Application Note: Commissioning

SUMMARY

This application note describes the steps needed to put a freETarget into service and trouble shoot problems as they arise.

REQUIRED

- freETarget V2.1 or higher
- Firmware V3.0 or higher

INTRODUCTION

freETarget has built in test software that helps to identify problems in the installation and ensure correct operation.

IMPORTANT

Your freETarget was tested when it was assembled and arrived with the latest firmware and calibrated. Straight out of the box it should work first shot (pun intended).

INSPECTION

After you have assembled the freETarget into the target holder, inspect the following

- The flat cable is pressed firmly into the sensors and signal board
- There are no kinks or sharp bends in the flat cable.
- All of the sensors are correctly installed North through West

POWER ON

When powered on, the LEDs will go through a short cycle RDY – X – Y to indicate that the power has been applied, the software is valid, and the circuit is functioning. See Figure 1 to see the expected operation.
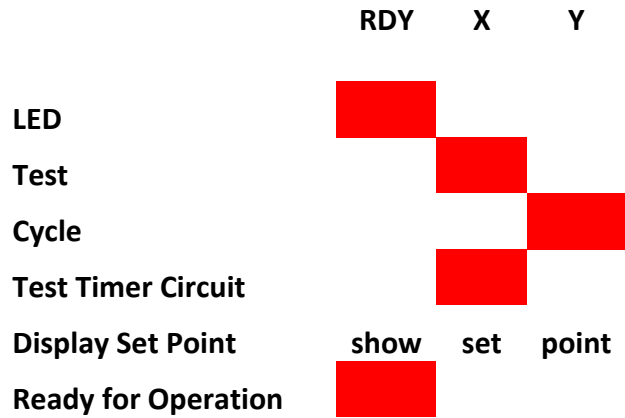
	RDY	X	Y
LED	■		
Test		■	
Cycle			■
Test Timer Circuit		■	
Display Set Point	show	set	point
Ready for Operation	■		

Figure 1: Power On Test Cycle

SENSOR TEST

At the beginning of each cycle, the software does a quick check to make sure that the hardware is ready for the next shot. If no errors are found, the RDY LED is illuminated and the circuit is ready to go. If a sensor is not detected, the fault LED is lit and the remaining LEDs are used to identify the faulty sensor

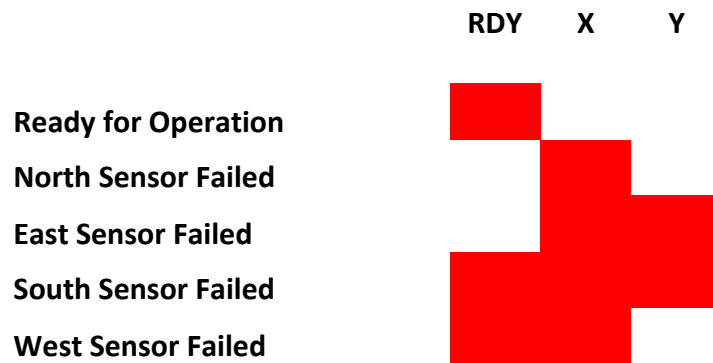|	RDY	X	Y
Ready for Operation	■		
North Sensor Failed		■	
East Sensor Failed		■	■
South Sensor Failed	■		
West Sensor Failed	■	■	

Figure 2: Sensor Fault Indication

If the sensors show ready for operation, tapping the face of the sensor will trigger a shot and indicate that the sensor is capable of detecting the projectile. In Figure 3, all of the LEDs are briefly illuminated to show that the shot was detected and sent to the PC.

	RDY	X	Y
Ready for Operation	■		
Shot Detected	■	■	■

Ready for Next Shot

Figure 3: LEDs During and After a Shot

CONNECTING TO THE PC

Launch the PC program and make sure that the correct COM port has been selected.

- Press the Setup Icon (Gear Wheel)
- Inspect Hardware
- Verify that the correct COM port is used.
- Press the CONNECT button on the PC program
    o Does the program show CONNECTED?
    o The current firmware version and date is shown?
    o The competition timer starts running?
    o If the answer is no to any of these questions,
        ▪ check the USB cables
        ▪ the selected COM port
        ▪ make sure the driver for the CH340 chip is loaded (google ch340 driver for instructions)

FIRST SHOT

From a distance of 10 meters, fire your first shot into the target.

- Does the shot register on the PC program?
    o No, check the cables and settings
    o Unplug the FACE sensor if it is plugged in

Fire a series of 9 more shots onto the target.

- Do all 10 shots show up on the display?
    o No, check the cables and settings
- Are the shots more-or-less in the correct place?
    o You're done. Happy Shooting
- Are the shots correct, but the mirror image?
    o The sensors are installed correctly, but mirror image.
    o Swap North and East
    o Swap West and South
    o Go back to the beginning and test the circuit.
- Are the shots correct, but the reversed top and bottom?
    o The sensors are installed correctly, but upside down.
    o Swap North and West
    o Swap South and East

- Go back to the beginning and test the circuit.

SET TRIGGER POINT

At this moment, your freETarget is working correctly. Once you get confident in how it works, you might want to change the trigger point and try to improve the accuracy. Refer to the Application Note: Setting the Trigger Point for more instructions.

TECHNICAL SUPPORT

If something goes wrong please send an email to free-e-target and we will try to resolve your problem

Before sending an email, please follow these steps, it will make things go a lot quicker

1. Go onto the PC program,
2. Connect to the target
3. Using the Arduino button, (upper right, small green circle icon) view the settings, example below
4. Send the screen shot of the settings

"NAME":"TARGET",
"ANGLE": 45,
"CALIBREx10": 45,
"DIP": 0,
"LED_BRIGHT": 50,
"MFS": 0,
"NAME_ID": 0,
"PAPER_ECO": 0,
"PAPER_TIME": 0,
"POWER_SAVE": 30,
"SEND_MISS": 0,
"SENSOR": 230.00,
"SN": 92,
"STEP_COUNT": 0,
"STEP_TIME": 0,
"TARGET_TYPE": 0,
"TEST": 0,
"Z_OFFSET": 0,
"NORTH_X": 0,
"NORTH_Y": 0,
"EAST_X": 0,
"EAST_Y": 0,
"SOUTH_X": 0,
"SOUTH_Y": 0,
"WEST_X": 0,
"WEST_Y": 0,
"IS_TRACE": 0,

"TEMPERATURE": 29.50,
"SPEED_SOUND": 0.35,
"V_REF": 1.01,
"TIMER_COUNT":5568,
"DIP_HEX": 0x0,
"WiFi": 1,
"VERSION": "3.04.11 October 2, 2021",
"BD_REV": 3.10