Self Tests

In addition to automatic self checks performed at power up, the C Plus also has diagnostic tools that can be used by the technician during installation and whenever functionality is in question.

Using the Self Test feature:
Self-test directives are entered while the C Plus is in normal operating mode using a terminal emulator like Hyperterm.
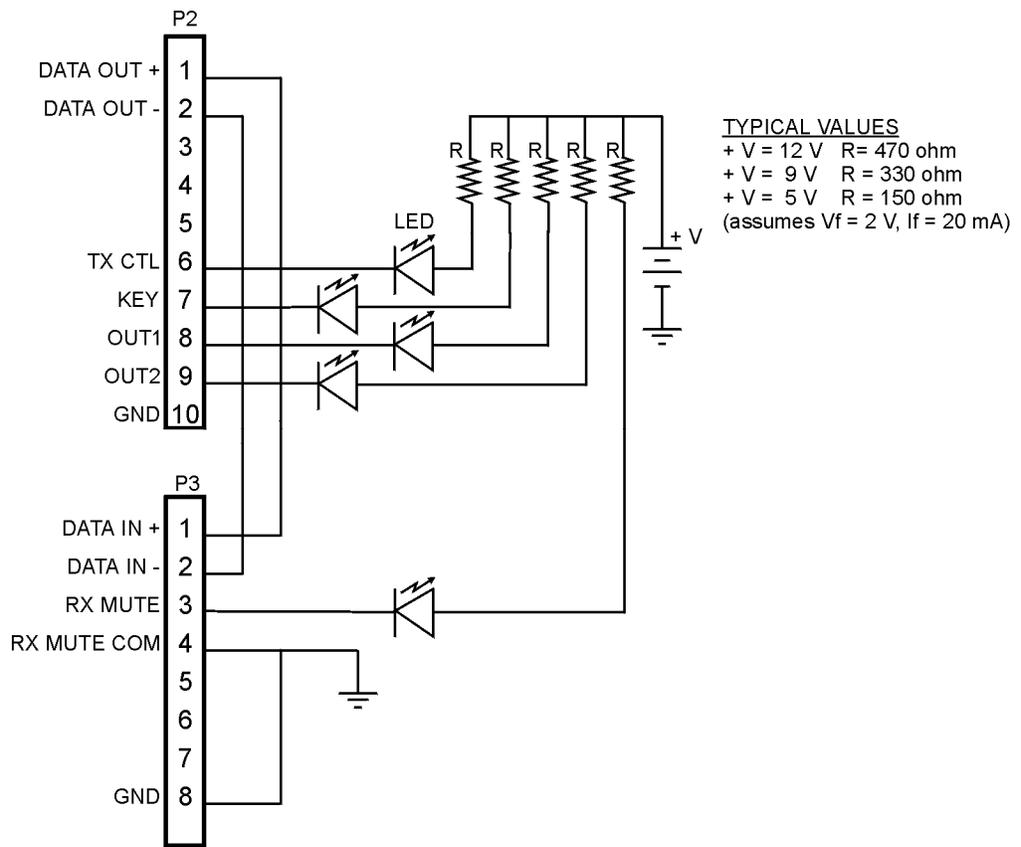
Self-test Directives:

$$CHAN	Returns the channel number assigned.
$$DISPLAY	Illuminates all pixels of the display for five seconds to check for non-functional display pixels.
$$DUALDEC	If the dual decode feature has been enabled, this command returns the two types of signaling that are enabled for decode, and which format is enabled for encode.
$$KEYT	Useful in adjusting outbound data deviation. This command keys the C Plus and sends data for 10 seconds in the signaling format currently in operation.
$$LOOP	Generates a PTT ANI message and then an emergency message in the signaling format currently in operation. Repeats for 16 seconds, one message per second. If Data Out is attached to Data In during the diagnostic test, the C Plus will decode and display the data that it is encoding. This performs a complete loop-back test verifying all encode and decode circuitry.
$$OUTS	Causes the outputs to individually wiggle for 3 seconds each. Affects Key, RXMute, TXCtl, Out1 and Out2. If these outputs are connected to LED circuitry, operation of the outputs will be verified by illuminated LED's.
$$SWVER	This command returns the version number and date of the flashware.
$$TRIDEC	If the tri-decode feature is enabled, this command returns the three types of signaling that are enabled for decode, and which format is enabled for encode.

Additional Information:
If using the $$LOOP command with the test fixture, emergency decodes must be cleared from the display in order to view subsequent PTT ANI's. $$DISPLAY has no effect on the C Plus I display. $$KEYT and $$LOOP will not transmit if the PTT input is active or if the channel busy input is active. $$LOOP messages will not be decoded if RXInhibit is active.

Test Fixture
The diagram below describes a simple test fixture that will provide a visual presentation of the results of the $$OUTS command and also loops output to input to verify encode and decode functionality using the $$LOOP command.

P2

DATA OUT +	1
DATA OUT -	2
	3
	4
	5
TX CTL	6
KEY	7
OUT1	8
OUT2	9
GND	10

LED

R R R R R

TYPICAL VALUES
+ V = 12 V   R= 470 ohm
+ V = 9 V   R = 330 ohm
+ V = 5 V   R = 150 ohm
(assumes Vf = 2 V, If = 20 mA)

+ V

P3

DATA IN +	1
DATA IN -	2
RX MUTE	3
RX MUTE COM	4
	5
	6
	7
GND	8

See Also:
Communicating with the C Plus using Hyperterm