

nopLabs

Shooting Chrony PC Protocol

The serial port settings are 4800bps, 8 data bits, no parity and 1 stop bit.

Each line of a response includes a carriage return (0x0d) and line feed (0x0a), the initiating command does not. A serial terminal emulator application, Hyperterm on Windows or Minicom on OS X and Linux, can be used to manually interact with the Chrony.

Chrony PC interface commands:

[SYSX](#) Enter PC control mode
[X.END](#) Terminate PC control mode
[X.ALO](#) Ping Chrony
[X.GEE](#) Get shot data
[X.QRY](#) Get system information
[X.CPY](#) Copy string data
[X.INC](#) Increment string number
[X.DEC](#) Decrement string number
[X.GRM](#) Get string data
[X.HXB](#) Hex dump EEPROM page with page decrement
[X.HXF](#) Hex dump EEPROM page with page increment
[X.HXD](#) Hex dump EEPROM page
[X.RUN](#) Modify system parameter

Getting in and out of PC control mode:

Command	Description
SYSX	Chrony enters PC control mode. Chrony may not enter PC control mode if screen is not the start screen or -[]- screen when this command is issued. On receipt of the SYSX command the Chrony responds with the ready prompt 0:rdy> and also displays =PC= on the LCD. The ready prompt is also sent after valid commands are executed. Invalid commands do not get any response although the Chrony will display Crr1 on the LCD. It seems the X at the end of the command can be any character.
X.END	Terminates PC control mode. Responds with the message { }ok!
X.ALO	Can be used to test if the Chrony is connected and in PC control mode. Think of it as a ping command or "Allo" are you there. Responds with the message { }ok! Thanks to Tom over at opgenorth dot net for information on this command.

Getting memory contents and system information:

Command	Description
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X.GEE	<p>Dumps the working memory and stored string data.</p> <p>The blocks of data represent the number of shots in the string, the shot within the string, the string the shot belongs in and in this case the velocity in feet per second. String zero is the string in working memory.</p>
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```
{
, 0010nf
-01-, 0000nf, 49.61Vf
-02-, 0000nf, 49.78Vf
-03-, 0000nf, 49.94Vf
-04-, 0000nf, 50.11Vf
-05-, 0000nf, 50.27Vf
-06-, 0000nf, 50.44Vf
-07-, 0000nf, 50.61Vf
-08-, 0000nf, 50.78Vf
-09-, 0000nf, 50.95Vf
-10-, 0000nf, 51.12Vf

, 0010nf
-01-, 0001nf, 5933.81Vf
-02-, 0001nf, 5957.17Vf
-03-, 0001nf, 5980.72Vf
-04-, 0001nf, 6004.45Vf
-05-, 0001nf, 6028.37Vf
-06-, 0001nf, 6052.49Vf
-07-, 0001nf, 6076.79Vf
-08-, 0001nf, 6101.30Vf
-09-, 0001nf, 6126.00Vf
-10-, 0001nf, 6150.90Vf

, 0010nf
-01-, 0002nf, 49.61Vf
-02-, 0002nf, 49.78Vf
-03-, 0002nf, 49.94Vf
-04-, 0002nf, 50.11Vf
-05-, 0002nf, 50.27Vf
-06-, 0002nf, 50.44Vf
-07-, 0002nf, 50.61Vf
-08-, 0002nf, 50.78Vf
-09-, 0002nf, 50.95Vf
-10-, 0002nf, 51.12Vf
}ok!
```

X.QRY	<p>Get system information</p> <pre>{ Shooting Chrony, V6.03i,25/DEC/1999,0Fe-003C-1 Len=12.000-in Fre=12.000-MHz OST=98304 System: 01000000+00000000 FreeMem, 0004nf Strings, 0002nf Current, 0002nf RecSize, 0010nf }ok!</pre>
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Working with strings:

Command	Description
X.CPY	Copy current string from EEPROM to working memory {-10-, 0002nf}ok!
X.INC	Increments the string number that will be returned by X.GRM {-10-, 0004nf}ok!
X.DEC	Decrement the string number that will be returned by X.GRM {-10-, 0001nf}ok!
X.GRM	Returns the current string { , 0010nf -01-, 0000nf, 5933.81Vf -02-, 0000nf, 5957.17Vf -03-, 0000nf, 5980.72Vf -04-, 0000nf, 6004.45Vf -05-, 0000nf, 6028.37Vf -06-, 0000nf, 6052.49Vf -07-, 0000nf, 6076.79Vf -08-, 0000nf, 6101.30Vf -09-, 0000nf, 6126.00Vf -10-, 0000nf, 6150.90Vf }ok!

Accessing EEPROM contents:

Command	Description
X.HXB	Decrement page and hex dump { 0100: }ok! Note that this page exceeds the address range of the EEPROM in a Beta Chrony and returns an empty set.
X.HXF	Increment page and hex dump { FF00: }ok! Note that this page exceeds the address range of the EEPROM in a Beta Chrony and returns an empty set.
X.HXD	Hex dump without increment or decrement The first 8 bytes of page zero are reserved for system use. Following the system bytes are 16-bit little-endian shot values. The values are likely expressed in units or ticks used to measure the time it takes a projectile to travel between the screens. These are the values listed along with the FPS values when generating test shots. The Chrony uses some type of encoding for values greater than 32K. { 0000: 00 00 13 FF FF FF FF F1 F8 07 F0 07 E8 07 E0 07 0010: D8 07 D0 07 C8 07 C0 07 B8 07 B0 07 90 DB 5E DB

```
0020: 2C DB FA DA C8 DA 96 DA 64 DA 32 DA 00 DA CE D9
0030: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0040: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0050: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0060: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0070: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0080: }ok!
```

Note that this is all the EEPROM memory of a Beta Chrony, 128 bytes. The EEPROM of a Gamma Chrony is 2048 bytes.

Modifying system settings:

Command	Description
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X.RUN	No detailed information on available settings just yet. Thanks to Tom over at opgenorth dot net for information on this command.
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