

# **Anytronics D612**

## **6 Channel 12A/channel**

### **Rack Mounting Dimming / Switching Systems**

#### **Installation and operational guide**

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## **1.0 Introduction**

Anytronics' range of rack mounting dimming and switching packs contains three, six and twelve channel digital dimming and switching power packs housed in 2, 3 and 4 U high rack mounting enclosures. Each product in the range offers up to two DMX inputs, two analogue (0-10v) inputs, preheat and local level control inputs so that each channel is controlled by the highest input level present. Users will appreciate the robust construction, circuit breaker protection, the flexible and comprehensive input and control arrangements and the fully featured, easy to use menu system with bargraphs for each separate input and control.

The switch packs provide economical and reliable zero voltage switching whilst the dimmers provide an individual choice of dimming or zero voltage switching per channel with a wide range of output connection options

### **Key Features of D612**

- 12A/channel dimming or zero voltage switching
- single or three phase working with neutral connected loads
- comprehensive menu system for displaying and editing settings
- one or two DMX512 inputs protected to DMX512A
- XLR and RJ45 DMX connections
- 0, 1 or 2 analogue 0-10V inputs on standard DIN locking connectors
- local level controls, either menu driven or via rotary front panel controls
- preheat control for each channel
- maximum level set for each channel, top set or scaling
- LCD bargraph display for all channel monitor and status indication
- C13 circuit breaker protection on all channels
- Phase indicators
- back panel mounted fuse holder for 'electronics' fuse for ease of access
- programmable DMX failure modes
- proportional cooling fan control
- wide range of output connection regimes available
- output connectors on front panel in 4U high (194 versions)
- output connectors on back panel in 2U high (192 versions)
- optional wall, under/over surface and rack mounting (194 versions)

{References in curly brackets in the text below match the reference letters on the dimmer lid}

## **2.0 Installation**

### **2.1 Mounting Options**

All versions of the packs are designed for mounting in 19" racks. 194 versions (4U high) may also be mounted on walls, or over or under surfaces by removing the detachable ears (three M4 bolts each) and moving them to the required positions to facilitate installation.

However the pack is mounted, ensure that there is ample ventilation at both sides of the pack to provide adequate cooling.

### **2.2 Supply connections**

The dimmer will work on one, two or three phases of a supply with loads connected to neutral. In permanent installations it is advisable to make sure that the power supply is matched to the maximum rating of the dimmer (regardless of initially connected loading) in case other loads are added in due course without considering the supply. For short term installations it may be sufficient just to check that the rating of the supply is matched to the total of the connected load ratings.

The supply cable should be introduced through and secured by the 32mm cable gland {A} provided on the rear of the unit. Since the internal temperatures inside the dimmer can exceed 50°C, the supply cable should be tolerant of high temperatures (eg HOFr type), and have sufficient cross-sectional area of copper to be rated for use at this ambient temperature.

For **three phase** supplies make off the three phases into the DIN rail screw terminals marked L1, L2, L3. Do not fit the supplied bridging bar across these terminals!! The appropriate wire size for the supply cable of a three phase balanced supply would be a minimum of 4mm<sup>2</sup>. In this configuration the output channels are grouped per phase. First third (channels 1-2) to phase 1, second third (3-4) to phase two and third third (5-6) to phase 3.

For **single phase** supplies the supplied bridging bar should be fitted securely across the three terminals L1, L2 and L3 and the Live supply made off into the central terminal L2. The recommended cable size for single phase supplies is 16mm<sup>2</sup>, and the pack must be derated accordingly if using cable of smaller area (eg 57A total for 10mm<sup>2</sup> cable).

For **either** type of supply the incoming neutral is made off centrally into the PCB mounted brass buss bar unless the pack is fitted with a four pole isolator switch or an RCD, in which case there will be a DIN rail mounted screw terminal for this neutral connection.

The earth connection should always be made off centrally into the chassis mounted bus bar.

The control electronics is powered from phase 1 through a 20mm 100mA T fuse which is in a fuse holder {E} on the back panel (192 versions) or on the front panel (194 versions).

### **2.3 Output connections**

Most versions of the dimmer are factory fitted with rear (192) or front (194) panel output sockets for ease of installation, and all connections to these sockets should have been made and tested at the factory.

Versions of the dimmer for 'hard wired' connection to loads provide cable access through 20mm holes in the rear panel. All of the output Earth connections should be made to the chassis mounted brass buss bar. The Neutral and dimmed Live connections for each output channel are made to the labelled screw terminals across the back of the PCB.

The C13 circuit breakers require a total fault loop impedance of less than 2.7ohms in order to achieve a 5 second disconnection time (1.7ohms for 0.2 seconds).

In order to facilitate dimming operation the minimum recommended load for all of these dimmers is 100W of resistive/incandescent load per output circuit.

### **2.4 Input connections**

Detailed pin connections for all input socket options are shown on the equipment lid. All input and control cabling should be routed well away from supply and output cables.

DMX1 inputs are available on the front of 194 units and on the back panel of 192 units. There should be XLR input connectors {B} and two adjacent RJ45 connectors {C} and {D} and internal screw terminal connections with cable access via {F}. Note that RJ45 connector {C} also provides +5V power for powering external equipment such as desks, Anyscene memory units or similar Anytronics products. If linking DMX from dimmer to dimmer using RJ45 cabling, daisy chain connector {C} on one unit to connector {D} on the next, and so on.

DMX2 inputs are via XLR connectors {G} on the rear panel.

Analogue 1 inputs (with a +24V 50mA output for desks) are provided on a locking 8 pin DIN connector {H} on the rear panel.

Analogue 2 inputs are on a similar locking 8 pin DIN connector {I}.

### **3.0 Bargraph menus**

In normal operation the unit powers up with a bargraph display of the output dimming levels. It is possible to move between the different bargraph displays using the two left hand *parameter* +/- buttons. The sequence shown below follows repeat presses on the right hand *parameter* + button.

#### **3.1 Output**

This display shows the actual output levels on a bargraph and allows display of individual channel output values by using the *channel* +/- buttons. A corresponding cursor will move along the bargraph display. This numeric display shows the true output levels including the effects of preheat, switching/dimming curves, maximum level setting etc, whilst all the other bargraph displays show the raw input data values before any such processing.

Note that the *edit* and *value* buttons do nothing, but that it is possible to enter the system menu by pressing both *parameter* + and - buttons together. (see section 4 below)

#### **3.2 Dimming/Switching**

The display shows d for dimming or S for switching on a bargraph style display. Individual channel settings can be displayed or edited by using the *channel* +/- buttons. To change these settings, use the *edit* button to enter the edit mode (blue edit LED comes on) and use the *channel* buttons to move between channels and the *value* buttons to change individual or all channel settings. When editing individual channels, the cursor will move to the corresponding position on the bargraph display, and if the value has been changed from the original the cursor will flash.

Changes made in edit mode are effective immediately, but are only saved permanently when edit mode is left (blue edit LED extinguishes) by pressing the *edit* button again. Edits can be abandoned by pressing either of the *parameter* buttons when the blue edit LED will extinguish but the settings which were effective when the edit mode was last entered will be reinstated.

CARE !! A mistake in editing here could turn a switching channel to a dimming channel and make the dimmer try to dim a connected load which should only be fed from a switched supply. A slip of the finger could be costly!! For safety, do not edit these settings with power applied to any of the outputs, and double check the channel assignments and connected loads before driving the outputs.

#### **3.3 Preheat**

Preheat is additive, (dimming channels only) so that the output is held at the preheat level with zero input, but increases immediately the input level is above zero.

This bargraph display shows the set levels of preheat for each channel and allows display of individual channel preheat values by using the *channel* +/- buttons. A corresponding cursor will move along the bargraph display. Switching channels have no Preheat and show as 'S' in the bargraph.

To change these settings, use the *edit* button to enter the edit mode (blue edit LED comes on) and use the *channel* buttons to move between channels and the *value* buttons to change individual or all channel settings. When editing individual channel values, the cursor will move to the corresponding position on the bargraph display, and if the value has been changed from the original the cursor will flash.

Again, changes made in edit mode are effective immediately, but are only saved permanently when edit mode is left (blue edit LED extinguishes) by pressing the *edit* button again. Edits can be abandoned by pressing either *parameter* button when the blue edit LED will extinguish but the settings which were effective when the edit mode was last entered will be reinstated.

### 3.4 DMX1 (not if analogue inputs only)

This display shows the DMX 1 input levels for each channel on a bargraph and allows display of individual channel input values by using the *channel +/-* buttons when a cursor will move along the bargraph display to the corresponding channel. The true raw DMX input values are shown before preheat, switching curves or any other processing.

#### DMX 1 start address edit

Pressing the *edit* button in the DMX 1 bargraph display shows the DMX 1 start address. Pressing the *edit* button again allows you to change this start address (blue edit LED comes on) using the *value +/-* buttons. Edited address changes are immediately effective (if the address has changed the cursor will blink) and pressing the *edit* button to leave edit mode will store the new address. Alternatively pressing either *parameter* button whilst in edit mode restores the original address and leaves edit mode (blue edit LED extinguishes).

Press either *parameter* button to return to the bargraph view.

### 3.5 DMX2 (if installed)

This display shows the DMX 2 input levels for each channel on a bargraph and allows display of individual channel input values by using the *channel +/-* buttons when a cursor will move along the bargraph display to the corresponding channel. The true raw DMX input values are shown before preheat, switching curves or any other processing.

#### DMX 2 start address edit

Pressing the *edit* button in the DMX 2 bargraph display shows the DMX 2 start address. Pressing the *edit* button again allows you to change this start address (blue edit LED comes on) using the *value +/-* buttons. Edited address changes are immediately effective (if the address has changed the cursor will blink) and pressing the *edit* button stores the new address. Alternatively pressing either *parameter* button whilst in edit mode restores the original address and leaves edit mode (blue edit LED extinguishes).

Press either *parameter* button to return to the bargraph view.

### 3.6 Analogue (if installed)

This display shows the 0-10V analogue 1 input levels for each channel on a bargraph and allows display of individual channel input values by using the *channel +/-* buttons when a cursor will move along the bargraph display to the corresponding channel. The values shown are raw input values before preheat or any other processing is applied.

Note that the *edit* and *value* buttons do nothing.

### 3.7 Analogue 2 (not if not installed, or if front panel level controls fitted)

This display shows the 0-10V input levels at the second analogue input for each channel on a bargraph and allows display of individual channel input values by using the *channel +/-* buttons when a cursor will move along the bargraph display to the corresponding channel. The values shown are raw input values before preheat or any other processing is applied.

Note that the *edit* and *value* buttons do nothing.

### 3.8 Local level controls

Local level controls are included on all models and provide a useful channel test facility. There are two types of local control available with these dimmers, either front panel rotary potentiometers (or switches for switch packs) for each channel with a Master control, or else a menu driven local level control for each channel.

For **front panel rotary level controls** this display shows the set level for each channel (moderated by the Master level control) on a bargraph and allows display of individual values by using the *channel +/-* buttons. A cursor will move along the bargraph display to the corresponding position. Inputs to switching channels are shown as analogue (pre-switching) values.

Note that the *edit* and *value* buttons do nothing.

For **menu driven local controls** this display shows the set local levels for each channel on a bargraph and allows display of individual channel levels by using the *channel +/-* buttons. A corresponding cursor will move along the bargraph display.

To change these settings, use the *edit* button to enter the edit mode (blue edit LED comes on) and use the *channel* buttons to move between channels and the *value* buttons to change individual or all channel settings. When editing individual channel levels, the cursor will move to the corresponding position on the bargraph display, and if the value has been changed from the pre edit value the cursor will flash.

Again, changes made in edit mode are effective immediately, but are only saved permanently when edit mode is left (blue edit LED extinguishes) by pressing the *edit* button again. Edits can be abandoned by pressing either *parameter* button when the blue edit LED will extinguish but the settings which were effective when the edit mode was last entered will be reinstated.

These menu set local levels will be retained on power down, and it is possible to save them and recall them from different memories on power up and power down (see section 5).

### 3.9 Maximum levels

This feature is optionally available for **switching channels** (see Section 4) of dimming packs when the channel output will switch between zero and maximum levels, but if this feature has not been selected, the display will show 'S' in place of the normal bargraph display.

For **dimming channels** there are two modes of Maximum setting. The default is a simple top set where the output is limited at the set maximum level. If there is no Preheat level set, then this limiting will occur when the input reaches the set maximum. The alternative maximum level mode scales the input so that as the input control level goes from 0-100%, the output will scale linearly from preheat level to set maximum.

The maximum level setting menu and bargraph operates exactly as for the menu driven local controls above to set the maximum output level for each channel. The display shows the set maximum level for each channel on a bargraph and allows display of individual channel values by using the *channel +/-* buttons. A cursor moves along the bargraph display to the corresponding position.

To change these settings, use the *edit* button to enter the edit mode (blue edit LED comes on) and use the *channel* buttons to move between channels and the *value* buttons to change individual or all channel settings. When editing individual channel values, the cursor will move to the corresponding position on the bargraph display, and if the value has been changed from the original the cursor will flash.

Again, changes made in edit mode are effective immediately, but are only saved permanently when edit mode is left (blue edit LED extinguishes) by pressing the *edit* button again. Edits can be abandoned by pressing either *parameter* button, when the blue edit LED will extinguish and the settings which were effective when the edit mode was last entered will be reinstated.

## **4. System menus**

In any normal (bargraph) display, press both of the *parameter* switches together, to access the system menus. Pressing the *parameter* buttons will then cycle through the menus. Press both parameter buttons together to return to the normal bargraph displays.

### **4.1 Display and edit LCD backlight brightness**

The set value is displayed. If a change is required, press the edit button (blue edit LED comes on) and use the value buttons to alter the backlight brightness. Changes are immediately effective, but are only saved permanently when leaving edit mode by pressing the *edit* button. To abandon the edit changes and retain the original value, press either *parameter* button.

### **4.2 Display and edit LCD contrast**

Works exactly as for backlight brightness above.

### **4.3 Display and edit fan cooling options**

The set fan operational option is displayed. These are :-

- a. quiet mode : fan normally off, comes on progressively above internal threshold temperature.
- b. fan always on : fan normally on at low level, but speed increases above internal threshold temperature.
- c. fan always full on

If a change of fan option is required, press the edit button (blue edit LED comes on) and use the *value* buttons to alter the option. Changes are effective within a few seconds, but are only saved permanently when leaving edit mode by pressing the *edit* button. To abandon the edit changes and retain the original setting, press either *parameter* button.

### **4.4 Select Number Format**

This display shows the currently selected number format for input values, either as DMX levels 0-255, or as a percentage 0-100%. To change the selection, press the *edit* button (blue edit LED comes on) and the *value* buttons to change the selection. Changes are saved by pressing the *edit* button, or abandoned by pressing either *parameter* button, in either case the blue edit LED is extinguished, and the current selection displayed.

### **4.5 Display and edit DMX1 disconnection options**

The action to be taken if an active DMX signal is disconnected from the DMX1 input is displayed. The default is for the last input DMX levels to be held. This can be changed to 'fade to zero' by pressing the *edit* button to enter the edit mode and changing the selected option with the *value* buttons.

### **4.6 Display and edit DMX2 disconnection options**

Works exactly as for DMX 1 input above.

### **4.7 Dimming Channel Maximum output level setting option**

Normally a dimming channel will have a maximum set value of 255. If it has a lower value than this set, the maximum output level can be set either as a top limit, limiting the output when input and preheat drive the output level to the set maximum, or else the input will be scaled so that the output rises from preheat to maximum set level as the input changes from 0-100%.

This selection is set globally for all channels and is shown on the bottom line of the display. Press the *edit* button (blue edit LED comes on) and the *value* buttons to change the selection. Changes are saved by pressing the *edit* button, or abandoned by pressing either

*parameter* button, in either case the blue edit LED is extinguished, and the current selection displayed.

#### **4.8 Switching Channels Maximum output level setting**

Normally a switching channel will have a maximum set value of 255, (ie full on). It is possible to individually select 'on' levels for switching channels by setting their required 'on' levels in the maximum level bargraph display, but before this is possible the option must be set in this part of the menu. For normal switching to full on, set 'channels switch only to full on', but to allow editing of the maximum levels for switching channels set 'channels switch to set Maximum'.

#### **4.9 Display current temperatures**

Possibly only of academic interest, but the internal sensed temperatures can be displayed. The *edit*, *channel* and *value* buttons do nothing.

### **5. Saving and recalling alternative settings**

'Settings' which can be edited using the menus explained in sections 3 and 4 above are loaded from non volatile memory as the pack powers up, and edited settings are only saved to this memory as the pack powers down. Normally settings are just saved and recalled from user's (default) memory to retain fixed modes of operation as defined by the edited settings.

It is also possible to store and recall the settings in an alternative 'hirer's' location. [In six and three channel packs there is an extra hirer 2 memory.] It is thus possible for a hirer to quickly restore all his preferred settings from hirer's memory to user's memory when equipment is returned from hire by powering up with the left *parameter* button pressed to load the hirer's settings and then power down with no buttons pressed to save these settings in (default) user memory.

With no buttons pressed, the default user's memory is used to save or recall all settings during power up or power down.

The hirer 1 memory is used if the left *parameter* - button is pressed during power up or power down.

The hirer 2 memory is used if the right *parameter* + button is pressed during power up or down.

If both *parameter* buttons are pressed during power up, all the original factory default settings will be loaded, and these can be saved to user's or hirer's memories on power down as required.

By holding down both *parameter* buttons as the unit is powered down, saving of the current settings can be defeated, and in this way the previously stored settings will be retained in memory and the results of any recent edits lost.

#### **5.1 Power up / power down options summary**

##### **5.1.1 Options at switch on**

If neither *parameter* switch is pressed, the normal user's settings are recalled.

If left *parameter* - switch pressed, hirer 1's settings are recalled.

If right *parameter* + switch pressed, settings are loaded from hirer 2 memory

If both *parameter* switches pressed, loads default factory settings from Programme memory.

**WARNING !! This will set all channels on a dimming pack to dimming !!**



### 5.1.2 Options at switch off

If neither *parameter* switch is pressed settings are saved as normal user's settings.

If left *parameter* - switch pressed, settings stored as hirer 1's settings.

If right *parameter* + switch pressed, settings stored as hirer 2's settings.

If both *parameter* switches pressed, bypasses any saving of settings.