Time Drops Wireless Swim Timing System

User instructions

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Regulatory notices

The information in this document is subject to change without notice. Screenshots shown in this document may not match exactly the latest version of the software.

FCC Compliance Statement:
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 must accept any interference received, including interference that may cause undesired operation.

STC-1 contains   FCC ID 2AC7Z-ESPC3MINI1 and FCC ID X8WBT840X or SQGBL654PA
SA-1 contains   FCC ID 2ABN2-RSND05
PB-1 Buttons   FCC ID 2AZ5T-PB001
PB-2 Buttons   FCC ID 2AUXB-DSBC-110
SBA-1 contains   FCC ID 2AHMR-ESP12S

Getting Started

This guide will help you to set up and use the Time Drops timing system for swimming.

The timing system consists of the following:

1. The timing controller STC-1
2. A number of timer buttons (typically 3 for each lane, plus some spares)
3. The start adapter SA-1
4. An Android tablet for managing the timers and scoreboards (not included)
5. A laptop computer for your meet management software (not included)
6. Optionally - A scoreboard (not included)

The Swim Timing Controller STC-1 is the 'heart' of the system and manages the wireless communication with the buttons, the starter unit and the tablet. The controller contains a precision reference clock to ensure accurate results. This controller is water resistant and contains a rechargeable Li-Ion battery which is designed to operate the timing system for up to 10 hours.

The timer buttons connect wirelessly to the controller. The buttons are attached to lanyards and are given to the timers at the end of the pool. The timers push the buttons when the swimmer touches the wall at the end of each race. The button's times are automatically transmitted to the hub which in turn sends the times to the tablet for evaluation.

The PB-2 buttons are IP67 water resistant and can continue to be used after a drop into the pool. Even so they should be retrieved as quickly as possible as extended exposure to several feet of water may cause water to ingress into the protective shell.

The timer buttons are operated with disposable Lithium CR-2032 coin cells which are designed to last 500 hours of continuous operation which should translate to 2-3 years of recreational swim team use. However it is recommended to install fresh batteries at the beginning of every other swim season.
These batteries are quite affordable when ordered in bulk:

https://smile.amazon.com/AmazonBasics-CR2032-Lithium-Coin-Cell/dp/B07RXJ4S7Z

The Start Adapter SA-1 can be connected to a swim starting system such as the Infinity starting system. The starting unit has a dual banana jack which connects to the "START OUTPUT" socket of the Infinity system. For other starting systems, a suitable adapter may be required. The starter unit operates on a single CR-123A lithium battery which will last many years. It is recommended to have a spare battery on hand and replace as needed. To exchange the battery, a #1 Phillips screwdriver is required.

Both the CR2032 and the CR-123A lithium batteries do not leak and it is not required to remove them for storage. However when not in use the system should be stored in a space where it is not exposed to extreme heat or freezing temperatures.

If your team does not have a starting system, the races can be started manually with the designated START button. This button can also be used as a backup in case the primary starting system is not functioning.

Setting up the tablet

The timing system is operated with an App, which runs on the Android operating system. This app is optimized for 8- or 10 inch Tablets which can be purchased in many places. Please note that Amazon Fire tablets are supported, but will require an Amazon account to activate; Tablets from Samsung, Asus, Lenovo or Huawei (among others) can be used. Please note that at a minimum, Android 6.0 is required.

When you first use your tablet, Android requires that a Google account is set up. Unless you are the only user of this tablet, it is STRONGLY recommended to create a new, shared account. For this account, you can use an existing email address such as timing@myteam.com. If you do not have such an address, you can also create a new email address from gmail such as timing.myteam@gmail.com.

DO NOT use your own private Google or Amazon account as this can and will expose your personal data such as email messages, private photos, shopping history etc. to any user of the timing tablet.

It is recommended to write down the password of a shared account on a piece of paper and store it with the tablet as the users may change from season to season. It is also recommended to disable any lock screen, PINs or biometric authentication so that the tablet can always be unlocked when needed.

Hint: most tablets are configured with gesture navigation; Time Drops will be easier to use if you switch to 3-button navigation under Settings/Display/System navigation

After you have set up the tablet for first use and have connected it to the internet, please install the "Time Drops Wireless Swim Timing Console" application which is available on Google Play. You can find this app by scanning the following QR code or following the link:

Setting up the timing console app

Setting up Wi-Fi

Most of the communication of the timing system is done wirelessly through Wi-Fi. A connection to the internet is recommended, but not required. The Wi-Fi connection must be reliable and provide a reasonably strong signal at your timing desk. The following options can be used to provide a Wi-Fi signal (in order of preference)

1. A stationary Wi-Fi router with a cable connection to the internet. This should be a separate router from your general pool wi-fi network. The Wi-Fi should not be shared with the general public or other pool users to avoid interference. The Internet connection can be shared.
2. A mobile phone in Hotspot mode or 4G/5G Hotspot near the timing desk
3. A stationary Wi-fi router without connection to the internet

Please note that the STC-1 operates on the **2.4 GHz band only.** On some multi-band routers it may be required to disable the 5 GHz mode or to set it to a different SSID as the 2.4 GHz band, otherwise some tablets or computers may have difficulty connecting to the correct network. Most routers should have no problem however.

Description of the timing console app

The following shows the basic layout of the timing console application.
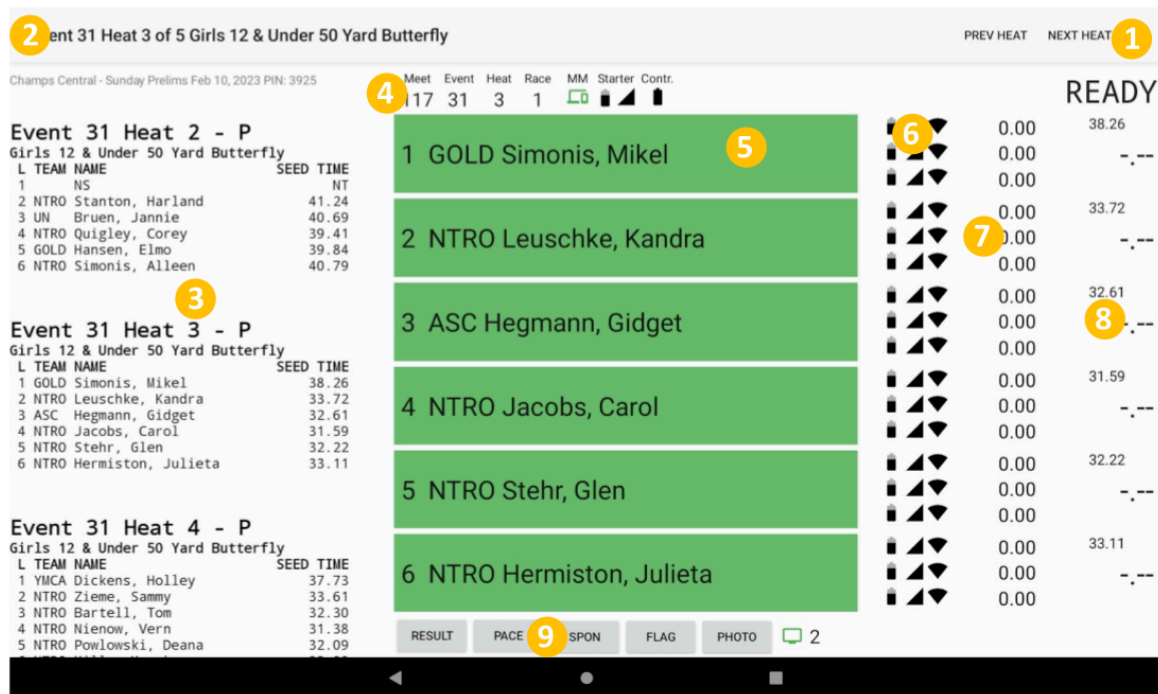
1. Menu buttons
2. Current event and heat description
3. Meet program. Long-press to run a specific race or to make adjustments after the race is over
4. System status - meet number, event number, heat number and race number as well as connectivity with the laptop computer, start adapter and controller
5. Lane assignment status and control
6. Status of timer buttons: battery level, sending signal strength, receiving signal strength
7. Latched time of each button once pressed. Swipe this area left to clear erroneous button pushes, or swipe right to confirm when less buttons have been pushed as expected.
8. Final time calculated from the individual buttons according to USA swimming/FINA rules. Seed time is shown above for each lane. Long-press this area to make adjustments
9. Scoreboard control (only shows when a scoreboard is connected):
   RESULTS - scoreboard
   PACE - display a pace clock on the scoreboard
   SPON - display sponsor logos
   FLAG - show flag animation
   PHOTO - display photos
   VIDEO - stream video from an IP camera

Main Menu

The menu has a number of items that are required for setting up the system and to configure each meet. It is normally not needed for running a meet once it is set up and started.

Settings…

Meet…

Buttons…

Displays…

Records & Standards…

Controller setup

Firmware Update…

My Account…

About…

Share Logs

Reset Races

Setting up the timing controller

The first time you use the timing system at your pool, the STC-1 needs to connect to your Wi-Fi network. This process may take some time since the Wi-Fi options and permissions are different from tablet to tablet and are also dependent on the specific Android version used. This process only needs to be performed once unless you change your Wi-Fi router and/or password
Make sure the tablet is connected to your pool's Wi-Fi.
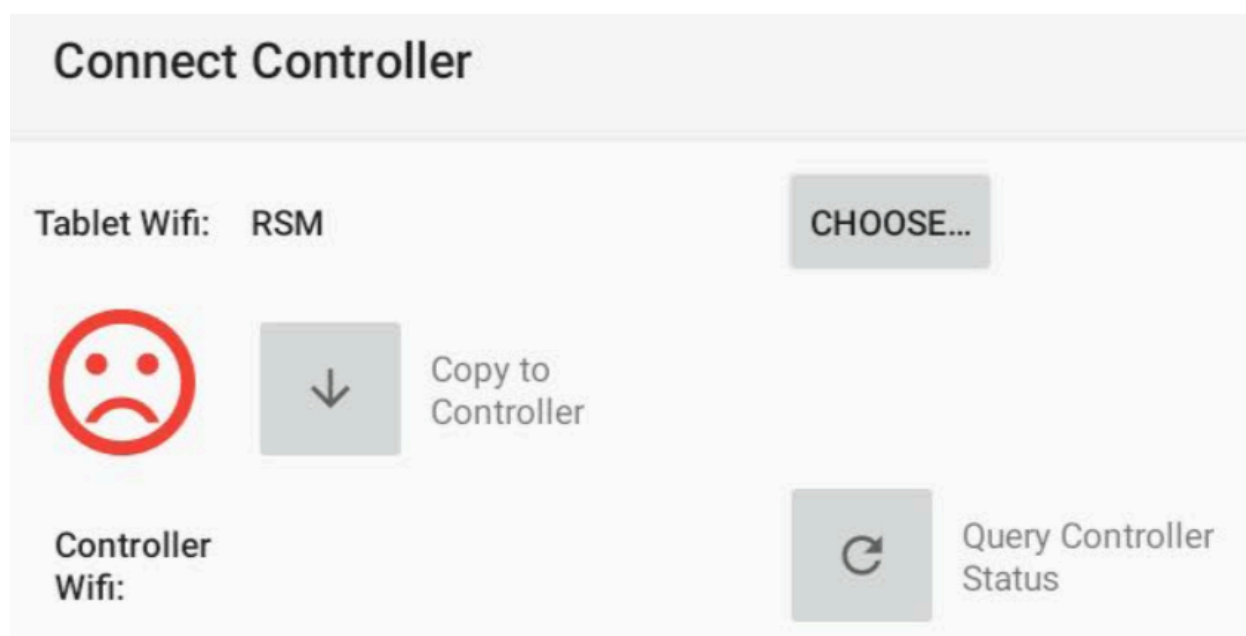
Please follow these steps:

1. Turn the Timing controller on. The red LED on the hub should flash slowly (one flash at a time) which indicates that the controller is not connected to a Wi-Fi network. If the controller is double-flashing while the smiley face shows a frown, it means that the controller is connected to a different wifi than the tablet. Press "Query controller status" to retrieve the name of the Wi-Fi the controller is connected to.
2. In the Timing app, select "Controller Setup" from the menu
3. The "Controller Setupr" screen will appear. Verify that the "Tablet Wifi" field shows the correct Wifi network you intend to use. If not, press the "Choose…" button to bring up the tablet's Wi-Fi settings. Change to the desired Wi-Fi network from the system settings. Press the BACK button to return to the "Controller Setup" screen. **Do not press the 'back' arrow on the top left corner of the Wi-Fi settings screen as this will navigate to the general system settings and will not bring you back to the app.**
4. Tap the "Copy to Controller" button with the arrow pointing down. **You will be prompted to enter your Wi-Fi password again as the Time Drops app does not have access to the password which you already entered into the operating system.**

5. The app will transmit the Wi-Fi network name and password to the STC-1 controller. This process may take up to 2 minutes, so please be patient. Once the controller is connected to the network, the Wi-Fi LED on the controller will flash twice. Once the tablet has established a connection to the controller, the smiley icon will turn from a frown to a smile, which confirms that the process is complete.

6. **If the password you have entered is incorrect, the process will fail without an error message**. If the controller has not connected after 2 minutes, repeat from step 4.

Manage Buttons

This function is important for the initial set-up and after any replacements of buttons. The buttons as they come from the factory are interchangeable, but each one has a unique serial number. After the buttons are attached to lanyards and labeled for each lane, the timing controller must be told which button belongs to which lane. This is done in the manage buttons screen. In this screen, all unassigned buttons will show on the left side, and the assigned buttons are on the right side.The buttons can be easily identified: Press **and hold** a single button, and after a short time the corresponding icon on the screen will turn green. (note: gray icons are buttons that have been previously assigned but are not currently in transmission range or are turned off)

So for example, press and hold the button on the lanyard labeled "3B". Wait until the button turns green, then drag the green button and drop it into the "3B" position.

At any time, press the 'SAVE' button to transmit your changes to the STC-1.

To assign a button to a lane, simply drag and drop the unassigned button to the correct position.

To remove a button from an incorrect position, simply drag another button in its place.

Each lane can have up to 3 buttons. The starter adapter must also be assigned to the start position. Additional buttons can be configured as manual start buttons.

If you use a backup start button in addition to the start adapter, you should not routinely push that button simultaneously with the primary starter. Only use the backup if the primary starter fails.
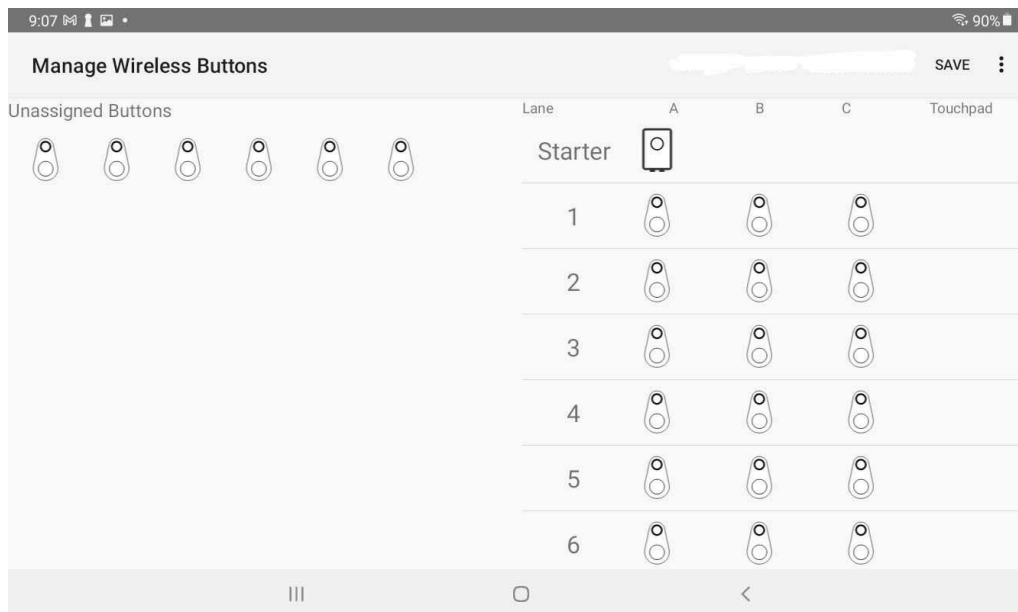
Mini-Starter

Setup

To set up the Mini-Starter, please follow these steps:
- Insert the microphone's K-Style connector into the MIC port of the mini-starter. It will only fit in one direction
- Connect the AUX port of the mini-starter to a suitable external amplified speaker using a 3.5 mm audio cable (mono or stereo)
- Push the small button on the top of the microphone to turn the mini-starter on
- On the Buttons.. page of the console app, the mini-starter will show up with a microphone icon. Drag the icon into the 'Starter A' position to make it the primary starter

Use

The microphone of the mini-starter has 2 buttons: one large PTT (Push-To-Talk) button on the side and a small start trigger on the top. These buttons function in the following way:
- Press the PTT button and talk into the microphone to issue commands to the swimmers ('Take your mark')
- **While holding the PTT button**, push the start trigger to start the race. The start trigger will not work if pushed by itself, or if you push the 2 buttons at the same time. You must push the PTT button first to arm the start trigger.
- The microphone will automatically shut off after a start. If you want to use it again, release the PTT button and push it again
- The mini-starter can generate a recall sound in case of the false start. To issue the recall, push the start trigger first, then the PTT button while holding the start trigger

The overall volume of the mini-starter must be controlled from the amplified speaker or PA system. However, you can adjust the volume of the start sound relative to the microphone. To make these adjustments, go to the Buttons… screen and press the 'Mini-Starter' menu button on the top of the screen. This will open a dialog with 3 settings:
- Start sound volume (relative to microphone)
- Start sound pitch
- Start sound duration

Press 'SAVE' to send the settings to the Mini-Starter. Please wait a few seconds for the updated settings to take effect.

Manage Displays

This menu is used to configure any attached scoreboards.

Each scoreboard is run by a separate app. This screen is used to configure the display parameters for each scoreboard. The scoreboard controllers must be connected to the same subnet (wired or Wi-Fi) and will be detected automatically when present. Once the screen is configured, both the screen and the app will remember these settings and won't have to be set again.

When a scoreboard is first connected, it will show up as "New (xxxxx)" where xxxx is the serial number of the scoreboard. You can change this name to something more easy to remember.
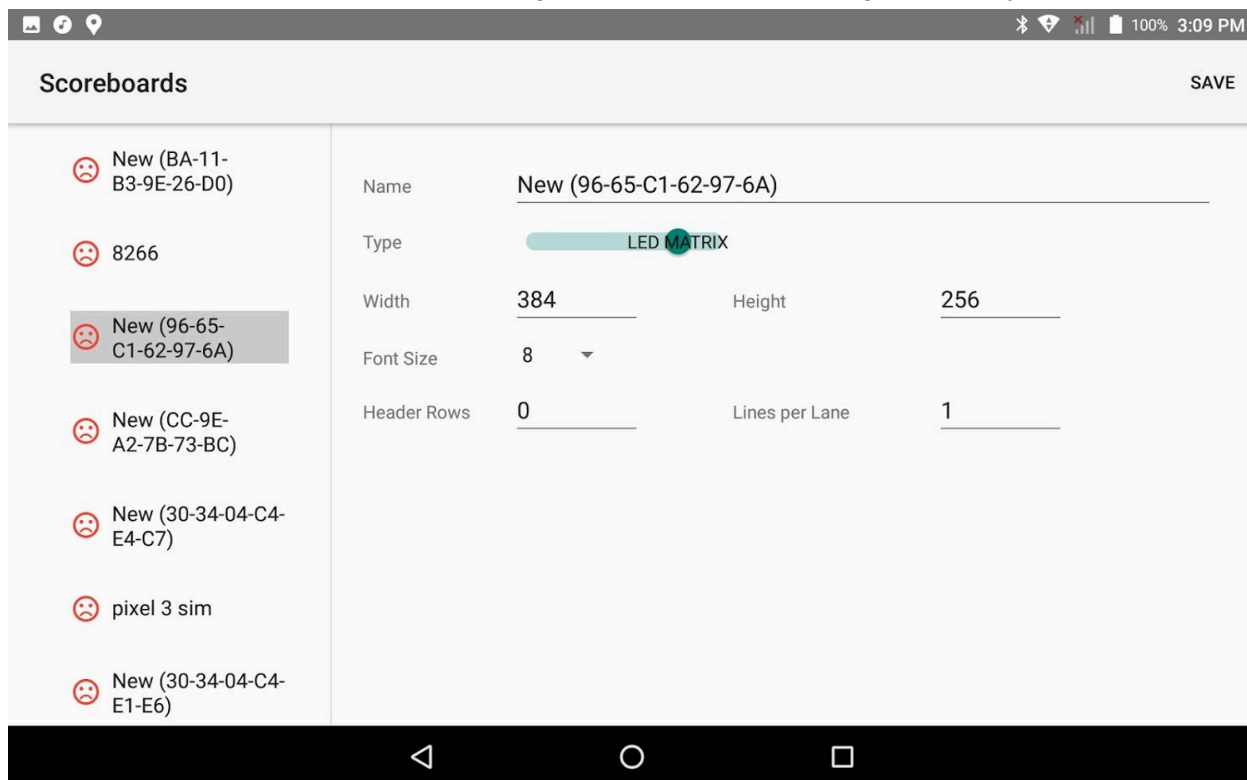
The most important setting for each scoreboard is the Type - "TV" or "LED MATRIX". TV monitors are Amazon Fire TVs or any TV with an Amazon Fire TV Stick. For the TV displays, there are no additional settings. For the LED matrix displays you need to set the parameters of the display as they differ in size and resolution.

Note: on some older TV's, the scoreboard display may spill over the edge of the screen. This is due to the 'overscan' setting in the TV which should be turned off. The exact name of this setting may differ between manufacturers. Examples could be 'native mode', 'edge control' or 'picture size'

Preparing the Meet Management Laptop

In order to connect the timing application to your meet management computer, you need to install the MM-Link software on your laptop (Windows 10 required).

The MM-Link app is available in the Microsoft store:

https://www.microsoft.com/store/apps/9MV7DPML9LC2

The only interaction with this app is that you have to choose a shared folder where files will be exchanged with your meet management software (Meet Manager or Meet Maestro). This only needs to be done once. Please click the "Choose…" button and select the desired directory on your computer.
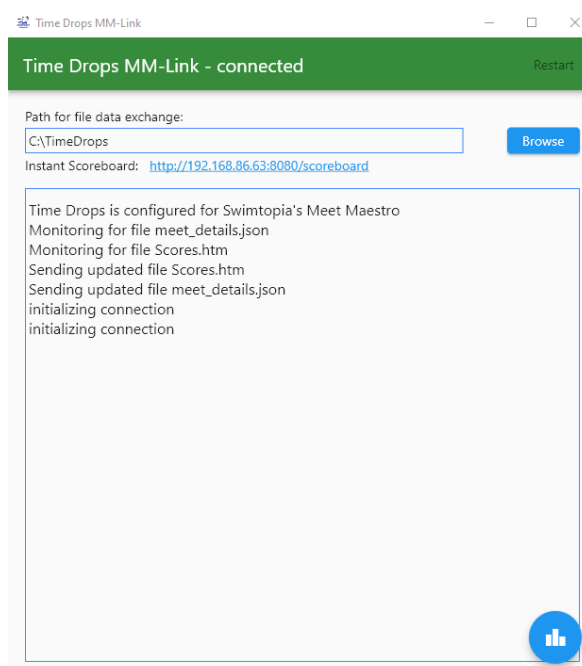
This can be any folder on your computer, but typically will be something like "c:\TimeDrops". You need to configure the same folder in your meet management software.

Hint: it will be helpful to add this folder to your 'Quick Access' folders so that you can access this folder more easily.

Setting up at a meet

The timing hardware (controller, start adapter and buttons) are easy to set up.
Please make sure the hub is fully charged prior to the meet. The hub should be placed near the edge of the pool, with a clear line of sight to the ends of the pool where the timers will be positioned. If your timers switch between the deep end and the shallow end of the pool, the best position is along the side of the pool.
Simply push the power button on the STC-1 to turn it on. The controller will automatically connect to the configured Wi-Fi network and will start communicating with the console app. The controller will turn off automatically 10 minutes after the app is exited.
The buttons need to be clicked once in order to turn them on. They will turn off automatically once the controller turns off.
Plug the start adapter into your starting system and attach the adapter with the velcro pad. Perform one test start on the starter in order to power on the adapter. Just like the buttons, the adapter will shut down automatically once the hub is turned off.

We have a [checklist](#) which helps you not to forget any step during the setup for a meet.

Setting up the Scoreboard Adapter

The system may include the SBA-1 scoreboard adapter which allows use of certain numeric scoreboards with a serial port interface (RS232) with a ¼" phone jack connector.
The adapter requires a 5V external power supply (included).
To configure this adapter, it needs to be connected to the same Wi-Fi network as all the other components. The adapter has a Wi-Fi based configuration page.

If you have forgotten the password, you can reset it using the following sequence:
- Unplug the power supply cable from the adapter
- Insert a paperclip into the small reset hole on the side of the adapter
- Push and hold the reset button with the paper clip
- Insert the power supply
- After a few seconds, release the reset button
- The red LED should now be mostly ON with only brief dark periods

The scoreboard adapter has a red LED which will indicate the status of the adapter:
- **Rapid blinking** (**mostly on, interrupted by short off periods**) - The adapter is in factory configuration and you can connect to it with your smartphone to configure it
- **Alternating on/off blinking** - The adapter has been configured and is trying to connect to the assigned Wi-Fi network, but is not connected just yet
- **Mostly off with occasional short flash** - The adapter is connected to Wi-Fi and ready to be used
- **Small blue LED may be on or off and can be ignored.**

Once the adapter is connected correctly, the red LED will appear 'OFF' and will only flash very briefly every 5 seconds or so. If the red LED is on more than that the adapter is not configured correctly and will not work.

If you need to change the adapter to connect to a different SSID make sure that the originally configured SSID is not available. The adapter will automatically switch to the configuration mode if the original SSID cannot be found. You do not need to perform the button reset unless you cannot remember the AP password set during the initial setup.

Please verify that the red LED is in the rapid blinking pattern before attempting the configuration. Then, simply connect your smartphone or laptop to the 'ScoreboardAdapter' network. You should see a prompt on your phone "please sign into the ScoreboardAdapter network" or similar. Tap on the prompt.

This will bring you to the following landing page:
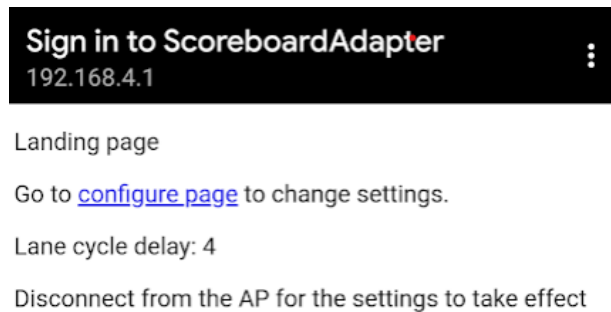
Please tap on the 'configure page' link to get to this configuration page:

This page has 4 settings:
- AP password: This will be the password for the configuration page in the future.You cannot leave this empty and must assign a password of your choice. Please write down this password and ideally stick it onto the adapter for future reference.
- WiFi SSID: This is the SSID for your timing system's wifi network. Please be aware that this is **case sensitive**. If your SSID is "MyWi**f**i", then entering 'MyWi**F**i" will not work!
- WiFi password: the password for your timing system wifi. Double-tap the box to make the password visible as you type. Please triple check the correct spelling of the password. If you have trouble connecting the adapter, it is 99% of the time due to a mis-typed SSID or password.
- Lane delay: the time (in seconds) each lane will be shown before it cycles to the next lane. You can leave this alone as the setting can also be made from the tablet.

After you press 'Apply', you will need to disconnect your phone from the "ScoreboardAdapter" network for the settings to take effect.

Running a meet

This description assumes that the meet has already been seeded and is ready to be run. The next steps depend on your meet management software

Using Meet Maestro (SwimTopia)

Please also refer to this video: https://youtu.be/f-QSTBUsA7U

Configuring the timing interface and exporting the program

The Meet Maestro desktop application has an interface to timing systems. The integration is quite easy: go to the settings screen and there to the "Timing Setup" section. There, click the "Add Timing System Configuration button.
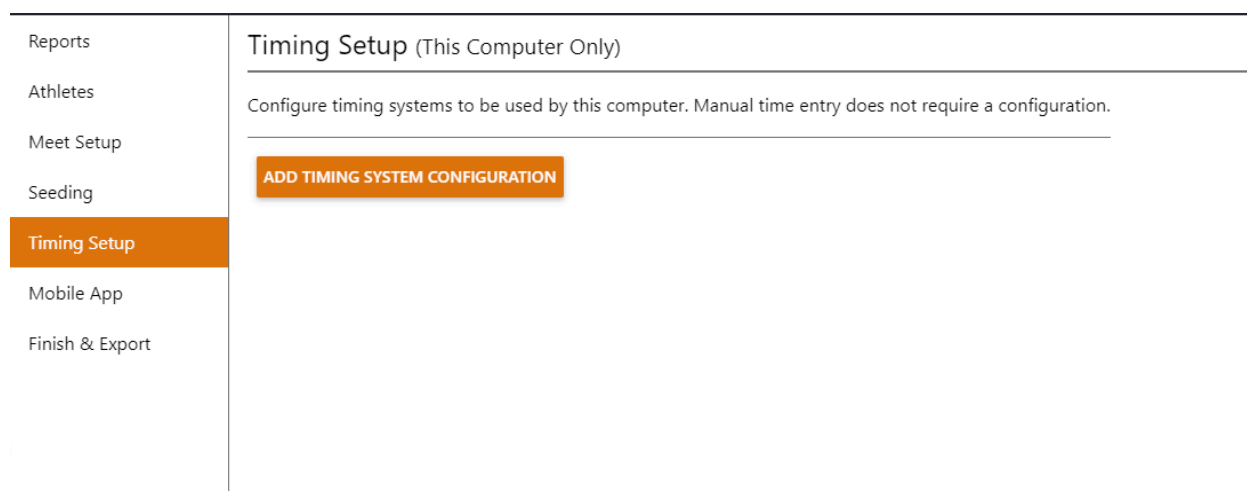
On the next screen, select the 'Time Drops' timing system

Now, the Time Drops setup screen will load. The most important aspect in this screen is to select the correct shared folder by clicking "Change Directory" if needed (1).This can be any folder on the computer (e.g. C:\TimeDrops), but it needs to match the folder you selected for MM-Link.

Next, click 'Write Configuration File' (2). This will export the meet program to Time Drops. After a few seconds, the tablet should update with the updated program.

Next, click 'Change Session Number' (3). This will present you with a list of session files in the shared folder. You may have to press "Check For New Files" on that list to refresh it. Select the session number which matches the meet number displayed on the tablet screen.

If it is all set up correctly, the same number should appear in 'Timing system is exporting to session #' and 'Currently importing from session #'.

You should also tell Meet Maestro how many Times per lane to expect. This depends on how many buttons you have purchased and the number of available volunteers for each lane.

Important: this value is only for Meet Maestro. You will have to set the number of buttons per lane in Time Drops to the same number. This can be done in the 'Meet…' screen.

Finally, hit 'SAVE' (4).

Session 1 — Test Old 🐻

Time Drops

Data directory

C:\TimeDrops

CHANGE DIRECTORY (1)

Timing System Configuration

The timing system configuration file is used to configure the timing system (event descriptions, athlete and team names for scoreboards, etc).

WRITE CONFIGURATION FILE (2)

Session Number

Timing system is exporting to session #1.
Currently importing from session #1.

CHANGE SESSION NUMBER (3)

Expected Number of Times per Lane

| 3 ▼ | Display warnings if fewer times are imported |

SwimTopia Mobile App Settings

☐ Enable the Live Event/Heat bar

Learn more about the Live Event/Heat bar. Any updates to the current event and heat will adapt (4) *timeline, changing when upcoming swim reminders are sent to mobile app users. Running test before the meet starts, while this is enabled, will start sending reminders early!*

CANCEL   **SAVE**

EVENT 1	⌃ ⌄	100YD MEDLEY RELAY **Mixed 6 & Under**	HEAT	LANE	STANDINGS		WOMEN	MEN	COMBINED
			‹ **1** ›		RSM Springwood		16 8	8 4	32 16

| 1 ▾ | | | | | | | | | | ✓ Saved |

🐻 **Time Drops** ⚙   Meet **001**   Race ⟳   **LOAD TIMES**

LANE	TEAM	ATHLETE	SEED TIME	TIMER 1	TIMER 2	TIMER 3	><	RESULT TIME	DQ		OFFICIAL TIME SC YARDS	HEAT PLACE	PLACE	PTS
1	ADD ENTRY													
2	RSM	RSM C	1:48.95	6.80	6.80	6.80		6.80	··· ☐ ...	🔲🔲	6.80	1	1	8
3	RSM	RSM B	1:30.89	7.60	7.60	7.60		7.60	··· ☐ ...	🔲🔲	7.60	2	2	
4	SPW	SPW A	2:05.86	8.47	8.47	8.47		8.47	··· ☐ ...	🔲	8.47	3	3	4
5	RSM	RSM A	2:04.90	9.34	9.34	9.34		9.34	··· ☐ ...	🔲🔲	9.34	4	4	
6	ADD ENTRY													

Once the system is set up for the meet, a timing system bar will appear in the Meet Maestro main screen. When you make any changes to the meet such as scratches, export the program again by clicking the gear icon (1) in the timing system bar, then Write Configuration File (2) then SAVE (3).

Important: You need to click CHANGE SESSION NUMBER and select the correct session for this meet. Time Drops will generate a new session number for each meet or session, and the session number in Meet Maestro needs to match the session number in Time Drops. **CAUTION: Sometimes the SAVE button may be scrolled out of view. If you change the session number, it will not take effect until you scroll down and click SAVE**
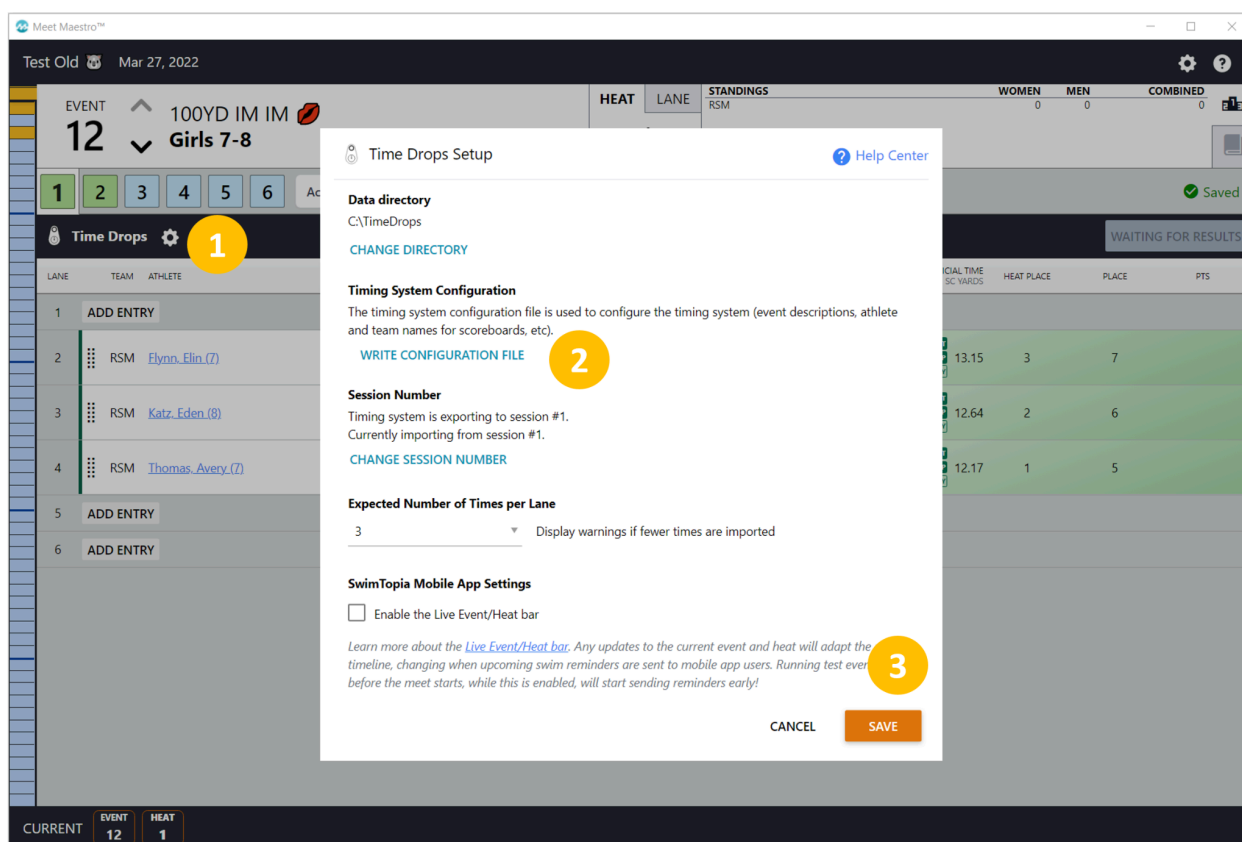
Loading times into Meet Maestro

As each race is finished, the timing system will save a results file into the shared folder. Meet Maestro monitors this folder and will update the display from "NOT READY" to "LOAD TIMES" (1). Press the "LOAD TIMES" button to import the results. NOTE: Meet Maestro identifies the result file by the race number, not the event or heat number. If there is a mismatch, you can manually enter the correct race number in the Meet Maestro screen to load data from any result file.

	EVENT	100YD MEDLEY RELAY					HEAT	LANE		STANDINGS					WOMEN	MEN	COMBINED	
	1	**Mixed 6 & Under**					‹ **1** ›			RSM					16	8	32	
										Springwood					8	4	16	

1 ▾ ✓ Saved

🧅 **Time Drops** ⚙   Meet **001**   Race   ① **LOAD TIMES**

LANE	TEAM	ATHLETE	SEED TIME	TIMER 1	TIMER 2	TIMER 3	> <	RESULT TIME		DQ			OFFICIAL TIME SC YARDS	HEAT PLACE	PLACE	PTS
1	ADD ENTRY															
2	RSM	RSM C	1:48.95	6.80	6.80	6.80		6.80	···	☐ …		▣▣	6.80	1	1	8
3	RSM	RSM B	1:30.89	7.60	7.60	7.60		7.60	···	☐ …		▣▣	7.60	2	2	
4	SPW	SPW A	2:05.86	8.47	8.47	8.47		8.47	···	☐ …		▣	8.47	3	3	4
5	RSM	RSM A	2:04.90	9.34	9.34	9.34		9.34	···	☐ …		▣▣	9.34	4	4	
6	ADD ENTRY															

Using Meet Manager (Hy-Tek)

Please also refer to this video: ▶ Hy-Tek Meet Manager and Time Drops

Exporting the Sessions list

If you are running a multi-session meet or any meet with many teams, you should export a sessions list so that Time Drops Live can show the sessions in the correct order with estimated start and end times and can match the team abbreviations automatically. To export the sessions list, select Report / Sessions from the Meet Manager menu.

Select all relevant sessions, and check 'Flat HTML' as the format,and check the other boxes exactly as shown. Then click 'Create Report'. Save the Session.htm file to the MM-Link folder. MM-Link will automatically send the report to the tablet.

Exporting the Meet Program

The first step to run the meet is to export the meet program to the timing console:

Select Reports → Meet Program from the main menu. On the 'Meet Program screen, select the desired session:

Important: Time Drops can only work with one Session at a time. Each session will be treated as a separate meet. If your meet has multiple session, please make sure that each session has a distinct title, such as 'Saturday AM' and 'Saturday PM'. **Never select the first row 'All Events' when running a meet with multiple sessions!**

After you select the session, click 'Select All' in the window menu, which will select all events within the chosen session.

At the bottom of the screen, select the following options under 'Include in Meet Program':
Select "Flat HTML" under Columns, and uncheck all other Format options

Next, check "Records", "Time Standards", "Entry Times", "Heat Start Times" and "Empty Lanes" on the "Include in Meet Program" tab. Make sure that none of the other boxes are checked. If

you want relay names shown on the scoreboard, enter '4' into the "Relay Athlete Names" box, otherwise enter "0".

Now, when you press "Create Report", Meet Manager will prompt you for a directory where the file "MeetProg.htm" will be stored. Select your shared directory (e.g. C:\TimeDrops) and confirm to overwrite the file if it already exists. **Do not change the name of the file to anything other than the default "MeetProg.htm".** If prompted to overwrite an existing file, click 'Yes'.
The meet program on the tablet will update automatically after a few seconds.

Updating the program during the meet

If at any time during the meet you have any changes (such as scratches, substitutions, or removal or addition of heats), you need to re-export the meet program so that the information in the console (and on the scoreboard) are up-to-date.For simple scratches it is not absolutely required to do so since you can simply mark the lane as empty when it is run but generally it is recommended to update the program as soon as possible.
**Please note that there is currently no option to add events in the timing console app. The only way to add events is to add it in Meet Manager and then export the program to the console.**

Configuring the Timing Interface

In Meet Manager, there are 2 steps to connect to the timing system: first, configure your timing system interface. In the Run Screen, go to Interfaces → Set-up → Timing Console Interface:
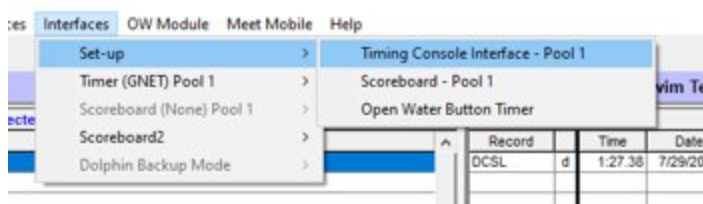
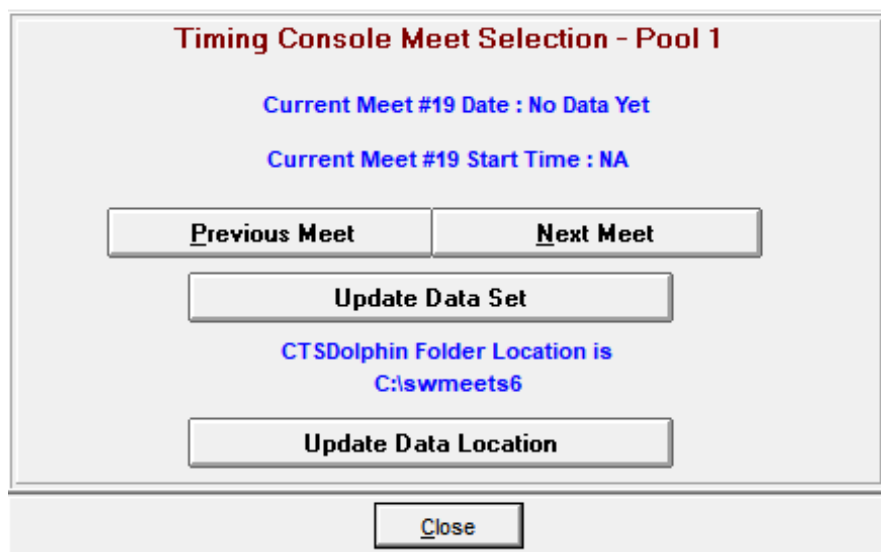In the Set-up dialog, select "Generic Network File Sharing":
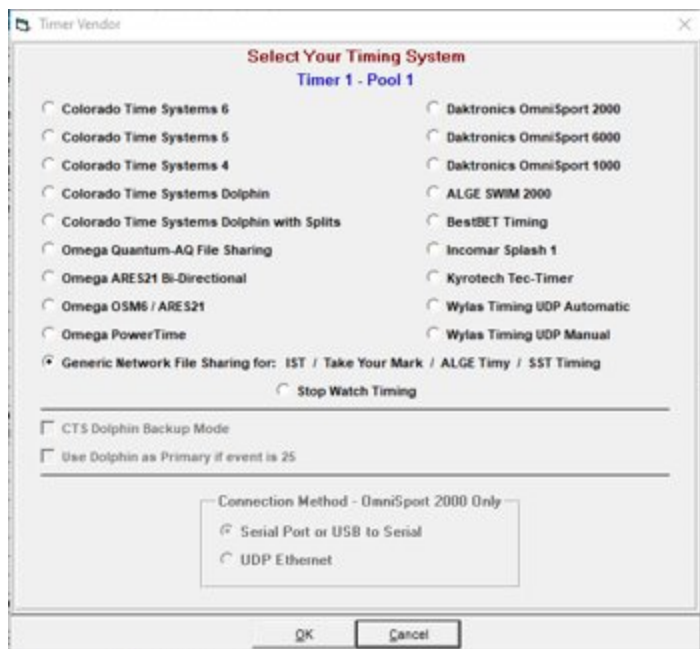
Then, go to Interfaces → Timer (GNET) → Select Data Set

In the following dialog, press "Update Data Location" and select your shared folder (e.g. "c:\swmeets6").

After the first race is run, go to this dialog again, and click "Update Data Set", then click "Previous Meet" or "Next Meet" until you see the correct meet with today's date and the meet number shown on the timing console app. Now you are ready to load results from the timing into Meet Manager with the "Get Times" button.
Note: Due to the way this interface works, the current meet will NOT show up in the meet selection dialog until you have run at least one race. That can be a test race.

Loading results into Meet Manager

As each race is finished, the timing console will save a results file into the shared folder. Meet Manager does not monitor this folder, so you have to manually press the "Get Times" button on the Run screen in order to import times. Meet Manager will display a confirmation pop-up dialog if there is some kind of mismatch between the results file and the meet program (e.g. no-show, added swimmer etc.). NOTE: The "Get Times" button will identify the results file by event # and heat # and not by race #. In case of discrepancies (race was run on the console with the incorrect event and heat selected) you can press the "Race" button, after which you are able to enter any race number to be loaded irrespective of the assigned event and heat number.

Use of the Timing application

Once the meet program has been exported into the shared folder, it will automatically update the tablet.
 In the main screen, occupied heats will show with a green button and empty lanes will show with a red button. You can toggle the lane between occupied and empty by touching the bar. By default, the assignment of lanes as empty or occupied is loaded from the program. However if the situation in the pool is different from the program, it is very important to let the system know if a lane is empty due to no-show since otherwise the timing system will not know if a heat has ended.

Starting a race

If everything is set up correctly, the display will show "READY" in the upper right corner. The race can now be started from the starter. As soon as the race is started, the system will display a running clock with the elapsed time. After the start, it is a good time to double check any empty lanes and mark them in the app accordingly. You should also check if the correct event and heat is set. You can change the heat at any time before the race has finished by using the "PREV HEAT" and "NEXT HEAT" buttons

False Start

Once the race is started, a "FALSE START" button will appear in the upper right corner. Simply press this button to let the system know of the false start. This will require confirmation since this step cannot be undone and no times will be recorded for the race.

Possible issues

There are a number of abnormal situations that can occur during a race. Most of these are not malfunctions of the system but rather errors committed by the timers. The following will describe how to deal with these situations:

1. **One or more timers prematurely press on the button:** (for example they didn't realize a race was four laps): A time will be latched into the display of the lane. You can simply reset the lane by swiping the button times left.
2. **One timer fails to push the button as the swimmer finishes the race:** Normally, the system will require 3 buttons pushed for a correct time calculation. However, if there are 2 buttons pressed, the system will wait a few seconds for the 3rd button to be pushed. During this time the time will be shown as yellow. If no further button is pushed, the system will automatically accept this partial result and the lane will turn green. The system will calculate the average of the two buttons as the official time in accordance with USA Swimming rules

3. **Two timers fail to push the button:** In this case, the single available time will be shown in red. You need to decide if this time is plausible or not. If the time is plausible, simply swipe the red area to the right to accept the time. Otherwise swipe left.
Note you can also long-press on the red area and a pop-up menu will be shown: if the time is plausible, select "ACCEPT PARTIAL" and the time will be accepted. Otherwise, reset the lane if required. In any case, you should corroborate this result with manual back-up times if possible

4. **A swimmer does not finish:** simply mark the lane as empty

5. **Extra Start:** the start button may be pressed while a race is already in progress. You will see a pop-up window allowing you to ignore the extra start

6. **Failure to push any button or empty lane not marked as such:** If there is a lane that is not marked as empty, and no button is pushed for that lane (or only 1 button is pushed but it is not accepted), the system will continue to run and wait for this last lane to finish. If a new race is started in that state, you will see the same pop-up window as for the Extra Start (since the system cannot distinguish between these two conditions). If indeed a new race has started, simply accept the extra start and the system will move to the next heat and retroactively start it using the time from the start event. The current heat will be closed (any partial results will be accepted) and the result will be saved.

7. **Swimmer in the wrong lane:** If a swimmer is in the wrong lane, you can correct the display in the app and on the scoreboard by long-pressing the lane button. You will see a dialog where you can enter the correct name of the swimmer. NOTE: this will only update the scoreboard and the app. To correctly load the times into your meet management program, you will also need to change the lane assignment in the meet management software.
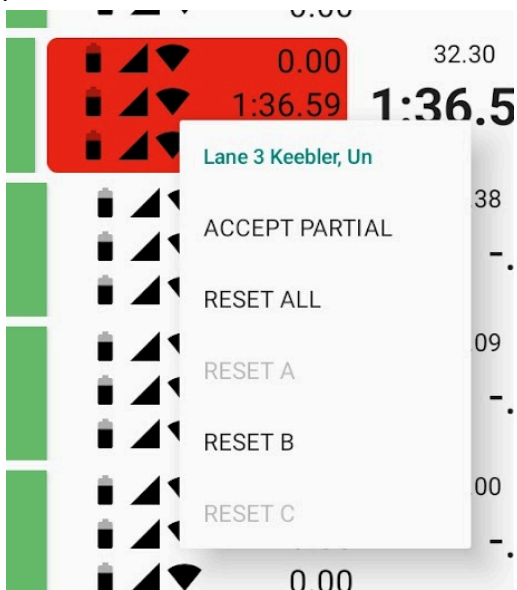
Lane with 2 buttons pressed - this will auto-accept and turn green within a few seconds.
You can also swipe the button pad to the right to immediately accept the result.
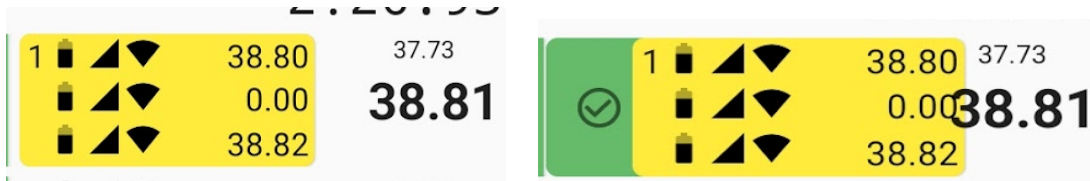
Lane with single button pushed. You can swipe right to confirm, or swipe left to reset the button :
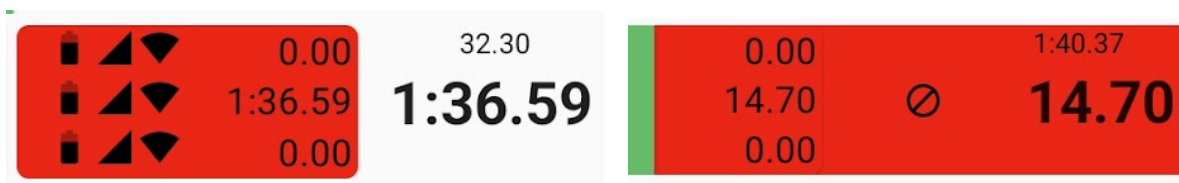
Long-press to open the lane adjustment menu. Reset as error or Accept if this seems to be a plausible time:

Combining Events

Setting up combined events

Time Drops has a convenient feature that allows to combine Events and Heats, which is a time saving practice very common in summer league swimming and other types of meets. This feature allows 2 or more events to be swum simultaneously if there are not enough swimmers or relay teams in those events to fill all the pool lanes.

The key to understanding how combining works is that the meet seeding has to be manually adjusted so that each available lane is only used once across all events. The meet manager software will usually seed the entries from the center lane out. Therefore, after the initial seeding, combining of event will not be possible as the lanes are occupied multiple times, for instance:

After the initial seeding: Lanes 3 and 4 are used in both events

Event 5 Girls 9-10 Medley Relay

Lane	Relay Name	Ltr	Seed Time
1			
2			
3	Rancho San Miguel	A	2:39.14
4	Las Trampas Swim Team	A	2:34.23
5	Rancho San Miguel	B	2:54.32
6			

Event 6 Boys 9-10 Medley Relay

Lane	Relay Name	Ltr	Seed Time
1			
2			
3	Rancho San Miguel	A	2:30.64
4	Las Trampas Swim Team	A	3:11.21
5			
6			

After manual adjustment: Girls are using lanes 1-3 and boys are using lanes 4-5

Lane	Relay Name	Ltr	Seed Time
1	Rancho San Miguel	B	2:54.32
2	Las Trampas Swim Team	A	2:34.23
3	Rancho San Miguel	A	2:39.14
4			
5			
6			

Lane	Relay Name	Ltr	Seed Time
1			
2			
3			
4	Las Trampas Swim Team	A	3:11.21
5	Rancho San Miguel	A	2:30.64
6			

The above example is from Meet Manager, but it works analogously in Meet Maestro.

Combining of Relays is enabled by default in Time Drops. Therefore, when this program is sent to Time Drops, these two events will be automatically combined. During the import of the program, MM-Link will automatically display a report of which events were combined:
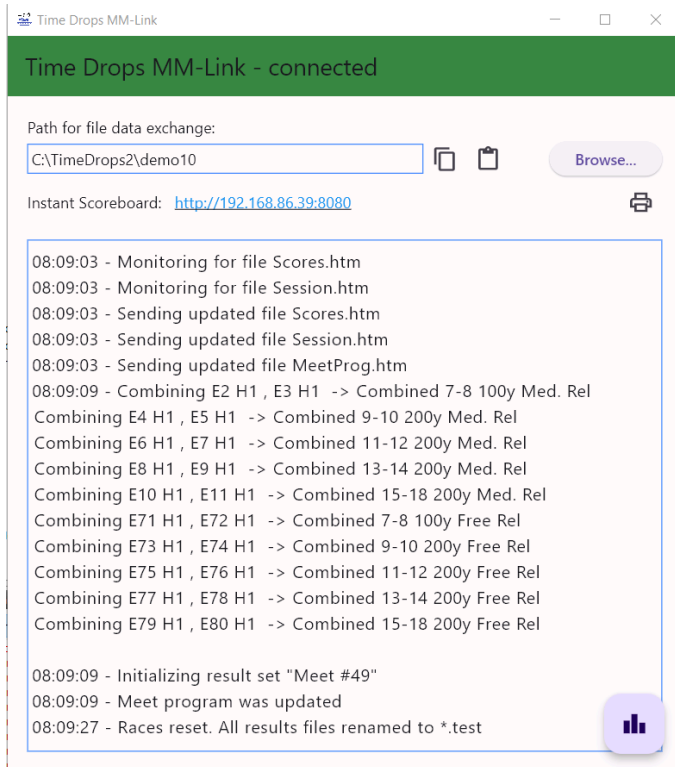
Likewise, these events will show up as combined on the tablet console app:

One important thing to remember is that even while the combined events are clearly marked in Time Drops and also in the Live! app if the meet is published, neither Meet Manager nor Meet Maestro are aware of the combining at this point. Because of this, any printed meet programs or heat sheets will NOT reflect the combining. It needs to be therefore clearly communicated to the marshal, starter and other officials that these events are intended to be combined.

Importing the results from combined events

Once the combined event has finished, Time Drops will automatically split the results up into separate results files for each event. Therefore you can just import the times for each event just as if those events had been swum separately. The traditional practice of loading the same result multiple times into different events by using the race # is not needed.

Advanced combining

As described above, combining is enabled by default for relay events only. But it can also be applied to other situations. On the meet settings screen, there are several toggles to control this behavior:

There are a few preconditions that need to be met before events can be combined:
1. The events or heats in question need to be directly adjacent. Time Drops cannot combine for instance Event 4 Heat 1 with Event 5 Heat 2 (see below on how to handle this situation)
2. The events need to use the same stroke, age group and distance (see below for exceptions)
3. Each lane must only be occupied once across the events to be combined
4. Only Heat 1 can be combined, e.g. E4H1 with E5H1

With this in mind, the explanation for the toggle switches is as follows:

- **Relays**: enables the combining of relays meeting the preconditions. Enabled by default
- **Individual**: enables the combining of individual events meeting the preconditions.
- **Age Groups**: relaxes the age group requirement, which allows more than 2 events across age groups to be combined
- **Heats**: relaxes the Heat 1 requirement, so that even heats within the same event can be combined. Note: Usually if heats become sparsely used due to scratches, it is often better to just re-seed the event and eliminate empty heats. Combining of heats is only advisable if one wants to keep the original heat structure intact.
- **Distances**: relaxes the 'same distance' requirement, provided that the distances in question are > 200. This can be useful for long distance events, e.g. to combine 1K swimmers with Mile swimmers.

There are some other situations which cannot be handled with the combining algorithm. For example:

- Combining non-adjacent events such as moving a single girl from E10H2 to the E11H3 of the boys where there is an empty lane
- A swimmer missed their race and will be added to an empty lane in a later event

The best approach in these situation would normally be to just model the updated seeding in Meet Manager or Meet Maestro and update the program. However the meet managers will normally prevent you from adding swimmers into heats not matching the age or gender. In these situations, you can still use Time Drops to get the times for the swimmers. The process is as follows:

At the time of the race, just manually toggle the respective lanes on the tablet to ADD-ON (green) so that a time will be captured for that lane. Once the race is finished, you can either:
- Manually enter the time into the meet manager
- Import the time into the meet manager (usually the program will complain about a time in an empty lane) and then manually copy/paste the time to the correct swimmer
- If you combined non-adjacent heats and the lane assignment is modeled correctly in the respective heat, you can also load the times by manually overriding the race number. In

Meet Manager, this can be done by pressing the "Race #" button instead of 'Get Times'. In Meet Maestro, you can use the 'Race #' drop-down menu next to the 'Load Times' button to load times from one heat into another heat

Using the Time Drops system with touchpads

The Time Drops system can also work with touchpads from most vendors. Each pad can be connected wirelessly to the system by using one SA-1 Start/Pad adapter for each pad. To set up the system for use with touchpads, do the following:

- Drag each of the adapters into the correct near or far pad position in the Buttons screen and save
- Under Settings.., select 'Touchpads at near end' or 'Touchpads at both ends' as appropriate in the Touch Pads section.
- Once touchpads are enabled, there will be a number of different options:
    - 'Start odd lap races from far end' - this will allow you to start races with just one length from the far end of the pool so that the swimmers can use the touchpads at the near end
    - 'Accept pad times without backup button' - If this option is selected, a touch on the pad in the final lap will count as a finish time, even if none of the backup buttons was pressed. This can be useful, e.g. for practice
    - 'Promote backup times for scoreboard if late touch' if this option is selected, the system will automatically display the backup times on the scoreboard if a pad is triggered more than 0.45 s after the backup buttons have been pushed. This option is advantageous for younger swimmers who frequently finish with a soft touch. This setting does not affect the scoring in Meet Manager or Meet Maestro, you will still have to 'adjust' the time for the official time. This option simply assumes that this adjustment will happen later and will display a more plausible time on the scoreboard.
    - 'Use subtractive splits' - when this option is selected, subtractive rather than cumulative splits will be shows on the scoreboard and elsewhere in the system
    - Start delay - the time in seconds after the start before the pads become 'armed' and will register touches
    - Split delay - the time in seconds after each turn before the pads become 'armed' to register the next touch
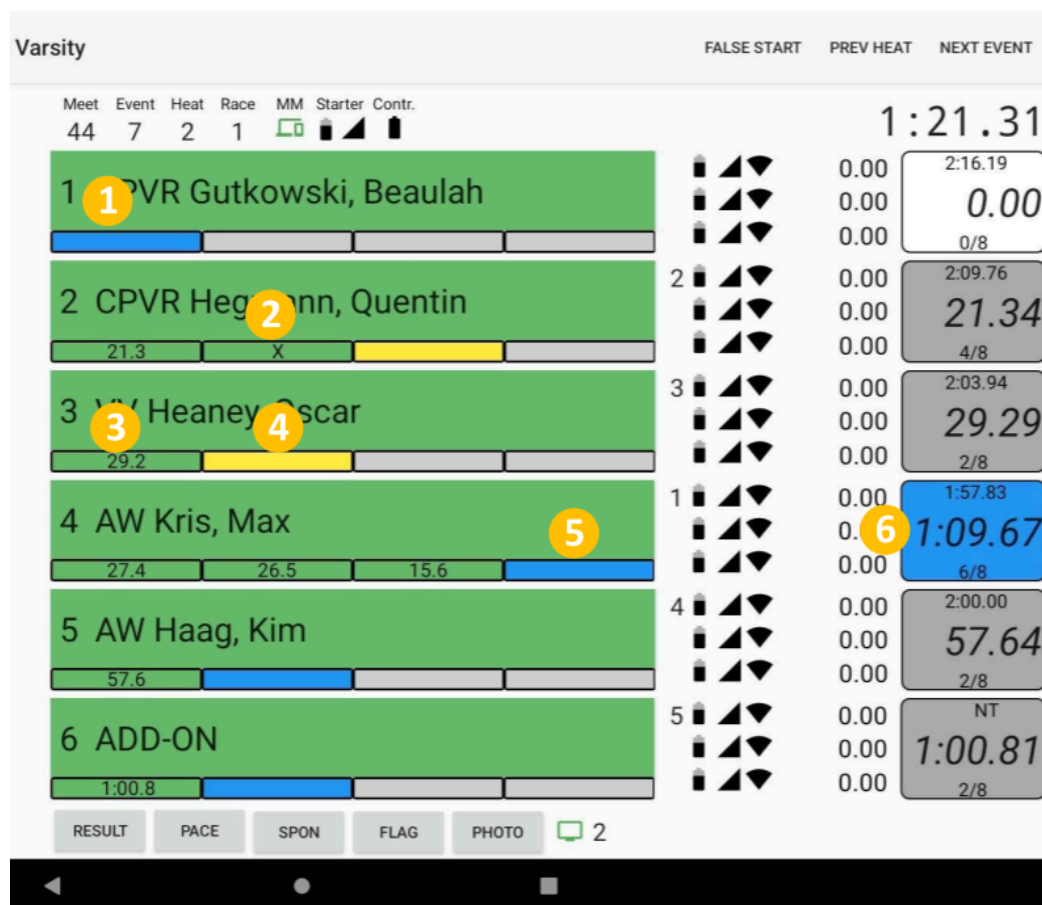
Legend:

1) The blue color indicates that the pad is armed for the first split. This will occur after the Start Delay has elapsed

2) A split has been missed and the operator has confirmed a missed split by swiping the pad box up

3) The green color indicates that a split time was captured. The subtractive split time is shown in the box (truncated to 0.1 s to reduce visual clutter)

4) The yellow color indicates that a split is overdue for this lap (> 50% longer than the average lap time for this lane). This may indicate a missed touch

5) The blue color in the last length indicates that the pad is armed for the finish. After the first split, this will occur after the Split Delay since the last touch has elapsed.

6) To further highlight the finish arm, the pad box turns blue too

The pad box (6) can be used to control your pads and make adjustments during the race:

- Swipe the pad up to add a touch (in case of a missed touch during a turn)
- Swipe the pad down if there was an extra touch (e.g. a relay swimmer getting out of the pool late). This will immediately re-arm the pad.
- Double-tap on the box for a Finish Arm. This will immediately arm the pad and the next touch will be considered the finish time.

Running Championship meets or Invitationals

If you are tasked with running your league's championship meet or another larger invitational meet, no problem! Time Drops is perfectly capable of running meets of any size.

Pooling multiple systems

It is perfectly OK to pool the buttons from multiple systems in your league to make one larger system with more lanes or more buttons per lane. Just reconfigure the system for more lanes in the Settings, and then drag the additional buttons in the appropriate slots on the Buttons screen. Upon request, we can even provide the additional higher numbered lanyards for a nominal fee.

Configuring redundant routers, controllers and tablets

On the big meet day, you do not want any minor mishaps to cause big disruptions. You should set up everything with redundancy in mind and you should have at least one backup for each component ready.

Router

The Wi-Fi router is the most critical part of your system and the most likely one to fail or experience problems. We recommend configuring at least two separate Wi-Fi routers or hotspots, ideally each with an independent internet connection.A mobile phone in hotspot mode can also serve as a backup.

Both routers should be set up with the exact same SSID and password, because in that case the controller, tablet, laptop, scoreboards etc will seamlessly switch from one to the other.

After you have set up the routers in that way, **test and verify** that if you turn off the first router and switch on the second, that all the parts of the system successfully reconnect to the backup router. If one of them doesn't, check for subtle misspellings in the SSID or password, such as

- uppercase/lowercase ("myWiFi" vs "myWifi")
- leading/trailing spaces ("myWiFi " vs "myWiFi")
- 0/O 1/I mixup ("mywifi0" vs "mywifiO")
- Both routers need to be configured for 2.4 GHz

Lastly, once the two routers are set up and tested, make sure that you **NEVER turn on both at the same time** as that will create chaos

Controller

If you pool two systems you may also have 2 of the STC-1 controllers. While the STC-1 is unlikely to fail during a meet, it will also be prudent to have a back-up available. The STC-1

controller is hot-swappable during a meet, because all the configuration data of the controller is stored in the tablet. Just set up the 2nd controller with the same Wifi network using "Connect Controller".

We recommend performing a clock synchronization on both controllers prior to the big meet. A clock synchronization can be forced by connecting the controller to the tablet, and then selecting 'Reset Races' in the tablet app. Do this for the first controller, wait one minute, then turn the first controller off and the second one on, and select 'Reset Races' again. That will make sure that the master clocks in both controllers are very close to each other.

In the unlikely event that a controller malfunctions during the meet, you can simply turn off the faulty one and turn on the backup controller, which will take over the complete operation within 30 seconds.While the controllers are hot-swappable, do not switch controllers while a race is running. It is completely safe to switch them between heats.

As with the router, **NEVER turn on both controllers at the same time** as this will lead to completely unpredictable behavior.

Tablet

You can also set up a backup tablet for the case that your tablet is failing. This will require some special precautions:

- Both tablets need to be signed in with the same team account into the Time Drops app
- Both tablets need to be configured with the same number of lanes, buttons per lane etc
- The button pairings on the Buttons screen need to be the exact same ones on both

Either way, you will NOT be able to seamlessly continue a Time Drops Live! Session if you have to switch out the tablet. As with the router and controller, **NEVER run the Time Drops console app on more than one tablet** at the same time.

Summary

Every part of the Time Drops system can be swapped out during a meet if problems should occur. With proper preparation and practice, this can be done within a minute or less and with minimal disruptions. The key to doing this successfully is to verify the correct setup of each component and its backup, and to rehearse what to do if any issue should arise. We recommend to set up everything a day before the big meet and to practice the swapping of each component at least once.

Appendix A: Updating the Controller Firmware

Occasionally, a firmware update may be available for the timing controller. The timing console will inform you if a firmware update is available. You can choose if you want to perform the update now or later. **If you are just about to start a meet, you should postpone the update.**

Note: From time to time, the tablet app may distribute additional firmware updates to the buttons and the SA-1 start adapter. These firmware updates will occur automatically and should not interfere with the normal operation of the controller.

Appendix B: Replacing the PB-2 button battery

The PB-2 buttons are equipped with a lithium button cell type CR2032 These batteries will last many years, but eventually they will need to be replaced. The process is fairly simple: Simply hold the metal ring with one hand, and unscrew the back cover counterclockwise with the other hand.

This Youtube Video explains the process in detail: ▶ Time Drops PB-2 battery replacement