Notes re Version 3 Firmware for E682, E6804, and upgraded (E680s and E681s) Mar 26, 2013

Added support for Renard output type, not yet tested.

Added dithering/gamma correction for most 8-bit pixel types. This uses slight intensity shifts on each refresh of the pixels to extend the effective intensity range of the pixels from 8 to 10 bits, then the gamma table is used to produce a corrected 8-bit value to send to the pixel. The result is a more natural dimming curve. This was previously done with the 6803 pixels in order to extend their dimming range from 5 bits to 8 bits.

DHCP is no longer supported, addressing is now by static IP only.

Boot time options using the Program button have been added/changed to simplify the process of first-time setup of the board if your LAN is other than 192.168.1.x. These options are activated by holding down the program button at startup and releasing after the specified flash count on the red and green leds:

1: Forces display of the currently configured static IP address on the leds. The display will cycle through all 12 digits of the IP address. The green led comes on and lights steady while each digit is displayed, and the red led flashes to indicate the digit value. A 0 digit is indicated by the green led on but no flashes of the red led. This is to allow determination of the IP address of a controller if you don't know it. This loops until reset.

2: Forces a temporary IP of 10.10.10.10. This subnet is often used with Unicast E1.31.

3: Forces a temporary IP of 169.254.74.73, used for direct link to a PC with no router involved.

4 or more: Forces a temporary IP address of 192.168.x.206 where x is the flash count-4. For example, holding the button for 4 flashes would set an IP of 192.168.0.206. 14 flashes would give an IP of 192.168.10.206.

In most cases this should allow the creation of a temporary IP that is compatible with the local network.

The number of Multicast universes has been increased from 6 to 7. Unicast capability has been added also for up to 12 universes. In Multicast mode, only sockets 1-7 are used. In unicast mode sockets 1-12 are used.

This is the current command list for the version 3 firmware. Some command forms are unique to the E6804 since that controller has only 1 output per cluster. The number of commands has been reduced, and many of the commands have a shorthand form to set the value on all 4 outputs or clusters simultaneously. As used here, the term O/C means output or cluster (output for the E6804, cluster for E681 and E682).

Many commands have been made more user-friendly. A good example is the REVERSE command. With the current software the user types REVERSE c,n, where c is a cluster number and n is the sum of the binary (1,2,4,8) values for the strings of that cluster that are to be set in reverse. The new command form is: REVERSE c,s where c is the cluster number and s is the string number within the cluster. The command toggles the reverse status of that string.

On the web page, user-changeable values are shown in a red font, and the command to change that value is in capital letters. For example: " IP 192.168.1.206". This shows that the 192.168.1.206 value can be changed by the IP command.

While full command names are shown, typing the first 2 (or more) characters of the command name is sufficient.

ADDRESS Sets starting DMX addresses for one or all O/Cs (was previously DMX)

(See the UNIVERSE command for the mapping of external E1.31 universes to local SOCKETS on the controller. The addresses entered here refer to one of the local SOCKETS, 1-12.)

ADDRESS N ‘auto assign address for O/C N. If O/C is 0, addressing begins at 1-1, otherwise ‘addressing begins at the end point of the previous O/C, plus one.

ADDRESS S,C ‘**Auto-addresses the entire board**. Cluster 1 will start at socket S, channel C ‘and the remaining clusters will have contiguous addresses.

ADDRESS O,S,C ‘Set start address of O/C O to socket S channel C (like current DMX command).

BOOT Restarts the controller.

BOOT

COLORS Set color order for an output or cluster. (Previously RGB command). **The COLORS command always steps to the next possible color configuration, you no longer enter a numeric value.**

COLORS c ‘Step to next RGB order for O/C c.

GROUP Sets pixel group size, for example GROUP of 3 means pixels are controlled in groups of 3.

GROUP n ‘Set group size for ALL O/Cs to n.

GROUP o,n ‘Set group size only for O/C o to n.

IP Sets the controller’s IP address. This is always used for accessing the web server, and is also used as the destination IP address of Unicast E1.31 packets.

IP a.b.c.d

LOAD Load configuration information from a memory page.

LOAD ‘Load configuration page 0

LOAD n ‘where n is 0-7, Load configuration page n

MODE toggles between unicast mode and multicast mode for E1.31

MODE

NO Sets the timeout time after which all outputs are turned off if incoming data is lost.

NO (or NO 0) ‘Disables auto shutoff on loss of data.

NO n ‘Enables auto-shutoff after n seconds of data loss.

NULLS Set the number of ‘null’ pixels at the beginning of a string. This command now sets the nulls value for only one string at a time.

NULLS o,n ‘For E6804 only, sets null count for output o to n pixels.

NULLS c,s,n ‘For E68x only, set number of nulls for cluster c string s to n.

PIXELS Set string size in physical pixels (not counting null pixels). **Note this is a change from the present system in that PIXELS sets the string size in physical pixels (excluding null pixels), previously the string size was entered using the LENGTH command as the number of pixel GROUPS.**

	PIXELS n	‘Sets the string size (in physical pixels not counting nulls) for all strings.
	PIXELS o,n	‘Sets the strings size for O/C o to be n pixels.
REVERSE	Determines whether a string is driven in reverse order. **The REVERSE command always toggles the current REVERSE state and operates on one string (or output if E6804) only.**	
	REVERSE o	‘E6804 only, toggles REVERSE status for output o
	REVERSE c,s	‘E68x only, toggles reverse state for cluster c string s
SAVE	Save configuration to memory	
	SAVE	‘save to memory 0.
	SAVE n	‘n=0-7, save to memory n.
STRING	Sets number of active strings on an O/C.	
	STRING o	‘E6804 only, toggles output o’s single string output on or off.
	STRING n	‘E68X only, sets ALL 4 clusters to be n active strings.
	STRING c,n	‘E68X only, sets cluster c’s string count to n.
SUBNET	Sets the subnet mask	
	SUBNET a.b.c.d	
TEST	Turn test patterns on or off	
	TEST	‘turns test pattern off
	TEST n	‘turn on test pattern n, if n=0 turn off
TYPE	Sets pixel/output type (**formerly CHIP**)	
	TYPE	‘displays a list of type codes and equivalent pixel chip/output types.
	TYPE n	‘sets all O/Cs to be pixel/output type n
	TYPE m,n	‘sets only O/C m pixel/outputs to be type n
UNIVERSE	Selects which universes the controller will respond to (maps up to 12 E1.31 universe numbers to the controller’s 12 internal E1.31 “sockets”).	
	UNIVERSE n	‘set all sockets to consecutive universes beginning with socket 1 = universe n.
	UNIVERSE s,n	‘set one socket only (socket s) to universe n.
ZIGZAG	Sets the interval at which strings reverse direction, used when strings are zig-zagged back and forth in an array.	
	ZIGZAG	‘turns off zigzag on all strings
	ZIGZAG n	‘sets all O/Cs to zigzag every n pixels.
	ZIGZAG o,n	‘sets O/C o string(s) to zigzag every n pixels.

As a real-world example, let's say we're going to configure 2 E682 boards as 16 strings of 50 pixels, type 2811, and we want all pixel addresses to be contiguous beginning with channel 1 of universe 1.

For the first board we use these commands:

UNIVERSE 1	'maps this boards E1.31 sockets beginning with socket 1 = universe 1.
TYPE	'this displays a list of type codes and pixel types, and shows us that 2811s are type 3.
TYPE 3	'sets pixel type as 2811s on all strings.
STRINGS 4	'turns on all 4 strings of each cluster (16 output boards only).
PIXELS 50	'sets string length of all pixel strings to 50.
ADDRESS 1,1	'auto-addresses the entire board beginning with channel 1 of the 1st universe.
SAVE	

Once we do this we will see that the first board uses address from universe 1 channel 1 to universe 5 channel 360. So we want our 2nd board to begin its addresses at universe 5 channel 361. We use these commands for the 2nd board:

UNIVERSE 5	'maps all sockets to universes beginning with socket 1 = universe 5 because this board will 'start its addresses on universe 5 and work up from there.
TYPE 3	'sets pixel type to 2811
STRINGS 4	'4 strings active on all clusters
PIXELS 50	'all strings are 50 pixels long
ADDRESS 1,361	'auto-address the entire board, starting at socket 1 (=universe 5), channel 361, because this is 'one more than the end point of board #1.
SAVE	