



# STORMY STORMY CC

The latest LED technology meets the charm of a classic strobe

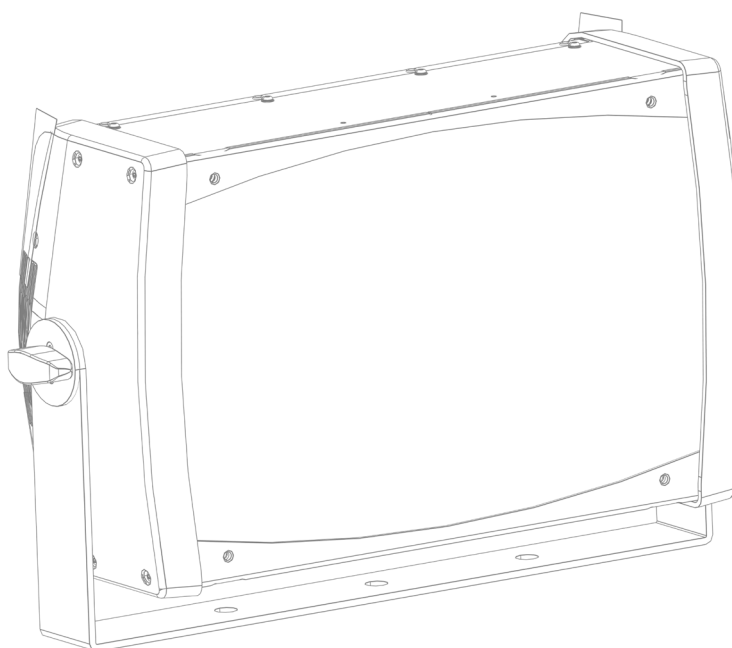


**STORMY C71090**  
**STORMY CC C71091**



## STORMY STORMY CC

The latest LED technology meets the charm of a classic strobe



### **Congratulations on choosing a Clay Paky product!**

We thank you for your choice. Please note that this product and all the others in the rich Clay Paky range, has been designed and manufactured with total quality to ensure excellent performance and best meet your expectations and requirements.



Carefully read this instruction manual and keep in its entirety and keep it safe for future reference.

It is essential to know the information supplied in this manual in order to ensure that the fitting is installed, used and serviced correctly and safely.



CLAY PAKY S.p.A. disclaims all liability for damage to the fitting or to the other property or persons deriving from installation, use and maintenance that have not been carried out in conformity with this instructions manual, which must always accompany the fitting.

CLAY PAKY S.p.A. reserves the right to modify the characteristics stated in this instructions manual at any time and channel list without prior notice.



# STORMY

## STORMY CC

The latest LED technology meets the charm of a classic strobe

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## 1. SAFETY INFORMATION

### • Installation

Make sure all parts for fixing the projector are in a good state of repair. Make sure the point of anchorage is stable before positioning the projector. The safety chain must be properly hooked onto the fitting and secured to the framework, so that, if the primary support system fails, the fitting falls as little as possible. If the safety chain gets used, it needs to be replaced with a genuine spare.



### • Minimum distance of illuminated objects

The projector needs to be positioned so that the objects hit by the beam of light are at least 0.2 metres (8") from the lens of the projector.

### • Minimum distance from flammable materials

The projector must be positioned so that any flammable materials are at least 0.20 metres (8") from every point on the surface of the fitting.



### • Mounting surfaces

It is permissible to mount the fitting on normally flammable surfaces.

$$t_a < 40^\circ\text{C}$$

### • Maximum ambient temperature

Do not use the project if ambient temperature ( $t_a$ ) exceeds 40°C.

### • IP20 protection rating

The protection rating of the fitting is IP20. The meaning of the protection rating is:

IP20

IP 2 0

└ Not protected against dripping water, rain, splashes or jets of water.

└ Protected against penetration by solid bodies of over 12mm (0.47") in diameter.



### • Protection against electrical shock

Connection must be made to a power supply system fitted with efficient earthing (Class I appliance according to standard EN 60598-1). It is, moreover, recommended to protect the supply lines of the projectors from indirect contact and/or shorting to earth by using appropriately sized residual current devices.

### • Connection to the power mains

A qualified electrician must perform connection to the power mains. Check that the mains frequency and voltage correspond to the frequency and voltage for which the projector was designed and indicated on the electrical data label. This label also gives the input power. Refer to the latter to evaluate the maximum number of devices to be connected to the mains to avoid overloads.

$$t_c \leq 100^\circ\text{C}$$

### • External surface temperature

The maximum temperature that can be reached on the external surface of the fitting, in a thermally steady state, is 100°C (212°F).

### • Maintenance

Before starting any maintenance work or cleaning the projector, cut off power from the supply mains. After switching off, do not remove any parts of the fitting for at least 10 minutes. The lenses must be mounted and, if visibly damaged, they have to be replaced with genuine spares.



The products to which this manual refers comply with the following European Directives:

- 2006/95/EC - Safety of electrical equipment supplied at low voltage (LVD)
- 2004/108/EC - Electromagnetic Compatibility (EMC)
- 2011/65/EU - Restriction of the use of certain hazardous substances (RoHS)

## 2. UNPACKING AND PREPARATION

1

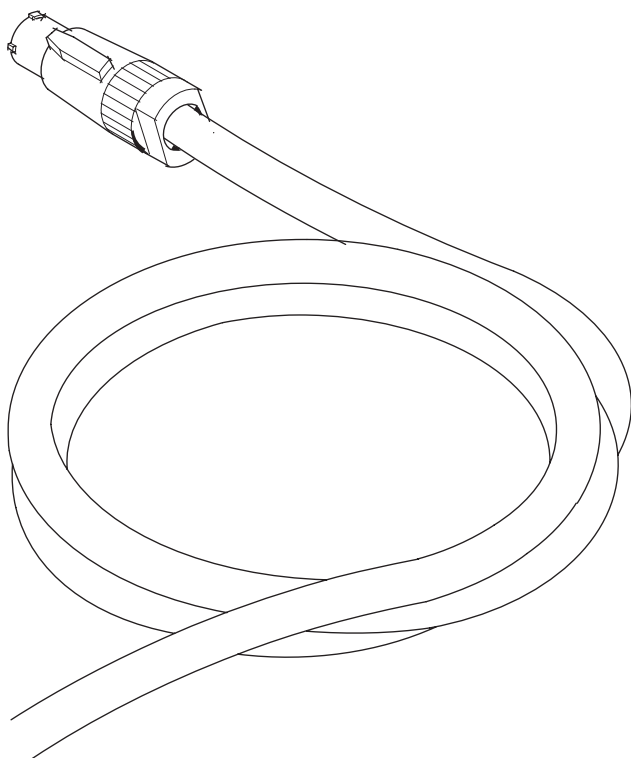


Fig. 1 - Packing content

## 3. INSTALLATION AND START-UP

2

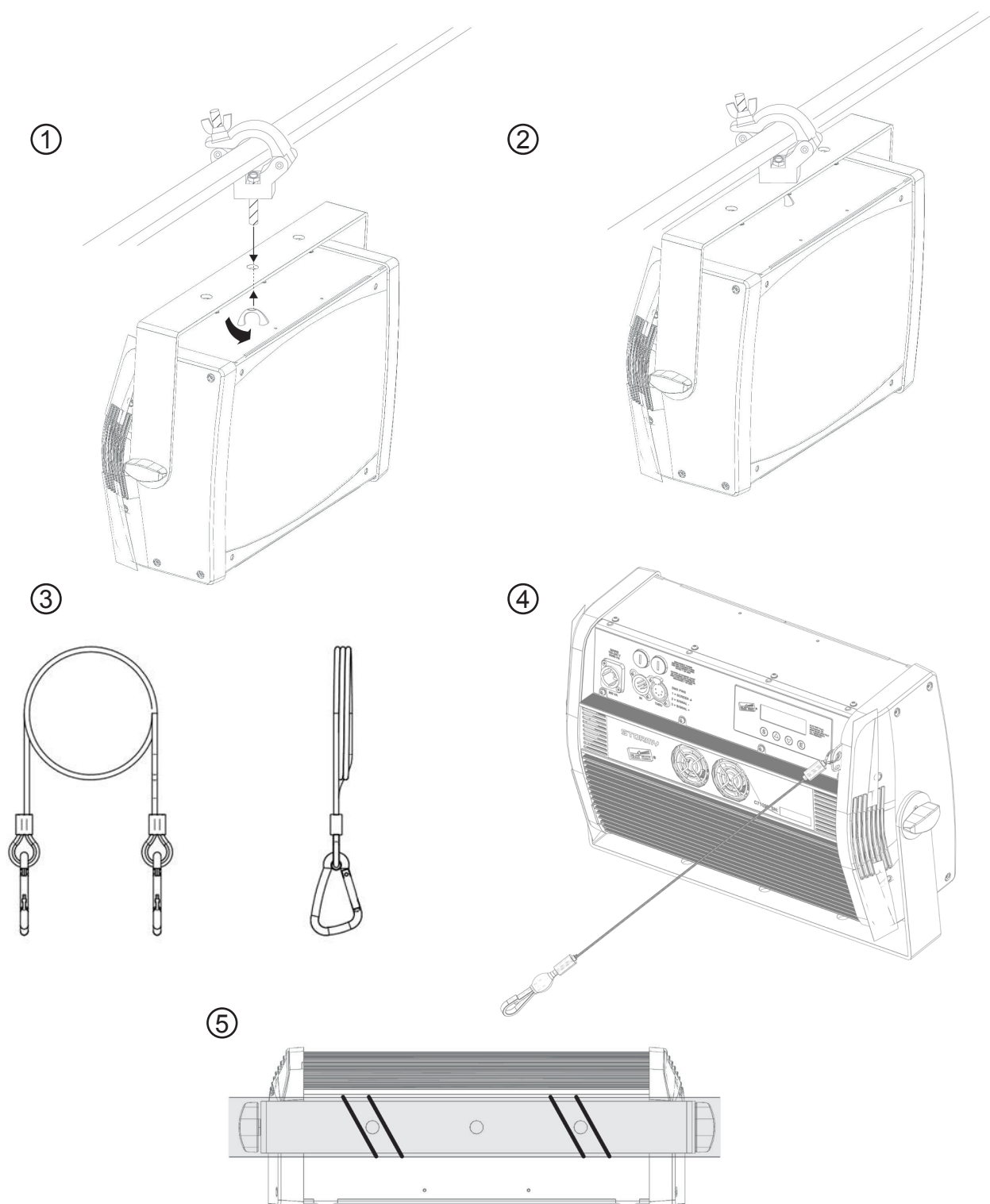


Fig. 2 - Projector installation

The projector can be installed on the floor, on a truss, on the ceiling or wall. **WARNING: the safety chain must be installed except when the projector rests on the floor. (Code 105015/801 available upon request).** This must be secured to the projector support structure and then hooked to the fastening point at the centre of the fixture.

Continued



### 3. INSTALLATION AND START-UP

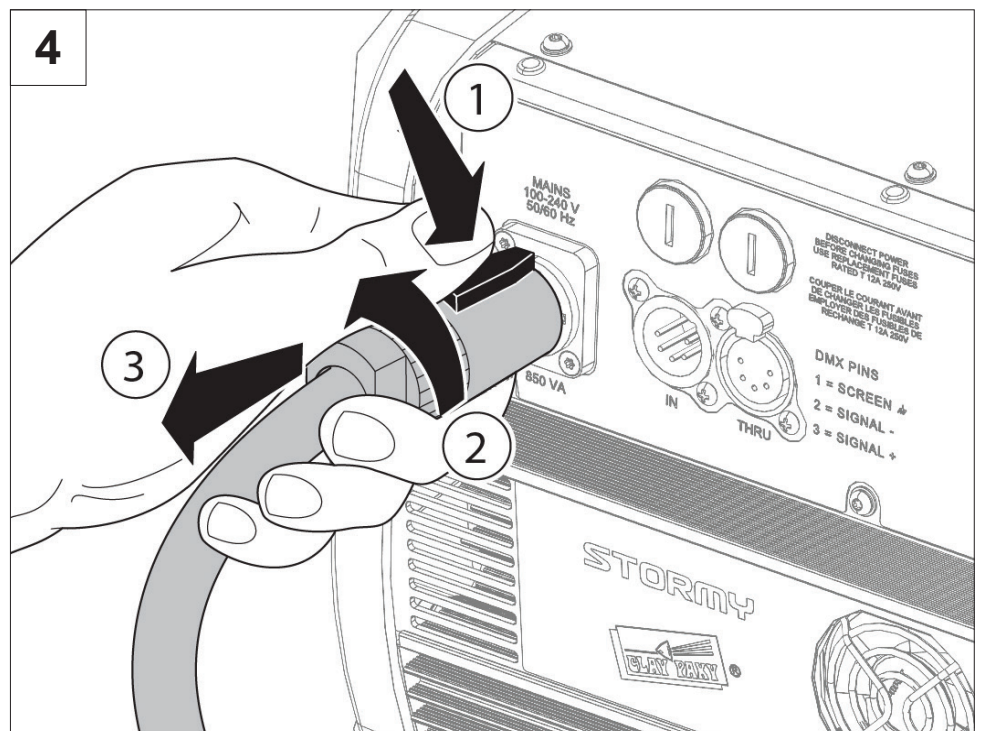
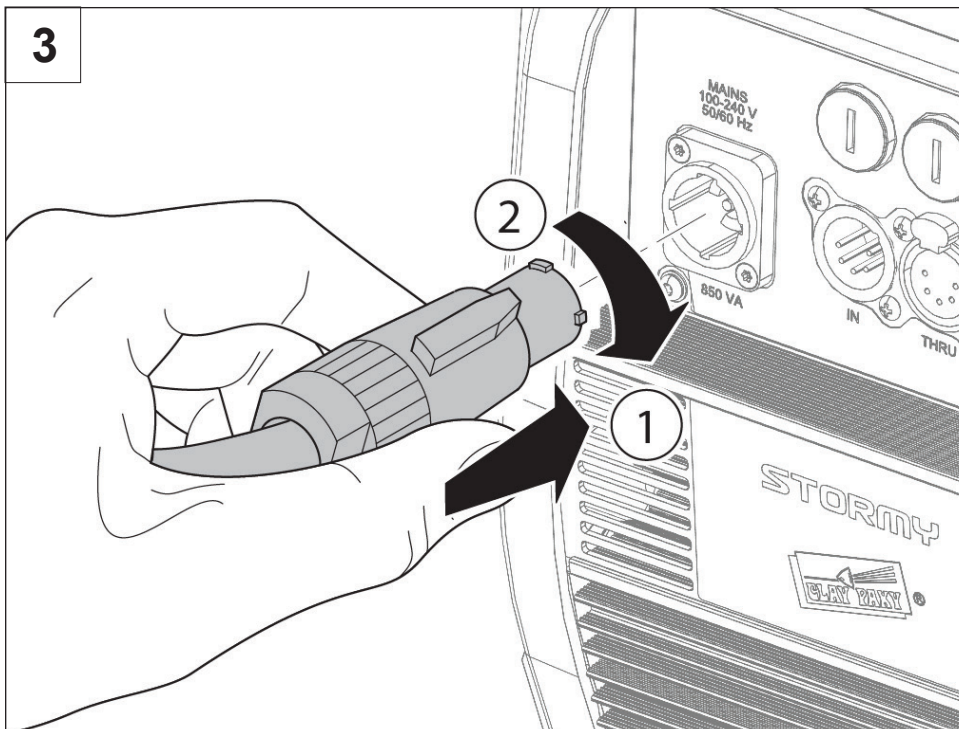
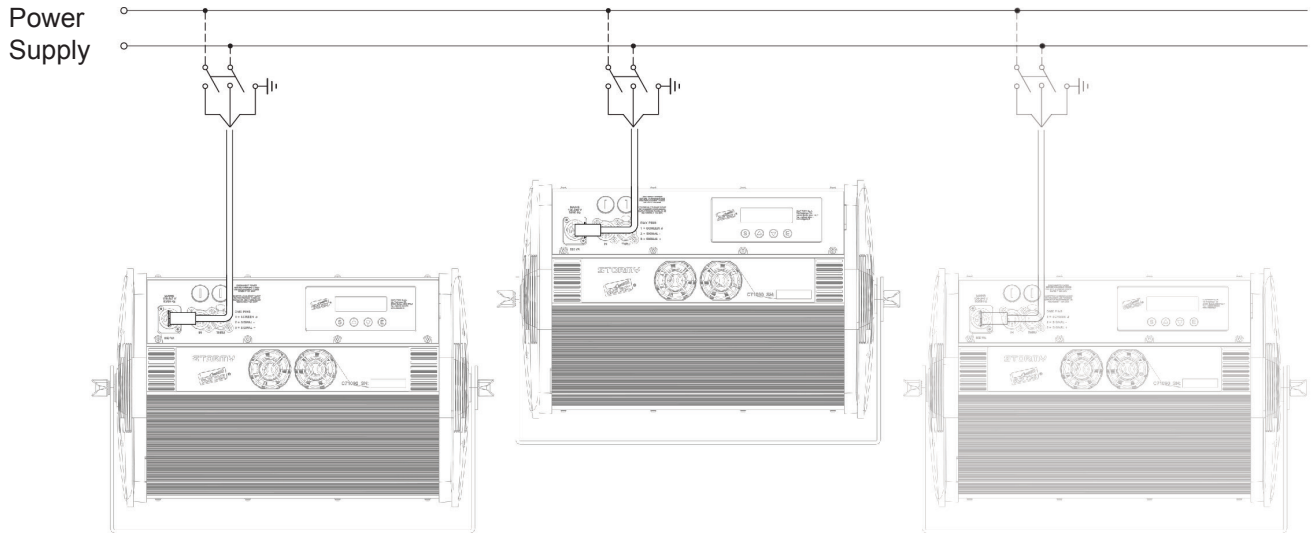


Fig. 3, 4 - Connecting and disconnecting the power cord

## 4. CONTROL PANEL

5



6

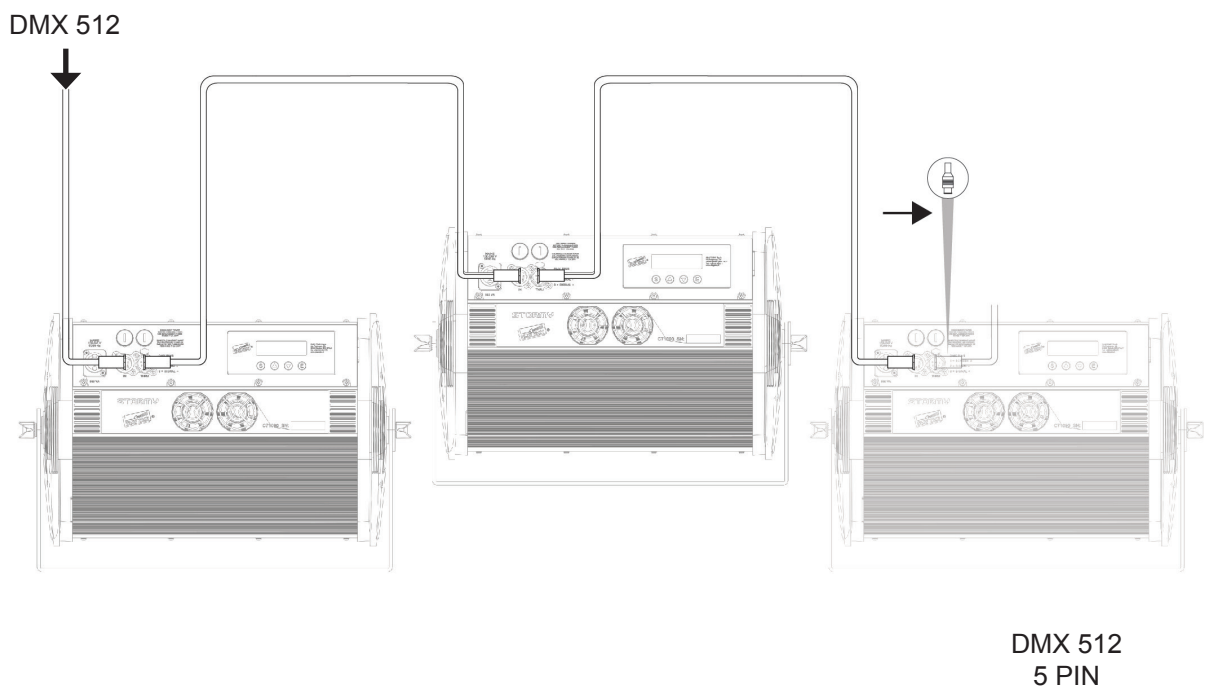


Fig. 5 - Connection to the power mains

Fig. 6 - Connections to the control signal line (DMX)

Use a cable conforming to specifications EIA RS-485: 2-pole twisted, shielded, 120Ω characteristic impedance, 22-24 AWG, low capacity. Do not use microphone cable or other cable with characteristics differing from those specified. End connections must be made using XLR type 3-pin male/female connectors. A terminating plug must be inserted on the last projector with a resistance of 120 (minimum 1/4 W) between terminals 2 and 3.

**IMPORTANT:** The wires must not make contact with each other or with the metal casing of the connectors. The casing must be connected to the shield braid and pin 1 of the connectors.

Continued



## 4. CONTROL PANEL

7



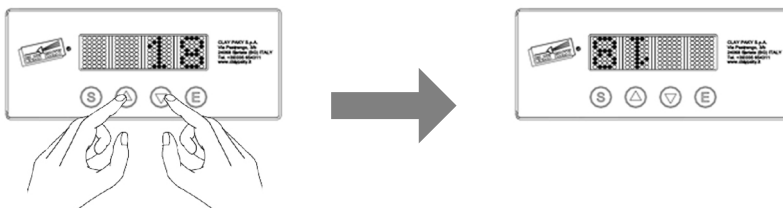
### Menu settings status

If no button is pressed after a wait period (about 60 seconds) → the display automatically returns to idle status. Any modified value that has not yet been confirmed with the **E** key will be cancelled.

### Button functions – Menu SET

|                   |                                                                                                                                                                                                                                                              |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SELECT</b><br> | <ul style="list-style-type: none"> <li>• If pressed in idle status: Cyclically switches between idle status and menu settings.</li> <li>• If pressed while setting a menu: Moves to an upper level without changing anything (exits the function)</li> </ul> |
| <b>DOWN</b><br>   | Decreases the value displayed (with auto-repetitions), or passes to the next item on the menu. For quick access to the minimum parameter value, press the UP key while holding down the DOWN key.                                                            |
| <b>UP</b><br>     | Increases the value displayed (with auto-repetitions), or passes to the previous item on the menu. For quick access to the maximum parameter value, press the DOWN key while holding down the UP key.                                                        |
| <b>ENTER</b><br>  | Confirms the displayed value or activates the displayed function or opens the next menu.                                                                                                                                                                     |

### Display inversion



To activate this function press at the same time UP and DOWN keys while the display is in standby.

The condition is memorized and saved even for the subsequent switching. To return to the initial state repeat the operation again.

Fig. 7 - Switching on the projector

The projector immediately turns on when the power cord is plugged

## 5. MENU SETTING

| Main Menu      | Level 1                 | Level 2                | Level 3             | Choices / Values    |
|----------------|-------------------------|------------------------|---------------------|---------------------|
| SET UP         | DMX Address             |                        |                     | 001 - 512           |
|                | Channel Mode            | Standard<br>Extended   |                     |                     |
|                | Fixture ID              |                        |                     | 001 - 255           |
| OPTION         | Dimmer Curve            | Curve 1<br>Curve 2     |                     |                     |
|                | Minimum Ton Value       |                        |                     | 000-255             |
|                | LED mode                | Row<br>Balance         |                     |                     |
|                | Silent Mode             | Standard<br>Quiet      |                     |                     |
|                | Display                 |                        |                     | On / Off            |
|                | Settings                | Default preset         | Reset to default    | Yes / No            |
|                |                         | User preset 1          | Load preset 1       | Yes / No            |
|                |                         |                        | Save to preset 1    | Yes / No            |
|                |                         | User preset 2          | Load preset 2       | Yes / No            |
|                |                         |                        | Save to preset 2    | Yes / No            |
|                |                         | User preset 3          | Load preset 3       | Yes / No            |
|                |                         |                        | Save to preset 3    | Yes / No            |
| INFORMATION    | System Version          | Strobe firmware        |                     |                     |
|                |                         | Boot firmware          |                     |                     |
|                |                         | Driver firmware        |                     |                     |
|                |                         | CPU board              |                     |                     |
|                |                         | CPU SN                 |                     |                     |
|                | Driver diagnostics      | LED Temperature        | Current             |                     |
|                |                         |                        | Maximum             |                     |
|                |                         |                        | Minimum             |                     |
|                |                         | Driver Temperature     | Current             |                     |
|                |                         |                        | Maximum             |                     |
|                |                         |                        | Minimum             |                     |
|                |                         | LED channel            |                     | CH1 - CH4(R-G-B-W)  |
|                | DMX Monitor             | Red                    |                     | 255bit / 0-100%-000 |
|                |                         | Green                  |                     | 255bit / 0-100%-000 |
|                |                         | Blue                   |                     | 255bit / 0-100%-000 |
|                |                         | White                  |                     | 255bit / 0-100%-000 |
|                |                         | Intensity              |                     | 255bit / 0-100%-000 |
|                |                         | Duration               |                     | 255bit / 0-100%-000 |
|                |                         | Rate                   |                     | 255bit / 0-100%-000 |
|                |                         | Macro                  |                     | 255bit / 0-100%-000 |
|                |                         | Blinder                |                     | 255bit / 0-100%-000 |
|                | Fans Monitor            | Power Supply fan speed |                     |                     |
| MANUAL CONTROL | Reset                   |                        |                     | Yes / No            |
|                | Channel                 | Red                    |                     | 255bit / 0-100%-000 |
|                |                         | Green                  |                     | 255bit / 0-100%-000 |
|                |                         | Blue                   |                     | 255bit / 0-100%-000 |
|                |                         | White                  |                     | 255bit / 0-100%-000 |
|                |                         | Intensity              |                     | 255bit / 0-100%-000 |
|                |                         | Duration               |                     | 255bit / 0-100%-000 |
|                |                         | Rate                   |                     | 255bit / 0-100%-000 |
|                |                         | Macro                  |                     | 255bit / 0-100%-000 |
|                |                         | Blinder                |                     | 255bit / 0-100%-000 |
|                |                         | Red                    |                     | 255bit / 0-100%-000 |
| TEST           |                         |                        |                     |                     |
| ADVANCED       | Access Code <u>1234</u> | Firmware uploader      |                     | Yes / No            |
|                |                         | Model SetUp            | Undefined model     |                     |
|                |                         |                        | Stormy<br>Stormy CC |                     |

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## 5.1 SET-UP MENU

### SET UP - DMX ADDRESS

It allows to set DMX address to be assigned to the projector, it's possible to select a DMX address between 1 and 512.

> **NOTE:** : In case of absence of DMX input signal, the displayed projector address flashes.

---

### SET UP - CHANNEL MODE

It allows to set the operation mode of the projector selecting from the following:

|                   |                                                                                      |
|-------------------|--------------------------------------------------------------------------------------|
| • <b>Standard</b> | Max 7 DMX channels occupied for Stormy CC / max 3 DMX channels occupied for Stormy   |
| • <b>Extended</b> | Max 10 DMX channels occupied for Stormy CC / max 6 DMX channels occupied for Stormy. |

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### SET UP – FIXTURE ID

It allows to set a "Fixture ID" to be assigned to the projector, for easier identification of the same projector in an installation. It's possible to select a "Fixture ID" between 1 and 255.

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## 5.2 OPTIONS MENU

### OPTION – DIMMER CURVE

It allows the selection of one of the following two Dimmer curves:

- **Curve 1**
  - **Curve 2**
- 

### OPTION – MINIMUM TON VALUE

It allows the set the minimum "TON" duration of strobe flash under which it's not possible to come down. It's possible to select a value between 0 and 255.

With the "Duration" channel you set the flash duration. At every level of the DMX signal corresponds a duration. The value "Minimum TON value" represents the level of the DMX channel Duration under which the TON value does not change.

---

### OPTION – LED MODE

It allows the selection of one of the following two methods of LEDs management

- |                  |                                                                               |
|------------------|-------------------------------------------------------------------------------|
| • <b>Row</b>     | RGBW channels are independent .                                               |
| • <b>Balance</b> | RGBW components are optimized to have a white color with maximum light output |
- 

### OPTION – SILENT MODE

It allows the selection of one of the following two alternatives:

- |                   |                                                                                                                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • <b>Standard</b> | Maximum fans' speed; therefore maximum noise level and maximum light output of the LEDs.                                                                                                                         |
| • <b>Quiet</b>    | It reduces the fans' speed and, as a consequence, the noise; the maximum brightness of the LEDs. It reduces also subject to decrease according to the conditions of use (ambient temperature, used effect type). |
- 

### OPTIONS - DISPLAY

The enabled DISPLAY option (ON) allows to reduce the display backlight on the machine, after a 30 seconds in standby mode. To restart is enough to press any key. Select OFF to disable this option.

---

### OPTIONS - SETTING

It allows to save in the machine memory 3 different settings of the options menu items and its submenus:

- **User preset 1**
- **User preset 2**
- **User preset 3**
- **Load preset 1, 2 o 3:** It is used to display a previously configuration saved by the user.
- **Save to preset 1, 2 o 3:** It is used to save the current configuration set by the user.

- **Default preset**

It allows to reset to the default values (factory settings) on all the voices of the option menu and of the related submenus

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## 5.3 INFORMATION MENU

### INFORMATION MENU – SYSTEM VERSION

It allows to display the firmware/hardware versions of installed machine components:

|                        |                                |
|------------------------|--------------------------------|
| <b>Strobo firmware</b> | Strobo application firmware    |
| <b>Boot firmware</b>   | Safety software                |
| <b>Driver firmware</b> | Driver application firmware    |
| <b>CPU board</b>       | Hardware revision of CPU Board |
| <b>CPU SN</b>          | Serial number of CPU Board     |

---

### INFORMATION MENU – DRIVER DIAGNOSTIC – LED TEMPERATURE

It allows to display some details about the functionality of the card/cards and LEDs:

|                  |                                          |
|------------------|------------------------------------------|
| • <b>Current</b> | Instantly detected operating temperature |
| • <b>Maximum</b> | Maximum detected temperature             |
| • <b>Minimum</b> | Minimum detected temperature             |

---

### INFORMATION MENU – DRIVER DIAGNOSTIC – DRIVER TEMPERATURE

It allows to view some details about the functionality of the driver card for LED:

|                  |                                          |
|------------------|------------------------------------------|
| • <b>Current</b> | Instantly detected operating temperature |
| • <b>Maximum</b> | Maximum detected temperature             |
| • <b>Minimum</b> | Minimum detected temperature             |

---

### INFORMATION MENU – DRIVER DIAGNOSTIC – LED CHANNEL

It displays the diagnostics from the driver card: for each of the 4 channels a SYSTEM information and a ERROR information is reported (the decoding is specified in the driver's specifications).

---

### INFORMATION MENU – DMX MONITOR

It allows to visualize the DMX input level (in bits or as a percentage) of each channel of the projector (value Between 0 and 255 bit or between 0 and 100%).

---

### INFORMATION MENU – FANS MONITOR

It allows to display the rotation speed (RPM Speed) of the fans installed on the machine.  
PwrSp = Power Supply fans.

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## 5.4 MANUAL CONTROL MENU

### MANUAL CONTROL – **RESET**

It allows to reset the projector's CPU in case of anomalies.

---

### MANUAL CONTROL – **CHANNEL**

It allows to set a value in bit to the channels, from the projector control panel for manual control of each effect without the need of a DMX input signal (values between 0 and 255 bits).

## 5.5 ADVANCED MENU

> **NOTE:** To access to the Advanced menu (only recommended for experienced users), you need to set the access code 1234.

### ADVANCED MENU – **FIRMWARE UPLOAD**

It allows to transfer the firmware from one projector to the others connected to it.

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### ADVANCED MENU – **MODEL SETUP**

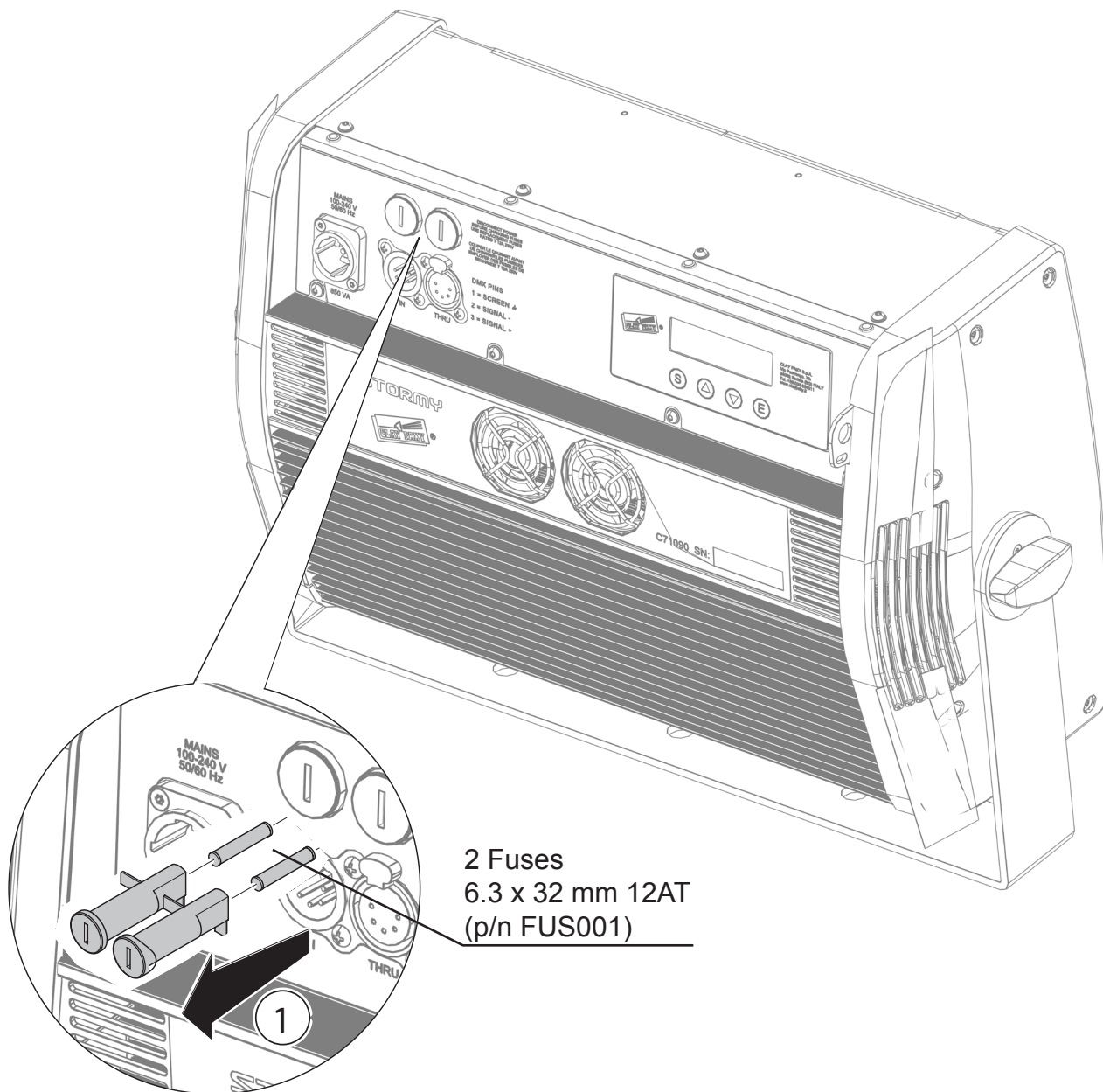
It allows to change the projector's model set, selecting among the available:

- **Undefined**
- **Stormy**
- **Stormy CC**



## 6. MAINTENANCE

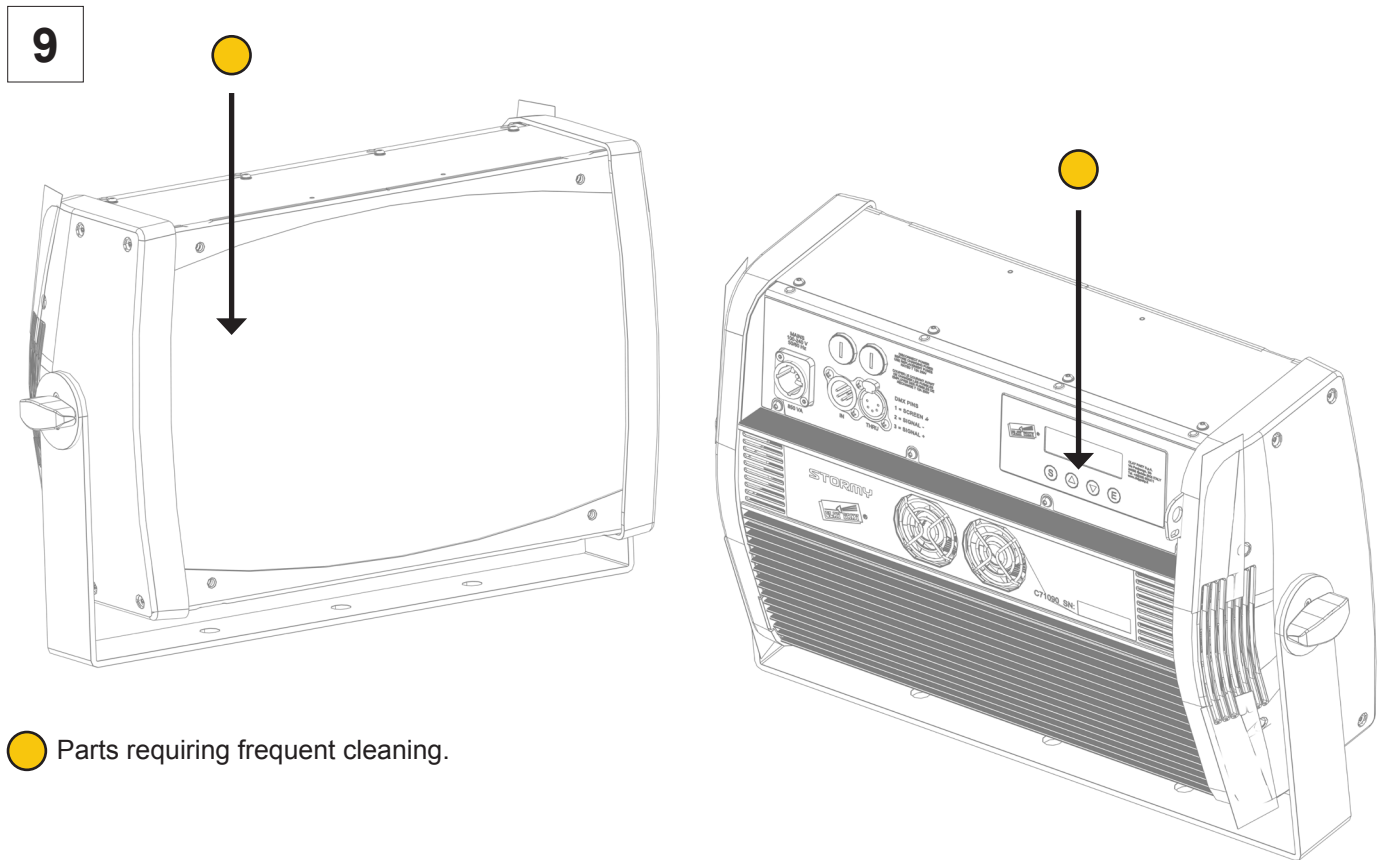
8



**Fig. 8 - Fuses replacing**

Each product has 2 fuses associated with the main power cord connection.

## 6. MAINTENANCE



**Fig. 9 - Periodic cleaning**

To ensure optimal operation and performance for a long time it is essential to periodically clean the parts subject to dust and grease deposits. The frequency with which the following operations are to be carried out depends on various factors such as wear and the work environment quality (air humidity, dust, salinity, etc.). To remove dirt from external parts, use a soft cloth dampened with any liquid glass cleaning detergent.

It is recommended that the projector undergoes an annual service by a qualified technician for special maintenance involving at least the following operations:

- General cleaning of internal parts.
- General visual check of internal parts, cabling, mechanical parts, etc.
- Electrical, photometric and functional checks; eventual repairs.

### **IMPORTANT: Cleaning transparent cover**

Only use neutral soap and water to clean the transparent cover then dry it carefully with a soft, non-abrasive cloth. (WARNING: the use of alcohol or any other detergent could damage the transparent cover.)

## 7. ACCESSORIES

10

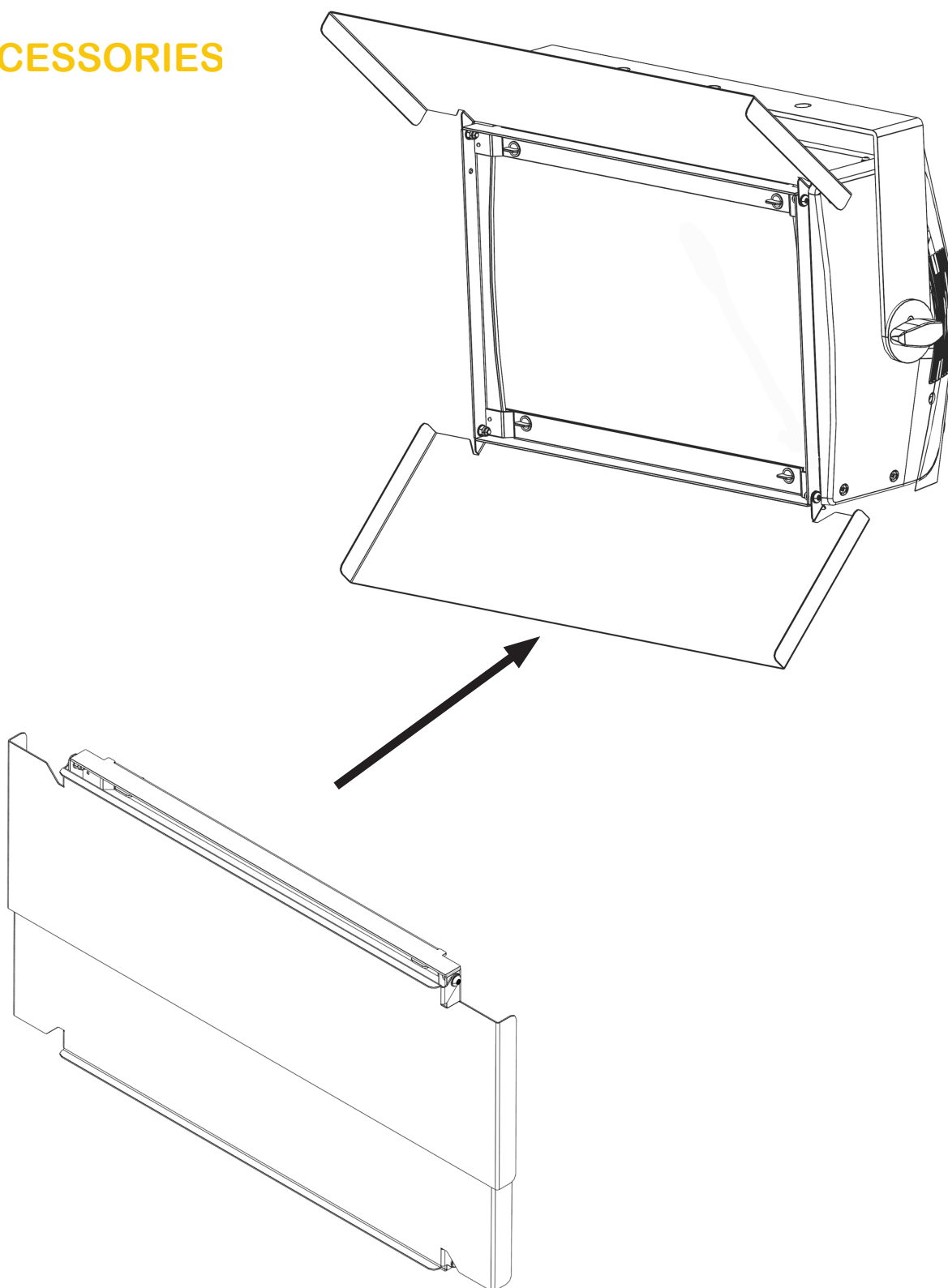
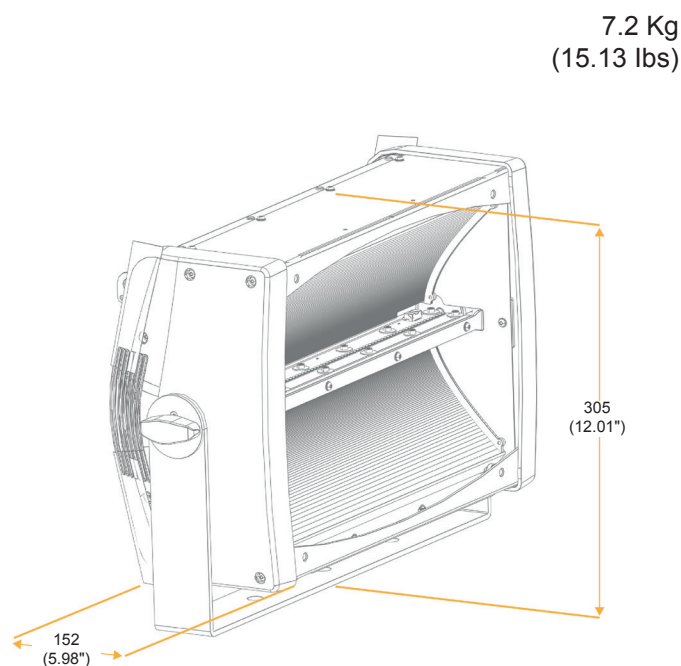
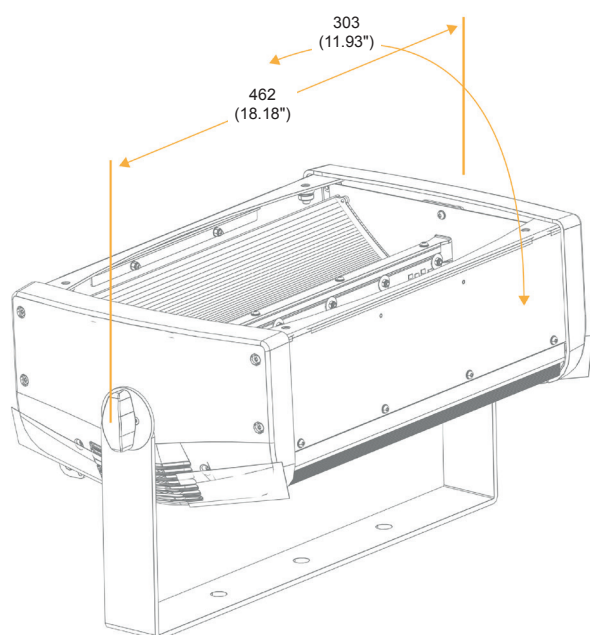


Fig. 10 - Bandoors - C71116

## 8. TECHNICAL DATA

|                              |                                                                                                                                          |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Led color temperature</b> | 5700K                                                                                                                                    |
| <b>Cooling</b>               | Forced ventilation with axial fans.                                                                                                      |
| <b>User interface</b>        | - LCD display 3 lines<br>- 4 Membrane buttons                                                                                            |
| <b>Connection</b>            | - AC power input/output: Neutrik PowerCon<br>- DMX data in/out: 5-pin locking XLR                                                        |
| <b>External power</b>        | Full range 100-240V 50-60Hz, PowerCon connector                                                                                          |
| <b>Input Power</b>           | 850 VA                                                                                                                                   |
| <b>Body</b>                  | - Body extruded in black anodized aluminium                                                                                              |
| <b>Weight</b>                | 7.2 Kg (15.13 lbs)                                                                                                                       |
| <b>Protection rating</b>     | IP20                                                                                                                                     |
| <b>Working position</b>      | Work in any position                                                                                                                     |
| <b>CE Marking</b>            | <b>CE Marking</b><br>Complies with the following European Directives<br>- 2006/95/EC (LVD)<br>- 2004/108/EC (EMC)<br>- 2011/65/EU (RoHS) |



## 9. 1/A CHANNEL LIST \_ STORMY

| CHANNEL | CHANNEL MODE |           |
|---------|--------------|-----------|
|         | STANDARD     | EXTENDED  |
| 1       | INTENSITY    | INTENSITY |
| 2       | DURATION     | DURATION  |
| 3       | RATE         | RATE      |
| 4       | -            | MACRO     |
| 5       | -            | SPEED     |
| 6       | -            | OFFSET    |

## 9.2/A CHANNEL FUNCTION \_ STORMY

| Channel Mode |          | DMX Value      | Function                                                                                                                                                                                                                                                                                                                                            |
|--------------|----------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard     | Extended |                |                                                                                                                                                                                                                                                                                                                                                     |
| 1            | 1        |                | <b>INTENSITY</b>                                                                                                                                                                                                                                                                                                                                    |
|              |          | <b>0 - 255</b> | Light output linearly increases from off to maximum brightness                                                                                                                                                                                                                                                                                      |
| 2            | 2        |                | <b>DURATION</b>                                                                                                                                                                                                                                                                                                                                     |
|              |          | <b>0 - 255</b> | Light time (versus dark time) linearly increases from shorter time (2.5msec) to longer time (650msec)<br><i>See details in a following dedicated table.</i><br><b>IMPORTANT:</b><br>Duration Time must be lower than Rate Time (Period) for flashing.<br>If Duration Time is equal or greater than Rate Time (Period) the light is continuously on. |
| 3            | 3        |                | <b>RATE</b>                                                                                                                                                                                                                                                                                                                                         |
|              |          | <b>0 - 5</b>   | Light OFF                                                                                                                                                                                                                                                                                                                                           |
|              |          | <b>6 - 255</b> | Flashing at linearly variable frequency from low: (~0.3 flashes/sec or 1 flash every period of 3.5sec) to high (25 flashes/sec or 1°flash every period of 40msec)<br><i>See details in a following dedicated table.</i>                                                                                                                             |
| -            | 4        |                | <b>MACRO</b>                                                                                                                                                                                                                                                                                                                                        |
| -            | 5        |                | <b>SPEED</b>                                                                                                                                                                                                                                                                                                                                        |
| -            | 6        |                | <b>OFFSET</b>                                                                                                                                                                                                                                                                                                                                       |

## 9. 1/B CHANNEL LIST \_ STORMY CC

| CHANNEL | CHANNEL MODE |           |             |
|---------|--------------|-----------|-------------|
|         | STANDARD     | EXTENDED  | INDEPENDENT |
| 1       | RED          | RED       | RED         |
| 2       | GREEN        | GREEN     | DURATION    |
| 3       | BLUE         | BLUE      | RATE        |
| 4       | WHITE        | WHITE     | GREEN       |
| 5       | INTENSITY    | INTENSITY | DURATION    |
| 6       | DURATION     | DURATION  | RATE        |
| 7       | RATE         | RATE      | BLUE        |
| 8       | -            | MACRO     | DURATION    |
| 9       | -            | SPEED     | RATE        |
| 10      | -            | OFFSET    | WHITE       |
| 11      | -            | -         | DURATION    |
| 12      | -            | -         | RATE        |
| 13      | -            | -         | INTENSITY   |
| 14      | -            | -         | MASK        |

## 9.2/B CHANNEL FUNCTION \_ STORMY CC

| Channel mode |          | DMX Value | Function                                                                                                                                                                                                                                                                                                                                         |
|--------------|----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard     | Extended |           |                                                                                                                                                                                                                                                                                                                                                  |
| 1            | 1        |           | <b>RED</b>                                                                                                                                                                                                                                                                                                                                       |
|              |          | 0 - 255   | Red colour linearly increases from no-light to maximum intensity                                                                                                                                                                                                                                                                                 |
| 2            | 2        |           | <b>GREEN</b>                                                                                                                                                                                                                                                                                                                                     |
|              |          | 0 - 255   | Green colour linearly increases from no-light to maximum intensity                                                                                                                                                                                                                                                                               |
| 3            | 3        |           | <b>BLUE</b>                                                                                                                                                                                                                                                                                                                                      |
|              |          | 0 - 255   | Blue colour linearly increases from no-light to maximum intensity                                                                                                                                                                                                                                                                                |
| 4            | 4        |           | <b>WHITE</b>                                                                                                                                                                                                                                                                                                                                     |
|              |          | 0 - 255   | White colour linearly increases from no-light to maximum intensity                                                                                                                                                                                                                                                                               |
| 5            | 5        |           | <b>INTENSITY</b>                                                                                                                                                                                                                                                                                                                                 |
|              |          | 0 - 255   | Light output linearly increases from off to maximum brightness                                                                                                                                                                                                                                                                                   |
| 6            | 6        |           | <b>DURATION</b>                                                                                                                                                                                                                                                                                                                                  |
|              |          | 0 - 255   | Light time (versus dark time) linearly increases from shorter time (2.5msec) to longer time (650msec)<br><i>See details in a following dedicated table.</i><br><b>IMPORTANT:</b><br>Duration Time must be lower than Rate Time (Period) for flashing. If Duration Time is equal or greater than Rate Time (Period) the light is continuously on. |
| 7            | 7        |           | <b>RATE</b>                                                                                                                                                                                                                                                                                                                                      |
|              |          | 0 - 5     | Light OFF                                                                                                                                                                                                                                                                                                                                        |
|              |          | 6 - 255   | Flashing at linearly variable frequency<br>from low: (~0.3 flashes/sec or 1 flash every period of 3.5sec)<br>to high (25 flashes/sec or 1°flash every period of 40msec)<br><i>See details in a following dedicated table.</i>                                                                                                                    |



### 9. 3 DURATION CHANNEL DETAILS

STORMY C71090  
STORMY CC C71091

| DMX level | Time [msec] | DMX level | Time [msec] | DMX level | Time [msec] | DMX level | Time [msec] | DMX level | Time [msec] | DMX level | Time [msec] |
|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
| 0         | 2.50        | 43        | 111.7       | 86        | 220.8       | 129       | 330.0       | 172       | 439.2       | 215       | 548.4       |
| 1         | 5.00        | 44        | 114.2       | 87        | 223.4       | 130       | 332.6       | 173       | 441.7       | 216       | 550.9       |
| 2         | 7.60        | 45        | 116.7       | 88        | 225.9       | 131       | 335.1       | 174       | 444.3       | 217       | 553.5       |
| 3         | 10.10       | 46        | 119.3       | 89        | 228.5       | 132       | 337.6       | 175       | 446.8       | 218       | 556.0       |
| 4         | 12.60       | 47        | 121.8       | 90        | 231.0       | 133       | 340.2       | 176       | 449.4       | 219       | 558.5       |
| 5         | 15.20       | 48        | 124.4       | 91        | 233.5       | 134       | 342.7       | 177       | 451.9       | 220       | 561.1       |
| 6         | 17.70       | 49        | 126.9       | 92        | 236.1       | 135       | 345.3       | 178       | 454.4       | 221       | 563.6       |
| 7         | 20.30       | 50        | 129.4       | 93        | 238.6       | 136       | 347.8       | 179       | 457.0       | 222       | 566.2       |
| 8         | 22.80       | 51        | 132.0       | 94        | 241.2       | 137       | 350.3       | 180       | 459.5       | 223       | 568.7       |
| 9         | 25.30       | 52        | 134.5       | 95        | 243.7       | 138       | 352.9       | 181       | 462.1       | 224       | 571.2       |
| 10        | 27.90       | 53        | 137.1       | 96        | 246.2       | 139       | 355.4       | 182       | 464.6       | 225       | 573.8       |
| 11        | 30.40       | 54        | 139.6       | 97        | 248.8       | 140       | 358.0       | 183       | 467.1       | 226       | 576.3       |
| 12        | 33.00       | 55        | 142.1       | 98        | 251.3       | 141       | 360.5       | 184       | 469.7       | 227       | 578.9       |
| 13        | 35.50       | 56        | 144.7       | 99        | 253.9       | 142       | 363.0       | 185       | 472.2       | 228       | 581.4       |
| 14        | 38.00       | 57        | 147.2       | 100       | 256.4       | 143       | 365.6       | 186       | 474.8       | 229       | 583.9       |
| 15        | 40.60       | 58        | 149.8       | 101       | 258.9       | 144       | 368.1       | 187       | 477.3       | 230       | 586.5       |
| 16        | 43.10       | 59        | 152.3       | 102       | 261.5       | 145       | 370.7       | 188       | 479.8       | 231       | 589.0       |
| 17        | 45.70       | 60        | 154.8       | 103       | 264.0       | 146       | 373.2       | 189       | 482.4       | 232       | 591.6       |
| 18        | 48.20       | 61        | 157.4       | 104       | 266.6       | 147       | 375.7       | 190       | 484.9       | 233       | 594.1       |
| 19        | 50.70       | 62        | 159.9       | 105       | 269.1       | 148       | 378.3       | 191       | 487.5       | 234       | 596.6       |
| 20        | 53.30       | 63        | 162.5       | 106       | 271.6       | 149       | 380.8       | 192       | 490.0       | 235       | 599.2       |
| 21        | 55.80       | 64        | 165.0       | 107       | 274.2       | 150       | 383.3       | 193       | 492.5       | 236       | 601.7       |
| 22        | 58.30       | 65        | 167.5       | 108       | 276.7       | 151       | 385.9       | 194       | 495.1       | 237       | 604.2       |
| 23        | 60.90       | 66        | 170.1       | 109       | 279.2       | 152       | 388.4       | 195       | 497.6       | 238       | 606.8       |
| 24        | 63.40       | 67        | 172.6       | 110       | 281.8       | 153       | 391.0       | 196       | 500.1       | 239       | 609.3       |
| 25        | 66.00       | 68        | 175.1       | 111       | 284.3       | 154       | 393.5       | 197       | 502.7       | 240       | 611.9       |
| 26        | 68.50       | 69        | 177.7       | 112       | 286.9       | 155       | 396.0       | 198       | 505.2       | 241       | 614.4       |
| 27        | 71.00       | 70        | 180.2       | 113       | 289.4       | 156       | 398.6       | 199       | 507.8       | 242       | 616.9       |
| 28        | 73.60       | 71        | 182.8       | 114       | 291.9       | 157       | 401.1       | 200       | 510.3       | 243       | 619.5       |
| 29        | 76.10       | 72        | 185.3       | 115       | 294.5       | 158       | 403.7       | 201       | 512.8       | 244       | 622.0       |
| 30        | 78.70       | 73        | 187.8       | 116       | 297.0       | 159       | 406.2       | 202       | 515.4       | 245       | 624.6       |
| 31        | 81.20       | 74        | 190.4       | 117       | 299.6       | 160       | 408.7       | 203       | 517.9       | 246       | 627.1       |
| 32        | 83.70       | 75        | 192.9       | 118       | 302.1       | 161       | 411.3       | 204       | 520.5       | 247       | 629.6       |
| 33        | 86.30       | 76        | 195.5       | 119       | 304.6       | 162       | 413.8       | 205       | 523.0       | 248       | 632.2       |
| 34        | 88.80       | 77        | 198.0       | 120       | 307.2       | 163       | 416.4       | 206       | 525.5       | 249       | 634.7       |
| 35        | 91.40       | 78        | 200.5       | 121       | 309.7       | 164       | 418.9       | 207       | 528.1       | 250       | 637.3       |
| 36        | 93.90       | 79        | 203.1       | 122       | 312.3       | 165       | 421.4       | 208       | 530.6       | 251       | 639.8       |
| 37        | 96.40       | 80        | 205.6       | 123       | 314.8       | 166       | 424.0       | 209       | 533.2       | 252       | 642.3       |
| 38        | 99.00       | 81        | 208.2       | 124       | 317.3       | 167       | 426.5       | 210       | 535.7       | 253       | 644.9       |
| 39        | 101.5       | 82        | 210.7       | 125       | 319.9       | 168       | 429.1       | 211       | 538.2       | 254       | 647.4       |
| 40        | 104.1       | 83        | 213.2       | 126       | 322.4       | 169       | 431.6       | 212       | 540.8       | 255       | 650.0       |
| 41        | 106.6       | 84        | 215.8       | 127       | 325.0       | 170       | 434.1       | 213       | 543.3       |           |             |
| 42        | 109.1       | 85        | 218.3       | 128       | 327.5       | 171       | 436.7       | 214       | 545.8       |           |             |

## 9.4 RATE CHANNEL DETAILS

STORMY C71090  
STORMY CC C71091

| DMX level | Time [msec] | Frequency [flash/sec] | DMX level | Time [msec] | Frequency [flash/sec] | DMX level | Time [msec] | Frequency [flash/sec] |
|-----------|-------------|-----------------------|-----------|-------------|-----------------------|-----------|-------------|-----------------------|
| 0         | -           | 0                     | 43        | 350.0       | 2.86                  | 86        | 168.0       | 5.95                  |
| 1         | -           | 0                     | 44        | 336.0       | 2.98                  | 87        | 166.0       | 6.02                  |
| 2         | -           | 0                     | 45        | 330.0       | 3.03                  | 88        | 164.0       | 6.10                  |
| 3         | -           | 0                     | 46        | 320.0       | 3.13                  | 89        | 162.0       | 6.17                  |
| 4         | -           | 0                     | 47        | 315.0       | 3.17                  | 90        | 160.0       | 6.25                  |
| 5         | -           | 0                     | 48        | 310.0       | 3.23                  | 91        | 158.0       | 6.33                  |
| 6         | 3500        | 0.29                  | 49        | 305.0       | 3.28                  | 92        | 156.0       | 6.41                  |
| 7         | 3500        | 0.29                  | 50        | 300.0       | 3.33                  | 93        | 154.0       | 6.49                  |
| 8         | 2320        | 0.43                  | 51        | 290.0       | 3.45                  | 94        | 152.0       | 6.58                  |
| 9         | 2320        | 0.43                  | 52        | 284.0       | 3.52                  | 95        | 151.0       | 6.62                  |
| 10        | 1760        | 0.57                  | 53        | 280.0       | 3.57                  | 96        | 150.0       | 6.67                  |
| 11        | 1760        | 0.57                  | 54        | 275.0       | 3.64                  | 97        | 149.0       | 6.71                  |
| 12        | 1400        | 0.71                  | 55        | 270.0       | 3.70                  | 98        | 148.0       | 6.76                  |
| 13        | 1400        | 0.71                  | 56        | 264.0       | 3.79                  | 99        | 147.0       | 6.80                  |
| 14        | 1160        | 0.86                  | 57        | 255.0       | 3.92                  | 100       | 146.0       | 6.85                  |
| 15        | 1160        | 0.86                  | 58        | 250.0       | 4.00                  | 101       | 145.0       | 6.90                  |
| 16        | 1000        | 1.00                  | 59        | 245.0       | 4.08                  | 102       | 144.0       | 6.94                  |
| 17        | 1000        | 1.00                  | 60        | 240.0       | 4.17                  | 103       | 142.0       | 7.04                  |
| 18        | 880.0       | 1.14                  | 61        | 237.0       | 4.22                  | 104       | 140.0       | 7.14                  |
| 19        | 880.0       | 1.14                  | 62        | 234.0       | 4.27                  | 105       | 138.0       | 7.25                  |
| 20        | 760.0       | 1.32                  | 63        | 231.0       | 4.33                  | 106       | 136.0       | 7.35                  |
| 21        | 740.0       | 1.35                  | 64        | 227.0       | 4.41                  | 107       | 134.0       | 7.46                  |
| 22        | 720.0       | 1.39                  | 65        | 224.0       | 4.46                  | 108       | 132.0       | 7.58                  |
| 23        | 700.0       | 1.43                  | 66        | 220.0       | 4.55                  | 109       | 130.0       | 7.69                  |
| 24        | 640.0       | 1.56                  | 67        | 217.0       | 4.61                  | 110       | 128.0       | 7.81                  |
| 25        | 600.0       | 1.67                  | 68        | 214.0       | 4.67                  | 111       | 127.0       | 7.87                  |
| 26        | 580.0       | 1.72                  | 69        | 211.0       | 4.74                  | 112       | 126.0       | 7.94                  |
| 27        | 570.0       | 1.75                  | 70        | 208.0       | 4.81                  | 113       | 125.0       | 8.00                  |
| 28        | 560.0       | 1.79                  | 71        | 205.0       | 4.88                  | 114       | 124.0       | 8.06                  |
| 29        | 540.0       | 1.85                  | 72        | 200.0       | 5.00                  | 115       | 123.0       | 8.13                  |
| 30        | 500.0       | 2.00                  | 73        | 197.5       | 5.06                  | 116       | 122.0       | 8.20                  |
| 31        | 490.0       | 2.04                  | 74        | 195.0       | 5.13                  | 117       | 121.0       | 8.26                  |
| 32        | 480.0       | 2.08                  | 75        | 192.5       | 5.19                  | 118       | 120.0       | 8.33                  |
| 33        | 460.0       | 2.17                  | 76        | 190.0       | 5.26                  | 119       | 119.0       | 8.40                  |
| 34        | 440.0       | 2.27                  | 77        | 187.5       | 5.33                  | 120       | 118.0       | 8.47                  |
| 35        | 430.0       | 2.33                  | 78        | 185.0       | 5.41                  | 121       | 117.0       | 8.55                  |
| 36        | 420.0       | 2.38                  | 79        | 182.5       | 5.48                  | 122       | 116.0       | 8.62                  |
| 37        | 410.0       | 2.44                  | 80        | 180.0       | 5.56                  | 123       | 115.0       | 8.70                  |
| 38        | 400.0       | 2.50                  | 81        | 178.0       | 5.62                  | 124       | 114.0       | 8.77                  |
| 39        | 390.0       | 2.56                  | 82        | 176.0       | 5.68                  | 125       | 113.0       | 8.85                  |
| 40        | 384.0       | 2.60                  | 83        | 174.0       | 5.75                  | 126       | 112.0       | 8.93                  |
| 41        | 376.0       | 2.66                  | 84        | 172.0       | 5.81                  | 127       | 111.0       | 9.01                  |
| 42        | 360.0       | 2.78                  | 85        | 170.0       | 5.88                  | 128       | 110.0       | 9.09                  |

Continued →

## 9. 4 RATE CHANNEL DETAILS

STORMY C71090  
STORMYCC C71091

| DMX level | Time [msec] | Frequency [flash/sec] | DMX level | Time [msec] | Frequency [flash/sec] | DMX level | Time [msec] | Frequency [flash/sec] |
|-----------|-------------|-----------------------|-----------|-------------|-----------------------|-----------|-------------|-----------------------|
| 129       | 109.0       | 9.17                  | 176       | 80.0        | 12.50                 | 223       | 63.3        | 15.80                 |
| 130       | 110.0       | 9.09                  | 177       | 79.6        | 12.56                 | 224       | 63.0        | 15.87                 |
| 131       | 109.5       | 9.13                  | 178       | 79.2        | 12.63                 | 225       | 62.7        | 15.95                 |
| 132       | 109         | 9.17                  | 179       | 78.8        | 12.69                 | 226       | 62.4        | 16.03                 |
| 133       | 108.5       | 9.22                  | 180       | 78.4        | 12.76                 | 227       | 62.1        | 16.10                 |
| 134       | 108.0       | 9.26                  | 181       | 78.0        | 12.82                 | 228       | 61.8        | 16.18                 |
| 135       | 107.5       | 9.30                  | 182       | 77.6        | 12.89                 | 229       | 61.5        | 16.26                 |
| 136       | 107.0       | 9.35                  | 183       | 77.2        | 12.95                 | 230       | 61.2        | 16.34                 |
| 137       | 106.5       | 9.39                  | 184       | 76.8        | 13.02                 | 231       | 60.9        | 16.42                 |
| 138       | 106.0       | 9.43                  | 185       | 76.4        | 13.09                 | 232       | 60.6        | 16.50                 |
| 139       | 105.5       | 9.48                  | 186       | 76.0        | 13.16                 | 233       | 60.3        | 16.58                 |
| 140       | 105.0       | 9.52                  | 187       | 75.6        | 13.23                 | 234       | 60.0        | 16.67                 |
| 141       | 104.5       | 9.57                  | 188       | 75.2        | 13.30                 | 235       | 59.0        | 16.95                 |
| 142       | 104.0       | 9.62                  | 189       | 74.8        | 13.37                 | 236       | 58.0        | 17.24                 |
| 143       | 103.0       | 9.71                  | 190       | 74.4        | 13.44                 | 237       | 57.0        | 17.54                 |
| 144       | 102.0       | 9.80                  | 191       | 74.0        | 13.51                 | 238       | 56.0        | 17.86                 |
| 145       | 101.0       | 9.90                  | 192       | 73.6        | 13.59                 | 239       | 55.0        | 18.18                 |
| 146       | 100.0       | 10.00                 | 193       | 73.2        | 13.66                 | 240       | 54.0        | 18.52                 |
| 147       | 99.0        | 10.10                 | 194       | 72.8        | 13.74                 | 241       | 53.0        | 18.87                 |
| 148       | 98.0        | 10.20                 | 195       | 72.4        | 13.81                 | 242       | 52.0        | 19.23                 |
| 149       | 97.0        | 10.31                 | 196       | 72.0        | 13.89                 | 243       | 51.0        | 19.61                 |
| 150       | 96.0        | 10.42                 | 197       | 71.6        | 13.97                 | 244       | 50.0        | 20.00                 |
| 151       | 95.0        | 10.53                 | 198       | 71.2        | 14.04                 | 245       | 49.0        | 20.41                 |
| 152       | 94.0        | 10.64                 | 199       | 70.8        | 14.12                 | 246       | 48.0        | 20.83                 |
| 153       | 93.0        | 10.75                 | 200       | 70.4        | 14.20                 | 247       | 47.0        | 21.28                 |
| 154       | 92.0        | 10.87                 | 201       | 70.0        | 14.29                 | 248       | 46.0        | 21.74                 |
| 155       | 91.0        | 10.99                 | 202       | 69.6        | 14.37                 | 249       | 45.0        | 22.22                 |
| 156       | 90.0        | 11.11                 | 203       | 69.2        | 14.45                 | 250       | 44.0        | 22.73                 |
| 157       | 89.5        | 11.17                 | 204       | 69.0        | 14.49                 | 251       | 43.0        | 23.26                 |
| 158       | 89.0        | 11.24                 | 205       | 68.7        | 14.56                 | 252       | 42.0        | 23.81                 |
| 159       | 88.5        | 11.30                 | 206       | 68.4        | 14.62                 | 253       | 41.0        | 24.39                 |
| 160       | 88.0        | 11.36                 | 207       | 68.1        | 14.68                 | 254       | 40.0        | 25.00                 |
| 161       | 87.5        | 11.43                 | 208       | 67.8        | 14.75                 | 255       | 40.0        | 25.00                 |
| 162       | 87.0        | 11.49                 | 209       | 67.5        | 14.81                 |           |             |                       |
| 163       | 86.5        | 11.56                 | 210       | 67.2        | 14.88                 |           |             |                       |
| 164       | 86.0        | 11.63                 | 211       | 66.9        | 14.95                 |           |             |                       |
| 165       | 85.5        | 11.70                 | 212       | 66.6        | 15.02                 |           |             |                       |
| 166       | 85.0        | 11.76                 | 213       | 66.3        | 15.08                 |           |             |                       |
| 167       | 84.5        | 11.83                 | 214       | 66.0        | 15.15                 |           |             |                       |
| 168       | 84.0        | 11.90                 | 215       | 65.7        | 15.22                 |           |             |                       |
| 169       | 83.5        | 11.98                 | 216       | 65.4        | 15.29                 |           |             |                       |
| 170       | 83.0        | 12.05                 | 217       | 65.1        | 15.36                 |           |             |                       |
| 171       | 82.5        | 12.12                 | 218       | 64.8        | 15.43                 |           |             |                       |
| 172       | 82.0        | 12.20                 | 219       | 64.5        | 15.50                 |           |             |                       |
| 173       | 81.5        | 12.27                 | 220       | 64.2        | 15.58                 |           |             |                       |
| 174       | 81.0        | 12.35                 | 221       | 63.9        | 15.65                 |           |             |                       |
| 175       | 80.5        | 12.42                 | 222       | 63.6        | 15.72                 |           |             |                       |

## 10. DURATION time - RATE time (PERIOD) relation

