



The Leader in Event Critical Timing Electronics

T-Link Wireless

Models 5800/5805

Rev C



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T i m i n g S y s t e m s

LIMITED WARRANTY

To the original purchaser of this RaceAmerica product, RaceAmerica warrants it to be in good working order for a period of ninety (90) days from the date of purchase from RaceAmerica or an authorized RaceAmerica distributor. Should this product malfunction during the warranty period, RaceAmerica will, at its option, repair or replace it at no charge, provided the product has not been subjected to misuse, abuse, or alterations, modifications, and/or repairs not authorized by RaceAmerica.

Any product requiring Limited Warranty service during the warranty period should be returned to RaceAmerica with proof of purchase. If return of merchandise is by mail, the customer agrees to insure the product, prepay shipping charges, and ship the product to RaceAmerica, Inc., 280 Martin Avenue Unit 1, Santa Clara, CA 95050.

ALL EXPRESSED AND IMPLIED WARRANTIES FOR THIS PRODUCT ARE LIMITED IN DURATION TO THE ABOVE NINETY DAY PERIOD.

UNDER NO CIRCUMSTANCES WILL RACEAMERICA BE LIABLE TO THE USER FOR DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, SUCH PRODUCT.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

PRODUCT OVERVIEW

T-Link Wireless replaces track cables normally used to connect track sensors to the timing system. Model 5805 T-Link is available with internal Track Sensors making installation as easy as positioning the unit, power it on, and align the sensor. Model 5800 T-Link connects to an external track sensor using a short interconnect track cable.

NOTE: THIS PRODUCT USES ULTRA-BRIGHT LED TECHNOLOGY. DUE TO THE BRIGHTNESS LEVEL OF THIS DISPLAY, CARE SHOULD BE TAKEN, AS WITH ANY BRIGHT LIGHTING SOURCE, TO AVOID PROLONGED VIEWING AT CLOSE RANGE AND SHORT DISTANCES. AS WITH ANY BRIGHT LIGHTING SOURCE, VISION MAY BE AFFECTED SHORT TERM SIMILAR TO A CAMERA FLASH.

PRODUCT SPECIFICATIONS

Model 5800 T-Link

Frequency	900MHz band
Internal Battery	12VDC
T-Port Connections	05-5825 to Sensor 06-TL02 to PC
Connection Type	RJ-45 Modular
Identifier Codes	Z to PC A-G to sensors
Max Operating Range	-20°F to 120°F
Battery Life	24 hours

Model 5805 T-Link

Frequency	900MHz band
Internal Battery	12VDC
T-Port Connections	Metering Light
Connection Type	RJ-45 Modular
Identifier Codes	A-G to sensors
Max Operating Range	-20°F to 120°F
Battery Life	24 hours

AVAILABLE OPTIONS

5890A Battery Charger
 05-5825 Cable for Ext Sensor 25ft
 06-TL02 Cable T-Link to PC 25ft
 6070B Blow Molded sensor case (2 ea)
 06-58AX Spare Reconfigure Jumper Kit
 High gain antenna - increase range to miles

T-LINK SETUP

Each T-Link unit is configured with a unique ID code and a wireless optimizer code. These codes are listed on the identity label located on the bottom of the T-Link unit. Valid T-Link ID codes are Z, A, B, C, D, E, F, or G. The wireless optimizer code is also listed on the identity label for wireless communications optimization and compatibility with other T-Link units.

Install the antennas on all T-Link units. If the antenna is to be bent down for transport, loosen the antenna slightly and rotate the upper portion of the antenna into position. Hold the upper portion of the antenna while tightening the knurled area on the bottom portion of the antenna.

Locate the T-Link unit identified as ID Z. Locate the T-Port connector on the back of the T-Link unit. Connect this T-Port to a 9-pin serial PC port using the 06-TL02 data communications cable. Power on ID Z and observe the right LED illuminates and blinks off, then on very quickly appearing as a flicker. If ID Z is the only T-Link powered on, no other LEDs will illuminate. When other T-Links are powered on, the center LED will flash when a wireless signal is received from another T-Link unit. The left LED will flash very quickly indicating ID Z is receiving a good signal from other T-Links.

Position the T-Link unit with ID A at the start line and ID B at the finish line. When using model 5800 T-Link with external Track Sensors, connect the external Track Sensor to the T-Port of the T-Link unit using interconnect cable 05-5825. Power on all available T-Link IDs A through G.

The right LED will illuminate immediately. If the internal or external track sensor is aligned with the beam emitter, the left LED will blink on at a regular interval (the 'heart beat') indicating proper operation. If the left LED is on solid or blinks off momentarily, the track sensor is out of alignment. Re-position the track sensor until the left LED goes out and begins to display the heart beat. It may be easier to align ID A and ID B with ID Z powered off. The center LED will flash when a wireless signal is received from another T-Link unit.

USING SPARE T-LINKS

T-Link identifier codes are preset at the factory. Using an external Reconfig Jumper provided with the backup T-link unit, a T-Link's ID code can be changed enabling a single backup unit to replace any unit with the same optimizer code. To temporarily change the ID code of a T-Link unit, power the unit off. Select the Reconfig Jumper with the desired ID code and install into the T-Port of the T-Link unit to be reconfigured. Power on the T-Link unit. The left LED will flash

three short times to confirm the T-Link unit has been reconfigured to the new ID code. Unplug the Reconfig Jumper and connect any cables to the T-Link unit for normal use. Do not power off the T-Link unit after a new ID code has been assigned. The change of ID is temporary. When the T-Link unit is powered off, the ID code will revert back to the preset ID shown on the bottom of the T-Link unit.

BATTERY CHARGE

Charge the batteries using the external charger unit provided by RaceAmerica. All functional electronics are disabled during battery recharge to avoid damage. Typically battery charging will take 12 hours. The charger indicator LED will turn from red to green when charging is complete.

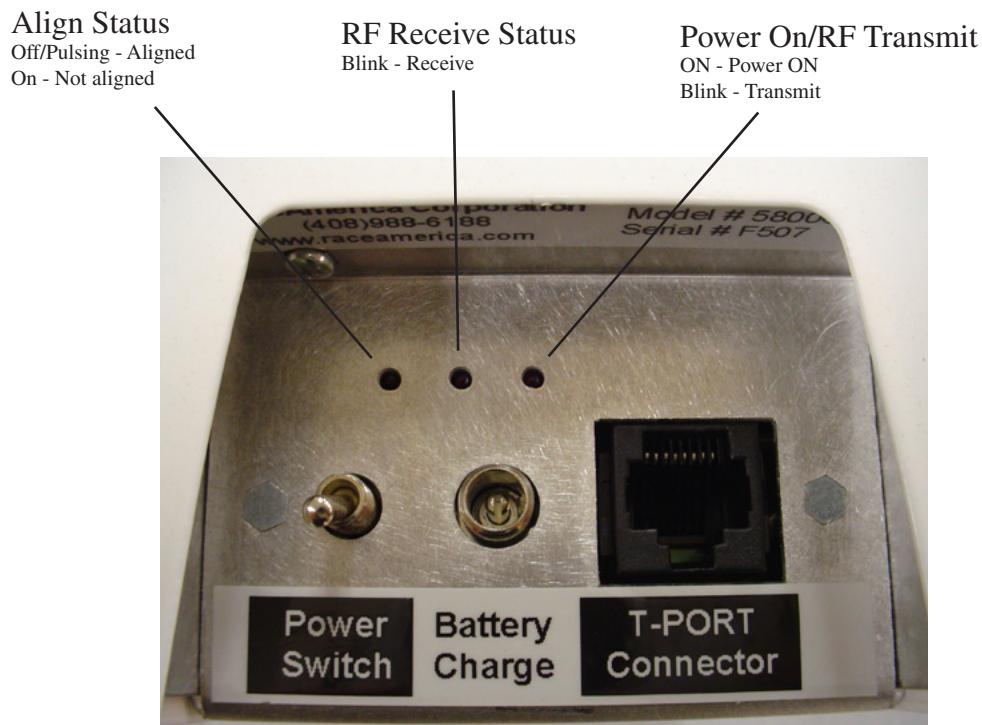
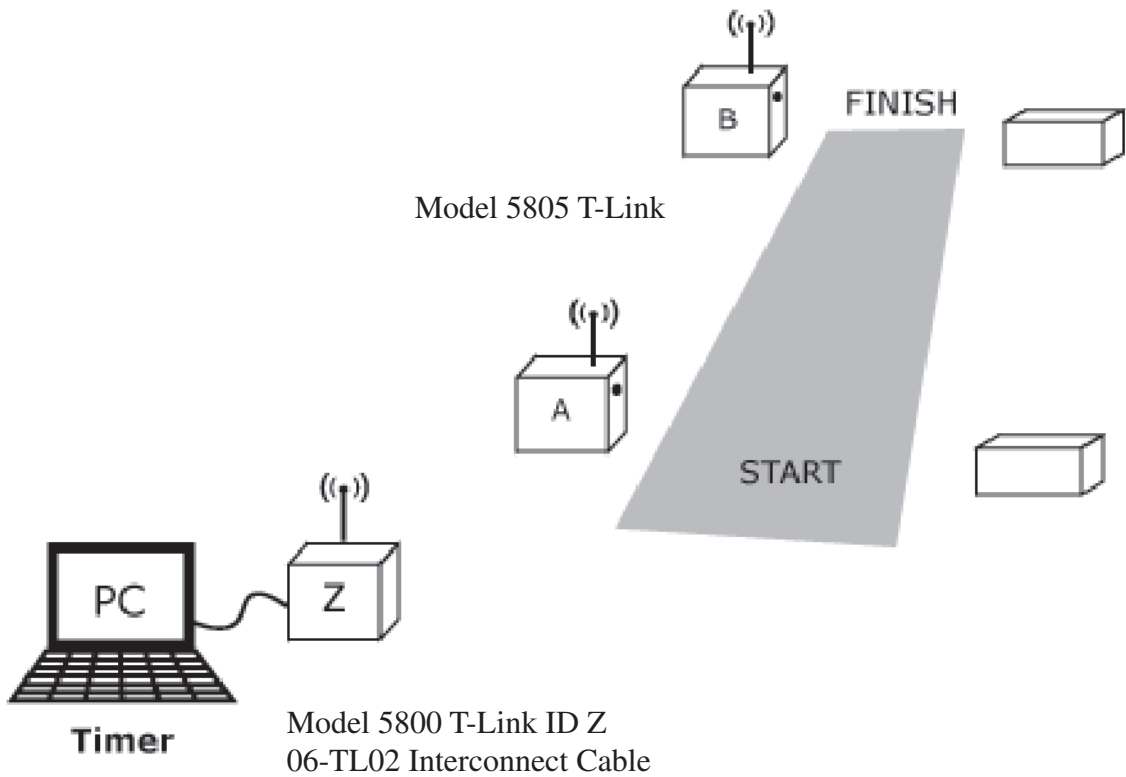
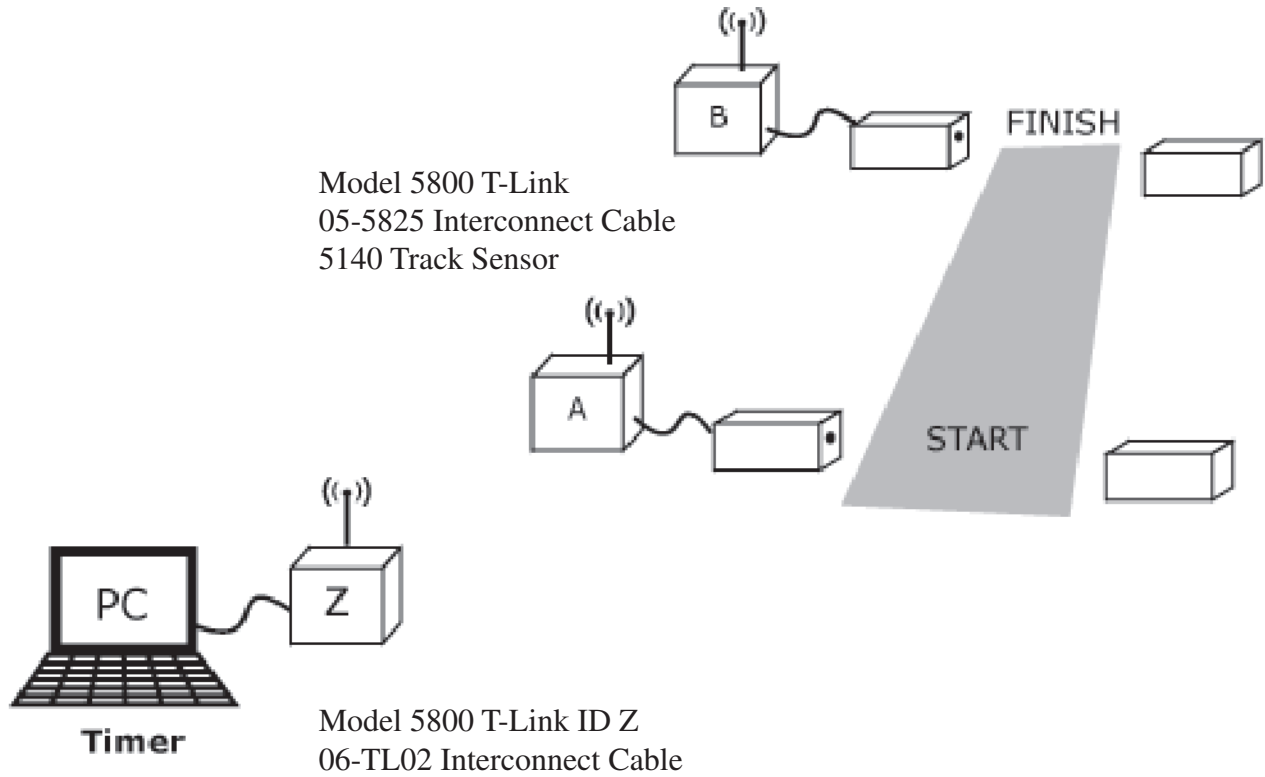


Figure 1 - T-Link power and external connections

TYPICAL TRACK SETUP



TECHNICAL DETAILS

Connection to a PC or Timer:

The T-Port is a RJ45 connector with 8 conductors. Viewing the T-Port, pin 1 is on the left side and pin 8 is on the right side of the connector. For RS232 serial data communications, pin 2 is ground and pin one is data sent from the T-Link unit. All other pins should not be connected to avoid damage to the T-Link unit.

Data String Protocol:

Data strings are sent from the ID Z T-Link unit to provide timing timestamps from each track sensor, battery charge level in each T-Link unit, and RF Data Integrity level of the wireless communications between the T-Link units. The data strings are always terminated by a 'carriage return' (cr) character and are 11 characters in total length.

<id> is the ID code of the T-Link - A thru G and Z are valid

<timestamp> is a 9-digit number for timing use

<error code> is a single digit number explained under Error Codes

<rev level> is a 3-digit number of the Revision Code of the T-Link

<batA> is a single digit number of the Battery Charge Level of a T-Link unit

<rfA> is a single digit number of the RF Integrity Level of a T-Link unit

<id> <timestamp> cr

ZB <bA><bB><bC><bD><bE><bF><bG><bZ> cr

ZW <rA><rB><rC><rD><rE><rF><rG> 0 cr

<id> E <error code> 0000000 cr

<id> R <rev level> 00000 cr

Error Codes:

When a condition occurs interrupting normal T-Link operation, an error message is sent by the ID Z T-Link unit. T-Link are self-correcting devices and can withstand continuous interruption of up to 10 seconds with 100% timing accuracy. The error codes are sent in the format of:

<id> E <error code> 0000000
(example: AE3000000)

E1 - Bad trigger data on ID B, C, D, E, F or G

E2 - Greater than 10 sec since last good data received from ID B, C, D, E, F or G

E3 - Nothing received from ID A during the last request

E4 - Greater than 10 sec since last good data received from ID A

E5 - Math overflow during calculation on ID B, C, D, E, F or G

All error messages are realtime during normal operation with different levels of urgency. Errors E1, E3, and E5 indicate local interference effecting the wireless communications or loss of signal. These are error messages to alert the user of intermittent interference and do not effect the accuracy of the timing system unless the error codes continue for more than 10 seconds of operation. Errors E2 and E4 also indicate local interference effecting the wireless communications or loss of signal unless these error codes are preceded by 10 seconds of continuous error codes.

MAINTENANCE

To insure uninterrupted operation on race day, it is suggested to keep track of battery usage hours so as to have fully charged batteries. To maintain the highest level of timing accuracy and minimize false trips, annual preventive maintenance and calibration should be performed on all system track sensors and beam emitter units.

SPARE PARTS

Further to minimize race program interruptions, RaceAmerica recommends some spare parts. A spare emitter/sensor pair should be available in the event of an unfortunate accident during a program. Contact RaceAmerica for availability and pricing of spares items.

SUPPORT AGREEMENTS

Support agreements are available from RaceAmerica providing Telephone Assistance on technical issues and operational questions, repair and/or replacement of hardware failures, Software and Firmware updates and bug reporting, and Annual Preventive Maintenance on all system track sensors and beam emitter units. Contact RaceAmerica for more information and pricing of Support Agreements.