

Infinity Start System



User Guide

F849 Rev. 202202

Colorado Time Systems

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Unauthorized modifications or changes made to this device not expressly approved by the party responsible for compliance voids the user's authority to operate the equipment.

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Introduction

Thank you for purchasing Colorado Time Systems' Infinity start system. Its multi-purpose design makes the Infinity perfect for use as an electronic start system or a limited public address system. Instructions for both of these applications are included in this manual.

Receiving Your Equipment

When you receive your Colorado Time Systems' equipment, follow these steps:

- 1) Open all shipping boxes.

Note: We recommend that you save all shipping boxes and packing material. You are responsible for damage to your equipment if an item is returned improperly packed.

- 2) Check all concealed damage immediately upon receipt of equipment. Report any damage directly to the freight carrier.

- 3) Use the Packing List included with the shipment to take an inventory of all items. If you believe one or more parts to be missing, contact our Customer Service Department immediately. They can be reached by email: support@coloradotime.com, or by telephone: +1 800-279-0653 in the U.S. and Canada, or at +1 970-667-1000.

Scope of this Instruction Guide

This instruction guide addresses all issues related to the installation and normal operation of your Infinity start system. A complete maintenance and troubleshooting section covers the most common problems that are user correctable. For any repairs or problems not found in this instruction guide, contact Colorado Time Systems' Customer Service Department by email: support@coloradotime.com, or by telephone: +1 800-279-0653 in the U.S. and Canada, or at +1 970-667-1000.

Infinity Start System Features

Your portable Infinity Start System contains a number of features which make it versatile and easy to use. It also serves as a limited public address system, allowing you to make announcements to your swimmers at practice and to the swimmers and spectators at a meet.

Add to these features the peace of mind you get from knowing Colorado Time Systems stands behind you with more than thirty years of expertise in designing and building accurate, reliable and innovative products.

Functions

Public address system to address swimmers and spectators. A 0.5 second dual tone electronic blast with simultaneous strobe flash. False start recall: repeating dual tone.

Battery Power

Each Infinity start system has a safe, reliable internal gel-cell battery with external charger and battery life indicator. The Infinity will not operate while plugged in to AC power.

Note: Your Infinity Start System can be operated only from battery power, keeping AC power away from the pool deck and reducing the possibility of electric shock.

Strobe Light

Bright 360° strobe light automatically flashes simultaneously when horn sounds. Gives watch timers/officials a reliable start reference; provides fair starts to athletes who are deaf or hard of hearing.

Speakers

The Infinity includes one built-in 40-watt, 8 ohm moisture and corrosion resistant reflex speaker. An additional speaker with is available for far lane starting.

Microphone

Single microphone used to address swimmers, start the race and recall in the event of a false start.

Mounting Options

Place the Infinity module on a tabletop or pool deck, use the optional CTS tripod (TR-3) with its mounting bracket, mount it on the flagpole with the optional CTS flagpole mount (START-FPM-2).

Connection to electronic timer

Interfaces to all Colorado Time Systems' electronic timers using start jumper cable, Model INF-SJ25 (25-foot cable) or Model INF-SJ50M (50 meter cable).

Optional Equipment

The following optional equipment is available for use with your InfinityStart System. Call your Colorado Time Systems at +1 800-279-0111 x250(U.S. and Canada) or +1 970-667-1000 to place an order.

- TR-3 Tripod: disassembles easily for storage. Adjustable height. Portable.
- INF-SP (125 or 200): 40-watt speaker with 125- or 200-foot cable for far lane speaker mounting.
- EXTSTROBE: External strobe light.
- M2-(25, 50, 100 or 200): Replacement Microphone with 25, 50, 100 or 200-foot cable.
- INF-SJ (25 or 50M): Start jumper cable for electronic timer with 25-foot or 50-meter length.
- BP-3: Spare battery and external charger.

Infinity Specifications

General

Model INF-SSM: Loudspeaker Start System consisting of a start module with built-in strobe, built-in 40-watt corrosion-resistant speaker, internal gel-cell battery, external battery charger wall brick, one plug-in microphone, and instruction guide.

Physical

Height:	9.75 inches
Length:	14.25 inches
Width:	7.25 inches
Weight:	12 lbs (5.4 kg)

Environmental

Temperature: 0°C - 50°C
Humidity: 90% (non-condensing)
Altitude: 0 to 3000 m

Electrical, Base Unit

DC Supply: 18 VDC @ 1.2A. The 18 V power adapter is used for recharging only.
Note: Your Infinity Start System can be operated only from battery power, keeping AC power away from the pool deck and reducing the possibility of electric shock.

Battery

Type: One 12 V Gel Cell
Operating Time: 8 hours of normal use
Recharge Time: 8 hours

Fuses

Battery - 5A Time Lag, 5mm x 20mm

Input and Output Connections

Microphone Ports: Input - 5V
External Charging Power: Input - 18 VDC @ 1.2A
Speaker Port: Output - 18 VAC @ 5A max.
Start Port: Opto-Isolator Transistor

Installation/Maintenance

This product is intended to be used in an indoor or outdoor swimming pool environment. When it is operated in the United States, it must be used in accordance with the National Electric Code. When it is operated elsewhere it must be used in accordance with all applicable national and local codes and regulations.

When charging, the Infinity Start System power supply must be used with a grounded outlet. This equipment is intended to be connected to a circuit protected by a ground-fault circuit interrupter when used outdoors or near a pool. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a qualified electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

Using the Infinity Start System in a manner not specified by Colorado Time Systems may cause the protection provided by the equipment to be impaired. Other than those maintenance items described in the Infinity user manual, there are no user serviceable parts on the Infinity Start

System. When servicing those parts shown in the user manual, use only replacement parts specified. Replacing of fuses or similar servicing shall be performed only while the unit is disconnected from the source of supply.



Figure A: Infinity Start System Components

Setup

This chapter contains instructions for setting up your Infinity Electronic Start System. The instructions in this chapter cover standard configurations. Your start system configuration may vary depending on specific requirements and optional equipment purchased.

General Guidelines

Location

Select an appropriate location for your start system module—usually the scorer’s table. Using the optional TR-3 tripod can give greater freedom to place your Infinity in the most convenient location.

Important: When installing your start system in a pool area, always place the start system module in a location where there is no chance that it could fall into the pool.

When using the built-in strobe light, the start system module should be positioned so that officials and spectators can start their watches from the strobe rather than the start tone, improving the accuracy of watch starts.

Battery

The Infinity start system operates on its built-in 12 VDC power source. When the battery is fully charged, typical operation is eight hours, depending on usage. Using the microphone as a public address system substantially reduces battery life.

The Infinity connection panel has a battery life indicator LED. The LED will shine green when the battery is fully charged. It will turn yellow when the battery has 5-6 hours of use remaining. It is best to recharge the battery when the indicator turns yellow. The battery indicator will turn red when only 1-2 hours of battery power remain. While the Infinity is plugged in and charging, the LED flashes green, and turns solid green when charged.

Battery Charging

Your Infinity will not operate while plugged into AC power for charging. It is therefore important that you make sure the battery is fully charged before each day’s swimming (the Battery Life indicator should be green). Pay attention to the battery life indicator and recharge your battery after each use, especially when the indicator turns yellow. The Battery Life indicator will blink green on/off when charging.

The best time to recharge the internal battery is immediately after each day’s use. To recharge the internal battery, remove the Infinity from the pool area, plug the battery charger into a 115VAC outlet. Attach the cable from the battery charger to the Charger connector on the Infinity connection panel, shown in Figure B below. Turn the power switch to Off to charge the battery. Keep the charger plugged in until the next use.

The charging circuit in the Infinity prevents overcharging, allowing you to leave the battery charger plugged in for extended periods of time without damaging the battery or any other components. If you do not use your Infinity for two or more months, recharge the battery before use. It is normal for rechargeable batteries to lose some power when not in use.

The battery will lose 20% of its charge in two to three months if it is not left plugged in.

Note: Make sure the power switch is in the Off position while charging.

An optional spare battery and external charger (BP-3) are also available for facilities to ensure that their Infinity always has a charged battery ready.

Note: Do not change the internal battery near water. Bring unit to a dry location before removing internal battery.

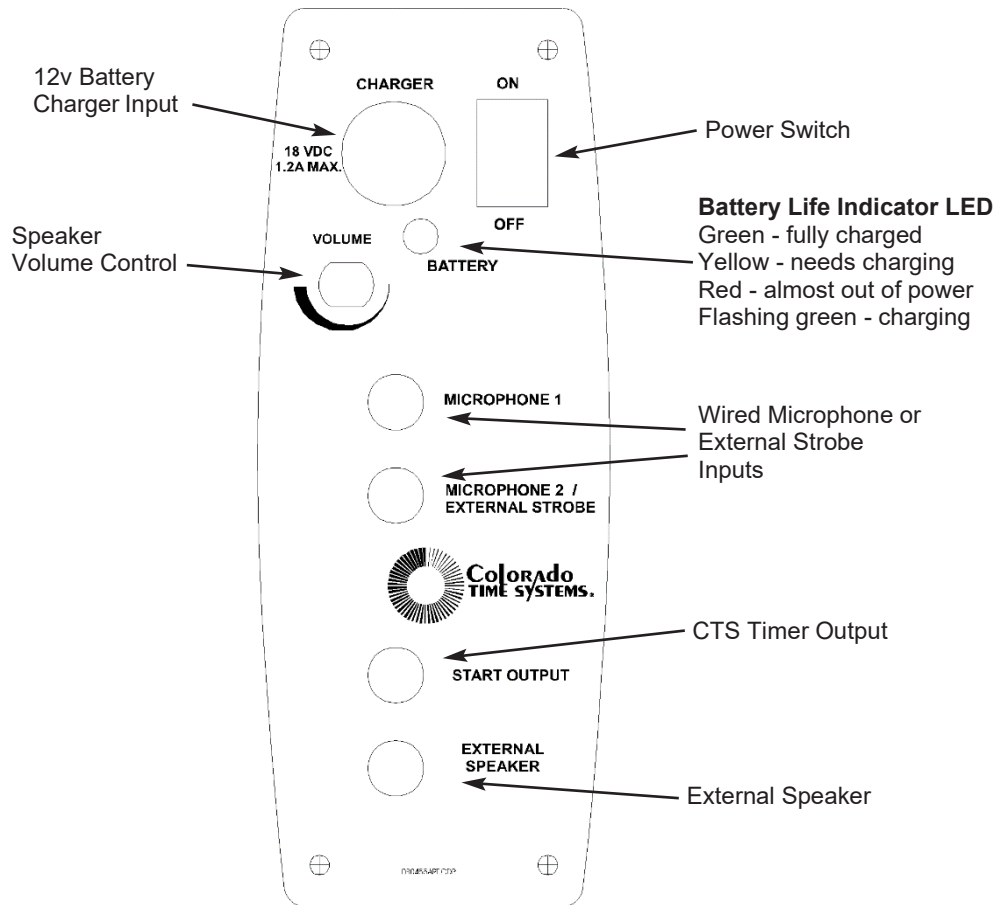


Figure B: Infinity Connection Panel

Using your Infinity with an Electronic Timer

If you are using your Infinity with an electronic sports timer, connect the timer start cable from the cable harness or deck plate to the Start input on your Infinity connection panel.

The Infinity sends only Normally Open (N.O.) start pulses, which work with all Colorado Time Systems' electronic timers. If your timer requires a Normally Closed start pulse, contact your Colorado Time Systems representative for factory modifications.

Microphone

Connect the microphone to either of the microphone jacks on the Infinity connector panel.

Note: Your Infinity electronic start system is designed for use only with factory supplied microphones. For reliable operation, do not connect any other devices other than CTS supplied microphones or external strobes to the microphone jacks.

On/Off Switch

To turn on your Infinity start system, flip the power switch to the On position. The location of the power switch is shown in Figure B on page 12. Regardless of start or PA operation, the Infinity consumes power whenever it is turned on. Therefore, it is very important that you remember to flip the power switch to the Off position when your Infinity is not in use. Failure to do so will result in a discharged battery after a few days. To prevent battery discharge, always remember to turn off the power switch and recharge the battery overnight as soon as possible after using your Infinity.

Adjusting PA Volume

To adjust the PA volume, turn on the Infinity, and adjust the volume knob on the connector panel. Rotating the volume control clockwise increases the volume; rotating the volume control counterclockwise decreases the volume. Test the volume level by speaking into the microphone.

The volume control affects only the PA volume—start and recall tones always function at maximum volume.

Note: To avoid feedback noise, do not hold the microphone close to the speakers when testing the output volume. Also, turn the volume down to decrease feedback.

Speakers

The Infinity has one built-in speaker. At the start impulse, this speaker amplifies the start tone.

One optional external speaker can be added. When using an external speaker, connect it to the External Speaker jack on the connector panel.

Note: Attach only the CTS approved Infinity external speaker to the speaker connector on your Infinity connection panel. Attaching any other type of speakers can cause your start system to fail.

External Strobe

To connect the external strobe, plug one end of a DC3 cable into the external strobe and the other end into either microphone 1 or 2 on the Infinity start system. Either microphone plug will work.

Using Your Infinity Electronic Start System

Starter's Microphone

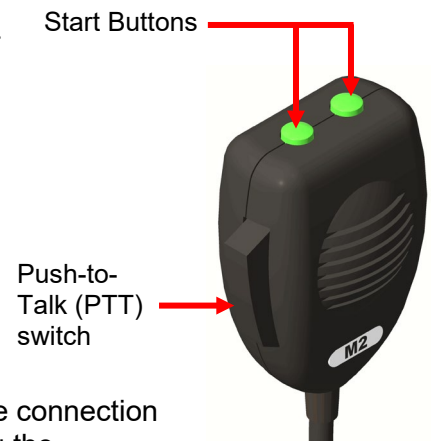
The M2 family of microphones for CTS start systems are ergonomically designed for comfortable and intuitive use. Features include two conveniently located start buttons on the top of the microphone for ease of operation for right- and left-handed users and a quiet push-to-talk switch.

Operation

- Plug the ¼" jack from the microphone cable into the microphone input of the start system.



- Use the Push-to-Talk (PTT) switch located on the left side of the microphone to use the unit as a microphone. For best results, the microphone should be held close to the user's mouth.
- Depress the PTT switch and either of the Start Buttons located on the top of the microphone to initiate a start or signal a recall. Either of the two start buttons can be used to operate either function.



Microphone Rest

A convenient microphone rest is built into the Infinity to the left of the connection panel. When the microphone is not in use, make a habit of snapping the microphone onto the rest. Using the microphone rest keeps the microphone out of the way and prevents accidental drops and potential damage.

Strobe Light

The strobe light flashes automatically whenever the start system receives a start pulse.

Timer Output

When properly connected to an electronic timing system, the Infinity automatically sends a start pulse to the timer whenever the microphone start button is pressed. If your electronic timer does not start properly, check the start cable connections both at the timer cable harness or deck plate, and at your Infinity.

Operating Notes

Training

Using your Infinity electronic start system during training sessions is one of its most useful features. Swimmers will quickly become accustomed to electronic starting and will thereby improve their start reflexes.

Volume Control

The volume control on the Infinity Connector Panel module affects only the PA volume. The start and recall tones always operate at full volume. If the start tone drops in volume or becomes longer, the battery is getting low and needs to be recharged.

Battery Indicator

Check the Battery Life indicator LED to verify your battery's remaining power.

Its different colors indicate:

Green - fully charged

Yellow - needs charging

Red - almost out of power

Flashing green - in charging mode

Strobe Light Usage

If coaches, parents and spectators attempt to start their stopwatches from the start tone, they will not get accurate starts. The relatively slow speed of sound (compared with the speed of light) generally results in late stopwatch starts for observers at any distance from the speakers. Educate your coaches, parents and spectators to use Infinity's built-in strobe or external strobe to trigger their stopwatch starts. The strobe flash is unaffected by poor acoustics and the fast speed of light ensures that all observers see the flash at the same time, resulting in more accurate stopwatch starts. The strobe also ensures fair starts for athletes who are deaf or hard of hearing.

Maintenance and Troubleshooting

This chapter contains maintenance and troubleshooting information which helps you keep your Infinity in good working order and helps you solve common problems quickly and easily.

Maintenance

Your Infinity electronic start system has been carefully designed to provide years of trouble-free service. No routine maintenance is necessary, but following a few simple steps will ensure that your Infinity delivers the trouble free service for which it was designed.

Battery

You can extend the usable life of the internal battery by always keeping it fully charged—never allow the battery to discharge completely. Leave the Infinity plugged in when not in use and always make sure the power switch is in the Off position after every use. If the Battery Life indicator turns red, your battery needs immediate recharging.

Cable Harness

Do not allow your speakers, speaker connections, cable harness terminals and timer start cable connector to remain wet constantly. Colorado Time Systems uses the finest quality materials available for these items, but the pool environment is very harsh. The corrosive action of chemically treated pool water will eventually corrode any connector exposed to it for long periods of time. Proper care and handling of cables can prevent damage.

Once a year, clean all female connectors with a swab and silicone grease: use Compound III® by Dow Corning® for best results. If connectors are badly corroded, clean them with Lime-A-Way®, which is available at most supermarkets, before applying a small amount of silicone grease to the connector.

Storage

It is best to store your Infinity in a cool, dry place after each use. Be sure to recharge the battery overnight and keep it charging before and during storage to make sure the Infinity is ready for the next time you need it. Do not store your Infinity in an area that becomes overly hot or cold. Try to keep it in a dry location that remains around 70-80 degrees Fahrenheit throughout the year.

Troubleshooting

Colorado Time Systems has taken great care to ensure that your Infinity electronic start system provides years of trouble-free service. If, however, you should experience difficulties with your Infinity, first attempt to locate and solve the problem using the Troubleshooting guide. Locate the problem you are experiencing and follow the remedies one at a time in the order presented, checking your Infinity for proper operation between each recommended remedy.

Solving simple problems yourself will save you time and money. If the problem you are experiencing is not mentioned in the Troubleshooting guide or the recommended steps do not solve the problem, call Customer Service toll-free at 800-287-0653 (U.S. and Canada) or 970-667-1000 for assistance.

This section helps you solve common start system problems quickly. Locate the difficulty you are experiencing in the Symptom column and then follow the recommendations in the Action column one at a time, in the order they appear. If the problem you are experiencing is not listed or the recommended remedies do not have the desired effect, write a summary of the problem and all steps you have taken to correct it and call Colorado Time Systems' Customer Service Department toll-free at 800- CTS-0653 (U.S. and Canada) or 970-667-1000.

Symptom	Action	Notes
Nothing Works	<ol style="list-style-type: none"> 1. Check power On/Off switch 2. Recharge battery 3. Check all connections on Infinity Connector Panel. 	<p>If power switch is on, and the LED indicator is red, the battery is discharged.</p> <p>See Figure B on page 12 for locations of these items.</p>
Battery will not charge	<ol style="list-style-type: none"> 1. Check power AC outlet—use a working lamp to check for power at outlet 2. Check charger connection on the Infinity Connector Panel 3. Replace battery 	<p>See Figure B for location of this item. The battery indicator will flash green when charging.</p> <p>See instructions beginning on page 23.</p>
Infinity does not start electronic timer but starthorn sounds properly.	<ol style="list-style-type: none"> 1. Check cable connections at timer, cable harness (or deck plate) and Infinity 2. Make sure you are using a Colorado Time Systems timer (Normally Open circuit) 3. Possible electronic timer failure — attempt to start timer manually. 	

Continued on next page

Symptom	Action	Notes
No start or recall tones at speaker(s).	<ol style="list-style-type: none"> 1. Make sure the starter is holding down the push-to-talk thumb switch when pressing the start button on the microphone. 2. Check wired microphone connector on the Infinity connector panel. 3. Check speaker connector at external speaker and on Infinity connector panel. 4. The microphone switch may be bad— substitute another microphone. 	<p>See instructions on page 15.</p> <p>See Figure B on page 12 for location of this item.</p>
No public address output at speaker(s).	<ol style="list-style-type: none"> 1. Check volume control level on the Infinity connector panel. 2. Check speaker connector at external speaker and on Infinity connector panel. 3. Check microphone connection on the Infinity connector panel. 	<p>See Figure B on page 12 for location of this item.</p> <p>See Figure B on page 12 for location of this item.</p>
Strobe does not flash	<ol style="list-style-type: none"> 1. Allow a few seconds between starts for strobe to recharge. 2. Return Infinity to CTS for repair 	
Experiencing Feedback	<ol style="list-style-type: none"> 1. Move further away from the base unit or behind the speakers in use. 2. Turn down the speaker volume 	

Returning Your Infinity For Service

If you are experiencing a problem not found in the Troubleshooting guide or not corrected by the troubleshooting instructions, it may be necessary to send part or all of your Infinity to the factory for service. Depending on the problem, it may be necessary to return the entire start system. The following list contains the components which can be returned to the factory individually after removal from the Infinity module.

Warning: Before attempting to remove any components, make sure the Infinity power switch is in the Off position and the battery charger is unplugged.

External Speaker

Detach the speaker connector from the Infinity module connector panel. Return the defective speaker.

Cables

For any of the cables used, detach all connections and return the cable.

Strobe Light

Return the entire system if you suspect that the strobe light portion of your start system is damaged. First try the troubleshooting tips described on page 22.

12v Gel-cell Battery

If you have tried to charge the 12v battery and it no longer is holding a charge, you may need to replace it with a new battery. The battery indicator LED will shine red if, after charging, the battery did not hold the charge.

To replace the battery, place the Infinity unit on a table in a dry location, away from the pool deck.

1. With a Phillips-head screwdriver, unscrew the three screws on the back battery cover as shown in Figure C. Remove the back panel of the Infinity.
2. Lift up the battery clip and slide the 12-volt gel-cell battery partway out so you have easier access to the connectors.
3. Disconnect the two connectors by wiggling them from side to side while pulling them off of the battery posts.
4. Remove the battery.
5. Lift up the battery clip and slide the new battery into the chamber with the battery connectors facing the opening. Let the battery clip snap down on to the battery to hold it in place.
6. Connect the colored wire connectors to the corresponding connectors on the battery. Do not pull excessively on the wires or you may dislodge them from the main circuit board.
7. Replace the back panel and tighten the three screws to hold the panel in place.

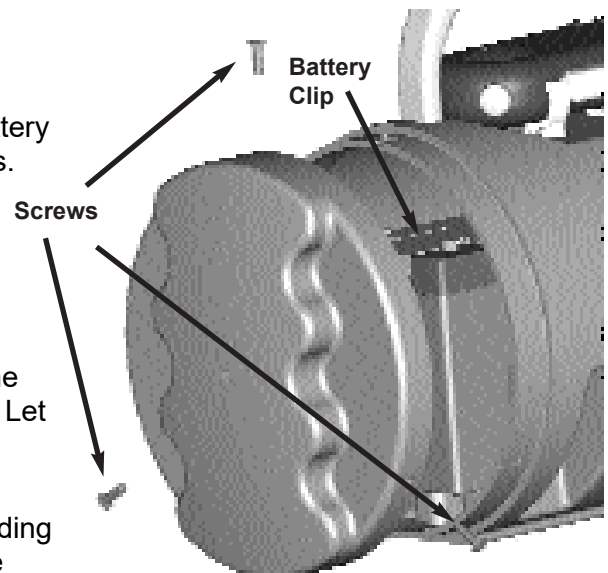


Figure C: 12v Battery Compartment



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