ROBERT JULIAT

USER'S MANUAL

VERSION 1 - 2

USITT DMX 512 ACCORDED
WIRING DATA

EDITION : 02/01/07
DN40729601

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1. OVERVIEW

DIGI 6 is a 6-channel dimmer, entirely digital. It can recognize a digital order in **DMX 512** or **AVAB** protocols. Each time the unit is switched on, and each time an in-series connection is made, the protocol is tested and recognised.

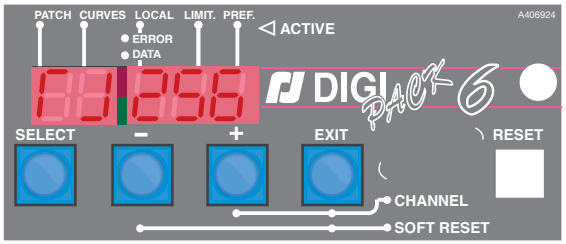
DIGI 6 accepts analog **0/+10V** and local controls. The output level is determined by the highest input level (Highest level takes over), and according to the curves which have been assigned to the channels.

DIGI 6 is designed for either one-phase or three-phase A.C. Voltage. The unit will need a frequency maintained between 45.5 to 64 Hz. It is strongly recommended that the network supply maintains constant this frequency. Read with care relevant technical sheets for additional information concerning electrical connections and dimmer output.

DIGI 6 can also :
- receive various parameters (first channel, curves)
- receive local input levels
- display input levels
- display information which facilitates optional functioning.

All these functions are performed by the **DIGI 6** in addition to real time light control. The user interacts with the unit through use of the keyboard and display.

The keyboard consists of 4 function keys and a **RESET** key. A LED display offers 5 elements of seven segments. The keyboard and display are conveniently located on the front board. On this mini instrument panel are found 2 LEDS - one green "**DATA ON**" LED, and one red "**ERROR**" LED.



Les pas DMX / *DMX steps*	Décimal (%)	Héxadecimal
192	75	C0
193	75	C1
194	76	C2
195	76	C3
196	76	C4
197	77	C5
198	77	C6
199	78	C7
200	78	C8
201	78	C9
202	79	CA
203	79	Cb
204	80	CC
205	80	Cd
206	80	CE
207	81	CF
208	81	d0
209	81	d1
210	82	d2
211	82	d3
212	83	d4
213	83	d5
214	83	d6
215	84	d7
216	84	d8
217	85	d9
218	85	dA
219	85	db
220	86	dC
221	86	dd
222	87	dE
223	87	dF

Les pas DMX / *DMX steps*	Décimal (%)	Héxadecimal
224	87	E0
225	88	E1
226	88	E2
227	89	E3
228	89	E4
229	89	E5
230	90	E6
231	90	E7
232	90	E8
233	91	E9
234	91	EA
235	92	Eb
236	92	EC
237	92	Ed
238	93	EE
239	93	EF
240	94	F0
241	94	F1
242	94	F2
243	95	F3
244	95	F4
245	96	F5
246	96	F6
247	96	F7
248	97	F8
249	97	F9
250	98	FA
251	98	Fb
252	98	FC
253	99	Fd
254	99	FE
255	FF (100%)	FF

Les pas DMX / *DMX steps*	Décimal (%)	Héxadecimal
128	50	80
129	50	81
130	50	82
131	51	83
132	51	84
133	52	85
134	52	86
135	52	87
136	53	88
137	53	89
138	54	8A
139	54	8b
140	54	8C
141	55	8d
142	55	8E
143	56	8F
144	56	90
145	56	91
146	57	92
147	57	93
148	58	94
149	58	95
150	58	96
151	59	97
152	59	98
153	60	99
154	60	9A
155	60	9b
156	61	9C
157	61	9d
158	61	9E
159	62	9F

Les pas DMX / *DMX steps*	Décimal (%)	Héxadecimal
160	62	A0
161	63	A1
162	63	A2
163	63	A3
164	64	A4
165	64	A5
166	65	A6
167	65	A7
168	65	A8
169	66	A9
170	66	AA
171	67	Ab
172	67	AC
173	67	Ad
174	68	AE
175	68	AF
176	69	b0
177	69	b1
178	69	b2
179	70	b3
180	70	b4
181	70	b5
182	71	b6
183	71	b7
184	72	b8
185	72	b9
186	72	bA
187	73	bb
188	73	bC
189	74	bd
190	74	bE
191	74	bF

2. GETTING STARTED

Each orders are stopped for a few seconds when the unit is switched on, or after each push on the **RESET** key. Then, local and analog (if any) orders are recognized and executed.
After recognition of protocol, digital orders are executed.

Meanwhile, two messages quickly follow each other on the display:
- The message "**Lx-xx**" ; "**x-xx**" represents the program version in **EPROM**.
- The "**rJxxx**" message, remains on display. "**xxx**" represents the number assigned to the first channel.

The following reference manual will help you access the many optional features of **DIGI 6**. To obtain maximum performance, we advise you to read the following pagraphs while operating **DIGI 6**.

3. USER'S INTERFACE

3.1. ROOT AND GENERAL MENU

As indicated, when switched on, **DIGI 6** displays a "**rJxxx**" message. We shall refer to it as the "**ROOT**", since it starts the dialog between you and the dimmer.

When you press the **SELECT** key for one or more seconds, the display changes. You receive the first item or option in a list of choices. Let us call this list "**MENU**".

There are 8 optional items in the menu program:
- **Circ** : allows the user to assign the first channel number.
- **Courb** : allows the user to assign a curve to each of the six channels.
- **LOCAL** : allows the user to assign local control levels to the channels.
- **Limit** : allows to set a limit on each channel
- **StAGE** : displays external input levels - digital or analog as well as local levels.
- **tESt** : allows assignment in local mode of preprogrammed levels.
- **PrEF** : allows the user to configure several hard/ soft parameters.
- **InFO** : displays information concerning protocol and frequency.

Note: *The seven segments of the displays allow only a limited range of written characters. Thus, the above messages must be a mixture of lower and upper case letters.*

As soon as the first menu option is displayed, you can access sequentially and cyclically all other options, simply by pressing **+** and **-** keys.
Pressing the **EXIT** key will allow reaccess to the "root" display (**rJxxx**). Pressing **SELECT** then allows access to the displayed function.

When one function of the menu is selected, the keys have the following significance:
- **+** and **-** keys allow you to change the displayed level upwards or downwards.
- Pressing **EXIT** for one second allows you to return to the same item in the menu.
- The **SELECT** key allows the user, for certain functions, to modify the selected item; for example - to choose a channel between 1 and 6.
- Combining **EXIT** and **-** allows you to reset the parameters.
- Combining **EXIT** and **+** allows you to display the channel number.
(Please refer to the following text for further detail.)

Note: *For comfort of utilization, some fonctions are delayed: initial entry into the menu, exit from any function with the EXIT key, and the parameter reset.*

3.2 OPTIONS MENU

3.2.1 CHANNEL OPTION

The menu "**Circ**" represents the option channel, which allows the user to select the digital assignment of the first channel. Once selected, the dimming unit recognizes which information coming from a lightboard will be considered for the first channel, as well as the following ones. For example, if the number chosen for the first channel is **126**, the six channels in the dimming unit will be assigned the following numbers in sequence : **126, 127, 128, 129, 130, 131.**

To change the number of the first channel, the syntax is as follows:
When "Circ" displays (the first item in the menu), press the **SELECT** key. The display shows **d1** (for the first channel), followed by the channel number selected for the first channel (1, 2 or 3 digits). Keys **+** or **-** allow modification, up or down, of the number of the first channel. The modification proceeds step by step, by successively pressing the keys **+** or **-**, or by continuous pressure of either. In using continuous pressure, the digit changes slowly to begin with, then increases in rapidity. You can also combine the two techniques to obtain the desired number quickly. The values follow each other in a cyclical manner ; #**1** preceded by the largest channel number assignable - **512** in **DMX**, **256** in **AVAB** - which in turn is followed by #**1.** With the patch on, each channel can be set independently.
Once the number of the first channel is chosen, you may press **EXIT** to go back to the Menu.

Note: *The channel numbers above DATA size (>256 AVAB, >512 DMX) will not be decoded by the unit.*

Les pas DMX / *DMX steps*	Décimal (%)	Héxadecimal
64	25	40
65	25	41
66	25	42
67	26	43
68	26	44
69	27	45
70	27	46
71	27	47
72	28	48
73	28	49
74	29	4A
75	29	4b
76	29	4C
77	30	4d
78	30	4E
79	30	4F
80	31	50
81	31	51
82	32	52
83	32	53
84	32	54
85	33	55
86	33	56
87	34	57
88	34	58
89	34	59
90	35	5A
91	35	5b
92	36	5C
93	36	5d
94	36	5E
95	37	5F

Les pas DMX / *DMX steps*	Décimal (%)	Héxadecimal
96	37	60
97	38	61
98	38	62
99	38	63
100	39	64
101	39	65
102	40	66
103	40	67
104	40	68
105	41	69
106	41	6A
107	41	6b
108	42	6C
109	42	6d
110	43	6E
111	43	6F
112	43	70
113	44	71
114	44	72
115	45	73
116	45	74
117	45	75
118	46	76
119	46	77
120	47	78
121	47	79
122	47	7A
123	48	7b
124	48	7C
125	49	7d
126	49	7E
127	49	7F

Les pas DMX / *DMX steps*	Décimal (%)	Héxadecimal
0	0	00
1	0	01
2	0	02
3	1	03
4	1	04
5	1	05
6	2	06
7	2	07
8	3	08
9	3	09
10	3	0A
11	4	0b
12	4	0C
13	5	0d
14	5	0E
15	5	0F
16	6	10
17	6	11
18	7	12
19	7	13
20	7	14
21	8	15
22	8	16
23	9	17
24	9	18
25	9	19
26	10	1A
27	10	1b
28	10	1C
29	11	1d
30	11	1E
31	12	1F

Les pas DMX / *DMX steps*	Décimal (%)	Héxadecimal
32	12	20
33	12	21
34	13	22
35	13	23
36	14	24
37	14	25
38	14	26
39	15	27
40	15	28
41	16	29
42	16	2A
43	16	2b
44	17	2C
45	17	2d
46	18	2E
47	18	2F
48	18	30
49	19	31
50	19	32
51	20	33
52	20	34
53	20	35
54	21	36
55	21	37
56	21	38
57	22	39
58	22	3A
59	23	3b
60	23	3C
61	23	3d
62	24	3E
63	24	3F

3.2.2 CURVES OPTION

This option, symbolized by "**Courb**" (Curves) in the menu, makes possible the assignment of an incoming/outcoming curve to each channel. To do this, the following syntax is used :
Press the **SELECT** key. The display will show "**C1**" (for the first channel), followed by one of the following symbols:
- **linL** : Linear Light curve.
- **lint** : Linear Voltage curve.
- **FLU** : Fluorescence curve.
- **rEL** : Static Relay.

Pressing **+** and **-** will cyclically display the five curves. When the desired curve is selected, press **SELECT** to access the next channel. After the last channel (**C6**), **C1** reappears. It is always possible to return to the menu by pressing **EXIT** (for one or more seconds).

In assigning a curve, keys **+** and **-** must be pressed step by step.

Once a channel is assigned a curve which is not the default Linear Light curve, the small red dot on the second of five displays begins to blink. Otherwise, if all the curves are the Linear Light type, the blinking dot is extinguished. This function is called **CURVES ACTIVE**.
It is always visible on the menu.

3.2.3 LOCAL OPTION

This option, symbolized by "**LOCAL**" on the menu, makes assignment of local level orders between 0% and 100% to each channel possible. Press SELECT to access this function. The display changes to "**L1**" (for the first channel) followed by "=" and the local channel level, which will be "**0**" for 0%, "**xx**" for an intermediate level and "**FF**" for 100%.
The local level of the channel selected can be modified by using the **+** and **-** keys. At **100%** (**FF**), the **+** key will not modify the local level ; similarly, at **0%** the **-** key is no longer active.
Either key can be pressed step by step, or continuously.

The level orders which are incoming from the lightboard are between 0 and 255. The same display (10% for example) can correspond to different levels (here, 26, 27 or 28).
Thus, individual pressing of the + and - keys, while always inducing a modification of the level order, does not necessarily modify the level displayed.

The "**=**" sign is blinking while the local channel level is below external levels of the same channel. As soon as the local level equals the highest external level (digital or analog), the "**=**" sign stays lit continuously.

Once the desired level is set, press **SELECT** to access the next channel adjustment. After the last channel (**C6**) is set, **C1** appears again. You may always return to the menu by pressing **EXIT**.

Once a local level is greater than **0**, the small red light over the last of the five displays will begin blinking. If, however, all local levels equal **0**, this red light extinguishes. This display function is called "**ACTIVE LOCAL**". It is visible on the root, in the menu, and during all other options.

3.2.4 LIMIT OPTION

The option "**Limit**" allows the setting of a maximum output value for each channel. A channel at 100% is not modified, a channel limited at 0% will have no output value, whatever the order sent to it.
For intermediary values, the limit level chosen will apply to the order received. For instance, a channel limited at 80% dimmed down at 50% will have an output value of 40% (50/100 x 80/100).
Press **SELECT** and the display shows "**li 1 FF**" which means that channel **1** is at **100%** (**FF** for full).
The "**+**" and "**-**" keys enable to change the limit value from 100% to 0%. "**SELECT**" gives access to the channels C1 to C6 (after C6, back to C1) and also to the set up.
You may always return to the menu by pressing **EXIT.** If at least 1 limit value is different from **FF** (Full), the small red dot over the fourth display starts blinking. This feature is called **ACTIVE LIMITATION** and can be found in the various menus.

3.2.5 STAGE OPTION

The option symbolized by "**Stage**" allows viewing of order levels for each channel.
Press **SELECT**, and the display shows "**P1**" for the first channel, followed by two digits which represent the highest external order (digital or analog). After a brief moment, the display changes automatically and indicates the local order level. To differentiate between the external and local order levels, the external order (coming from a lightboard) appears as a "**P**" and the local order as an "**L**" with the "**=**" sign. As long as no keys are pressed, the display flashes alternately between external (**P**) and local level (**L**).
SELECT allows access to channels **C1** to **C6**. After **C6**, **C1** returns, and the search for levels proceeds again. **EXIT** allows return to the menu at any time.

3.2.6 TEST OPTION

The option, represented by "**tESt**" on the menu, allows assignment of local levels which are preset at **50%** for each channel. During the test, this level replaces the existing local level. The light output will of course follow the curve of the channel being tested.
The **SELECT** key allows access to the test function. The display indicates "**t1**" for the first channel, "**=**" for local levels, and "**50**" for the percent. The **50%** local test level actually becomes the commanding level if it is higher than external levels for the same channel.

APPENDIX

CABLAGE DATA XLR 5 / *XLR 5 DATA WIRING*		
PIN	DMX 512	AVAB
1	0v	0v
2	Data -	Data -
3	Data +	Data +
4	-	-
5	-	-

CABLAGE ANALOG 0/+10V.
0/+10. ANALOG WIRING

1 à / *to* 6 : Ch
8 + 9 : 0V.
7 : Non utilisé / *Not used*

3.3.3 Hardware Reset

The hardware reset is obtained by pressing the **RESET** key. It governs the immediate restart function of the **DIGI 6** without changing the parameters and channels' levels in the unit.

3.4 CHANNEL NUMBER DISPLAY

The six channels are always indicated in every option by the numbers **1 to 6.** If you want to remember which number is assigned to which channel, press the **SELECT** and "**+**" keys simultaneously. While pressing the two keys, you will see the **Channel Data Number**. After release of the keys, the display returns to its previous condition.

The Channel Number Display function is active in the **Curves** (Courb), **Limit, Local**, **Test** and **Stage** options.

When **SELECT** is pressed a second time, the second channel is tested, and the first channel returns to its original level. As with all other options, the display returns to channel 1 after channel 6. At any time, pressing **EXIT** allows you to return to the menu, and all local levels return to their previously set levels.

3.2.7 PREFERENCES OPTION

This option allows you to configure several hard/soft parameters. Once a parameter changes from its default value, the 5th LCD dot begins to blink.

Preferencs	Display	Default
Soft start :	St	On
Patch :	P	Off
Booster :	b	Off
Smoothing :	F	On
Display :	n	Decimal
Analog :	An	0/10v

3.2.7.1. Soft start

This option will prevent potential problems created by peaks of current (generated when a whole rig is turned on for instance).

3.2.7.2. Patch

With this function, each channel number can be set independently.

3.2.7.3 Booster

The **BOOSTER** function provides a very reliable wiring; each mobile unit is provided with a circuit for reamplifying the digital signal, in order to preserve the signal quality. The function is implemented in hardware for the mobile units (it is not necessary for units in cabinets).
Press **"+"** or **"-"** to disable (and re-enable) the booster. The default value is **Booster OFF**.

Note: When the units are turned off, the **BOOSTER** function is automatically by-passed.

3.2.7.4 Smoothing
This function was added to perform a better light control by increasing the digital input command resolution from 256 steps to 7500 steps.

3.2.7.5 Number of steps
This function allows you to choose the input level display base: **DEC**imal (100 steps) or **HE**x**D**ecimal (**256** steps). Which is very useful for checking the digital transmission during service operations.

Press **"+"** and **"-"** to make your choice. The default value is decimal. If you choose hexadecimal, the 4th LCD dot will blink. The annexe table gives, for the **256** steps of a digital **DMX** or **AVAB** order, the decimal and hexadecimal display values.

3.2.7.6 Analog input level
This function allows you to choose the input analog level 0/+10V or 0/+5V for a 0% to 100% order.

Press "+" and "-" to make your choice. The default value is decimal. If you choose hexadecimal, the 4th LCD dot will blink.

3.2.8 INFORMATION OPTION

The option "**InFO**" allows you to know the parameters which are recognized by the **DIGI 6**.

3.2.8.1 Protocol
Press **SELECT** to see on the first display either the letter "**D**" or "**A**", or the sign "**-**" followed by "**Pro**", which indicates which protocol has been recognized ; "**D**" for **DMX512** protocol, and "**A**" for **AVAB** protocol. The hyphen "**-**" indicates that no protocol has been recognized, or that the series line is missing or of bad quality.

Information about the presence and quality of the series link is also given by two red and green LEDs in the middle of the display. They illuminate or extinguish according to the series status, regardless of which selection has been chosen in the menu.

The green **DATA** LED blinks if a signal is detected on the data line (even parasites). The red **DATA** LED remains extinguished if the signal respects a known protocol, or if no signal is received. The red LED alights if the signal does not respect the **DMX512** or **AVAB** protocols.

3.2.8.2 Errors
This function specifies the erroneous packet rate for **1000** input packets. The display shows **"ER 000"** for a proper line series.

Press **EXIT** to return to the menu, or press **SELECT** to have access to the frequency function.

3.2.8.3 Frequency
While pushing **SELECT** when series errors are displayed, you have access to the third information option - the frequency option. The frequency is given in the form **xxHx**. Here, "**H**" symbolizes the **Hertz** frequency unit. The dimmer is not designed to act as a frequency meter. Thus, the level displayed is merely an indication of power stability. As always, **EXIT** allows you to leave the option ; **SELECT** allows reaccess to the protocol function.

3.3 RESET

You have several reset possibilities, software or hardware. The software resets concern the **DIGI 6** parameters; the first channel number, the restitution curves, the local orders and the preferences.
The default levels are **1** for the first channel, **Linear Light** for the curves, **0%** for the local levels, booster (for preferences, see tab in the "Preferences" section). Of course, you are free to modify any or all of the parameters. The new levels will be saved (on a static **RAM**) - even when the **DIGI 6** is not operating.
To put parameters back to their default levels, use the following software reset functions.

3.3.1 Full parameter reset
The reset of all parameters (**PARAMETER RESET**) recharges the default values. To do this, you must return to the root (**rJxxx**) by pressing the **EXIT** key once or twice (wait a moment - this key is delayed). Then, press the **EXIT** and "**-**" keys simultaneously, for at least one second. During your reset, the message "**rESEt**" appears on the display, indicating that reset is occuring.
After reset, the display returns to "**rJ1**", and the red light dots remain unlit.

3.3.2 Parameter reset by groups.
The reset of selected parameters is accomplished by choosing an option, and then pressing the **EXIT** and "**-**" keys simultaneously. In the **Circ** option, you return to the number of the first channel, Number **1**. In the curves option (**Courb**), however, all channels return to linear light curve. The reset of local orders can be accomplished in **Local**, **Test**, or **Stage** options. The preferences reset is accomplished in Preferences or Information options.
The local reset is also delayed by about one second. During the reset, the "**rESEt**" message appears on the display, indicating that it is being executed.