# freETarget

Application Note: Setting the Trip Point

**SUMMARY**

This application note describes the procedure for calibrating the trip point of the circuit.

**REQUIRED**

* freETarget V2.1 or higher
* Firmware V3.0 or higher
* Small Screw Driver
* Header Jumper

**INTRODUCTION**

freETarget uses the sound of the projectile passing the sensors to trip a circuit and measure the time difference between the various sensor. Using the time difference the software computes the location and displays the results.

Ideally the hardware wants to detect the pellet at the moment the signal starts to appear. In practice setting the trip point close to zero would make it susceptible to false triggering from other targets. Setting the trip point too high would prevent the circuit from detecting some shots. freeETarget has a variable control that lets you adjust the trip point based on your range and shooting preferences.

**PREPARATION**

The circuit is put into calibration mode by inserting the CAL jumper as shown in Figure 1.

The trip ranges are selected by adding an additional jumper to the A or B header. The ranges are shown in Table 1.

Table 1: Jumper Settings

|  |  |  |
| --- | --- | --- |
| Low | Normal | High |
| Jumper A | None | Jumper B |

Start by setting the calibration to the NORMAL mode. Use the HIGH setting for outdoor ranges with high calibre weapons. The low setting is provided for reference only.

**ADJUSTMENT**

The trip point is adjustable in three ranges and 15 levels as shown in Table 2. Using the small screwdriver adjust the trim pot (Figure 2) and observe the LED indicators (Figure 3). The circuit is delivered calibrated to a trip point of roughly 600mV. Adjust upwards if you are getting false trips. Adjust downwards to improve the detection threshold.

Table 2: Trip Point Adjustment

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Low (mV) | Normal  (mV) | High  (mV) |  | **RDY** | **X** | **Y** |
| Do Not Use | 233 | 350 | 525 |  |  |  |  |
|  | 267 | 400 | 600 |  |  |  |  |
|  | 300 | 450 | 675 |  |  |  | **BLINK** |
|  | 333 | 500 | 750 |  |  |  |  |
|  | 367 | 550 | 825 |  |  | **BLINK** |  |
| Factory Setting | | 400 | 600 | 900 |  |  |  |  |
|  | 433 | 650 | 975 |  |  | **BLINK** | **BLINK** |
|  | 467 | 700 | 1050 |  |  |  |  |
|  | 500 | 750 | 1125 |  | **BLINK** |  |  |
|  | 533 | 800 | 1200 |  |  |  |  |
|  | 600 | 900 | 1350 |  | **BLINK** |  | **BLINK** |
|  | 667 | 1000 | 1500 |  |  |  |  |
|  | 733 | 1100 | 1650 |  | **BLINK** | **BLINK** |  |
|  | 800 | 1200 | 1800 |  |  |  |  |
|  | 867 | 1300 | 1950 |  | **BLINK** | **BLINK** | **BLINK** |
| DO NOT USE | 100 | 1400+ | 2000 |  | **TOGGLE** | **TOGGLE** | **TOGGLE** |

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Figure 1: Calibration Jumper | Figure 2: Adjusting Potentiometer | Figure 3: Indicator LEDs |

IMPORTANT

No LEDs or all blinking indicates under or over range and should not be used.

**FINISHING UP**

* Record the LED settings and date

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | S | X | Y | Reason for Change |
|  |  |  |  |  |
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|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

* Remove the calibration and other jumpers
* Cycle power to the freETarget
* Verify that the LEDs return to the conventional RDY-OFF-OFF setting