BROWER
Timing Systems

Brower Timing Systems
Test Center-System
2010

**User's Manual**

Quick Start Guide

Contents

Power On/Off

To power up the *TC-Timer*, press and hold the *On/Off* button for 2 seconds. The *Manual Start* button will simulate a remote start, and is helpful in learning how the timer works.
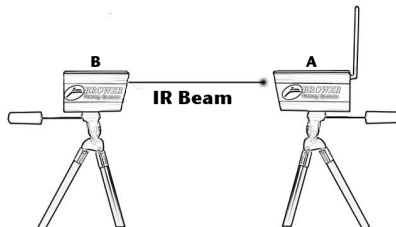
Power On PhotoGates A & B

Press and hold the *On/Off* button until *TC-PhotoGate A* beeps, then buzzes continually. For *TC-PhotoGate B*, hold button until desired distance is selected.
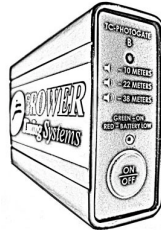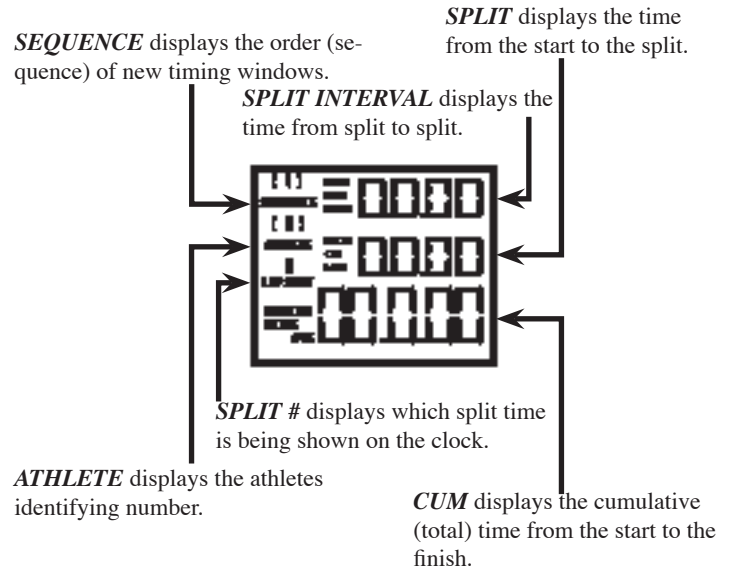
Line up PhotoGates A & B

Align *TC-PhotoGate B* to *A* until it stops beeping. Find eye center by rotating *B* to one side until *A* starts beeping then repeat to the other side. Set *B* in middle of these two positions.

SPLIT displays the time from the start to the split.

SEQUENCE displays the order (sequence) of new timing windows.

SPLIT INTERVAL displays the time from split to split.

SPLIT # displays which split time is being shown on the clock.

ATHLETE displays the athletes identifying number.

CUM displays the cumulative (total) time from the start to the finish.

Sequence

Sequence # is a chronological counter that helps the user keep track of where he is when using *Memory Review*.

Power On/Off

To power up the TC Timer, press and hold the *Power On/Off* button for 2 seconds. The data from the last session is still in memory until memory is cleared. The clock is now ready to receive radio signals.

Power On/Off

Memory Clear

Press and hold both buttons at the same time for approximately four seconds. Memory will clear and the clock will be reset to *Sequence #1*. **All past times will be lost.**

(New) (New)

New Athlete

To start a new athlete, press the *New* button and a reset clock is shown. If in *Memory Review*, use the up arrow to get to the latest sequence which will show a reset clock. (This is the only time the *Athlete #* can be adjusted.) To adjust *Athlete #* see *page 4.*

(New)

Athlete Memory Review

To review times, press the *Memory Review* buttons. Holding down either button will engage the high speed scroll. The sequence will adjust accordingly. The *Athlete #* will be displayed also.

Memory Review

(New)

Split Review

Press *Split/Scroll* buttons to review an athlete's split times. (up to 9 splits possible) The Split counter will adjust as each split is viewed.

Split/Scroll

Athlete # Adjust

Athletes can be assigned an identifying number. This may only be assigned before the clock starts for that athlete. (if in **Memory Review,** use **Up Arrow** to get to the latest sequence) Use *Split/Scroll* arrows to assign an *Athlete #*. After the desired number is reached, the start will lock the *Athlete #* to the time. If no adjustment is made for the next athlete, the same *Athlete #* will be assigned.

Split/Scroll

Manual Start

Press button to manually start, split or finish the timer. (Similar to a stopwatch) Using this function reduces the accuracy of an athletes time due to human error. Using the *Manual Start* button is a good way to learn how the system functions.
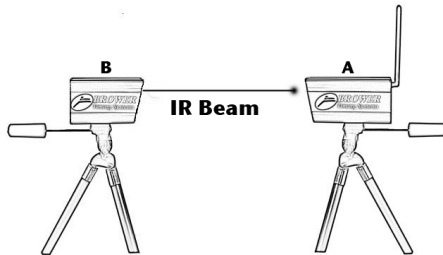
Manual Start

TC-PhotoGate Setup

🖘 Set up the TC-PhotoGate units as displayed below at the ***START, SPLIT*** or ***FINISH*** location.

🖘 Turn on ***TC-PhotoGate A*** by pressing and holding the power button for 2 seconds, it will beep then buzz continually, the green LED will also flash.

🖘 Point ***TC-PhotoGate B*** in the direction of ***TC-PhotoGate A***.

🖘 Turn on ***TC-PhotoGate B*** by holding down the ***On/Off*** button until the desired power level is selected. The blinking green light indicates the unit is on. ***TC-PhotoGate B*** emits an infrared (IR) light beam that is detected by ***A***. ***TC-PhotoGate A*** has three IR power settings indicating the maximum possible distance between ***TC-PhotoGates A & B***.

-1 beep: low power (10 Meters - 1000 hours battery life)
-2 beeps: medium power (22 Meters - 750 hours)
-3 beeps: high power (38 Meters - 250 hours)

🖘 To power down, press and hold the ***On/Off*** button for two seconds. A low tone beep will indicate power off.

🖘 Align ***TC-PhotoGate B*** by directing it toward the ***TC-PhotoGate A*** until it stops beeping. Center beam alignment by moving ***B*** in and out of alignment. The ***A*** unit will not sound when centered.

Application Tip

1. For the most accurate and repeatable results, set the IR light beam at the belt height of the athletes. This will be high enough so that the legs of the athletes do not break the IR light beam. This is also low enough that swinging arms and hands of the athlete will not prematurely break the IR beam.

2. To avoid unnatural hand reaching to break the beam, set TC-Photo-Gates A&B 15-30 feet apart with the running lane in the middle. Set the finish beam so it is **not** on a visible line. This will make it difficult for athletes to know where to reach out and break the beam with a hand, which can result in a faster time.

The timer is available in two forms,
TC-Timer and *TC-Timer USB*

Computer Communication

If *TC-Timer USB* is purchased,
it will have a computer USB port
next to the antenna. This allows
user to export data from the timer
to a PC. To export data, Plug
USB cable into the *TC-Timer*
and connect to computer. Open
TC-Results Center, then press
and hold the *Download* buttons.

Test Identification Number (T id)

T id numbers allow allow the user to add a test identification number to
a specific group of times. Once the identified data is downloaded to a
computer, the test times can be organized and given a label, i.e. Test #
1 - 40 yard dash. For tests like the bench press or box jump, the weight or
number of jumps can be entered into the *TC-Timer*. *T id* numbers (0-9)
must be input to the *TC-Timer* when a mode is selected.

With the *TC-Results Center* software the user will be able to customize timing data
into:

        -Athlete profiles comprising of chosen tests
        -Results by test type
        -Test rankings
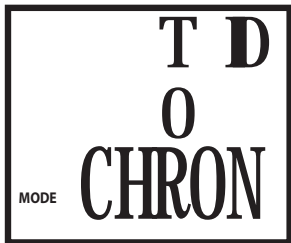
Use buttons to enter in the
test ID #.

Split/Scroll

T id is only usefull with the computer interface. If *T id* is not shown, user
may still use the modes, but cannot enter test ID numbers.

TC-Timer Modes

Use the *Mode* button to select the desired mode. Once mode is selected,
and the test number is assigned, press *Enter* button to use that mode.
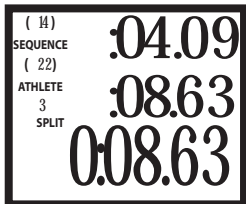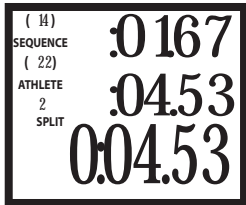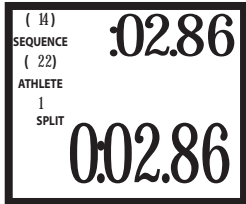
Chronograph Mode

Enter

CHRON mode is the principal mode
used for the majority of timing applica-
tions. When powered on, the *TC-Timer*
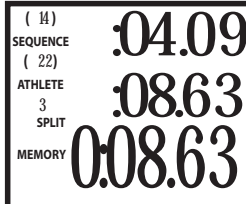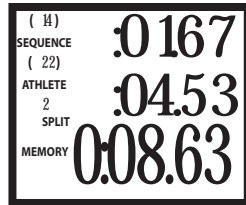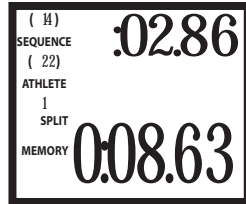automatically enters this mode.

Description continued on pages 10-11.
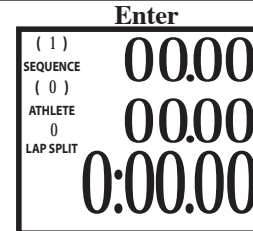
LIVE VIEW

The following examples show what the user will see during a live timing.

```
( 14)
SEQUENCE
( 22)       :02.86
ATHLETE
1
SPLIT
            0:02.86
```

```
( 14)
SEQUENCE
( 22)       :0167
ATHLETE
2           :04.53
SPLIT
            0:04.53
```

```
( 14)
SEQUENCE
( 22)       :04.09
ATHLETE
3           :08.63
SPLIT
            0:08.63
```
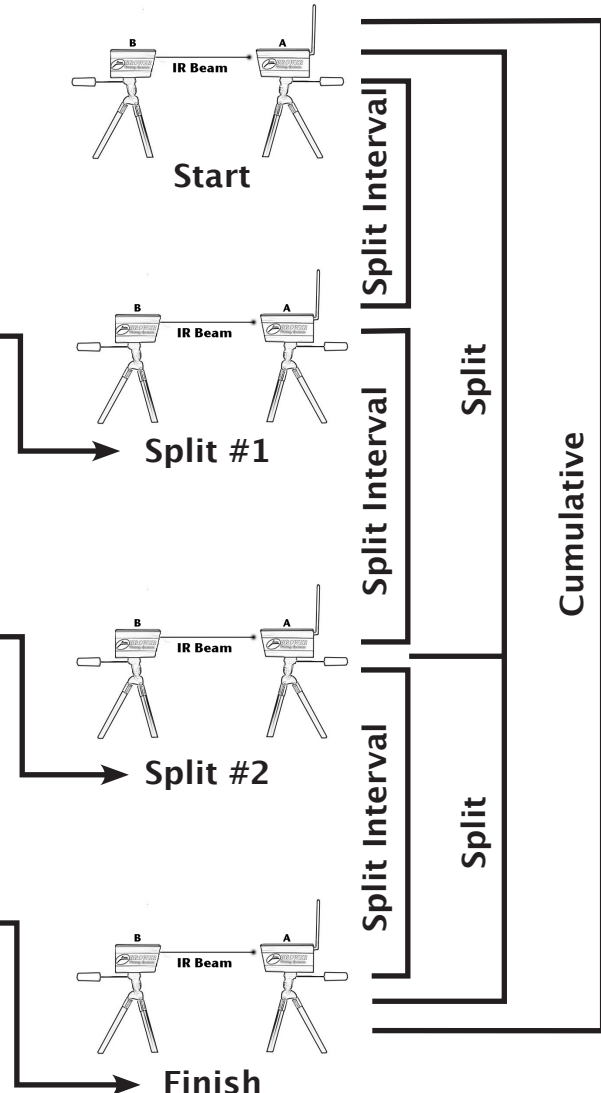
The first time the *NEW* button is pressed it will advance the *SEQUENCE* and will clear the clock.

The second time the *NEW* button is pressed it will enter *Memory Review*. The user is then able to navigate the Timers' memory using the *Up* and *Down* arrows. To review split times use *Split/Scroll* arrows.

MEMORY REVIEW VIEW

The following examples show what the user will see after the timing in *Memory Review*.

```
( 14)
SEQUENCE
( 22)       :02.86
ATHLETE
1
SPLIT
MEMORY      0:08.63
```

Split #1

```
( 14)
SEQUENCE
( 22)       :0167
ATHLETE
2           :04.53
SPLIT
MEMORY      0:08.63
```

Split #2

```
( 14)
SEQUENCE
( 22)       :04.09
ATHLETE
3           :08.63
SPLIT
MEMORY      0:08.63
```

Finish

Split Interval Diagram

The following diagram defines *Split Interval*, *Split* and *Cumulative* times.

1/1000th Mode

T D
0
1 1000
MODE

Enter

(1) SEQUENCE **0.000**
(0) ATHLETE **0.000**
0 LAP SPLIT **00.000**
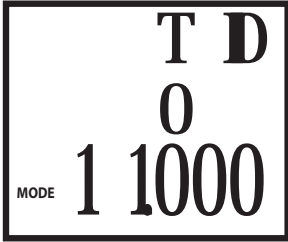
*1/1000th* mode is similar to the *CHRON* mode but displays 1/1000th of a second resolution.

This mode is usefull in timing short spans between the start and finish were extra resolution is needed for differentiation. All of the funtions work the same as the "Chron" mode.

Rule: You must have at least 0.2 seconds of time between start PhotoGate and finish PhotoGate.

At 20 mph that is ~50 inches or 0.2 sec.
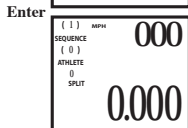At 100 mph that is~250 inches or 0.2 sec.

KPH/MPH Mode

T D
0
K:MPH
MODE

Enter
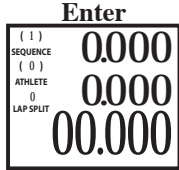
KPH/MPH mode calculates kilometers per hour and miles per hour.

MPH KPH
SET

Use *Up Split/Scroll Arrow* to alternate between KPH and MPH.

Split/Scroll

Enter

MPH **000**
SPAN

Scroll to set the number of **inches** or **mm** between the two *Photo-Gates*.

Split/Scroll

Enter

(1) MPH **000**
SEQUENCE
(0)
ATHLETE
0 SPLIT
0.000

When passing through the start and finish gates a time will be seen on the bottom dispalay and MPH on the top display. To see mph from split to finish, or start to split, the *TC-Timer* will show mph on the *Split Interval* display line.

Count Mode

T D
0
COUNT
MODE
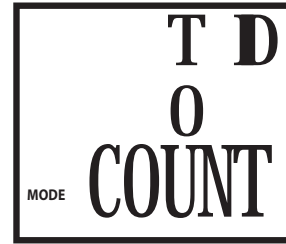
Use the *Manual Start* button to count the number of reps.

Enter

(1) SEQUENCE
(0)
ATHLETE
0
LAP SPLIT
00

Rep Counter

Manual Start

New

Frequency Select Mode

0 FREQ
MODE

Warning: Be sure TC-Timer is at least 10 feet away from other TC-PhotoGate systems in use so other signals are not picked up by timer.
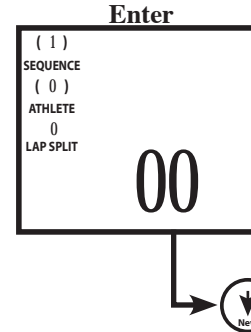
FREQ mode allows the user to change the radio frequency of the timing system. This allows two or more TC Systems to work in the same location. After setting the TC-Timer radio frequency (0-4), the frequency must also be changed to match in *TC-PhotoGate A*. This is done by removing the aluminum case and pressing down the appropiate switch on the blue switch. More than one switch cannot be down at the same time.
(All switches up is FREQ 0)

1 2 3 4
ON

RSSI Mode

26
31
RSSI
MODE

Relative Signal Strength Indicator RSSI Test Mode allows you to self diagnose the distance capability of reception or problems with signal reception.

Problem I occasionally miss a start or stop signal.
Solution Check RSSI to see if their is radio interference at your location. Indoor interference could come from equipment i.e. machines and computers, this may be the case if your RSSI reads 30/40 or higher without your *TC-PhotoGate A* transmitting.

Problem I need to time distances over 1000 feet, and I want to know if I will get reliable reception.
Solution Set up your *TC-PhotoGates* and have someone break the beam every three seconds. Go to the distance you need, the RSSI needs to read at least 29/35.

Problem I have noise or other users on my frequency. (38/50)
Solution Try frequency 1, 2, 3 or 4. (Must also be changed in *TC-PhotoGate A*.)

Troubleshooting

Problem one of my timing units does not power up.

Solution 1 All units require you to press and hold the power button for at least 2 seconds to initiate the power up sequence.

Solution 2 Check the battery. The units will warn of a low battery by a red flashing LED on the *TC-PhotoGate A* or *B* (the *TC-Timer* has a low battery symbol on the LCD). The units will work for up to 20 more hours and 5 for the *TC-Timer* with a low battery. If the unit shows no sign of turning on, check for dead battery.

Problem My timing system is setup correctly, but the *TC-Timer* won't receive a signal.

Solution 1 Check to see if all the system components are on the same radio frequency. See FREQ on page 14.

Solution 2 See RSSI on page 14.

Problem My tripod is broken. (60 day warranty, $35 replacement)

Solution If a single leg is broken, order a new tripod and save the two good legs for future replacement. (the legs unscrew from the tripod)

If you are still not sure the system is functioning correctly, call us at 801-572-5540

"I have found a problem, what do I do now?"
If the system has a defect return to Browe Timing Systems

Battery Replacement

Timer: Remove the battery cover on the lower back of the unit. Install fresh AAA alkaline batteries (Energizer Duracell). Replace the battery cover.

TC-PhotoGates A & B: Remove the set screw from the base of the unit. Apply pressure to the front of the unit between the lens and buzzer to slide the unit out of its case. Replace batteries (AAA). Place the unit back into the case and replace the set screw.

Caring for your system

The TC system is water resistant but not waterproof. The general rule is if you can train in the weather conditions, the system can function. If it is raining too hard to train, take the system out of the rain. If components get wet, let them air dry before putting them back into the foam holder bag. If components get really wet, remove batteries until dry.

Specifications

Radio: Radio transmission distances up to 1000 feet can be received in line of sight applications. Distances can be reduced if *TC-Timer* is in close proximity to electric motors and computers or *TC-Timer* is close against a body.

Battery Life: *TC-Timer* 50 hours, *TC-PhotoGates* 500
Timing Accuracy: 1/1000th of a second
Radio Switch Accuracy: 0.0001

Warranty

The BROWER TIMING SYSTEM is backed by a 1 year warranty covering manufacturing defects. Service, whether covered by the warranty or not can be performed and returned quickly. (Express incomming and return shipping charges are not covered by warranty.)

Tripods wear out with use are only covered for 60 days by the warranty.

FCC Regulatory Compliance Information

FCC ID: XVABTS
NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

CAUTION: Any changes or modification not expressly approved by Brower Timing Systems could void the user authorization to operate this equipment.

TC-PhotoGate A **compliance labeling**
This device complies with Part 15 of the FCC Rules:
Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. this device may accept any interference received, including interference that many cause undesired operation.