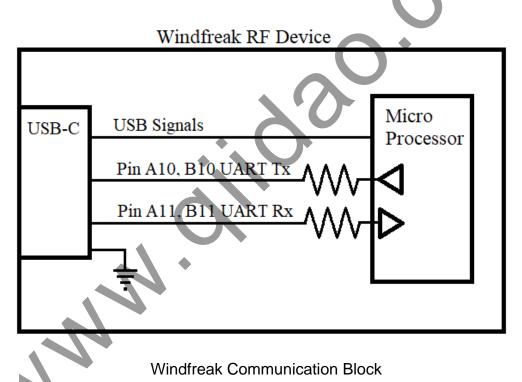
Windfreak Technologies

Windfreak USB-C Devices

UART Guide v0.1a

Windfreak RF Devices that have USB-C as the USB communications plug can also send and receive UART communications through two of the pins in the USB-C connector. Devices such as the SynthNV Pro, SynthHD (v2) and SynthHD Pro (v2) have this ability. This document describes how to hook into the UART signals from Arduino and Raspberry Pi devices.

Please note: This is an industry non-standard way of doing things, so these types of devices from Windfreak ship with a USB2 cable. When using these devices with USB only, it is important to use the USB2 cable shipped with the device. This protects the PC from any issue that might be caused by the UART signals coming through a USB3 cable to a PC USB port. Internally, there are 500 ohm resistors on the Tx and Rx lines, which should protect hardware from damage.



One way to connect to the Windfreak device is to cut and strip back a USB-C 3 cable and tap into the bare wires. This takes knowledge of the cable, or some other way of knowing what the wires are. It's probably not a good idea to trust in wire colors unless

A better solution is to purchase the below connector and solder your own wires.

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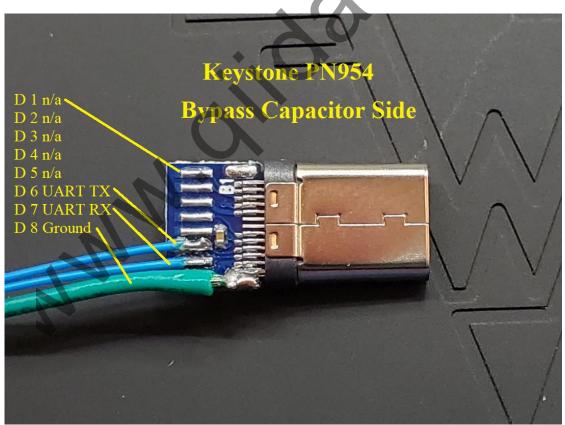
getting them directly from the manufacturer of the cable.





The part is Keystone Electronics part number 954. At Digikey the part number is 36-954-ND and possibly can be found quickly via this link: <u>https://www.digikey.com/product-detail/en/keystone-electronics/954/36-954-</u> ND/5638367

It is important to be very careful with your soldering as shorting any pads together could harm the Windfreak device. The Windfreak device uses a 3.3V processor, but its pins are 5V tolerant.



Keystone PN954 Wiring

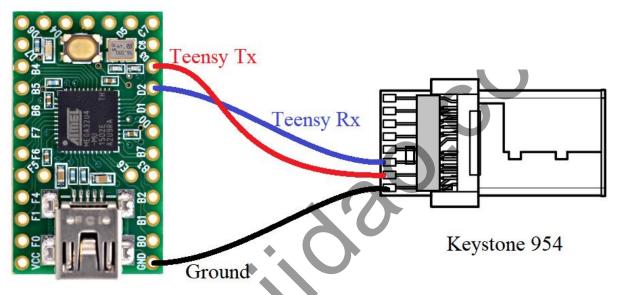
When hooking your UART device to the Windfreak device, Tx should hook to Rx and Rx

For UART enabled USB-C Windfreak RF Devices

should hook to Tx. In other words, your transmitter should transmit to the Windfreak UART receiver at Keystone Pin D7 and your receiver should receive from the Windfreak UART transmitter at Keystone Pin D6.

Teensy 2 Arduino Control

One example of a controller would be to use a Teensy 2 from PJRC: <u>https://www.pjrc.com/store/teensy.html</u>

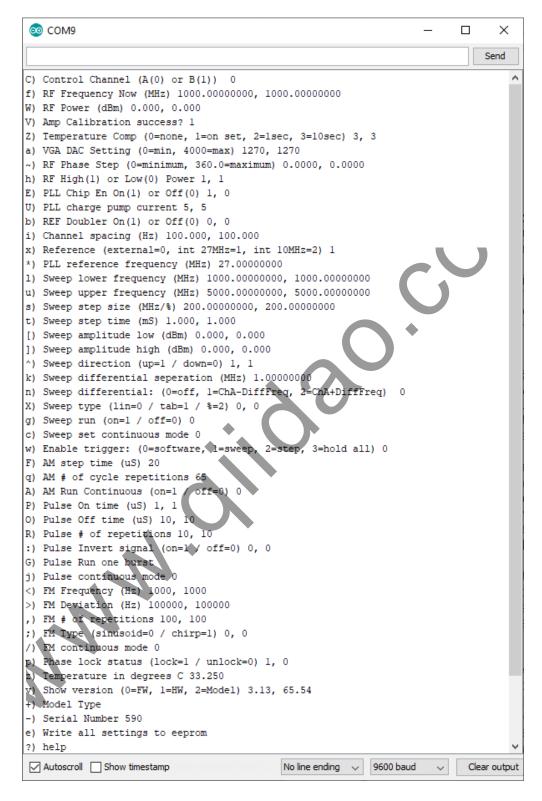


The Teensy will get its power from your USB control connection, and the Windfreak device should be plugged into a 5V power source through its barrel connector. If you are using a SynthNV Pro, we don't typically ship with a power adapter since it can power through USB, so please contact us for one.

For the Teensy Arduino application, you can use code like this:

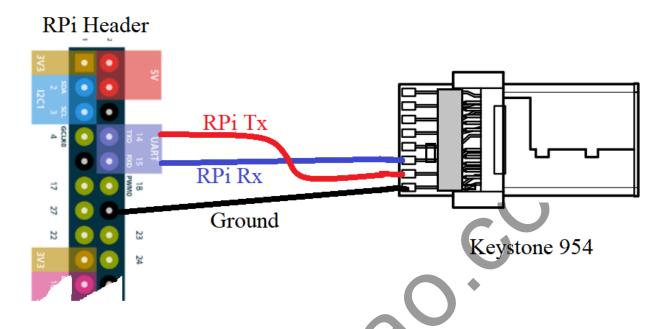
```
void setup() {
   Serial.begin(9600); // USB baud don't care
   Serial1.begin(115200); // UART baud required for Windfreak
}
void loop() {
   if (Serial.available() > 0) Serial1.write(Serial.read()); // write to UART from USB
   if (Serial1.available() > 0) Serial.write(char(Serial1.read())); //write to USB from UART
}
```

Using the Arduino Terminal, send a ? command through USB to the Teensy and you should see a response of all Windfreak variables. Here is an example from a SynthHD:



Raspberry Pi4 Control

Another example of a controller would be to use a Raspberry Pi: <u>https://www.raspberrypi.org/products/raspberry-pi-4-model-b/</u>



To get the RPi going you need to enable the hardware pins:

- 1) In terminal run: sudo raspi-config
- 2) Select Interfacing Options
- 3) Select Serial
- 4) Select NO for login shell access
- 5) Select YES to enable the serial hardware pins
- 6) Reboot
- 7) Install Cutecom

Open Cutecom. If this is the first time to run Cutecom you need to change the device to /dev/ttyS0. Also change the termination characters to "None" to the right of the input box. Click Open and send a ? command and you should get a response similar to below:

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Sessions Help Close Device Close Settings ? Input: None Char delay: Oms Send file Plain [14:53:30:201] C) Control Channel (A(0) or B(1)) 0: Intervention Intervention [14:53:30:2021] C) Control Channel (A(0) or B(1)) 0: Intervention Intervention [14:53:30:264] V) Amp Calibration success? 0: Intervention Intervention Intervention [14:53:30:264] V) Amp Calibration success? 0: Intervention Intervention Intervention [14:53:30:264] V) Amp Calibration success? 0: Intervention Intervention Intervention [14:53:30:264] V RE Powber On(1) or Of(0) 0, 0; Intervention Intervention Intervention [14:53:30:264] V Reference (external=0, int 27MPz=1, int 10MPz=2010; Intervention Intervention [14:53:30:264] V Sweep Jower frequency (MHz) 1000.0000000; Intervention Intervention [14:53:30:264] V Sweep Jower frequency (MHz) 1000.000000; Intervention Intervention [14:53	CuteCom - Default	~ ^ X
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114:53:30:3641 W) RF Power (dam) 0.000, 0.000 114:53:30:3641 Z) Temperature Comp (0=none, 1=on set, 2=1sec, 3=10sec) 3, 3 * 114:53:30:3641 Z) Temperature Comp (0=none, 1=on set, 2=1sec, 3=10sec) 3, 3 * 114:53:30:3641 Z) Temperature Comp (0=none, 1=on set, 2=1sec, 3=10sec) 3, 3 * 114:53:30:3641 PL Chip En On(1) or Off(0) 1, 0 * 114:53:30:3641 PL Chip En On(1) or Off(0) 1, 0 * 114:53:30:3641 PL Chip En On(1) or Off(0) 0, 0 * 114:53:30:3641 PL Chip En On(1) or Off(0) 0, 0 * 114:53:30:3641 PL reference (external=0, int 27MH2=1, int 10MH2=2) 1* 114:53:30:3641 PL reference frequency (MH2) 1200,00000000, 1000,0000000 * 114:53:30:3641 PL reference frequency (MH2) 1200,0000,00000, 1000,0000000 * 114:53:30:3641 PL reference frequency (MH2) 1200,0000,000000 * 114:53:30:3641 PL reference (ms) 1.000, 10000 114:53:30:3641 PL reference (ms) 1.000, 10000 114:53:30:3641 PL reference (ms) 1.000, 10000 114:53:30:361 PL reference (ms) 1.0000, 00000 114:53:30:361 PL sweep step time (ms) 1.000, 10000 114:53:30:361 PL reference (ms) 1.0000, 10000 114:53:30:361 PL reference (ms) 1.0000, 10000 114:53:30:361 PL reference (ms) 1.0000, 100000 114:53:30:361 PL reference (ms) 1.0000, 10000000 114:53:30:361 PL reference (ms) 1.0000, 100000000 114:53:30:361 PL reference (ms) 1.0		í.
[14:53:30:364] 2) Temperature Comp (0=none, 1=on set, 2=1sec, 3=10sec) 3, 3* [14:53:30:364] a) VGA DAC Setting (0=minimum, 360.0=maximum) 0.0000, 0.0000 [14:53:30:364] b) RF Phase Step (0=minimum, 360.0=maximum) 0.0000, 0.0000 [14:53:30:364] b) RF Phase Step (0=minimum, 360.0=maximum) 0.0000, 0.0000 [14:53:30:364] b) RF Doubler On(1) or Off(0) 1, 0* [14:53:30:364] b) RF Doubler On(1) or Off(0) 1, 0* [14:53:30:364] b) RF Doubler On(1) or Off(0) 1, 0* [14:53:30:364] b) RF Doubler On(1) or Off(0) 1, 0* [14:53:30:364] b) RF Doubler On(1) or Off(0) 1, 0* [14:53:30:364] b) RF Doubler On(1) or Off(0) 1, 0* [14:53:30:364] b) Sweep loyper frequency (MHz) 1000.00000000, 1000.0000000* [14:53:30:364] b) Sweep step size (MHz/5%) 0.00000010, 5000000000* [14:53:30:364] b) Sweep step size (MHz/5%) 0.00000010, 2000000000* [14:53:30:364] b) Sweep amplitude low (dBm) 0.000, 0000 [14:53:30:364] b) Sweep amplitude low (dBm) 0.000, 0000 [14:53:30:361] b) Sweep amplitude low (dBm) 0.000, 0000 [14:53:30:391] c) Sweep type (In=0 (Iab) 1, 0000, 00000 [14:53:30:391] b) Sweep officerntials (0=off, 1= ChA-DiffFreq, 2=ChA+DiffFreq) 0* [14:53:30:419] p) Mee prime (mS) 1, 0 [14:53:30:419] p) Max be tring (US) 20* [14:53:30:419] p) Max be tring (US) 20* [14:53:30:419] p) Max continuous (nn=1 / %=2) 0. 0*		
[14:53:30:364] →) RF Phase Step (0=min, 4000=max) 0, 1270* [14:53:30:364] →) RF Phase Step (0=minum, 360.0=maximum) 0.0000, 0.0000* [14:53:30:364] b) RFE Doubler On(1) or Off(0) 1, 0* [14:53:30:364] b) REF Doubler On(1) or Off(0) 0, 0* [14:53:30:364] b) REF Doubler On(1) or Off(0) 0, 0* [14:53:30:364] b) REF Doubler On(1) or Off(0) 0, 0* [14:53:30:364] b) REF not PL reference (requence), (MHz) 27,00000000* [14:53:30:364] b) Sweep lower frequency (MHz) 27,000000000, 1000.0000000* [14:53:30:364] b) Sweep step size (MHz/%) 0.00000000, 1000.00000000* [14:53:30:364] b) Sweep step size (MHz/%) 0.00000000, 5000.00000000* [14:53:30:364] b) Sweep step size (MHz/%) 0.00000000* [14:53:30:364] b) Sweep step size (MHz/%) 0.0000000* [14:53:30:364] b) Sweep step size (MHz/%) 0.0000000* [14:53:30:364] b) Sweep step time (mS) 1.000.1000* [14:53:30:361] b) Sweep amplitude low (dBm) 0.000, 0.000 [14:53:30:361] b) Sweep differential: Seperation (MHz) 1.00000000* [14:53:30:391] c) Sweep set cotinuous mode 0* [14:53:30:391] d) Sweep type [imarch (Lab 1/ %E2) 0.0* [14:53:30:419] w) Enable trigger (De-software, 1=sweep, 2=step, 3=hold all) 0* [14:53:30:419] w) Aff to cycle repetitions 55* [14:53:30:419] w) Aff we for the (uS) 1.1* [14:53:30:419] w) Aff to cycle repetitions 10, 10* <tr< td=""><td></td><td></td></tr<>		
[14:53:30:364] →) RF Phase Step (0=minimum, 360.0=maximum) 0.0000, 0.0000 + [14:53:30:364] →) RF High(1) or Low(0) Power 1, 1 * [14:53:30:364] →) RF Poubler On(1) or Off(0) 1, 0 * [14:53:30:364] →) REF Doubler On(1) or Off(0) 0, 0 * [14:53:30:364] →) REF Doubler On(1) or Off(0) 0, 0 * [14:53:30:364] →) REF Doubler On(1) or Off(0) 0, 0 * [14:53:30:364] →) REF Doubler On(1) or Off(0) 0, 0 * [14:53:30:364] →) Reference frequency (MHz) 1000.00000000, 1000.00000000 * [14:53:30:364] → PLL reference frequency (MHz) 1000.00000000, 1000.00000000 * [14:53:30:364] → Sweep step size (MHz/%) 0.000000000, 1000.00000000 * [14:53:30:364] → Sweep step size (MHz/%) 0.00000010, 200.00000000 * [14:53:30:364] → Sweep step size (MHz/%) 0.00000010, 200.00000000 * [14:53:30:364] → Sweep step size (MHz/%) 0.00000010, 200.00000000 * [14:53:30:364] → Sweep step size (MHz/%) 0.000000000 * [14:53:30:364] → Sweep step size (MHz/%) 0.00000000 * [14:53:30:364] → Sweep step size (MHz/%) 0.0000000 * [14:53:30:391] → Sweep differential * Operation (MHz/ 1.0000.0000) * [14:53:30:391] → Sweep step size (MHz/Mz/%) 0.0000000 * [14:53:30:391] → Sweep step continuous mode 0 * [14:53:30:391] → Sweep step continuous mode 0 * [14:53:30:41] → M step time (US) 10, 10 * [14:53:30:41] → M step time (US) 10, 10 *		
[14:53:30:364] E) PLL Chip En On(1) or Off(0) 1, 0* [14:53:30:364] D) PLL charge pump current 5, 5* [14:53:30:364] D) Channel spacing (Hz) 100.000, 100.000* [14:53:30:364] D) Channel spacing (Hz) 100.000, 100.000 [14:53:30:364] D) Skeep lower frequency (MHz) 27.000000000 [14:53:30:364] D) Sweep lower frequency (MHz) 27.000000000, 5000.0000000 [14:53:30:364] D) Sweep step size (MHZ/%) 0.00000010, 200.00000000. [14:53:30:364] D) Sweep step size (MHZ/%) 0.0000010, 200.0000000. [14:53:30:364] D) Sweep amplitude low (dBm) 0.000, 0.000* [14:53:30:364] D) Sweep amplitude low (dBm) 0.000, 0.000* [14:53:30:361] N Sweep differential: Georf, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0* [14:53:30:391] N Sweep differential: (D=off, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0* [14:53:30:391] N Sweep try lo(in=0, tabe 1 / %=2) 0, 0* [14:53:30:391] N Sweep try lo(in=0, tabe 1 / %=2) 0, 0* [14:53:30:391] N Sweep try lo(in=1, tabe 1 / %=2) 0, 0* [14:53:30:391] N Sweep try lo(in=0, tabe 1 / %=2) 0, 0* [14:53:30:391] N Sweep try lo(in=0, tabe 1 / %=2) 0, 0* [14:53:30:391] N Sweep try lo(in=0, 1 off=0) 0* [14:53:30:419] P) AM & of cycle repetitions 65* [14:53:30:419] P) AM & of try loven trinuous node 0* [14:53:30:419] P) AM & of cycle repetitions 10, 10* [14:53:30:419] P) AM & of try loven trinuous node 0* <td>5</td> <td></td>	5	
[14:53:30:364] b) PLL charge pump current 5, 5 × [14:53:30:364] b) ARE Doubler On(1) or Of(0) 0, 0 × [14:53:30:364] b) ARE Poubler On(1) or Of(0) 0, 0 × [14:53:30:364] ×) Reference (external=0, int 27MHz=1, int 10MHz=2) 1 × [14:53:30:364] ×) PLL reference frequency (MHz) 27.00000000, 1000.0000000 × [14:53:30:364] v) Sweep lower frequency (MHz) 1000.00000000, 1000.00000000 × [14:53:30:364] v) Sweep lower frequency (MHz) 1000.0000000, 1000.0000000 × [14:53:30:364] v) Sweep step time (mS) 1.000. 1000.00000 [14:53:30:364] v) Sweep step time (mS) 1.000. 1000.0000 [14:53:30:364] v) Sweep step time (mS) 1.000. 1.000. [14:53:30:364] v) Sweep direction (up=1 / down=0) 1., J' [14:53:30:361] v) Sweep direferential separation (MHz) 1.00000000 × [14:53:30:391] v) Sweep direferential separation (MHz) 1.00000000 × [14:53:30:391] s) Sweep type (in=0 / tabe 1/ % ≥ 2) 0. 0. × [14:53:30:391] s) Sweep type (in=0 / tabe 1/ % ≥ 2) 0. 0. × [14:53:30:391] g) Sweep type (in=0 / tabe 1/ % ≥ 2) 0. 0. × [14:53:30:391] g) Sweep run (on=1 / off=0) 0. × [14:53:30:419] V) AM where time (uS) 20. * [14:53:30:419] V) AM where thing (uS) 1.0 × [14:53:30:419] V) AM where on time (uS) 1.1 × [14:53:30:419] V) AM where on time (uS) 1.0 × [14:53:30:410] V) Bulse Invert signal (on=1 / off=0) 0. *		
[4:53:30:364] b) REF Doubler On(1) or Off(0) 0, 0* [14:53:30:364] i) Channel spacing (H2) 100.000, 100.000 [14:53:30:364] i) Sterence (external=0, int 27MHz=1, int 10MHz=2) 1* [14:53:30:364] i) Sweep lower frequency (MHz) 27.00000000, 100.000000000* [14:53:30:364] i) Sweep lower frequency (MHz) 5000.0000000, 500000000* [14:53:30:364] i) Sweep step time (mS) 1.000, 1.000* [14:53:30:364] i) Sweep step time (mS) 1.000, 1.000* [14:53:30:364] i) Sweep amplitude low (dBm) 0.000, 0.000* [14:53:30:364] i) Sweep amplitude low (dBm) 0.000, 0.000* [14:53:30:361] i) Sweep amplitude low (dBm) 0.000, 0.000* [14:53:30:391] n) Sweep differential: (0=0f, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0* [14:53:30:391] x) Sweep differential: (0=0f, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0* [14:53:30:391] j) Sweep true (n=1 / df=0) 0* [14:53:30:391] j) Sweep true (n=1 / df=0) 0* [14:53:30:491] j) M Enable trigger. (0=software, 1=sweep, 2=step, 3=hold all) 0* [14:53:30:419] i) AM Rum Continuous (on=1 / off=0) 0* [14:53:30:419] i) AM Rum Continuous (on=1 / off=0) 0* [14:53:30:419] i) AM Rum Continuous (on=1 / off=0) 0.0* [14:53:30:410] i) Pulse Rum one burst * [14:53:30:410] i) Pulse Rum one burst * [14:53:30:411] i) PM Secotin (Hz) 100000, 1000* [14:53:30:451] i) FM Frequency (Hz) 1000, 100*		
[14:53:30:364] x) Reference (external=0, int 27MHz=1, int 10MHz=2) 1x [14:53:30:364] b) Sweep lower frequency (MHz) 27.000000000, 5000.0000000x [14:53:30:364] b) Sweep step size (MHz/y%) 0.0000010, 200.00000000x [14:53:30:364] b) Sweep step size (MHz/y%) 0.0000010, 200.0000000x [14:53:30:364] b) Sweep step ime (mS) 1.000, 1.000 [14:53:30:364] b) Sweep amplitude low (dBm) 0.000, 0.000 [14:53:30:364] b) Sweep amplitude low (dBm) 0.000, 0.000 [14:53:30:361] x) Sweep differential seperation (MHz) 1.00000000x [14:53:30:391] x) Sweep differential seperation (MHz) 1.00000000x [14:53:30:391] x) Sweep tifferential seperation (MHz) 1.00000000x [14:53:30:391] x) Sweep tifferential: (0=off, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0x [14:53:30:391] x) Sweep tifferential: (0=off, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0x [14:53:30:391] x) Sweep tifferential: (0=off, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0x [14:53:30:419] w) Enable triggeh (0=software, 1=sweep, 2=step, 3=hold all) 0x [14:53:30:419] v) AM & for cycle repetitions 65 % [14:53:30:419] v) AM & for cycle repetitions 65 % [14:53:30:419] v) AM & for cycle repetitions 10, 10 % [14:53:30:419] v) AM & for cycle repetitions 10, 10 % [14:53:30:419] v) Pulse Unot tiggeh (0=1 / off=0) 0, 0x [14:53:30:410] v) FM M & for petitions 10, 100 % [14:53:30:451] v) FM Deviation (Hz) 100000 (100 %		
[14:53:30:364] *) PLL reference frequency (MHz) 27.0000000. [14:53:30:364] I) Sweep lower frequency (MHz) 1000.0000000. 1000.0000000. [14:53:30:364] I) Sweep step size (MHz/%) 0.0000010 200.0000000. [14:53:30:364] I) Sweep step time (mS) 1.000.1.000. [14:53:30:364] I) Sweep amplitude low (dBm) 0.000.0000. [14:53:30:364] I) Sweep amplitude low (dBm) 0.000.0000. [14:53:30:364] I) Sweep amplitude low (dBm) 0.000.0000. [14:53:30:361] I) Sweep amplitude low (dBm) 0.000.0000. [14:53:30:361] I) Sweep amplitude low (dBm) 0.000.0000. [14:53:30:361] I) Sweep differential: 6eperation (MHz) 1.00000000. [14:53:30:391] N Sweep differential: 6eperation (MHz) 1.00000000. [14:53:30:391] N Sweep type (lin=0/tab=1/%=2) 0.0. [14:53:30:391] S) Sweep set continuous mode 0. [14:53:30:41] N Sweep type (lin=0/tab=1/%=2) 0.0. [14:53:30:41] N Sweep set continuous (on=1/off=0) 0. [14:53:30:41] P) AM set time (uS) 20. [14:53:30:41] P) Pube On time (uS) 1.1. [14:53:30:41] P) Pube On time (uS) 1.1. [14:53:30:41] P) Pube On time (uS) 1.0.10. [14:53:30:41] P) Pube R on one burst \sigma (on=1/off=0) 0. [14:53:30:41] P) Pube R on one burst \sigma (on=2/off=0) 0. [14:53:30:41] P) Pube R on one burst \sigma (on=2/off=0) 0.0. [14:53:30:41] P) Pube R on time (uS) 10.10.		
[4:53:30:364]) Sweep lower frequency (MHz) 1000.0000000, 1000.00000000; [4:53:30:364]) Sweep step size (MHz/%) 0.0000010, 200.00000000; [4:53:30:364]) Sweep step time (mS) 1.000, 1.000; [4:53:30:364]) Sweep amplitude low (dBm) 0.000, 0.000; [1:53:30:361]) Sweep amplitude low (dBm) 0.000, 0.000; [1:53:30:391] ^) Sweep amplitude low (dBm) 0.000, 0.000; [1:53:30:391] ^) Sweep amplitude low (dBm) 0.000, 0.000; [1:53:30:391] ^) Sweep differential separation (MHz) 1.00000000; [1:53:30:391] ^) Sweep differential separation (MHz) 1.00000000; [1:53:30:391] ^) Sweep type (lime(1/cta) 1.4%=2) 0.0; [1:53:30:391] 3) Sweep type (lime(1/cta) 1.4%=2) 0.0; [1:53:30:391] 3) Sweep type (lime(1/cta) 1.4%=2) 0.0; [1:53:30:419] b) Examplitude low (sequence); [1:53:30:419] b) AM set time (uS) 20; [1:53:30:419] A) AW Run Continuous (sen=1 / off=0) 0; [1:53:30:419] A) AW Run Continuous (sen=1 / off=0) 0; [1:53:30:419] A) AW Run Continuous (sen=1 / off=0) 0; [1:53:30:419] A) AW Run Continuous (sen=1 / off=0) 0; [1:53:30:419] A) AW Run Continuous mode 0; [1:53:30:419] A) Pulse Run one burst * [1:55:30:410] A) FM Eventian (M2) 10000; [1:55:30:451] A) FM Deviation (H2) 100000; [1:55:30:451] A) FM zentinuous mode 0; [1:55:30:451] A) FM z		
[14:53:30:364] u) Sweep upper frequency (MHz) 5000.0000000, 5000.0000000. [14:53:30:364] t) Sweep step size (MHz/%) 0.0000010, 200.00000000. [14:53:30:364] t) Sweep step time (mS) 1.000. 1.000. [14:53:30:361] D) Sweep amplitude low (dBm) 0.000, 0.000. [14:53:30:361] D) Sweep amplitude high (dBm) 0.000, 0.000. [14:53:30:391] N) Sweep differential seperation (MHz) 1.00000000. [14:53:30:391] N) Sweep differential: (0=off, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0.* [14:53:30:391] N) Sweep type (in=0 / tab=1 / %=2) 0, 0.* [14:53:30:391] N) Sweep type (in=0 / tab=1 / %=2) 0, 0.* [14:53:30:391] N) Sweep type (in=0 / tab=1 / %=2) 0, 0.* [14:53:30:391] N) Sweep type (in=0 / tab=1 / %=2) 0, 0.* [14:53:30:419] N) Enable trigger (0=software, 1=sweep, 2=step, 3=hold all) 0.* [14:53:30:419] A) AM Run Continuous mode 0.* [14:53:30:419] A) AM Run Continuous (no=1 / off=0) 0.* [14:53:30:419] A) AM Run Continuous mode 0.* [14:53:30:410] A) AW Run continuous mode 0.* [14:53:30:410] A) Pulse A of repetitions 10, 10.* [14:53:30:410] A) AW Run continuous mode 0.* [14:53:30:410] A) AW Run continuous mode 0.* [14:53:30:410] A) Pulse continuous mode 0.* [14:53:30:410] A) Pulse continuous mode 0.* [14:53:30:411] A) FM Frequency (Hz) 10000, 10000.* [14:53:30:451] A) FM Deviation (
[14:53:30:364] t) Sweep step time (mS) 1.000, 1.000, [14:53:30:364] t) Sweep amplitude low (dBm) 0.000, 0.000, [14:53:30:391]) Sweep amplitude high (dBm) 0.000, 0.000, [14:53:30:391] x) Sweep differential seperation (MHz) 1.00000000, [14:53:30:391] x) Sweep differential seperation (MHz) 1.00000000, [14:53:30:391] x) Sweep differential seperation (MHz) 1.00000000, [14:53:30:391] x) Sweep true (lin=0/tab=1/%=2) 0, 0, [14:53:30:391] x) Sweep true (lin=0/tab=1/%=2) 0, 0, [14:53:30:391] x) Sweep true (lon=1/fe=0) 0, [14:53:30:391] x) Sweep true (lon=1/fe=0) 0, [14:53:30:419] x) Sweep set continuous mode 0, [14:53:30:419] x) Sweep true (lon=1/fe=0) 0, [14:53:30:419] x) AM step time (uS) 20, [14:53:30:419] x) AM step time (uS) 1, 1, [14:53:30:410] x) AM Run Continuous (on=1/off=0) 0, [14:53:30:410] x) Pulse of time (uS) 1, 1, [14:53:30:410] x) Pulse of time (uS) 1, 1, [14:53:30:410] x) Pulse for time (uS) 1, 1, [14:53:30:410] x) Pulse for time (uS) 1, 1, [14:53:30:410] x) Pulse for time (uS) 1, 1, [14:53:30:410] x) Pulse numer tignal (on=1/off=0) 0, 0, [14:53:30:410] x) Pulse numer tignal (on=1/off=0) 0, 0, [14:53:30:42] x) Pulse Run one burst 1, [15:53:01:42] x) Pulse Run one burst 1, [15:53:01:42] x) PM Deviation (Hz) 1000, 1000, [14:53:30:451] x) FM Tereutions 100, 100, [14:53:30:451] x) FM Tereutions 100, 100, [14:53:30:451] x) FM Type (sinusoid=0 / chirp=1) 0, 0, [14:53:30:451] x) FM Type (sinusoid=0 / chirp=1) 0, 0, [14:53:30:451] x) FM toroitinuous mode 0, [14:53:30:451] x)		
[14:53:30:364] [) Sweep amplitude low (dBm) 0.000, 0.000°, [14:53:30:391] h) Sweep amplitude low (dBm) 0.000, 0.000°, [14:53:30:391] k) Sweep differential seperation (MHz) 1.00000000°, [14:53:30:391] k) Sweep differential seperation (MHz) 1.00000000°, [14:53:30:391] k) Sweep differential seperation (MHz) 1.00000000°, [14:53:30:391] k) Sweep type (lin=0/tab=1/%=2) 0, 0°, [14:53:30:391] c) Sweep set continuous mode 0°, [14:53:30:391] c) Sweep set continuous mode 0°, [14:53:30:419] w) Enable trigger, (0=software, 1=sweep, 2=step, 3=hold all) 0°, [14:53:30:419] q) AM # of cycle repetitions 65 % [14:53:30:419] q) AM # of cycle repetitions 65 % [14:53:30:419] AM Bun Continuous (on=1 / off=0) 0 °, [14:53:30:410] O) Pulse 0n time (uS) 10, 10°, [14:53:30:410] O) Pulse for time (uS) 10, 10°, [14:53:30:410] O) Pulse and none burst % [14:53:30:411] Pulse for time (uS) 10, 10°, [14:53:30:412] O) Pulse Run one burst % [14:53:30:413] O) Pulse Run one burst % [14:53:30:413] O) Pulse Run one burst % [14:53:30:451] O) FM Frequency (Hz) 1000, 10000°, [14:53:30:451] O) FM beviation (Hz) 100000, 10000°, [14:53:30:451] O) FM and repetitions 100, 100°, [14:53:30:451] O) FM and continuous mode 0° [14:53:30:451] O) FM and continuous mode		
[14:53:30:391]) Sweep amplitude high (dBm) 0.000, 0.000 · [14:53:30:391] ^) Sweep direction (up=1 / down=0) 1, 1, · [14:53:30:391] h) Sweep differential: seperation (MHz) 1.00000000 · [14:53:30:391] h) Sweep differential: (0=off, 1=ChA-Difffreq, 2=ChA+DiffFreq) 0 · [14:53:30:391] h) Sweep type (lin=0 / tab=1 / %=2) 0, 0 · [14:53:30:391] c) Sweep set continuous mode 0 · [14:53:30:419] w) Enable trigger (0=software, 1=sweep, 2=step, 3=hold all) 0 · [14:53:30:419] q) AM # of cycle repetitions 65 · [14:53:30:419] q) AM # of cycle repetitions 65 · [14:53:30:419] p) Pulse Off time (uS) 10, 10 · [14:53:30:419] p) Pulse Off time (uS) 10, 10 · [14:53:30:419] p) Pulse Off time (uS) 10, 10 · [14:53:30:410] O) Pulse Off time (uS) 10, 10 · [14:53:30:410] O) Pulse Invert signal (on=1 / off=0) 0, 0 · [14:53:30:410] P) Pulse continuous mode 0 · [14:53:30:410] P) Pulse continuous mode 0 · [14:53:30:411] P) Pulse continuous mode 0 · [14:53:30:421] FM Prequency (Hz) 10000, 10000 · [14:53:30:451] FM Prequency (Hz) 10000, 10000 · [14:53:30:451] FM Prequency (Hz) 10000, 10000 · [14:53:30:451] FM Prequency (Hz) 10000, 1000 · [14:53:30:451] / FM status (lock=1 / unlock=0) 1, 0 · [14:53:30:451] / FM or petit		
[14:53:30:391] k) Sweep differential: (0=off, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0 * [14:53:30:391] n) Sweep differential: (0=off, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0 * [14:53:30:391] k) Sweep type (lin=0 / tab=1 / %=2) 0, 0 * [14:53:30:391] c) Sweep run (on=1 / off=0) 0.* [14:53:30:41] w) Enable trigger. (0=software, 1=sweep, 2=step, 3=hold all) 0.* [14:53:30:41] w) Enable trigger. (0=software, 1=sweep, 2=step, 3=hold all) 0.* [14:53:30:41] p) AM step time (uS) 20.* [14:53:30:41] p) AM # of cycle repetitions 65.* [14:53:30:41] AM W and continuous (on=1 / off=0) 0.* [14:53:30:41] P) Pulse on time (uS) 1, 1.* [14:53:30:41] O) Pulse for time (uS) 10, 10.* [14:53:30:41] N) Pulse for repetitions 10, 10.* [14:53:30:41] R) Pulse and one burst * [14:53:30:41] R) Pulse ton time us 10, 10.* [14:53:30:41] R) Pulse ton time us 10, 10.* [14:53:30:451] J) Pulse continuous mode 0.* [14:53:30:452] FM Frequency (Hz) 1000, 1000.* [14:53:30:451] J) Fulse ton timo us mode 0.* [14:53:30:451] J) FM to frequetitors 100, 100.* [14:53:30:451] J) FM to frequetitors 100, 10.* [14:53:30:4		
[14:53:30:391] n) Sweep differential: (0=off, 1=ChA-DiffFreq, 2=ChA+DiffFreq) 0 % [14:53:30:391] X) Sweep type (lin=0/tab=1/%=2) 0, 0 % [14:53:30:391] c) Sweep set continuous mode 0 % [14:53:30:419] w) Enable trigger; (0=software, 1=sweep, 2=step, 3=hold all) 0 % [14:53:30:419] q) AM # of cycle repetitions 65 % [14:53:30:419] q) AM # of cycle repetitions 65 % [14:53:30:419] q) AM # of cycle repetitions 65 % [14:53:30:419] q) AM # of cycle repetitions 10, 10 % [14:53:30:419] Q) Pulse On time (uS) 10, 1 % [14:53:30:410] Q) Pulse On time (uS) 10, 10 % [14:53:30:410] Q) Pulse On time (uS) 10, 10 % [14:53:30:410] Q) Pulse Invert signal (on=1 / off=0) 0, 0 % [14:53:30:410] Q) Pulse Invert signal (on=1 / off=0) 0, 0 % [14:53:30:410] Q) Pulse Run one burst % [14:53:30:451] A) FM Frequency (Hz) 10000, 10000 % [14:53:30:451] >) FM Deviation (Hz) 100000, 100000 % [14:53:30:451] >) FM preg (sinusoid=0 / chirp=1) 0, 0 % [14:53:30:451] z) FM continuous mode 0 % [14:53:30:451] z) Temperature in degrees C 44.500 % [14:53:30:451] z) Temperature in degrees C 44.500 % [14:53:30:451] z) Serial Number 590 %		
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Clear Hex output Logging to: /home/pi/cutecom.log		
Device: /dev/ttyS0 Connection: 115200@8-N-1		•
	Device: /dev/ttyS0 Connection: 115200 @ 8-N-1	

For UART enabled USB-C Windfreak RF Devices

Troubleshooting

If you don't see /dev/ttyS0 then repeat steps 1-6 above. Windfreak devices don't like to see termination characters, so be sure and use a terminal program that allows you to turn them off. You can easily use a USB connection from the RPi since Raspbian comes with the proper hardware drivers. Finally, the UART port is slower than USB so using the Windfreak GUI based on Labview wont work properly through UART because of delay issues.

