

Function of the keys and the shuttle wheel on the Dimmer Control Unit (DCU)

QUIT key: Exits from the current menu. Abandons the underlined value being modified.

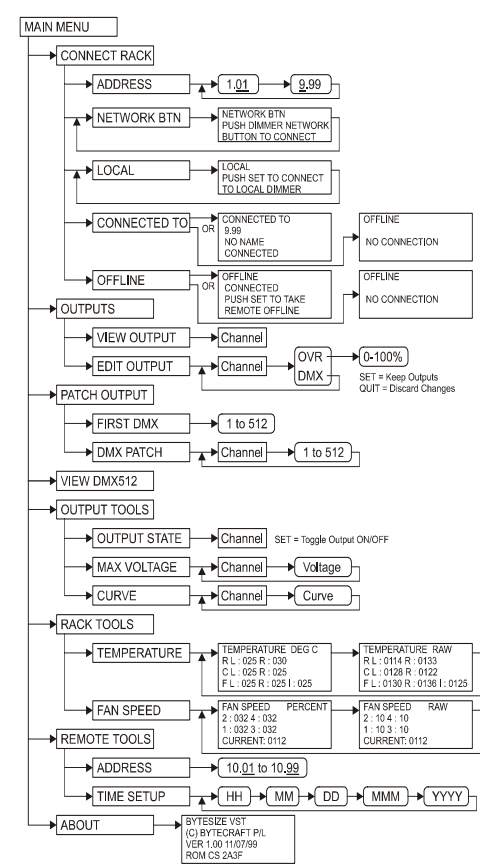
ENTER key: Selects and enters the displayed menu. Inside the menu, changes the *focus* for the value to be modified.

SET key: Accepts the underlined value being modified.

SHUTTLE wheel: Moves from menu to menu or modifies the underlined value.

From now on, the keys are referenced by their name only.

MENU SYSTEM FLOWCHART



ACCESSING THE MENU SYSTEM

From the Bytesize banner, press ENTER once, then rotate the SHUTTLE to navigate through the menu structure. The title of each menu is displayed in bold characters followed by "...". A banner is displayed at the top of each menu *page*. To the extreme left of the banner, a number, such as 2-8, lets the operator correctly locate the menu structure. The first digit is the level in the main menu structure, the second number shows total number of menus in the main tree. Once you enter a sub-menu, the number adapts to three digit reference, the first digit is the level in the main menu structure, the second digit the level in the sub-menu tree, the third is the total number of sub-menus in the branch.

Further on the right, there is a number, example 1.01; this is the Network address of the pack on which the remote is connected. Two tick boxes follow it; the first one indicates the status of the remote connection, the second one the status of the DMX 512 connection. A tick indicates it is OK while a cross indicates no connection. The open padlock icon has no meaning in this version of software.

1-8 CONNECT RACK

This menu allows the DCU to connect to any dimmer pack in the network.

1.1-5 Address

This sub-menu sets up communication between the DCU and any specific pack address, (typically from a distant location). Enter the address of the pack you want to connect to; if the address is valid, the DCU connects, otherwise it reports "DIMMER NOT FOUND REMOTE IS OFF LINE". Address range is 1.01 to 9.99.

1.2-5 Network BTN

This sub-menu allows a DCU to communicate with a specific pack without entering its address. When this menu is selected, press the NETWORK button on the front panel of the selected pack.

1.3-5 Local

This sub-menu establishes communications between the pack and the DCU connected to the front connector (as opposed to the network).

1.4-5 Connected To

This sub-menu displays the address of the pack with which the DCU is presently communicating.

1.5-5 Offline

This sub-menu severs communication between the DCU and the pack.

2.8 OUTPUTS

This menu provides the ability to view and set channel output levels.

2.1-2 View Output

This sub-menu initially shows the level of the first output. Rotate the SHUTTLE to view other output levels.

2.2-2 Edit Output

This sub-menu allows modification of the level of any output. Beware, once the level is entered from the DCU, it has priority over the DMX control and remains at that value until released (ie: returned to 0% with the DCU or performing a Reset on the pack). To the right of the channel number either DMX or OVR is displayed to indicate if the channel is controlled by DMX or locked in override.

3-8 PATCH OUTPUT

This menu regroups the functions to set the DMX 512 address for each output.

3.1-2 First DMX

The FIRST DMX sub-menu sets the address for the first output to any valid DMX 512 channel. The subsequent outputs are patched in chronological order, incrementing by one.

3.2-2 DMX Patch

The DMX Patch sub-menu allows setting the address of any output of the pack to any address of a valid DMX 512 channel. Several outputs may respond to the same address.

4-8 VIEW DMX512

This menu allows monitoring of the DMX512 data stream. It is provided as a convenient DMX tester. To the left of the large number (which is the scrutinized output) appear two values, the top number is the number of packets per second transmitted by the desk, the bottom number is the size of the DMX 512 packet in number of channels.

5-8 OUTPUT TOOLS

This menu allows output characteristics of each channel to be changed.

5.1-3 O-put State

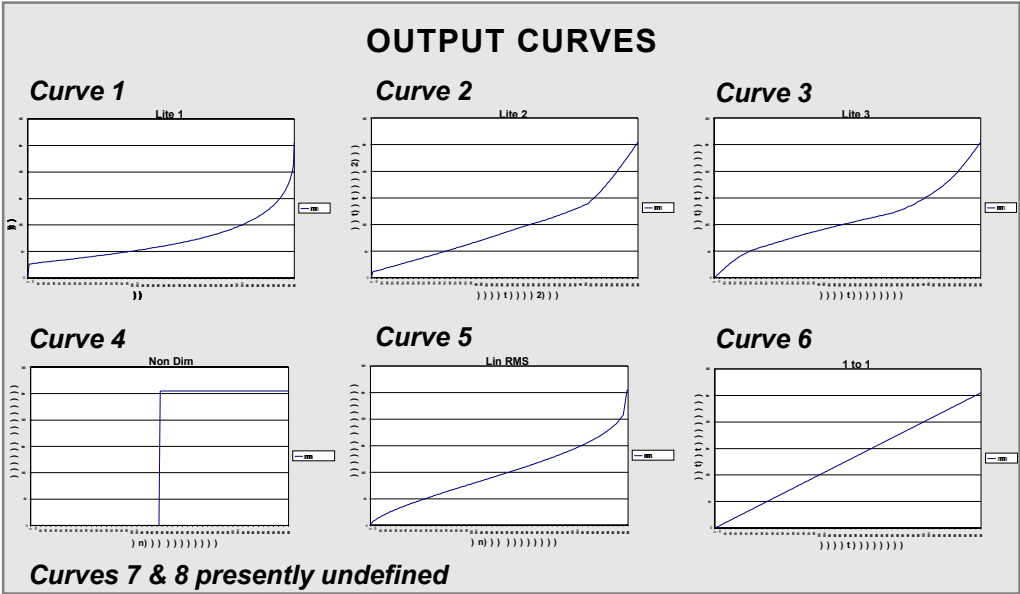
This sub-menu allows each output to be interrogated to determine its current status. A tick indicates that it is operating properly. A dash indicates that it is manually disabled. A cross indicates that it has been isolated due to an internal or external fault. This sub-menu also allows disabling or enabling of the selected output from the DCU.

5.2-3 MAX VOLTAGE

This sub-menu allows limiting the maximum output voltage for each output. The voltage may be set to any value between 50 and 240 Volts. When any of these values are selected, the associated output LED glows in amber. When MAX value is entered, the output LED returns to green.

5.3-3 Curves

This sub-menu allows allocation of one of the eight pre-defined curves to any output.



6-8 RACK TOOLS

This menu allows internal parameters to be monitored.

6.1-2 Temperature

This sub-menu displays the heatsink temperature in a Bytesize VST. If selected 0, values will be returned from the APC. The heatsinks are located by viewing the pack from above. (C=Centre, F=Front, R=Rear). The location "I" refers to the internal front panel.

6.2-2 Fan Speed

This sub-menu provides information on the speed and the current for the fans in a Bytesize VST. If selected, 0 values will be returned from the APC.

7-8 REMOTE TOOLS

This menu provides for setting the DCU address and its internal time clock.

7.1-2 Address

This sub-menu is provided to give a UNIQUE identity to any DCU on the network. The address range is 10.01 to 10.99. Make sure that each DCU has a different address.

7.2-2 Time Setup

The TIME SETUP sub-menu lets an operator set up the real time clock on the DCU. It uses the military 24 hours system. Press ENTER on each field to accept the value set by the SHUTTLE and move the cursor to the next field. SET has no effect in this sub-menu.

8-8 ABOUT

This menu item displays:

- Copyright message
- Software version number and date for the Remote
- ROM checksum for the Remote

BYTESIZE APC

OPERATOR INSTRUCTIONS

Revision 2 September 2000

Document 801-126-3102



The Bytesize APC is a compact, robust, heavy-duty architectural and theatrical 12 channel lighting dimmer pack. It operates with our new patented technology named Advanced Phase Control (APC).

The main advantages of this technology are:

- Energy savings: Around 1.5kW saving per typical 96-channel rack.
- Smaller, lighter more robust dimmer packs.
- Less heat: Higher reliability & longer life.
- Lower air conditioning demand.
- Lower energy running costs.

The Bytesize APC is the no-risk, intelligent solution for lighting control in stringent economical and electrical applications.

FEATURES

Principal Features:

- Patented¹ **APC** technology offering unsurpassed energy efficiency
- Patented¹ Easy to use, intuitive operator interface
- Direct access to frequently used functions
- LED per channel indication of level and status
- Plug-in remote control for advanced features
- **DSP** (Digital Signal Processor) CPU provides unsurpassed power for a product in this class
- Extensive software features
- Rugged, light-weight 19" rack construction
- Cool, quiet reliable operation
- Dynamic, real-time Frequency Tracking from **40Hz to 80Hz**
- Output voltage line regulation
- RCD safety protection
- HPD (Hot Power Disconnect) option
- Generously rated thermal/magnetic circuit breakers
- DPN (Neutral disconnect) circuit breakers for selected markets
- Neon "phase available" indication
- Control protocols: DMX512, LONworks™ (for supervision)
- Status monitoring and remote reporting
- Totally digital hard firing
- 13 bit fade resolution
- Optional **Dimmer Control Unit (Remote)** with bit mapped display and shuttle dial providing access to advanced features even from a remote location
- CE and C-Tick compliant

With **Bytesize^{APC}**, Bytecraft continues to set the standard for innovative, high-performance & efficient Entertainment and Architectural digital-dimmer packs, worldwide!

Designed and manufactured in Australia

¹ Australian and International patents pending

Overview

The basic configuration and operation of the Bytesize APC may be performed without the use of the remote control panel. Consult the drawing on the right to identify the keys referred to on this Instruction Sheet.

Power-Up Testing Sequence

When the Bytesize APC is first turned on, it enters a test sequence that appears like a five seconds delay without any activity. It then continues the testing by flashing the outputs LED indicators in green, red and amber. It then scans the number “8” across the Seven-Segment display from right to left. Once testing is complete, the software version number, such as 1.25, is displayed, then the three LEDs SET, DMX and RUN flash for half a second.

Operational displays

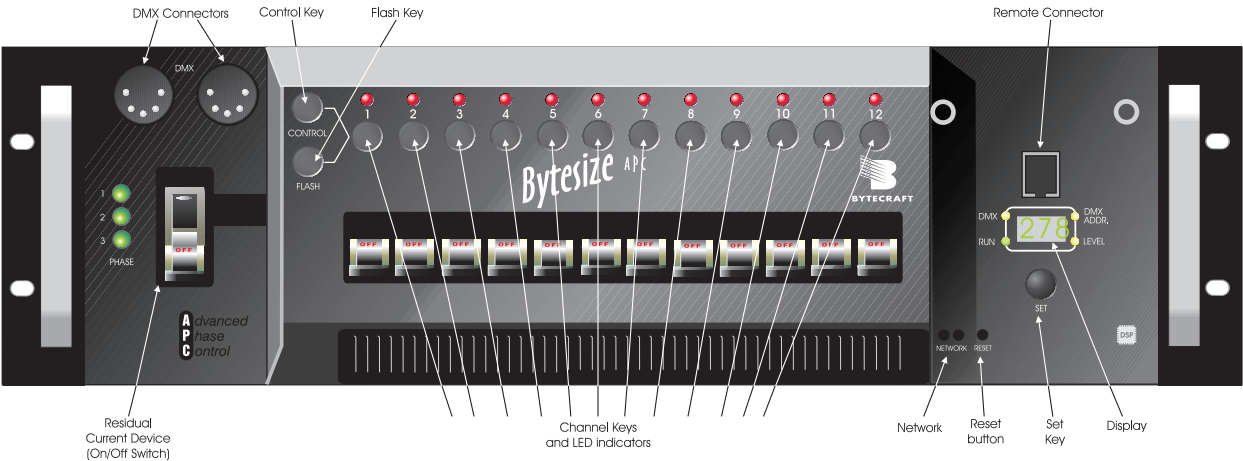
During normal operation, the Seven-Segment displays the first DMX address, ie. 001 (or the letters “pat” indicating that there is a user defined patch). The LEDs above the channel keys are turned on in the relevant colours, which may be green amber or red. When the channel operates normally, the green LED fades in and out according to the level of the output. The amber LED indicates that the maximum voltage for this output has been limited. It also fades in and out according to the control level. A flashing red LED indicates that the output has been disabled by an operator (read below). Once the pack receives valid DMX, the Amber LED turns ON. If DMX is lost, or becomes invalid, the Amber LED starts flashing. Several messages such as E01 and E06 through E08 may appear on the Seven-Segment display. These indicate error conditions. The red SET LED flashes to attract attention. Errors E7 and E08 will disable all the outputs. After proper investigation, the messages can be erased from the display by holding the CONTROL key while pressing on the FLASH key. The table below provides the meaning of the messages:

Display	Description	Clearing Fault Indication
E01	Communications problem.	Turn off the Bytesize APC, then turn it on again.
E06	DMX Pic processor is not responding.	Press CONTROL + FLASH.
E07	Line Frequency too low.	Press CONTROL + FLASH.
E08	Line Frequency too high.	Press CONTROL + FLASH.

Some operations of the Bytesize APC require the use of “hidden” buttons: Please familiarise yourself with their locations as indicated in the picture on the right.

Normal operation

To check the intensity of the output, press the required output key. The intensity is shown on the numeric display in percentage (note: this is not the DMX control input value but the REAL intensity of the output measured after curve, proportion and preheat modification).
To flash an output, hold the *FLASH* key down while pressing the required output key.
To disable an output, hold the *CTRL* key down while pressing the required output key.
A red flashing LED indicates a disabled output. This is a persistent change, and is maintained over resets. To re-enable the output, repeat the same operation.
To change the base DMX address, press the *SET* key. The rightmost digit flashes. Press the output keys in the range 1..9 to set this digit; output key 10 is interpreted as 0. Press *SET* to skip a digit. Repeat until the DMX address is entered. Should you want to abandon entering the new address half way through, wait for a few seconds without making any entry and the address will be reset to the previous value.
To display the software version number, hold down the *FLASH* key and press the *CTRL* key.
To Reset Flash Memory and default all parameters except calibration parameters, hold down the *CTRL* and *FLASH* keys and either power on or reset dimmer.



Advanced Features Menu

Features not normally required for day to day use are located in the Advanced Features Menu.

To enter the Advanced Features Menu, hold down the *FLASH* & *CTRL* keys for 3 seconds. Use this same method to exit this menu. The Advanced features menu returns to Normal mode if no key is pressed for 5 minutes.

The Advanced Features choices are:

- NET Set Network Address
- ACL Set AC Output Limit
- PRE Set Preheat level
- PAT Set DMX Patch
- PRO Set output proportion
- CUR Set Output Curve

Press the *CTRL* key to step forward or the *FLASH* key to reverse through these choices.

When NET is shown on the display, press the SET key to show the current network address of the pack.

Press the SET key to edit the value. The leftmost digit flashes. Use the 1..9 & 10 keys to set the new address. The 10 key enters the number 0.

Press SET to skip a digit.

Press CTRL to abort editing.

Press CTRL to return to return to top level menu.

All the other menu choices follow the same operation. Read below the general description for these menu selections followed by their specific applications.

When the menu choice required is displayed, press the *SET* key to initiate edition.

All the output LEDs will flash.

Press the required output key to see relevant value on the numerical display.

At this point you can press another output key to see another output information.

Press the *SET* key to start editing.

At this point the relevant digit flashes on the display.

Enter a required numbers using the output keys 1..9 (and 10 for 0)

The edition is complete once all the digits are entered.

Press the *SET* key to skip digits.

Press the *CTRL* key to abort editing.

Press the *CTRL* key to back one level.

Press the *CTRL* key to return to the main Advanced Menu structure.

- When ACL is displayed, a Maximum Voltage Limit per output may be entered. The valid range is between 50 and 240 Volts. A value above 240 returns the output to Line voltage (identified by “Lin” on the display)
 - When PRE is displayed, a Preheat value per output may be entered. This is the minimum value the output will produce under any circumstance. The valid range is between 0 and 100%.
 - When PAT is displayed, a Patch per output may be entered. The valid range is between 1 and 512. Several outputs may be set to the same DMX address.
 - When PRO is displayed, a Proportion per output may be entered. By default the value is set to 100%, any other value will decrease the output proportionally. The valid range is between 0 and 100%.
- When CUR is displayed, the Curve for the output may be entered. The valid range is between 1 and 6.

Output key to press	Curve Name	Shown on display
1	Lite 1	L-1
2	Lite 2	L-2
3	Lite 3	L-3
4	Non Dim	N-D
5	Lin Rms	Lin
6	1-1	1-1

SPECIFICATIONS					
Power per output	2.5kW	3kW	5kW	10kW	3kW
Number of outputs per pack	12	12	6	3	9
Mains frequency	40-80Hz	40-80Hz	40-80Hz	40-80Hz	40-80Hz
Input voltage					
Nominal	230V	230V	230V	230V	110V
Maximum	265V	265V	265V	265V	120V
Minimum	180V	180V	180V	180V	90V
Minimal load par sortie	0W	0W	0W	0W	0W
Maximum current per output	12A	15A	25A	40A	
30A Rise time¹	200/sec	200/sec	200/sec	200/sec	200/sec
Output circuit breaker	16A	15A	25A	50A	30A
Master RCD	30mA	30mA	30mA	30mA	30m
Power component	TRIAC	TRIAC	TRIAC	TRIAC	TRIAC
Environmental					
Ambient temperature	40°C	40°C	40°C	40°C	40°C
Humidity (non condensing)	10-85%	10-85%	10-85%	10-85%	10-85%
Mechanical					
Height (mm)	132.5	132.5	132.5	132.5	132.5
Width (mm)	483	483	483	483	483
Depth (mm)	475	475	475	475	475
Weight (kg)	16	16	16	16	16

¹ other values on request

Residual Current Device

A Residual Current Device protects the BYTESIZE APC pack. It acts as a Mains Input Switch and provides human protection. For the pack to be powered, the switch lever of the RCD must be in the up position. To switch off the pack, press on the key above the switch lever. Should the RCD trip unexpectedly, investigate and remove the reason for tripping, prior to attempting to reset the switch.

Power Connections

Bytesize APC is fed from a 3 phase, neu-tral and Earth power supply. The three green indicators located to the left of the RCD indicate the voltage presence.

Ventilation

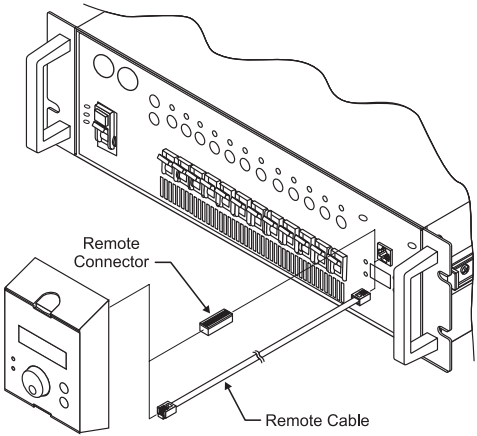
During operation, the Bytesize APC dissipates very little heat. However, the temperature of the heatsink is constantly monitored. The amount of heat dissipated depends upon the environmental conditions and the controlled loads. The fan starts operating when the internal temperature rises above 50°C and stops when it returns below this value. Sufficient air must be available to provide cooling. Air is drawn in from both sides and expelled through the front and rear of the pack.

DMX512 Network

When the Bytesize APC is controlled by DMX 512. It is connected to the DMX source by two twisted pairs of cable in a shielded envelope that should comply with the EIA485 standard. There must not be more than 31 receivers on the same line. A 120 Ohm, 1/4 Watt resistor must properly terminate the line on the last pack. The resistor should be connected across pins 2 and 3 of an AXR connector.

DMX Pin-Out

Pin	Wire	Signal
1	Shield	Ground / return / 0V
2	Inner conductor (usually black)	Data complement -
3	Inner conductor (usually white)	Data true +
4	Inner conductor (usually green)	Spare data -
5	Inner conductor (usually red)	Spare data true +



Connecting the Remote Control Unit

SYSTEM OVERVIEW

The Network connections allow the Bytesize APC to be used in a number of different configurations:

- * Master / Slave
- * Graphical Interface to PC
- * Controlled by multiple Dimmer Control Units (DCU)

The structure of a generalised network configuration is shown in the schematic on the right.

