

Polarotor Voltage to Polarity Converter

The problem many BUD owners have with new digital receivers today stems from the way the older systems use a servo motor (controlled by the old analog receiver) to change feed horn polarity. The new systems use different voltage levels on the coax (13 & 18 volts) to electronically switch feed horn polarity – Creating a hardware dilemma when upgrading a perfectly good dish with a new box

A Solution

When installed in the coax between the receiver and the LNB, this new adapter provides power to the servo and the correct position pulses.

It measures the coax voltage, automatically adjusting its pulse output to move the servo to one of two positions - which determines which polarity the LNB sees.

Typical servo color code is :

Red – servo power (+5v)

White – servo pulse

Black – servo ground

The device circuitry is built around the 8 pin PIC 12F683 micro-controller.

There is LED indication to show which polarity is sensed - green for horz / red for vert.

A variable resistor on the circuit board can be used to fine tune the servo offset adjust by (+/-10%) if needed, else it's centered electrically at 2.5 volts on the wiper. Adjusting this will shift both horizontal and vertical an equal amount one way or the other.

It's usually good practice to place the PIC Vdd .1uF cap (C1) between the power pins, in this case pins #1 and #8, in order to minimize noise.

My installation has the servo cable near the satellite receiver and I've put the adapter where I can see the LEDs. A short coax jumper between the receiver and one input of the adapter and the coax to the dish goes to the other.

Bill of Materials:

U1 - PIC12F683 micro

U2 - LM7805 voltage regulator

L1 - 2.2uH inductor

VR1 - 10k adj resistor

R1,R6 – 10k resistors

R2 – 47k resistor

R4,R5 – 330 ohm resistors

R3 – 220 ohm resistor

2 – 75 ohm RG-6 jacks

C1,C2 - .1uF cap

C3 – 10 uF cap

LED1 – bi color red/grn LED or 1 green and 1 red LED

1 – 8 pin socket for micro

