

Pre-Race Setup:

- 1) Setting up the finish line electric eye:
  - a) First, make sure the finish line is not too wide. A maximum of 10m is recommended, especially in snowy weather conditions. There is a measuring line included in the timing briefcase to check this.
  - b) The electric eye mounting poles should be placed just behind and to the downhill side of the poles that mark the finish line.
  - c) Set the reflector mounting pole into the snow, at the far side of the finish line, to a depth corresponding to the snow line marked on the pole. This sets the finish beam at an appropriate height relative to the racers. To avoid damaging it, do not hammer or push on the screw coming out of the top of the pole.
  - d) Remove the reflector from the finish briefcase and snugly screw it onto the top of the reflector mounting pole. Notice the reflector piece has two reflective sides. As the first choice, the boxed-in, clear reflector should be the one used to face the opposing strobe source. If adverse wind and snow conditions cause snow and ice to collect in this reflector, usage of the alternate red reflector may help, since it is not boxed-in. There is also a rectangular plastic cover (in the briefcase) that can be attached to the top of the reflector, with Velcro. This can be effective in shielding snow from the reflector.
  - e) Now set the electronic strobe mounting pole into the snow, to a depth corresponding to the snow line marked on the pole. This pole has an aluminum "paddle" at its base to help keep it stable in the snow. Do not hammer or push on the adjustable screw at the top of the pole.
  - f) Remove the strobe box from the briefcase and snugly hand tighten it onto the top of the mounting pole. In case of heavy precipitation, there is also a square plastic covering for the strobe box (attaches by Velcro). Otherwise use the box as is.
  - g) The adjustable dial on the backside of the strobe box should be set fully counterclockwise, to "MIN".
  - h) Connect the wiring to the strobe box-- green plug to green output jack and black plug to black output jack.
  - i) Connect the other end of the wiring to the input "2" jacks of the CP520 timebase box, green to green, black to black.
  - j) With the channel 2 inputs "blocked" on the CP520 (using the red blocking button), power up and align the strobe box:

- i) Turn the strobe box on and watch the “BATT” light. It should briefly light up and then go off, indicating the batteries are in good shape.
    - ii) Align the strobe box beam to the reflector. The “SIGNAL” light will go out when the strobe box is properly lined up. The alignment of the strobe can be varied and locked in by the adjustable mounting screw. Be sure the alignment is well-centered, and then hand tighten the adjusting screw. Do not over tighten.
  - d) When ready, unblock the channel 2 inputs of the CP520, and test for proper response by interrupting the electronic beam.
- 2) Make the start line timing connection to the CP520 timebase, either by HARDWIRE (if available) or by RADIO. In all cases, be sure to keep wire connections free of snow and moisture! When receiving start times at the finish area by RADIO:
  - a) Connect wiring from radio receiver box to the CP520 timebase:
    - i) Plug one end of wiring into the Output “A” pair of jacks of the receiver box -- green plug to green output jack, black plug to black output jack.
    - ii) Plug other end of the wiring into the green & black channel “1” inputs of the CP520 timebase box.
  - b) Antenna connection:
    - i) Remove antenna wand from the briefcase and connect it to the end of the antenna extension cable (black coaxial wire) using the coupling piece.
    - ii) Clip antenna wand into the top (orange colored) PVC mast segment. Assemble the mast from the remaining PVC segments and elevate the antenna wand. Firmly set the mast into the snow. The antenna cable can be clipped to the mast.
    - iii) Connect bottom end of the antenna extension cable to the receiver (the connection point is on the opposite side of the box from the on/off switch).
    - iv) NOTE: When the A-frame for the electronic display has been set up, the antenna mast can be further elevated, if deemed necessary, by inserting it into a hole in the top of the A-frame. Use the extra length of antenna cable, with coupling.
  - c) Check that the setting of the code switch on receiver matches the number specified on the label on the receiver box (it should already be

- preset that way). Confirm with the start referee that the transmitter at the start line also has this same code setting.
- d) Turn the receiver on/off switch to “ON”. The box will beep once when you do this and the “battery” light will illuminate steadily.
  - e) Note: The receiver will beep each time an input signal is received. When a good strong signal is received, the “Normal” and “Low” indicators will also both light up.

Procedure for receiving start times at the finish area by a HARDWIRE connection:

- a) Determine which ends of the hill hardwire will correspond to green and black by coordinating with the start referee.
  - b) Using alligator clip banana plugs, connect the designated green and black wires to the corresponding-color channel “1” input jacks of the CP520 timebase box.
- 3) When you are ready to receive impulses from the start line, “unblock” the channel 1 inputs (using the red blocking button on CP520) and check for proper response.
- 4) Setting up the Smart Display:
- a) Remove legs from A-frame top/box and set up the A-frame. Each leg has two segments, one that fits into a slot in the A-frame top and the other that serves as a foot piece. NOTE! There are screws on the long side of the A-frame. These are to attach a sponsorship sign and should be positioned facing out to the viewing public. Screw any available sign to the A-frame.
  - b) Secure the A-frame using the provided snow screws and tie-down straps. Cross-tie the straps for best lateral stability.
  - c) Clip and hang the Smart Display from the A-frame. The A-frame protects the Smart Display from precipitation when in use.
  - d) Connect the CP520 timebase to the Smart Display:
    - i) Use the grey 2-wire flat wire for this.
    - ii) The phone jack style of connector plugs into the “Computer” output of CP520.
    - iii) The large banana style plug on the other end of the wire inserts into the Data-IN port of the Smart Display.
  - e) Turn the Smart Display on. It will momentarily display all 8’s and then will await input from the CP520.

- 5) Position the hand timing volunteers. Make sure they understand instructions on their clipboard and that they have the sheets to record finish times on.
- 6) Confirm that manually start/finish timestamps captured by the hand timers are close (within a few tenths) of the electronically captured times for all forerunners.

During the Race: (these are basic CP520 timebase instructions. See the full CP520 write-up for more detail)

- 1) Before each racer is released, confirm that the on-deck number in the CP520 matches the bib number announced by the start referee. Correct if necessary.
- 2) Common CP520 command sequences:
  - a) False start: Enter \* + E1
  - b) Modify bib# at start line: Enter Bib# + E1
  - c) Racer is DNF: Press green-2
  - d) False finish: Enter \* + E2
- 3) To conserve batteries between runs:
  - a) Turn off the electric eye strobe
  - b) Turn off the Smart Display
  - c) Turn off the printer in the CP520

**Be sure to turn them all back on before the second run!**

- 4) The red input blocking buttons of the CP520 should be used whenever you want start or finish impulses to be ignored by the timebase. For example, between runs, or readjusting alignment of the finish strobe.
- 5) When transmitting on voice radio, avoid getting it near the CP520 box.

Post Race:

- 1) Collect stop watches and time sheets from the hand-time volunteers. Do not let them bring them to the lodge.
- 2) Store equipment as it was originally packed. Be sure to:
  - a) Turn off the radio receiver, strobe box and Smart Display.
  - b) If the weather is inclement, wrap and tape the Smart Display in garbage bags to protect it. It should not be allowed to get wet or snowy.
  - c) Wrap the advertisement sign (if any) in the bag it came in.
  - d) Be sure to disconnect and stow the antenna wand in the briefcase to keep it from getting damaged. Don't lose the coupling piece between the wand and extension cable (keep it attached to the cable)!
  - e) Screw the cover on the strobe tripod mount to keep it from getting damaged in the duffle bag. Please do not over tighten!