



BY ZONE 4

GoChip User Manual

Table of Contents

1. Table of Contents
1. Contact
2. FCC/IC Statement
2. Warrant
3. System Overview
3. Specifications
4. GoChip Operation
5. Battery Life

Contact

Zone4 Systems Inc.
205-820 Main St,
Canmore, Alberta, T1W 2B7
CANADA
Zone4.ca
support@zone4.ca
1-888-444-0199

FCC Notice to Users

This device complies with Part 15 of the FCC. 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.

Zone4 Systems Inc. has not approved any changes or modification to this device by the user. Any changes or modification could void the user's authority to operate the equipment.

ISED Notice to Users

This device complies with Innovation Science and Economic Development Canada's license-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the devices.

Le présent appareil est conforme aux CNR d'ISDE Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage;
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Warranty

Zone4 Systems Inc. ("Zone4") warrants that all Zone4 manufactured equipment will be free of any defect in materials or workmanship for the period of (2) years. Warranty begins from the date of shipment from Zone4. The warranty is extended to customers and applies to all Zone4 manufactured equipment purchased, installed, and used for the purpose for which such equipment was originally designed. The above warranties cover only defects arising under normal use and do not include malfunctions or failures resulting from misuse, abuse, neglect, alteration, problems with electrical power, usage not in accordance with product instructions, acts of nature, or improper installation or repairs made by anyone other than Zone4 or a Zone4 authorized third-party service provider. Zone4 reserves the right to substitute functionally equivalent new or serviceable used parts.

System Overview

GoChips are worn by racers as they travel the course. As GoChips cross Timing Points deployed at key locations on course, the chips read and store the precise time and loop id from each timing point. These stored crossings along with the unique chip id are broadcast from the chip out to any listening smart phones via Bluetooth Smart (BLE). Chip ID number and time stamps are captured by the Zone4 Go Android App and sent to the Zone4 timing software (online cloud software or local server software) to be consolidated, analyzed, and processed for results.

Specifications

GoChip	
Dimensions	31mm x 40mm x 11mm
Weight	18g
Housing	IP 69K (fully waterproof for extended immersion and high pressure washdown)
Signal Transfer	BLE Bluetooth Smart 2.4 Ghz
Operating temperature	-40C to +50 C
Battery Life	Expected 4 years depending on usage profile
Battery Indicator	Low Battery warning transmitted to android app at <20% remaining battery

GoChip Operation



GoChips are self-contained intelligent race timing devices. They uniquely identify each athlete and record and store the time, accurate to greater than 1/100 second, that each athlete crosses each timing point. The GoChips are motion triggered and stay active until they have been still for 10 minutes. While in motion, the chips can detect timing points and are continuously transmitting their times to listening phones.

Times are recorded by the chip at 0.001 (1/1000 sec, 1ms) precision and do not drift so they can be read many hours after the crossing without losing any accuracy.

Up to 30 Timing Points are stored in a GoChip for 3 days.

GoChips burst packets for 10 seconds immediately after crossing a timing point to ensure any listening phone picks up the new time immediately. After burst mode ends, GoChips continue to broadcast times at a rate of 1 message per second. In effect, the GoChip constantly “retells” its race story for up to 3 days so a cell phone running the GO App can capture results immediately or minutes or even hours after an athlete passes a remote timing point; the times are stored safely inside the chip to be transmitted later once the GoChip is in range of the phone. This allows precise remote timing points without remote cellular or Internet connectivity.

Absolute maximum detection distance from Android phone to GoChip is 200m though ZONE4 recommends system designs not exceed 20 meters.

During a race, GoChips transmit a “ping” every 1 second. This feature can be used for live tracking at less important checkpoints where no activator is used and a precise time stamp is not required. Pings are captured by any GoChip-enabled phones around the course and the GoChip number is associated with the phones’ location on course. Examples where this feature might be used would be to verify that athletes do not cut the course or that athletes follow the correct course or to flag an athlete in trouble because they are late arriving at a checkpoint. Because pings are collected once/second and phones can in extreme cases detect pings up to 200 meters distant, the location accuracy of ping time stamps tends to be 10s of meters so they should not be used for race scoring.

Battery Life

GoChip batteries are non-replaceable, non-chargeable. Battery use is highest when in motion so a GoChip battery will last over 4 years depending on how much it is used and triggered by motion.

Usage	Motion per Year	Battery Life
Heavy	500 hrs	3.8 Yrs
Medium	250 hrs	4.1 Yrs
Light	100 hrs	4.3 Yrs

GoChips starts transmitting a battery warning when it reaches 20% battery life, so you will have at least 2 months' notice to replace your chip. There is no risk your chip will suddenly die in the middle of an important race.