

Congratulations on your purchase of the *IST* remote starting system. It was designed for years of trouble free use and ease of operation. Just hook up the receiver to the microphone jack on your start and you are "wired" for sound!

Please take a moment to read this owners manual to become familiar with the features, operation and warranty information.

## **GENERAL**

The RF remote starting system consists of a handheld transmitter powered by a standard 9V battery and a receiver that plugs directly in to your existing starting device.

If you are using the *IST SWIMSTART* the power is supplied through the connection to the receiver. If you are using another

starting device a 9V battery is also required for the receiver. The receiver plugs into the microphone jack and mounts onto the starting device using the Velcro strips supplied.

The radio frequency link is in the 900 MHz frequency range and no license is required for operation.

### **FCC NOTICE:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Contact International Sports Timing for assistance. 800-835-2611.
- **MODIFICATIONS NOT EXPRESSLY APPROVED BY IST COULD VOID YOUR AUTHORITY TO OPERATE THE EQUIPMENT.**

## **OPERATION**

### **RECEIVER MOUNTING**

For best reception the receiver should be mounted so that the antenna has as clear a view as possible of the site where the starter will be standing. Anyplace where the antenna extends above the case will provide a transmission range in excess of 50 yards in most applications.

Although it is not necessary for the operation of the device that the LED lights are visible, they were incorporated into the design to continually monitor for outside interference, as well

as inform the starter of the recall time period.

They can also be used to help diagnose problems that may occur with the receiver or the start they are connected to.

### **INITIAL SET-UP**

Once the receiver has been connected to the start device and the power has been turned on, select any of 8 channels (0-7) by depressing either of the small buttons located on the channel selector switch.

Monitor the yellow "Carrier" LED to ensure it is NOT on at this time. If it is lit it indicates that there is other activity on this channel and another channel should be selected.

Next move the channel select switch on the transmitter to the same

channel you chose for the receiver.

If the transmitter and receiver channels are not the same, the device will not function.

When the transmitters' push to talk button is depressed the transmitter is turned on and an encoded data signal is transmitted to the receiver. When the receiver detects the carrier signal coming from the transmitter the yellow "Carrier" LED glows and the green "Valid Receive" LED glows when the encoded signal is successfully decoded.

This operation takes place in less than half a second and was incorporated in the design to ensure that only our transmitter has the correct "key" to access the receiver. This greatly reduces the risk of unwanted signal traffic

breaking in unannounced during a meet.

After this time, simply talk directly into the microphone grate on the front of the transmitter and adjust the volume control on the starting device for the proper audio level.

### STARTING A RACE

To signal the start of an event the start pushbutton is depressed while the push to talk button is held down.

Pushing the start button while the push to talk button is not depressed will not initiate the start tone.

This precaution was implemented to ensure that the tone is not accidentally started, and is in keeping with the current wired microphones.

The tone will automatically sound for about a quarter of a second and stop.

Immediately release the start button once the tone is heard.

Since the signal to start the tone is transmitted via radio link instead of wire, it sounds for the same amount of time regardless of how long the button is depressed.

The time the tone sounds is actually determined by the receiver circuitry and the transmitter start button needs to be depressed for only a fraction of a second to produce the start tone.

All of this is mentioned because if you have a tendency to leave your finger on the start button and you are a little shaky when you let off, it is possible to retransmit the start signal as you release

the button. This could inadvertently initiate the recall tone.

While precautions have been taken to make this event highly unlikely, the best way to prevent it is to press and release the start button quickly.

### RECALLING A RACE

When a recall is warranted, simply use the transmitter in the same way you did to start the race. After the start of a race there is a 10-second period where a recall tone will sound if another start signal is received.

### USING THE LED's

The LED's were incorporated to give the starter a sense of how the unit is functioning. They are used to identify outside interference, determine the recall time period, identify

the current channel at a glance\* and identify a low battery condition. \*\*

The yellow “Carrier” LED will light anytime there is a radio frequency signal on the same channel as you have selected. Besides lighting when the push to talk button is depressed, it will light when other sources are present and could interfere with the proper operation and running of the meet.

It is advisable to monitor the “Carrier” LED even when you are not actively using the start device, as it will alert you to possible problems due to outside interference.

This interference could come from cellular phones, pagers, other radio equipment, computers, modems and others as more devices are introduced to

the market. This is the benefit of having 8 different channels to choose from.

The green “Valid Receive” LED will light only when a valid code has been received on the correct channel. The receiver circuitry will not be enabled until this code is received. This is a further attempt to ensure the security of your receiver is not breached by an “unwanted” signal.

The sequence of events thus far when the push to talk button is depressed and the receiver and transmitter are tuned to the same channel is the “Carrier” LED will light and less than half a second later the “Valid Receive” LED will light. They will both remain illuminated until the push to talk button is released.

The blue “Start” LED lights when the start or recall tone is sounded and goes out upon the end of the tone.

Immediately following the start tone the red “Recall” LED is illuminated and stays lit for approximately 10 seconds to notify the starter of the recall time period. If a start is performed during this time a recall tone will sound.

The red “Transmit/Low Battery” LED on the transmitter illuminates when the push to talk button is depressed. It indicates that power is applied to the transmitter circuitry.

When the battery drains to about 7.5V the LED will blink, indicating that the battery should be replaced soon. There is still more than 10 hours of normal use

left at this point and this level was chosen to ensure that a meet would not be interrupted due to a low battery condition.

The 7-segment “Channel” LED was included on models used with the *IST SWIMSTART* for ease of channel identification at greater distance.

#### USE WITH STARTS OTHER THAN *IST SWIMSTART*

*(The following section applies only to those users who are using starting devices other than *IST SWIMSTART*'s)*

For starts other than *IST SWIMSTART* a 9V battery is required in the receiver. Because of this, two features have been added to these models and one removed.

There is a red "Low Battery" LED located on the receiver instead of a channel readout display LED. This was done to conserve power and is off unless a low battery condition is detected.

When a voltage of approximately 7.5V is sensed the LED begins to blink indicating the battery should be replaced. This level was selected to allow sufficient time to replace the battery so a meet will not be interrupted.

The second feature that was added to the receiver is a power down circuit. This was added to prevent the accidental discharge of the battery due to it being left on inadvertently.

After about 30 minutes if the receiver has not received a valid

transmission it will automatically turn off. This should not happen during the natural course of a meet or a practice.

If it is anticipated that a time period may elapse that is greater than this, simply depress the push to talk button anytime to reset the power down circuit. At that time it will again take 30 minutes for the receiver to turn off automatically.

If the power down circuit is activated the receiver will not function until it is reset.

To reset the receiver turn off the receiver on/off switch and turn it back on. To test to see if the receiver is on at any time, depress the push to talk button and monitor the yellow and green "Carrier" and "Valid Receive" LED's. If they do not light the unit is off or

not tuned to the correct channel.

#### BATTERY REPLACEMENT

To replace the battery in the transmitter, remove the battery cover located in the back of the unit by sliding it downward. Remove the old battery and replace with a new 9V battery. (Alkaline cells are recommended.)

Ensure proper polarity is observed or damage to the unit could occur. To test, depress the push to talk button and observe that the red power LED illuminates. If it does not, immediately remove the battery and check for proper polarity.

For receivers used with starting devices other than *IST SWIMSTART* the battery is replaced in the same manner as in the transmitter.

#### WARRANTY INFORMATION

As with all of our products the *IST* remote starting system comes with a 5-year parts and labor warranty which covers all normal wear and tear.

## **FEATURES**

- **900 MHz Operating Frequency Range**
- **8 User Selectable Channels**
- **Encoded Security Signal Virtually Eliminates False Starts and Audio Interference**
- **No FCC License Required**
- **Portable Rugged Construction**
- **5 Year Warranty**