



## SETUP GUIDE TAG HEUER TIMING BEAMS

### TIMING BEAM CASE CONTENTS

- |                                     |                          |
|-------------------------------------|--------------------------|
| 1. Tag Heuer Chronoprinter box x 1  | <input type="checkbox"/> |
| a. Chronoprinter 545                | <input type="checkbox"/> |
| b. Spare paper roll                 | <input type="checkbox"/> |
| c. Spare batteries                  | <input type="checkbox"/> |
| 2. Tag Heuer Receiver box x 1       | <input type="checkbox"/> |
| a. Receiver HL615                   | <input type="checkbox"/> |
| b. Antenna                          | <input type="checkbox"/> |
| c. Cable, banana plugs either end   | <input type="checkbox"/> |
| 3. Tag Heuer Infrared Beams box x 2 | <input type="checkbox"/> |
| a. Transmitter HL3-TX               | <input type="checkbox"/> |
| b. Wireless Photocell HL3-100       | <input type="checkbox"/> |
| c. Antenna                          | <input type="checkbox"/> |
| 4. Tripods x 2                      | <input type="checkbox"/> |
| 5. Tent pegs (bag)                  | <input type="checkbox"/> |
| 6. Setup Guide                      | <input type="checkbox"/> |
| 7. Pelican Case x 1                 | <input type="checkbox"/> |

### INSTRUCTIONS

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#### **\*HIGHLIGHTS\***

- Instructions 8 & 9 – Switches set to **HIGH** and **IMPULSE**
- Instruction 12 – Green light **GOES OUT WHEN ALIGNED**

1. **90 MINUTES BEFORE 00**

Power up the Chronoprinter 545 by pressing and holding the “on” button for 5 secs (figure 1 below). Upon power up the Chronoprinter 545 will conduct a system self-test including details such as, but not limited to (see figure 2 below):

- a. Date;
- b. Time; and
- c. Clock precision.



Figure 1. Power On Button

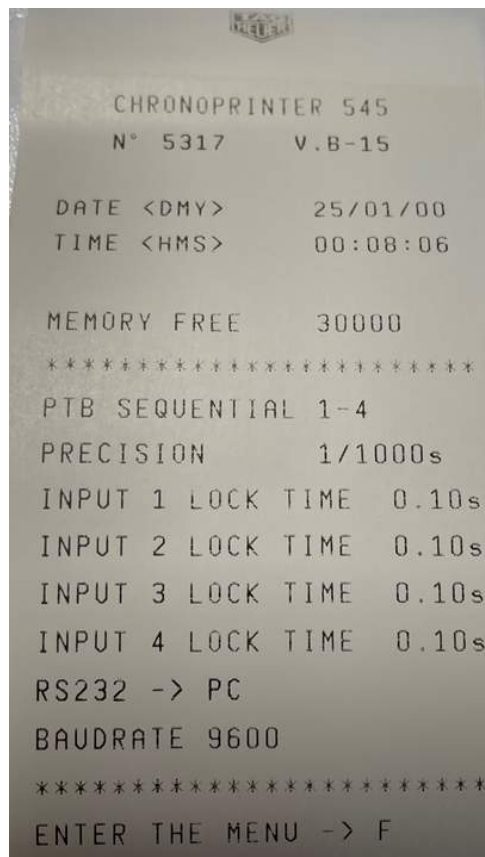


Figure 2. Example Chronoprinter 545 Self-test Results

**ONCE POWERED ON, DO NOT TURN THE CHRONOPRINTER OFF UNTIL THE END OF THE DAY.**

2. Connect the green banana plug to the green socket above the number '1' on the back of the Chronoprinter CP545. Likewise, connect the black banana plug to the black socket below the number '1' on the back of the Chronoprinter CP545. See figure 3 below.

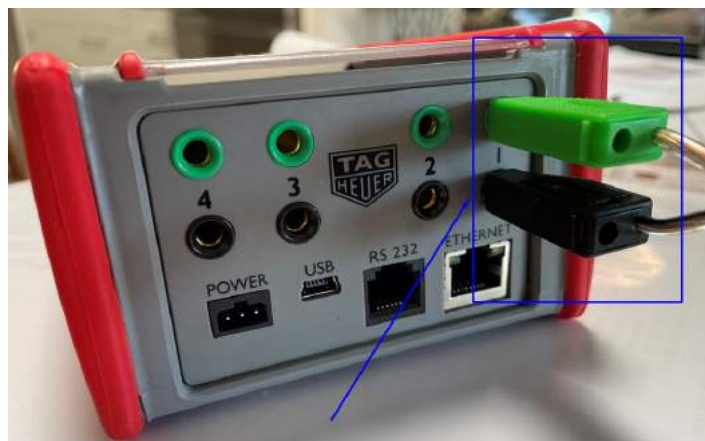


Figure 3. Chronoprinter CP545 Cable Connections

3. Connect Receiver HL615 in the same manner as described above at Step 2, to the ports under the '1' on the front panel. See figure 4 below.



Figure 4. Receiver HL615 Cable Connections

4. Attach the provided antenna to the Receiver HL615 using the BNC connector. See figure 5 below.



Figure 5. Receiver HL615 Antenna Connection

5. Power on the Receiver HL516 by pressing and holding the green 'Power' button for approx. 2 secs. See figure 6 below.

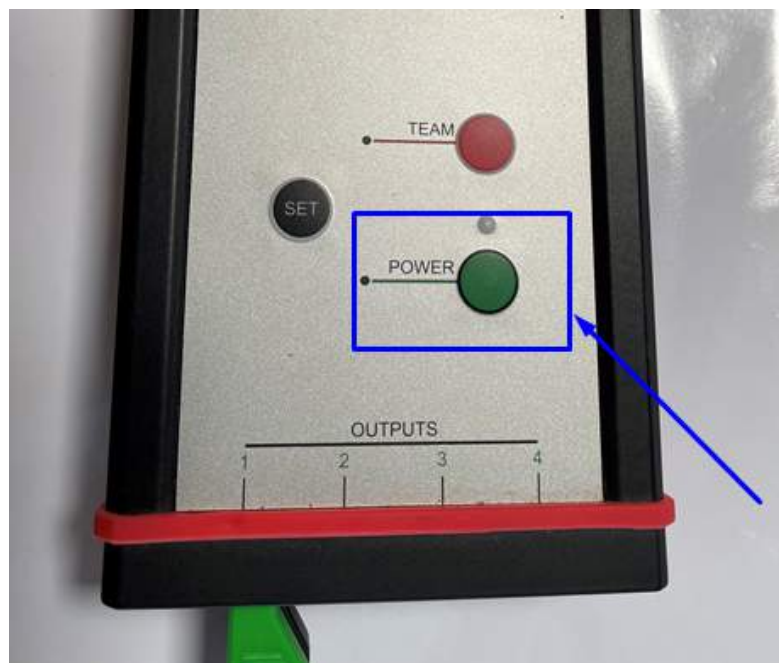


Figure 6. Receiver HL615 Power Button

6. Mount both the Infrared Transmitter HL3-TX and Wireless Photocell HL3-100 to the two tripods provided within the kit (see figure 7 below). Place tripods on either side of the road, securing the tripods with the provided tent pegs at base to prevent turbulence from the passing cars knocking them over.



Figure 7. Example Tripod Setup

**Note** there are tent pegs in the box for securing the tripod to the roadside.

**Note.** Place the Wireless Photocell HL3-100 on the side of the road with the clearest line of sight to Receiver HL615 (typically the same side as the control officials position) to reduce the chances of interference from any obstructions (i.e. trees, vegetation, vehicles).

7. Attach the provided antenna to the area of the Wireless Photocell HL3-100 using the BNC connector (see figure 8 below).



Figure 8. Wireless Photocell HL3-100 Antenna Connection

8. **Switch the Transmitter HL3-TX into 'High' power mode** using the switch on the back of the unit (see figure 9 below). This switch is marked '1' in the image below.



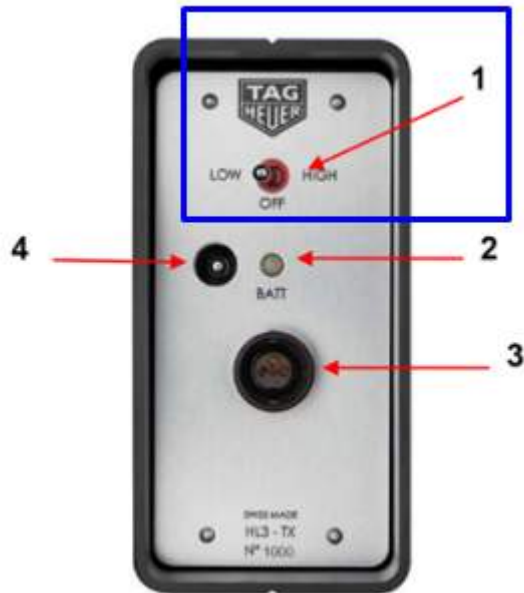


Figure 9. Transmitter Power Switch

9. **Switch the Wireless Photocell HL3-100 into 'Impulse Channel' mode** using the switch on the back of the unit (see figure 10 below).



Figure 10. Impulse Channel Switch

10. Ensure that the tripods heights of both the Infrared Transmitter HL3-TX and Wireless Photocell HL3-100 on either side of the road are set such that they would be midway up the side of a car: **about 800 to 900mm above the road**. Adjust the tripods to ensure the lenses of the Infrared Transmitter HL3-TX and Wireless Photocell HL3-100 are at the same height. See figure 11 below.

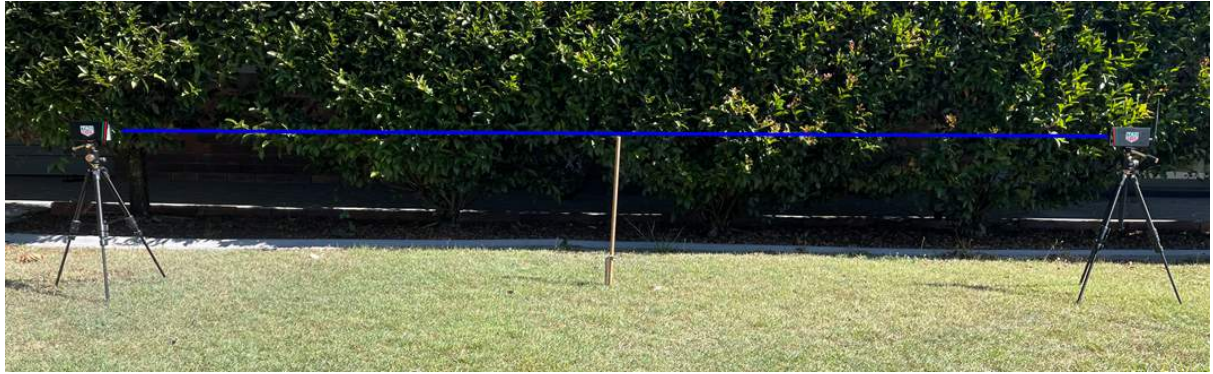


Figure 11. Vertical Alignment

**Note. Vertical tripod adjustment is easily achieved using the knob shown within figure 12 below.**



Figure 12. Vertical Tripod Alignment

11. To align the Infrared Transmitter HL3-TX and Wireless Photocell HL3-100 point both units so they are facing each other from either side of the road. When out of alignment the 'Status' LED will be lit on the rear of the Wireless Photocell HL3-100. See figure 13 below.



Figure 13. Wireless Photocell HL3-100 Status LED

12. Conduct a fine alignment of the Infrared Transmitter HL3-TX and Wireless Photocell HL3-100 by gently aligning the two units by moving the tripod handle **until the green “Status’ LED extinguishes. Once extinguished both units are correctly aligned.**
13. Once correctly aligned ensure all alignment knobs on the tripods are tightened by hand to ensure that as car’s pass the system doesn’t drift out of alignment. See figure 14 below.



Figure 14. Tripod Alignment Knobs

14. Test a beam break and wireless connectivity through to the Receiver HL615 (i.e. car passing through the beam) by walking through the beam. A beam break will cause the wireless receiver to ‘chirp’ audibly on receipt of the beam break.



## 15. IF DATE/ TIME IS NOT ALREADY SET

**NO MORE THAN 60 MINUTES BEFORE SAFETY CAR 00.** Set the time on the Chronoprinter, using a mobile phone or GPS showing seconds for the time reference. If you do not have a device showing GPS time including seconds, Safety Car 000 will – ask then to set the date/ time for you. Once set, **do not change the set time between cars or between heats even if it is wrong.**

This is the date/ time setting process, if needed:

- a. Press the **F** key.
- b. Press the down arrow until **Synchro** is selected.
- c. Press the Enter button (↵).
- d. Press the \* key to clear the year, then enter the year (4 digits – **2023** for example)
- e. Press the Enter button (↵).
- f. Press the \* key to clear the month, then enter the month (2 digits – **04** for example)
- g. Press the Enter button (↵).
- h. Press the \* key to clear the day, then enter the day (2 digits – **01** for example)
- i. Press the Enter button (↵).
- j. Press the Enter button again (↵).
- k. Type in a time a couple of minutes ahead of current time. For example if the time is currently around 11:09, you would want to enter **11:11**.
- l. Press the Enter button (↵).
- m. The screen will now show **READY FOR SYNCHRO**.
- n. Wait until your time source (mobile phone or GPS) shows the correct time – in this example, exactly as your time source ticks over to 11:11:00, press any of the **GREEN** number buttons to set the exact time. If you miss this, press \* and then repeat from step a above.
- o. Press the **F** button to get back into the main menu.
- p. Use the arrow keys to select **Parameters** and press the Enter button (↵).
- q. Use the arrow keys to select **Precision** then press the Enter button (↵).
- r. Select the required precision – for QRC and Club events, this is **'1'**.
- s. Press the Enter button (↵).
- t. Press **F** then **F** again to return to the timing screen.

16. Place the system in automatic mode by selecting the red button under the green '1' button. See figure 15 below. When in automatic mode the top left bar from the Chronoprinter 545 disappears. See figure 16 below.

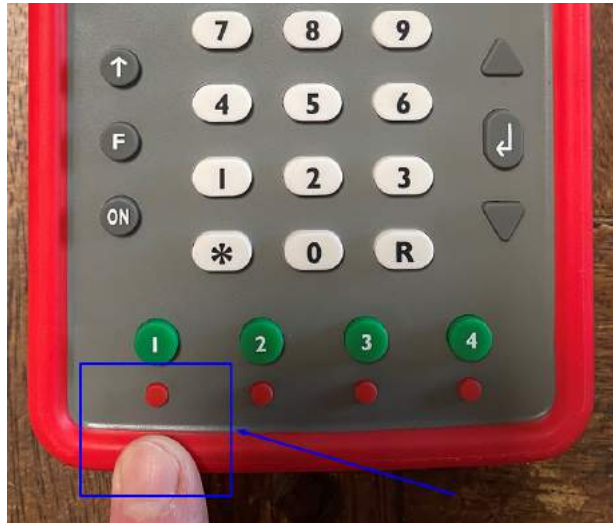


Figure 15. Chronoprinter 545 automatic mode

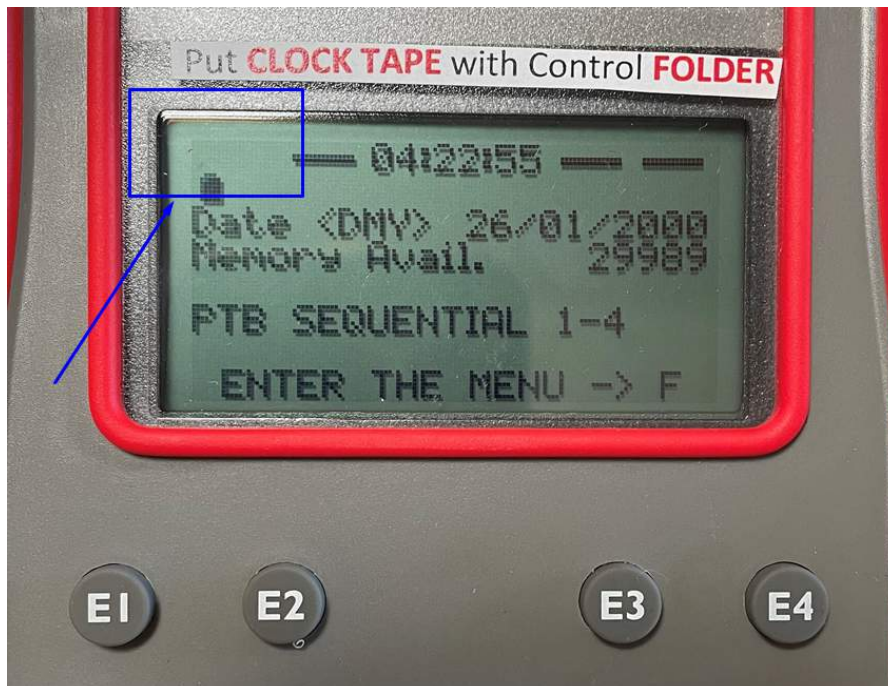


Figure 16. Chronoprinter 545 automatic mode

### OPERATIONS DURING COMPETITION

17. Where possible the system should be left in automatic mode which requires minimal interaction with the system to complete the timing process. If for whatever reason the system fails to work in automatic mode, the system can record times manually. Press the green '1' button to manually record a passing car's time. See figure 17 below.

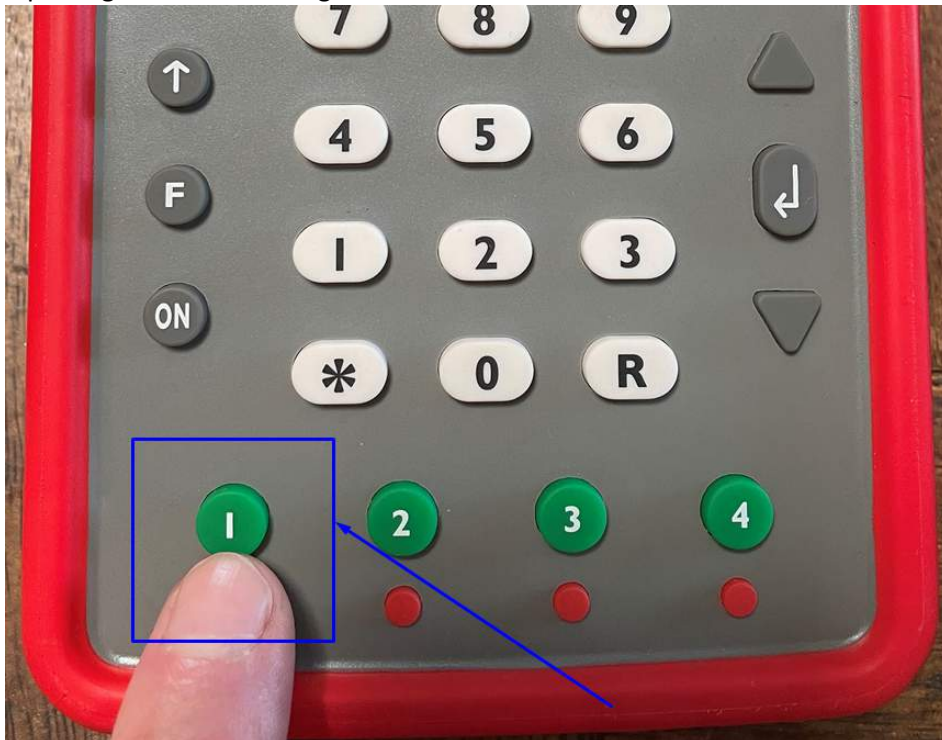


Figure 17. Manually record a passing cars time

18. Figure 18 below shows four times when the beam was broken. Each number proceeded with an 'M' signifies that the time was recorded manually and each number without a letter is an automatically recorded time.

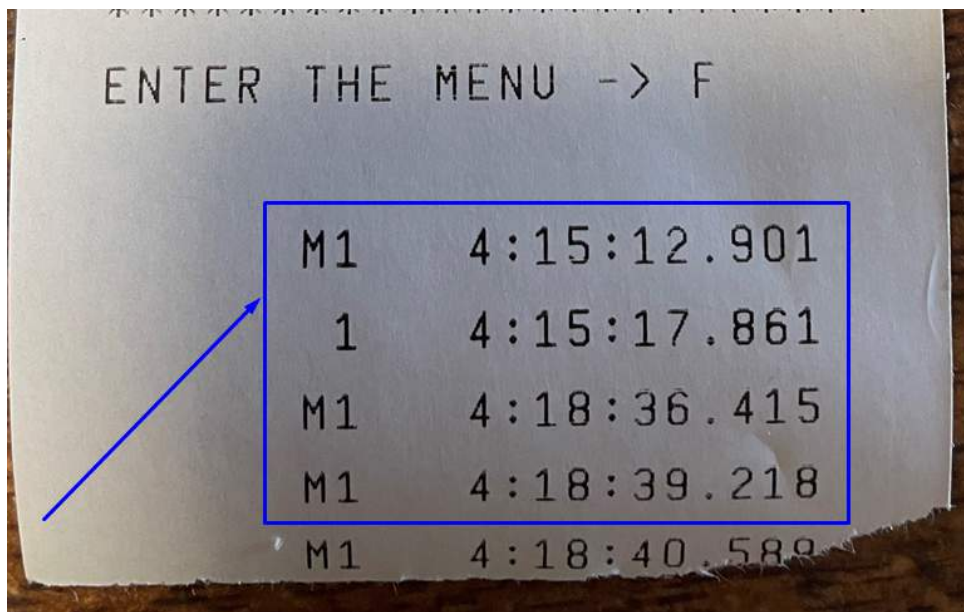


Figure 18. Manual and automatic times

**Note.** As each car passes the beam, the time should be recorded automatically. Transcribe this onto your paperwork along with the car number (car will not be recorded by the timing system). If the beams fail to work reliably, you can still use the green '1' button manually to achieve timing.

**Note.** Intermittently during operation, **and only when and where safe to do so**, ensure that the transmit/receive lenses of the Transmitter HL3-TX and Wireless Photocell HL3-100 are clean wiping away dirt/dust using a soft lint free cloth.



## PACKUP INSTRUCTIONS

1. Power down Chronoprinter 545 by pressing the "F" button. See figure 19 below.



Figure 19. Chronoprinter 545 power down

2. Press the 'up' arrow and select 'power off' from the menu by pressing the 'enter' key. Press the '\*' button to complete the power down of the Chronoprinter 545. See figure 20 below and figure 21 below.

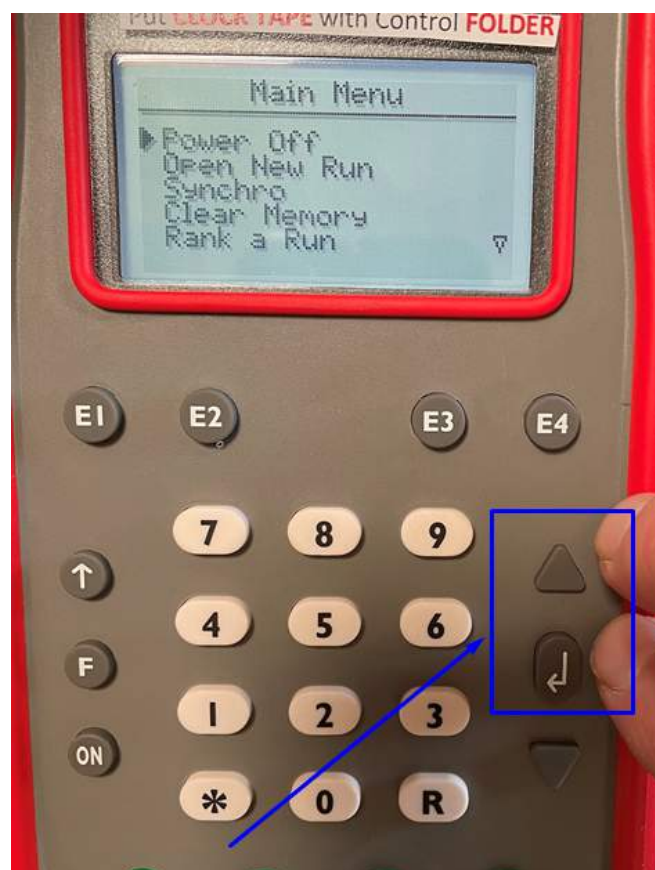


Figure 20. Chronoprinter 545 power down



Figure 21. Chronoprinter 545 power down

3. Press SET and POWER button concurrently on the Receiver HL615 unit for approx. 5 secs. See figure 22 below.

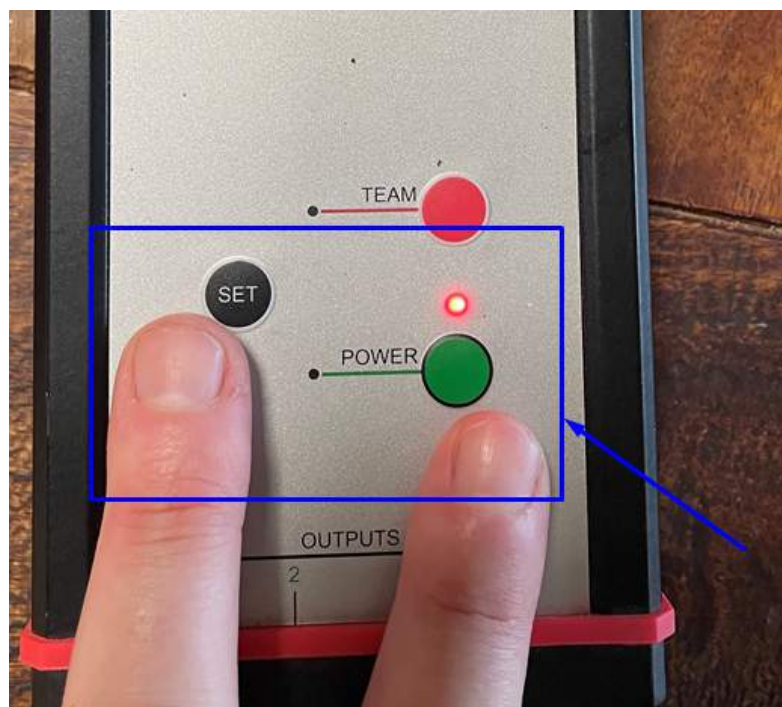


Figure 22. Receiver HL615 power down

4. Power down the Infrared Transmitter HL3-TX and Wireless Photocell HL3-100 by returning the switches to the 'Off' position. See figure 23 & figure 24 below.



Figure 23. Wireless Photocell HL3-100 Power Switch



Figure 24. Infrared Transmitter HL3-TX Power Switch

5. Disassemble all units wiping of all excess dirt and dust prior to returning to the correct storage boxes
6. Ensure all kit contents are returned to the case confirming via the checklist at the start of this user guide.
7. Ensure all timing beam equipment is recharged after use, prior to being stored for the next event.
8. Remove the batteries from the Chronoprinter prior to storage, to ensure no battery leakage.