

Lynx Astro USB Dew Controller Serial Protocol

Change Log

Date	Description of change	Author	Version
20/11/2018	First Draft	Grant Bowskill	v1.0

Device Principles

The Lynx Astro dew controllers are either 1 channel - 2 output or 4 channel - 4 output devices with a PWM power control for each channel.

Channel A is capable of high frequencies and the frequency can be adjusted on the fly.

Channels B, C and D use a lower, fixed frequency.

Communication Principles

The Lynx Astro dew controllers utilise a USB serial connection for communications in addition to manual, physical controls on the devices themselves.

The serial connection uses a standard 9600 baud rate, 8 data bits, no parity with 1 stop bit.

Protocol Principles

The serial protocol is very simplistic with a maximum of 14 characters permissible for each command. A command begins with a ':' and ends with a '#'.
:

1	2	3	4	5	6	7	8	9	10	11	12	13	14
:	X	X	V	V	V	V	V	V	V	V	V	V	#

: = Beginning of command

X = Command Characters - always two alphanumeric characters for the actual command

V = Up to 10 alphanumeric characters to denote the values or sub command instructions

= End of command

Responses follow the same pattern.

Possible Errors

Errors are always indicated with a returned :ERX# response where X is an error code.

Generic errors possible are:

:ER1# = End of command received without beginning.
:ER2# = Command too long.
:ER3# = Command not in progress.

GD - Get Device

Command: **:GD#**

Purpose: Get the device type, i.e. the number of channels the dew controller has.

Response: **:GDX#** where X is either 1 or 4 depending on the number of channels this device has.

GA - Get All

Command: **:GA#**

Purpose: Get the current power settings for each of the channels the device has.

Response: 1 Channel **:GAAXXX-#**
4 Channel **:GAAXXX-BXXX-CXXX-DXXX#**

Where XXXX indicates the power setting between 0-1023. The A, B, C or D character indicates the channel and each is separated with a '-'.
:ER4# = Not enough data received - make sure you zero pad the power level.

GC - Get Channel

Command: **:GCX#** where X is the channel A, B, C or D to retrieve.

Purpose: Get the current power setting for a specific channel.

Response: **:GCXVVV#** where X is the channel A, B, C or D returned and VVV is the power level between 0-1023.

Possible Errors

:ER5# = Channel out of range, e.g. channel B on a 1 channel device.

SC - Set Channel

Command: **:SCXVVV#** where X is the channel A, B, C or D to set and VVV is the power level between 0-1023. The power level must be 4 digits long so pad with leading zeros if necessary.

Purpose: Set the current power setting for a specific channel.

Response: **:SC1#** indicates success. Run a GA or GC command to verify.

Possible Errors

:ER4# = Not enough data received - make sure you zero pad the power level.

:ER5# = Channel or power level out of range, e.g. channel B on a 1 channel device or power above 1023.

SF - Set Frequency

Command: **:SFX#** where X is the frequency setting to use for channel A pwm, 1, 2, 3 or 4.

- 1 = 732hz (default)
- 2 = 2.93khz
- 3 = 11.7khz
- 4 = 47khz

Purpose: Set the PWM frequency for channel A.

Response: **:SF1#** indicates success. Run a GF command to verify.

GF - Get Frequency

Command: **:GF#**

Purpose: Get the current PWM frequency for channel A.

Response: **:GFX#** where X is the frequency setting for channel A pwm, 1, 2, 3 or 4.

- 1 = 732hz (default)
- 2 = 2.93khz
- 3 = 11.7khz
- 4 = 47khz

SS - Set Serial

Command: **:SSXXXXXXXX#** where X is an 8 character serial number string.

Response: **:SS1#** indicates success. Run a GS command to verify.

GS - Get Serial

Command: **:GS#**

Purpose: Get the devices serial number.

Response: **:GSXXXXXXXX#** where X is an 8 character serial number string.

GV - Get Version

Command: **:GV#**

Purpose: Get the devices firmware version.

Response: **:GVXXXXXXXX#** where X is a version string, e.g. 1.0.

FW - Firmware

Command: **:FW#**

Purpose: Reboot the device into firmware update mode. The device will restart and appear as a dfu device for updating.

Response: N/A - device will restart instantly.