels. This command is used to begin a new group selection.
- **CH+ [F2]**: Add the selected channel to the current selection.
- **CH- [F3]**: Eliminates the selected channel of the current selection.
- **THRU [F4]**: Selects a channel range. ### CH ### THRU (From the channel ### to the channel ###).
- **ALL [F5]**: Select all the system channels.

The current selected channels are marked with a symbol = (in bold).

In the second page:

- **LEVEL [F1]**: Assigns the entered level to the selected channel/group. ### LEVEL. The level is from 0 to 100.
- **100% [F2]**: Assigns the 100% level (full) to the selected channel/group.
- **50% [F3]**: Assigns the 50% level to the selected channel/group.

The assigned levels appear in the stage.

- **UP-DSP [F4]**: Shows us the next channels in the display.
- **CLEAR [F5]**: Erases the numerical data.

You can assign levels to the selected channel/group from the frontal fader. This fader is locked when you select a new channel/group or when you exit to the Main menu.

When the manual control is providing stage output, the **MAN** command is blinking in the Main menu.

**PRESET [F2]**

This menu permits us store, active or exam the presets. The DAC Plus has 99 presets of 60/120 channels and the preset 0 (black out preset). The preset 0 is the active preset by default.

This menu has two pages, to switch between them press the **NEXT [F6]** key.

Preset Menu. L=0 Preset Active=0 000  
 SET LEVEL DEL FREE REC NEXT

Preset Menu. L=0 Preset Active=0 000  
 VIEW CLEAR NEXT

To store a preset the user can use one of the next processes:

- Whit the **REC[F5]** function, entered the new preset number, ## REC,
- Whit the **FREE[F4] REC[F5]**, here, the system selects the new preset number. This selected number is the first number of free preset. This number is showed in the display.

If the user enter the number of one stored preset, the system will solicit confirmation:

**Stored preset. <REC> confirm**

Confirm pressing **REC [F5]** or exit pressing other key.

The content of the preset is exactly the demultiplexer output at the moment that the **REC** key is pressed. The preset is stored with:

- The manual control information.
- The digital input information.
- The active preset output information.
- The sequence output information.

**To exam the stored levels in a concrete preset**

Use the **VIEW [F1]** command in the second page of this menu.

Enter the preset number that you desire exam and press **VIEW [F1]**.

Example: 1 VIEW. The display shows us the channels and their levels stored in the preset 1:

Prs	1	2	3	4	5	6	7	8	9	10	11	12
	1	0	F	F	0	0	0	0	0	F	50	0

With the arrow keys you can move the page in the display to see the desired channel. To exit of this page, press MENU.

**To activate a stored preset in stage**

Use the **SET [F1]** command.

- Enter the desired preset number (0-99), for example, the preset number 1.
- Press **SET [F1]**.

The display shows us: **Preset Active: 1**

Assign output level to this active preset, from the frontal fader or from the **LEVEL [F2]** command, entering the level data before: **## LEVEL**.

The display shows us the output level for this active preset **L=55**.

When you exit of this menu, the frontal fader is locked (remembering its level). The next time, move the fader until reach the current preset level to take control of this active preset.

By default, all preset are activated at 0% level, avoiding light jumps in stage.

If you exit of the Preset menu with a active preset in stage, the **PRESET** word, in the Main menu, will be blinking.

#### **To deactivate the active preset**

Active the preset 0.

- **0 SET[F1]**.

#### **To erase a stored preset**

Enter the preset number that you desire erase, **##**.

Press **DEL[F3]**.

**SEQ [F3]**

This menu permits us create, playback and erase a 99 steps sequence. The step 0 is the preset 0, that preset is a blackout preset. The sequence steps are activates in sequential order, step by step, until that the last sequence step has been activated.

The functions MAN, PRESET and SEQ permit us use the demultiplexer like a control desk in a small shows or like a small backup system.

The SEQ menu:

Sequence Menu		
MAKE	USE	DEL

There are three submenus:

**MAKE [F1]:** Permits us create and modify the sequence.

**USE [F4]:** Permits us activate and control the sequence.

**DEL [F6]:** Erases the sequence.

**SEQ ⇒ MAKE [F1]**

To program the sequence is needed assign stored preset in its steps. In the display:

Seq Step=0	Pr=0	000
ADD	INSERT <<SEQ	SEQ>> DEL NEXT

The empty sequence has only the preset 0 (step 0). If the sequence have some steps the last step is showed in the display.

**Insert a new step to the end of the sequence**

Select the preset number to enter in the last step (at the first time, the step 1) ##.

Press the **ADD [F1]** command. The preset is added to the end of the sequence.

In the display: **Seq Step=1 Pr=##.**

**Insert a new step between two stored steps**

Locate the desired step in the display with the **SEQ>> [F4]** (up step) and **<<SEQ [F3]** (down step) commands.

Enter the desired preset number and press **INSERT [F2]**. The selected preset is inserted in the showed step.

Example: Our sequence have 7 steps, the steps: 0 – 6, the rectangle is simulating the display:

Step=0	Pr=0
Step=1	Pr=1
Step=2	Pr=2
Step=3	Pr=3
Seq	Step=4 Pr=4
Step=5	Pr=5
Step=6	Pr=6

If you press **SEQ>>[F4]**, the next step is located in the display:

Step=0	Pr=0
Step=1	Pr=1
Step=2	Pr=2
Step=3	Pr=3
Step=4	Pr=4
Seq	Step=5 Pr=5
Step=6	Pr=6

If you press **<<SEQ[F3]**, the previous step is located in the display, newly the step 4:

Step=0	Pr=0
Step=1	Pr=1
Step=2	Pr=2
Step=3	Pr=3
Seq	Step=4 Pr=4
Step=5	Pr=5
Step=6	Pr=6

Locate the step to insert the new preset in the display and:

Enter the preset number that you desire insert, ##, (example 10).

Press **INSERT [F2]**. Now the preset 10 is inserted in the step 4, between the presets 3 and 4.

Now the preset number 4 is in the next step, the step 5, the preset contained in the step 5 now is in the step 6 ... The preset contained in the last sequence step, now is in a new sequence step.

In the display:

Step=0	Pr=0
Step=1	Pr=1
Step=2	Pr=2
Step=3	Pr=3
Seq	Step=4 Pr=10
Step=5	Pr=4
Step=6	Pr=5
Step=6	Pr=6

**Free a preset contained in a sequence step**

Locate the desired step in the display and:  
Press **DEL [F5]**.

The preset is removed of the sequence; the next step preset now is in this step.

In the second page of this menu, **NEXT [F6]**, we have the next functions that they permit us:

- Assign fade times.
- Assign delay times.
- Assign a jump to a concrete step.

Enter times from 0.1 to 999 seconds.

For greater times of 10 seconds, the display shows us only its entire part, but this times are computed correctly.

The times and jump are assigned in the showed step. Locate the desired step to edit.

The second page of the SEQ menu is:

Seq Step=0 Pr=0	000
XTIME ATIME JUMP	SEQ>> CLEAR NEXT

**XTIME [F1]:** Fade time. It is the time that need the step preset in X2 to fade down from 0% to 100% and the time that need the step preset in X1 to fade up from 100% to 0%.

Locate the step in the display. Example the step 1

Enter the desired fade time: ###.#. Example 1.8

Press **XTIME [F1]**.

In the display: **Seq Step=1 Pr=1 Xt=1.8**

**ATIME [F2]:** Delay time. It is the time that step preset in X1 is maintained in stage before begin the next crossfade. This time permits us link the next crossfade in automatic mode.

Locate the step in the display. Example the step 1

Enter the desired delay time: ###.#. Example 2.5

Press **ATIME [F2]**.

In the display: **Seq Step=1 Pr=1 Xt=1.8 At=2.5**

The user can assign one of these times, both or none, for each sequence step.

The times didn't assign take the valours:

Fade time: 0 s.

Delay time: Infinite.

To erase any assigned time, assign the time: 0.0.

**JUMP [F3]:** This command produces a jumps from the step which the JUMP is programmed to the selected step.

Locate the step in the display. Example the step 1

Select the step number. Example 5

Press **JUMP [F3]**.

In the display: **Seq Step=1 Jump Step 5.**

Sequence playback: The sequence jumps from the step 1 to the step 5. The steps 2, 3 and 4 aren't started.

The step 0 doesn't admit the JUMP command.

One step with assigned JUMP losses its preset and assigned times.

### **SEQ ⇒ USE [F4]**

Sequence playback. In the display:

L>0	St=0	X1=1	X2	000
GO	PAUSE	GO-BACK	GO-TO	GO-X2 CLEAR

In the upper line of the display appears the step in stage and its preset (step in X1), and the next step and its preset (step in X2).

### **Sequence playback in manual mode**

Use the frontal fader.

In this case the frontal fader is sequence fader. This fader controls the crossfade between the preset in X1 and the preset in X2 manually. The assigned times aren't computed, the crossfade follows the fader movement.

In the upper left corner of the display appears the current fader status: **L>0**. Here, you can see the its level (0) and the needed movement direction (>) to playback the crossfade.

When the fader reaches the 100% the crossfade has finished. Now the preset in X2 is in X1 and the next sequence preset is in X2. The system is ready for the next crossfade and the fader is at 0% newly (L<0).

### **Sequence playback in automatic mode**

Use the **GO [F1]** key.

Each time that you press this key, a new crossfade is started. The fades are done with the assigned times. If the step hasn't fade time the preset in X2 jumps to stage and the preset in X1 jumps at 0%.

If the step hasn't delay times, it is necessary press the GO key to start a new crossfade.

The assigned times are showed in the display:

**L>0 St=1 X1=1 Xt=0(1.4) X2=2**

Here you can see:

The stage step (St=1).

The stage preset (X1=1).

The remaining fade time and the total fade time (Xt=0(1.4), here 1.4 is the assigned time).

And the next preset in stage (X2=2)

For the previous example, when you press **GO [F1]**, the preset 1 (in X1) fades down in 1.4 seconds, and the preset 2 (in X2) fades up in the same time.

After the crossfade, the preset 2 in X2 passes to X1 and the next sequence step passes to X2. Now the delay time (or automatic time) is computed:

**L>0 St=2 X1=2 At=0(5) X2=3**

In this example, the preset 2 is maintained 5 second in stage before of the beginning of the next crossfade

After the delay time, the next crossfade starts automatically.

A started crossfade always can be captured with the frontal fader.

### Stop a started crossfade

Use the **PAUSE [F2]** key. The crossfade is stopped until that the user presses the GO or GO-BACK key, or until the user finishes the crossfade with the frontal fader.

### Change the started crossfade direction

To return at the beginning of the started/paused crossfade, press **GO-BACK [F3]**.

The fade times are computed but with inverse direction.

### Jump to a step number

Enter the step number and press **GO-TO [F4]**. The selected step number is located in X2. The step is ready to fade up in stage with the next GO command.

### Jump to a preset number

Enter the preset number and press **GO-X2 [F4]**. The selected preset number is located in X2. The preset is ready to fade up in stage with the next GO command.

**SEQ ⇒ DEL [F6]**

Erases the sequence (all the sequence steps).  
Press **DEL [F6]**, the system needs confirmation:

**Press <DEL> to confirm**

Press **DEL [F6]** again to confirm. Now the sequence is empty. The system informs us:

**Sequence erased correctly**

## TECHNICAL SERVICE

Externally, we can clean this unit with a cloth wetted with water.

If the equipment is working in ambient especially "dirty" (powder, confetti, smoke...), is recommended to eliminate the accumulated dirt on the circuits printed through aspiration, at least, 1 time per year.

- Disconnect the DAC Plus.
- Disconnect the cables of input/output signals.
- Remove the upper cover from the equipment.
- Aspire (or to eliminate through air to pressure) the visible dirt.

Fuses change. The DAC Plus has a fuses hole with external access that contains 2 fuses of 1 A/250V type F:

- Disconnect the DAC Plus.
- Open the fuses hole, integrated in the IEC base, with help of a small screwdriver.
- Substitute the broken fuse by one new. (If it does not have a new fusible, use the second fusible. Replace this fuse as soon as possible).

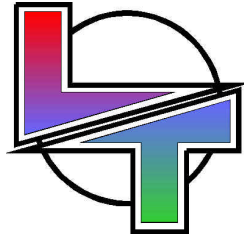
To prevent electrical shocks don't open the unit. Contact with personal qualified:

### POINTS OF SERVICE:

<b>MADRID</b> <b>BEN-RI Electrónica S.A.</b>	C/ Matilde Hernández Nº 31- 3ºC Edificio JAEN 28019 MADRID Tel: (91) 472 06 66
<b>ZARAGOZA</b> <b>BEN-RI Electrónica S.A.</b>	Pol. Ind. Malpica-Alfinden C/ Los Almendros, 61 50171 - La Puebla de Alfinden -ZARAGOZA Tel: (976) 10 89 59

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Specifications can be changed without previous notice.