Brower Timing Systems

BIB ID XS SYSTEM

2004

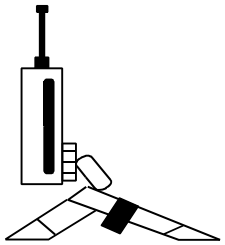
User's Manual

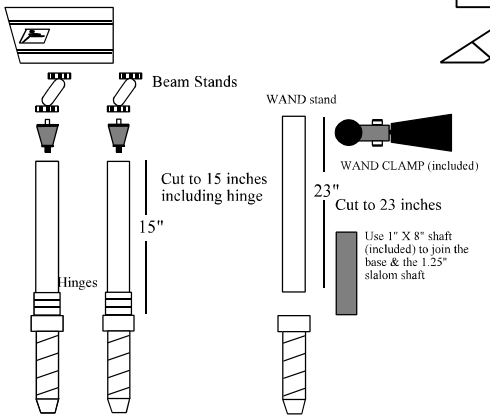
BUILDING SNOW SCREWS

The XS System comes with mounting fixtures for on-the-hill installation, however, the snowscrew bases and shafts are not included. The user can use bases that are compatible with their existing drills and wrenches.

Mount system according to drawing below:

TIMER stand sets on table or
Can strap to slalom pole or tree.





Instructions for building stands for the XS System

1) Use slalom bases (new or used) that are compatible with your team's drills and wrenches
2) From one length of 1.25" diameter slalom pole, cut shaft to make 3 pieces as diagramed
3) Use hinges for Beam stands for added safety
4) For the WAND stand, use the 8" shaft to join the base and 23" shaft
5) Insert expansion lugs into the end of the slalom pole and tighten setscrew with allen wrench counter clockwise

INTRODUCTION

Congratulations

You have just purchased the XS system. The XS system is a wireless timing system that synchronizes all of the units to a common Time-of-Day (TOD) reference, and synchronizes all of the radios to a precise common frequency. This provides the XS system with unprecedented accuracy and reliability.

Benefits of XS

-Life time calibration.- The XS system re-calibrates itself every time it is synced, eliminating the need for future tune-ups.

-Full time back-up timing- The WAND and PHOTOCELL save **all** of the times independent of the TIMER. *To access these times use the Memory Pod.*

-Superior battery life- Up to three years of typical use.

-Simple reliable use- All options are set from the TIMER. Syncing process then programs the WAND and PHOTOCELL.

-Exact crystal synchronization- With precise crystal matching, (+/-) 1/1000 second accuracy can be maintained from unit to unit for over 4 hours, over the full range of temperatures experienced in skiing.

Getting Started

The best way to learn how to operate the XS System is the hands-on method. Set the system up in your home or office *(do not install antenna on the TIMER)*. Be sure to set the TIMER at least 10 feet away from the WAND or PHOTOCELL. Start pushing buttons as you read the manual. Start at the front of the manual and work through each page. Try the "what if's?" (What if a skier falls or false starts?) to see how the TIMER responds. On the back of the Timer are notes summarizing how to use the system.

Training Tips

Assign a training number to all of your skiers for the entire year. Choose a number system that will help you remember what number belongs to each skier. For example, in the United States, racers are ranked into age class J0-J6. J0 racers could use numbers 0-9 and J1 racers could use 10-19 and so on. If you know the skier's number, the Timer will tell you in advance who is on the course.

Timing is most beneficial if the skier can see his or her time at the bottom of the course.

Note

The display counts by seconds while a skier is on the course. This time is not official until the TOD, which is transmitted by the finish, is subtracted from the start to give 1/100 second time on the TIMER display and 1/1000 second resolution for download.

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COMPONENT SETUP

Attach the antennas to the TIMER, WAND, and PHOTOCELL and mount units according to diagram on page 1. *Keep the TIMER at least 20 feet away from the WAND and PHOTOCELL on the high setting, and 5 feet away on the low setting to avoid overpowering the unit. If using a 2-way radio do not press the talk button within 5 feet of the TIMER while a start or finish signal is being received by the TIMER.*

Power On

The TIMER, WAND, PHOTOCELL, and IRE are all powered on by pressing and holding the power button for 4 seconds. All components will respond with a beep. The WAND and PHOTOCELL are now waiting to be synced and will not operate until they are synced (page 7).

Memory

The memory on the WAND and PHOTOCELL are cleared when powered up then synced. The TIMER's memory must be manually cleared by pressing the "CLEAR" button for six seconds. All of the components will store 255 skiers times and splits. If the memory is not cleared after 255 skiers, the time will show, but will not be saved.

TIMER Setup

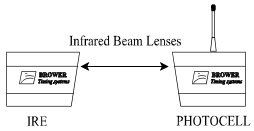
When the TIMER is powered on, a time-of-day (TOD) reference is set. This reference is then synced to the WAND and PHOTOCELL. If the TIMER is powered off, the TOD reference is lost. If the WAND and PHOTOCELL are powered off the reference is lost, however, the original reference can be restored by re-syncing the units to the TIMER.

WAND Setup

After the WAND has been synced it will display the program number. Screw Wand Stick into WAND and firmly press fiberglass extension into the Wand Stick.

PHOTOCELL Setup and Alignment

After the PHOTOCELL has been synced it will beep every four seconds to indicate that it is ready to be lined up with the IRE. Line the PHOTOCELL and IRE up according to the diagram.



When units are properly alined, the PHOTOCELL will only buzz when the beam is broken. *Fine tune the alignment with the IRE.*

IRE Setup

The IRE has three power settings. These settings allow for different finish line widths. To set the power level, press and hold the power button for the desired number of beeps.

IRE Power Levels

1 Beep - 10 Meters
2 Beeps- 20 Meters
3 Beeps- 30 Meters

Use an stronger power setting in heavy snow.

Low Battery Warning

All of the XS units will indicate when the batteries are getting low.*

TIMER- When powering unit on or off, hold the "POWER" button beyond the beep. The display will then show "BATT GOOD" or "BATT BAD".

WAND- When powering unit on or off, hold the "POWER" button beyond the beep. The display will then show "BATT GOOD" or "BATT BAD".

PHOTOCELL- A green LED, seen through the front lense, will flash if the battery is good. A red LED will flash if the battery is low.

IRE- The buzzer will beep repeatedly when powered on.

** All components will work for 20 hours after first low battery warning*

SYSTEM SETUP AND SYNC

All of the system setup is done through the TIMER. This information is transferred to the WAND and PHOTOCELL when synced.

Choosing Settings

Press the "Mode" button to cycle through the Options. Use the ↓ ↑ buttons to view option settings. Press the "Enter" button to choose settings.

Option Menu

CH - Channel 0-31 This sets the system to one of 32 isolated frequency channels. Systems set on different channels will not interfere with one another.

Pr - Power of transmission The option's settings are: . . . .

	SL*	DH	ALL
Wand	Low	High	High
Split	Low	High	High
Finish	Low	Low	High

Use the SL option when testing the system indoors and for slalom length courses. If longer transmission lengths are required use the DH setting. If timing from the top of a long GS or DH, choose the ALL setting. Using the proper setting conserves battery life and enhances the systems performance. The ALL setting may over power the receiver in the TIMER if it is to close to a WAND or PHOTOCELL.

**The SL option will work for most training hills that are under 45 seconds.*

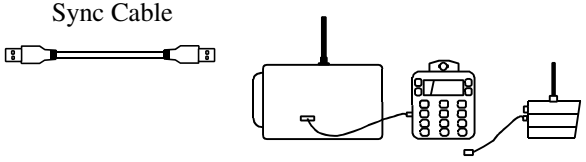
P# - Program The options settings are:
P1- FIFO – First In First Out
P2- PACE – Pace setting for hands free use.
P3- AUTO – Single skier timing, hands free.
P4- DUAL – Fist In First Out Dual*
P5- DUAL AUTO – Single skier per lane.*
P6- DUAL DIFF – Finish differential.*
**Additional Dual components required.*

SY - Sync The option settings are:
Start - Use for WAND or a PHOTOCELL
Finish - PHOTOCELL
Split - PHOTOCELL

Syncing the System

Choose CH, Pr, P# settings before syncing. . . . . . .
Select "START" from the syncing options and press "Enter". Connect the WAND to the TIMER with the SYNC CABLE. The WAND will beep when sync is complete. Next, select "FINISH" from the syncing options and press "Enter". Connect the PHOTOCELL to the TIMER with the SYNC CABLE. The PHOTOCELL will beep when sync is complete. Repeat steps for splits as needed. *A PHOTOCELL synced as a finish must be used as a finish. This is also true for splits.*

Sync Cable



Note
After the first unit is synced, the CH and Pr options will no longer appear in the settings menu.

PROGRAM INTRODUCTION

The XS system has seven program options. While each program has its own instructions there are functions that are common to all of the programs.

Enter Bib Number

The first step in all of the programs is for the racer to punch their bib number (1-255) into the WAND then press "Enter". The WAND will then triple beep when the racer can start. *The TIMER and WAND will only display up to bib # 99 but will store and transmit up to bib # 255.*

Memory Review of Timer

All of the times are stored in the TIMER. These times may be reviewed at any time by pressing the ↓ ↑ buttons. The TIMER will continue to receive times even when the stored times are being reviewed.
To review split times use the← → buttons adjacent to the times. Advancing memory, with the ↓ ↑ buttons, will always display the finish times.

Radio Signal Blocking

To block an unwanted finish signal from triggering the TIMER, press and hold the "Block" button throughout the unwanted finish signal and for 3 seconds after. This allows the operator to block any signals that are triggered by accident, such as a stray skier.

Manual Finish

A skier may be manually finished by pressing the "DNF" button on the TIMER. Use this function to finish a skier if the finish line has been impaired. The display will show DNF but the time will store like a split.(pg. 9)

PROGRAM 1 (FIFO) First In First Out

This program is used for racing events and training and has the capacity for 9 skiers on the course at one time. Skiers must finish in the order that they started.

Mount the TIMER where the coach may view finishes and operate TIMER.

If a skier falls or goes off course the skier must be DNF'ed. To DNF a skier press the "DNF" button on the TIMER. Pressing the DNF button will only DNF the time on the top line of the TIMER.

In the case of a false start, the phantom skier must be DNF'ed. If the TIMER is not manned, press the DNF button on the WAND along with the next skiers Bib #. This will DNF all unfinished times on the TIMER.

Caution!

If a fallen skier or false start is not DNF'd, the next skier will finish the fallen skier's time. If this occurs, push the "DNF" button to make up for the error.

Split

Up to 3 splits can be used in Program 1. Make sure not to mix up the split and finish after they are synced.

Split Rule

The first skier must pass **all** of the intermediate splits before the next skier can start. Once all of the splits are passed, the next skier can start even before the first skier passes the finish.

PROGRAM 2 (PACE)

This program is great for ski teams that use the system regularly. PACE is a hands free program, no operator is need to operate the TIMER. This is done through automated DNF's. Mode 2 handles DNF skiers automatically by establishing an "Arrival Window" which is a space of time in which the skier must finish. Mode 2 is capable of timing up to 9 skiers at a time.

Arrival Window & Extent

The *Arrival Window* is the time period in which a skier must finish. A skier finishing a course will stop the timer only if he is within his *Arrival Window*.
A *Window Extent* is the width of the Arrival Window. There are 3 *Window Extents* to choose from: 10, 14, and 18 seconds. Choose the desired extent from the P2 program mode. Use buttons "2"&"3" to select option, then press "Enter"

The WAND will limit how soon the next skier can start, depending on the length of the Window Extent. *After the WAND has been synced the TIMER cannot change the Window Extent.*

Pacer(s)

A *Pacer* is the skier that will establish the average finish time. This average finish time will automatically establish the *Arrival Window* for the skiers to follow. The *Pacer* is the first skier out of the start and must press the "Pace" button and his Bib #.A flashing "P" will show on the WAND's display. If the Pacer falls, the next skier must designate himself as a *Pacer*. Only the Pacer can be on the course when the Arrival Window is being established.

Example

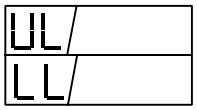
If the pacer's finish time is ***40.00sec,*** the **extent** is ***10 sec***

-The subsequent skiers would be required to finish before (40.00-5sec)=**35.00sec** and no later than (40.00+5sec)=**45.00sec**

Adjusting the Arrival Window

- The TIMER operator may manually lengthen or shorten the time of the Arrival Window.
- Adjustments may be made to the Finish Window *after* the course is Paced, and from the TIMER before the pacer.

To adjust the Arrival Window press MODE, WINDOW. Display will show.



Use the ↓ ↑ to adjust the arrival window, then press ENTER.

DNF

- If a skier's time runs past the Upper Limit set by the pacer, the skier's time will be replaced with DNF
- If a skier finishes before his time has reached the Lower Limit, the skier's time will continue to run until it is either manually DNFed or it runs past the Upper Limit. At this time the display will be replaced with DNF.

Split

Up to 3 splits can be used in Program 2. *When using splits make sure that the PHOTOCELL at the finish is programmed as a finish and not a split.*

Split Rule

The first skier must pass **all** of the intermediate splits before the next skier can start. Once all of the splits are passed, the next skier can start even before the first skier passes the finish.

PROGRAM 3 (AUTO)

This program is for recreational races and small training groups.

ONE SKIER ON THE COURSE AT A TIME.

No TIMER operator is required. False starts and DNF are handled automatically by sending the next skier. For false starts, just re-enter the same bib number.

Mount TIMER where the skiers can view times.

After the 1st skier completes the course, the TIMER'S display will wait 10 seconds before showing the 2nd skier's time.

Caution!

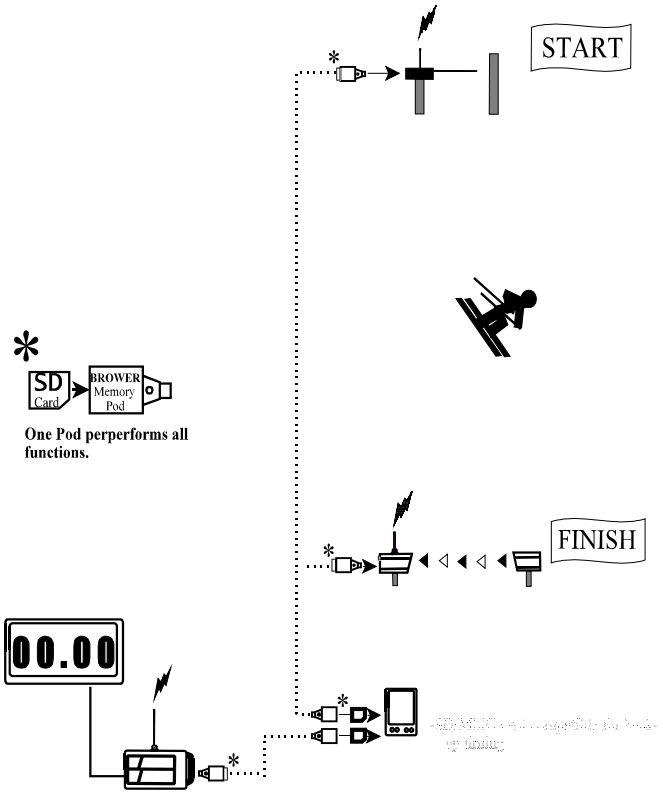
If a new skier starts before the previous skier has finished, the previous skier's time will be canceled and a DNF will appear on the display

Splits

Same as in Mode 1&2.

SETUP FOR EVENTS

For event setup use Program 1 (FIFO)



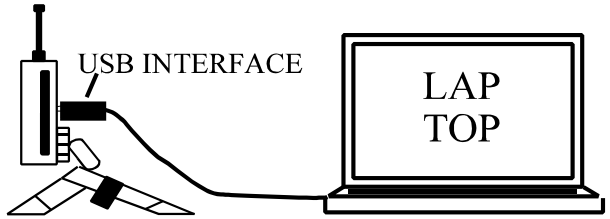
MEMORY POD

The MEMORY POD is used to transfer timing data from the TIMER, WAND, and PHOTOCELL to a Laptop or a PDA.

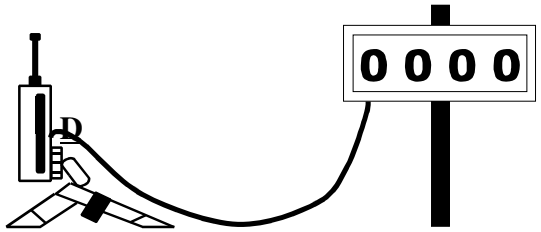
Slide the switch on the Memory Pod to select ether WAND/PHOTOCELL or TIMER. Plug Memory Pod into the WAND, PHOTOCELL, or TIMER to extract memory. The Memory Pod will blink when data transfer is complete. Remove MMC card from the Memory Pod to transfer data to a PDA or Laptop.

PDA & LAPTOP PROGRAM

Available January 2004



ISPLAY 100



The DISPLAY 100 displays the times in four inch digits which can be seen from 100 feet away.

Set up:

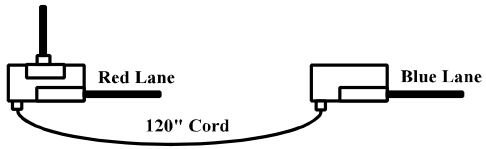
Plug the Display 100 into the TIMER.

The four digit time of the finished skier will stay for 10 seconds, then clear to 00.00.

DUAL LANE COMPONENTS

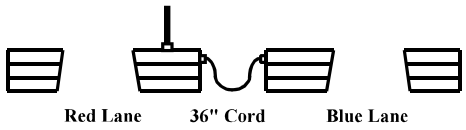
Dual Wand

The DUAL WAND is set up like the BIB ENTRY WAND (page 3). To power on, hold arm open for 5 seconds. The unit will automatically power down after 2 hours of non use. The DUAL WAND will beep 6 seconds after the arm is opened. Battery life on the DUAL WAND is 1 year. Change at the first of each year.
The starting gate should look like this:



Dual Beam Set

The DUAL BEAM is set up the same as the Photocell
Connect the two eye's with the 36" cord
The finish line should look like this:



PROGRAM 4 (DUAL FIFO)

Dual Lane FIFO Multiple Skiers

Mode 4 is a dual version of Mode 1 and operates in the same manner.

Entering Bib Numbers

When the XS System is set to Mode 4 the display on the WAND will flash "r E d".
Enter the bib # of the skier in the Red lane.
The display will now flash "b L U"
Enter the bib # of the skier in the Blue lane.
The display will now show - - _
The skiers are now ready to start.
If a skier is racing as a single, do not enter a bib # for the empty start gate, just press ENTER

Note: Up to 4 sets of skiers can be on the course at one time.

Notes

Mode 4 is similar to Mode 1. A skier that will not finish (or a false start) must be DNF'd.

You can DNF a racer from the WAND or the TIMER.

TIMER- To DNF a racer in the red lane press the Block Window" button. To DNF a racer in the blue lane press the "DNF" button.

WAND- To DNF all running times press the "DNF" button then enter the next skier's bib number. When the skier starts, all of the previous running times are DNF'ed.

Blue and Red lanes are stored and reviewed as sets.

PROGRAM 5 (DUAL AUTO)

This program is for recreational races and small training groups.

No operator is required.

Entering Bib Numbers

When the XS System is set to Mode 5 the display on the WAND will flash "r E d".
Enter the bib # of the skier in the Red lane.
The display will now flash "b L U"
Enter the bib # of the skier in the Blue lane.
The display will now show - - _
The skiers are now ready to start.
If a skier is racing as a single, do not enter a bib # for the empty start gate, just press ENTER

Notes

Only 1 set of skiers can be on the course at one time.
False starts and DNF are handled automatically by sending the next skier. For false start just re-enter the same bib #.

PROGRAM 6 (DUAL DIFF)

This program is for slalom snowboarding races and any other use where the desired result is the time difference between finishes.

No start is used

Entering Bib Numbers

Set up finish like a Dual Finish/

As 2 skiers are finishing, the fastest skiers Display (Red or Blue) will show 00:00 the second skiers display will show the differential time.

If a skier does not finish, press the "DNF" button on the TIMER. The TIMER will display all zeros and is ready for the next two racers.

REPLACING BATTERIES & MAINTENANCE

USE ONLY ALKALINE BATTERIES

Expected Battery Life

TIMER:	200 hours
WAND:	400 hours
PHOTOCELL:	300 hours
IRE:	250 Hours - Low setting – 60 ft.
	175 Hours - Medium – 110 ft.
	100 Hours - High – 175 ft.

Changing Batteries

DO NOT INSTALL BATTERIES BACKWARDS!!!

TIMER: Remove the 4 screws holding the backplate. Attach tripod to the backplate. Remove backplate to reveal the battery. Replace with: 3 AA Energizer Alkaline battery.

WAND: Remove the 4 screws holding the bottom plate and open the WAND like a book. *When removing the battery brace make sure to loosen the set screw at the base of the back with an allen wrench*. Replace the batteries and re-assemble in reverse order. Replace with: 3 AA Energizer Alkaline batteries.

PHOTOCELL: Using the antenna as a wrench, remove the antenna mounting lug. With a screwdriver, remove the setscrew on the bottom of the unit. Press on the face of the unit below the lens to slide the guts of the unit out of the housing. Replace with: 3 AAA Alkaline batteries.

IRE: With a screwdriver, remove the setscrew on the bottom of the unit. Press on the face of the unit below the lens to slide the guts of the unit out of the housing. Replace the battery and install the housing in reverse order. Replace with: 1 - 9v Energizer Alkaline battery (the Duracell is too big)

Maintenance

The PHOTOCELL and IRE are susceptible to water infiltration in heavy rain or wet snow. If water does get in the unit, after use remove the housing and remove the battery. Let stand until dry. Replace.

ELECTRICAL SPECIFICATIONS

XS System

Radio frequency 433.425MHz 25kHz spacing.
modulation method FM.FSK. 32 Channels
Temperature rating - 20 degrees C.
Receiver sensitivity .18 uV
Transmitter power- Low 10 mW
High 135 mW
Transmission distance - 5 miles line-of-sight
Memory capacity- all components store 255 skiers times

TROUBLESHOOTING GUIDE

What if the TIMER does not receive starts or finishes?

1. TIMER may be to close to PHOTOCELL or WAND antennas.
2. Close proximity 2-way radios -keyed radio at the same time TIMER is receiving a signal. Stay 5 feet from TIMER.
3. Use only alkaline batteries. Check battery low.

If TIMER is receiving stray signals, change channels.(pg . 6)

WARRANTY

All products have a 1 year warranty. Brower Timing will repair or replace any failed product at no charge for 1 year from time of purchase. Damage caused by user is not covered by the warranty.
Send all repairs directly to Brower Timing Systems.

Brower Timing Systems
12660 South Fort Street #102
Draper, Utah 84020 USA
Phone 801-572-5540 Fax 801-572-5941
sales@browertiming.com

Write the nature of the problem and include it with the returned product.
Include Visa # with expiration date for non-warranty repairs and express return shipping charges.

CE 0408 !

Austria
Germany
France
Switzerland
Great Britain
Norway
Sweden
Finland
Portugal
Slovenia
Spain

Brower Timing Systems declares that the equipment contained in this system conforms to the RTT directives.

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