

RACE RESULT

www.raceresult.com



RACE RESULT SYSTEM

Data Sheet



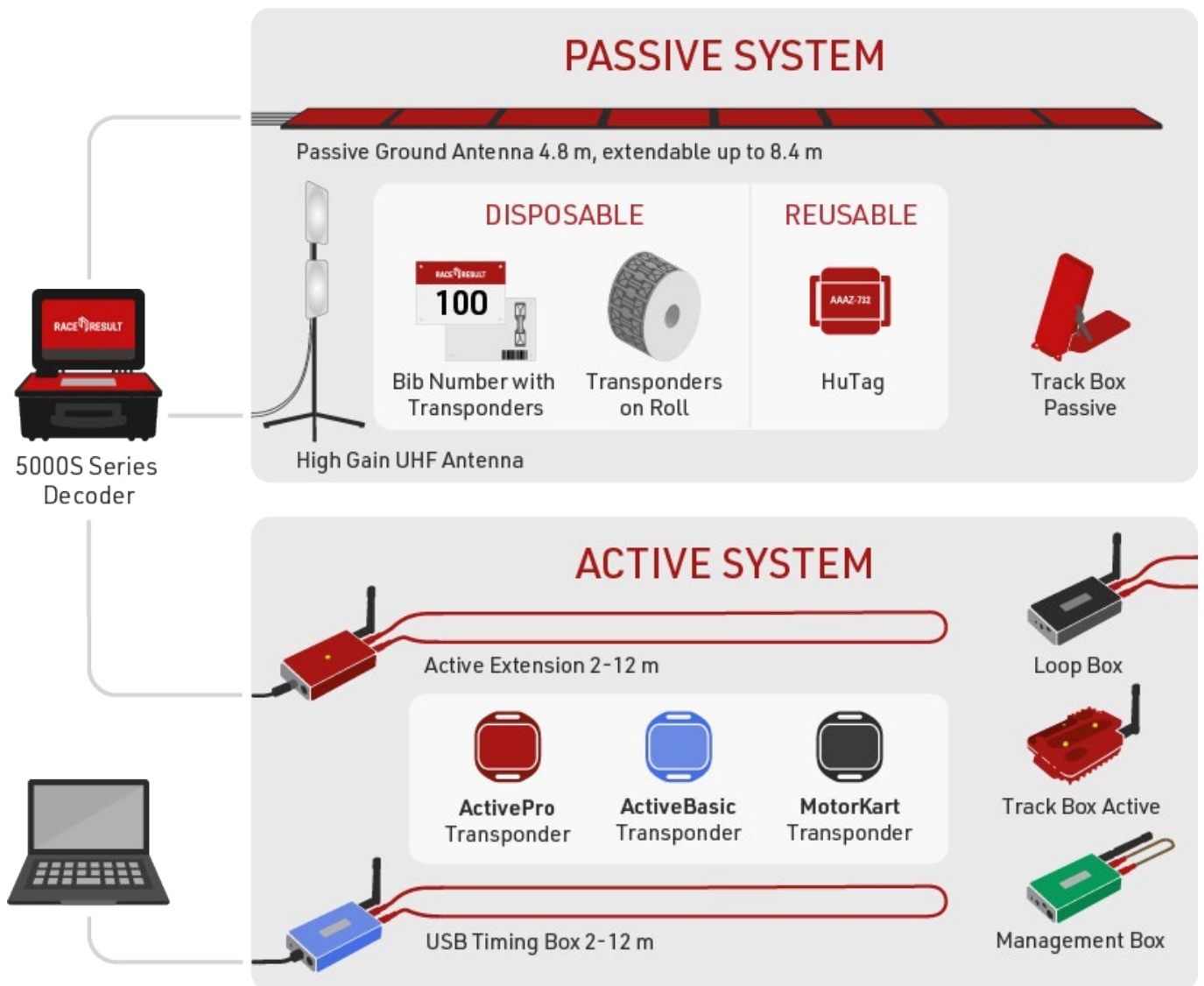
Content

RACE RESULT System	3
Decoder 5000S	4
Passive Antenna	5
High Gain Antenna	6
Passive Transponders	7
Track Box Passive	8
Active Extension	10
Active Transponders	11
Active Loop Box	13
USB Timing Box	14
Active Management Box	15
Track Box Active	16



RACE RESULT System

The RACE RESULT System is a race timing system for any type of active sport. It supports both active transponders (with battery) for complex or high speed races with high demands on precision (e.g. cycling, inline, ski or motorsports), and passive transponders (without battery) for mass events like marathons, road races, or mountain bike races.



Decoder 5000S

The RACE RESULT Decoder receives the signals from the transponders, calculates the exact finish time and provides the data to the scoring software like RACE RESULT 12 in real time. The system runs independently from your computer and from your power supply.

Timing System for

- Running
- Triathlon
- MTB
- Cycling
- Inline skating
- Skiing
- 8-10h (passive) / 24h (active) internal battery
- Precise, synchronized GPS time
- Integrated 4G/LTE module
- Easy setup and handling
- Online firmware update

Endless Application Options in Combination with RACE RESULT 12 Software

- Net time timing
- Lap counting and lap timing
- Team scores and age group results
- Multiple distances on the same course at the same time
- Multiple timing points
- Multiple decoders per timing point
- Real time presentation of results
- Simultaneous work via internet or local network



Safety & Conditions Decoder	
Protection class with closed cover	IP54
Safety norm	EN60950
Regulatory conformity	CE, RoHS, FCC
Relative humidity	Max. 90% non-condensing
Temperature range	-20°C to 50°C

Decoder Weight	Decoder Pack-Size
12.5kg	36 x 26 x 45cm

LTE/4G/3G/2G Module	
29-Band 4G/LTE/3G/2G Module	FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B26/B28 TDD: B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B8/B6/B19 GSM: B2/B3/B5/B8
Antenna	Internal External SMA (optional)
SIM card	Standard

Power & Battery Decoder	
AC power supply	110V - 230V 50 - 60Hz (2 A fuse)
DC power supply	12V - 14V 2A (when battery full)
Battery flight safety	15Ah (Pb) IATA - A48/A67
Charging time	4h (switched off) 7h (running)
Power consumption	26W (battery full) 60W (charging)
Battery life (passive)	8 - 10h ¹⁾
Battery life (active)	24h ¹⁾

1) Battery life can be reduced by usage of LTE/4G (-10%), low temperature (-25% @ 0°C/32°F) and battery age.

Ports & Features	
Internal GPS	uBlox 50 channel receiver, 30 seconds cold start
2 x LAN	Dual 100MBit / 10MBit lan port. auto crossover detection. Switched internally for loop through to next device.
USB	Thumb drive for backup
Antenna ports	8 x BNC
Feature port	Supplies 5V (500mA), 12V (500mA) output, start gun, photo sensor
Audio beep	3.5mm headphone plug (mono)

Passive Antenna

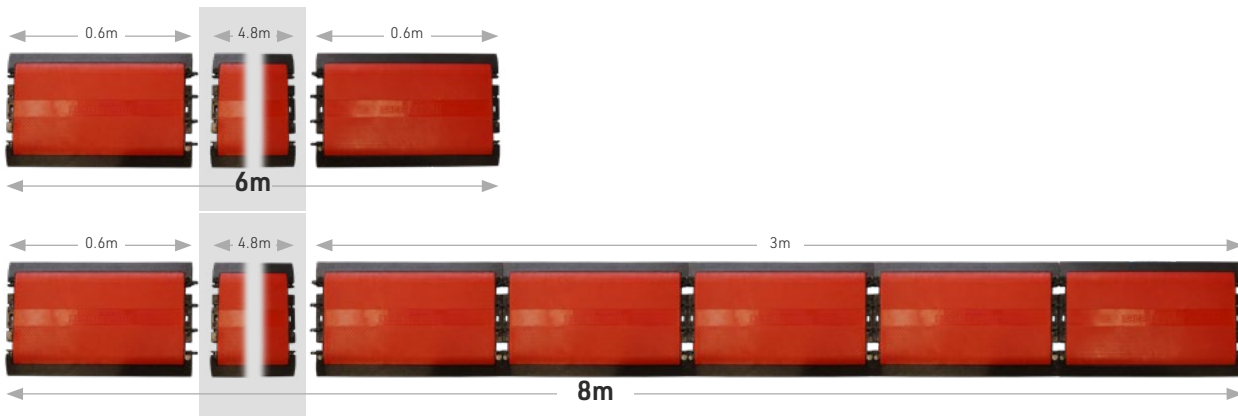


The passive UHF antenna can be used with all passive RACE RESULT transponders. Standard length is 4.8m / 16ft (antenna every 60cm / 2ft), extendable to 6m / 20ft or 8.4m / 26ft.



Passive Antenna Features

- **Easy setup in just a few seconds**
Simply unfold the antenna and connect it to the decoder.
- **Easy to ship**
The 4.8 meter antenna weighs 25.9kg / 57lbs and can be shipped via regular mail.
- **Flat design**
The height of only 2cm ensures excellent safety for all kinds of events.
- **Incredibly durable**
The antenna can be passed over by cars or even trucks.
- **German engineering inside**
Application optimized antennas guarantee the best detection rates.
- **6m or 8m Extension Kit**
Two or six additional elements to extend the antenna to 6m / 20ft or 8.4m / 26ft.



Antenna & Transponder (passive)	
Transponder frequency	866MHz (EU) 903-927MHz (US) 920-925MHz (AUS)
TX power	up to 36dBm EIRP radiated and 30dBm conducted
Track width	4.8m 6m or 8m with Extension Kit
Read range ¹⁾	4m
Detection rate	> 99.8% ²⁾
read rate	> 2,500chips/min
Maximum transponder speed ³⁾	40km/h 25mph
Timing accuracy ⁴⁾	200ms

	Weight	Size
4.8m antenna	25.3kg 25.5kg (incl. packaging)	Single element: 58 x 36.5 x 2cm Total: 465 x 36.5 x 2cm Cable length: 110cm Pack size: 60 x 40 x 20cm
6m Extension Kit	6.2kg	60 x 37 x 5cm
8m Extension Kit	18.6kg	60 x 37 x 15cm
Antenna height		2cm
Antenna width		29cm

1) Transponders are detected multiple times while crossing the antenna. The detection with the highest signal strength - right above the antenna - is used for timing.
 2) With transponders attached correctly.
 3) Higher speeds are possible, detection rate may be lower.
 4) Use GPS time to get most accurate results.

High Gain Antenna

For Barrier-Free Finish Lines

Perfect for special purposes like mass road cycling events. With high signal power these antennas provide long range and high precision. The passive transponder is usually put to the seatpost sticker participants have attached to their bike.

Please note: Using the High Gain UHF Antenna you need to apply to legal regulations and the correct setup is very important to achieve good results!

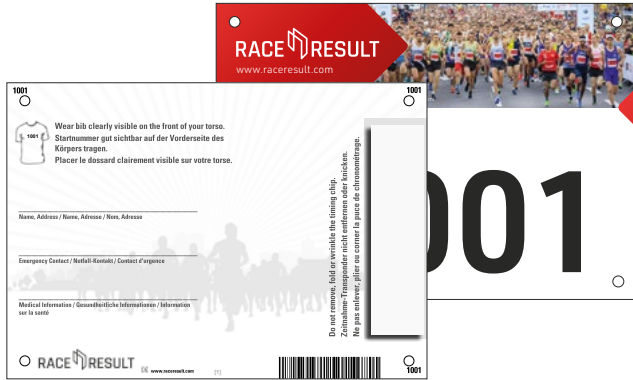
Features	
Frequency Range	865-868MHz (EU) 900-930MHz (US)
Gain	13dBi (min)
Polarization	Linear (Vertical or Horizontal)
Dimensions (LxWxD)	450 x 450 x 36mm
Weight	3kg (max)
Connector	N-Type female



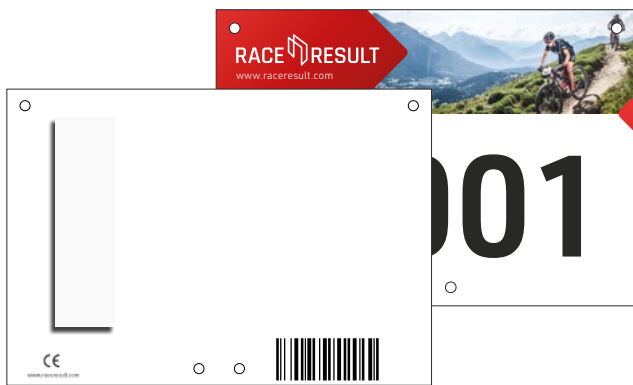
The tripod is sold separately in the shop.

Passive Transponders

Single Use



Bib with Transponder (single + duo)



MTB Plate with Transponder

RACE RESULT Bib Transponder



RACE RESULT Triathlon-Tag



Seatpost Sticker with Transponder

Multi Use



RACE RESULT HuTag



TransponderCard (reusable)



Baton with Transponder

Track Box Passive

The RACE RESULT Track Box Passive combines a custom UHF reader and antenna, LTE modem, GPS module and internal battery all in to one ready-to-go unit. It is primarily designed for sports timing using passive UHF transponders, making it the ideal solution for setting up additional split points on a race course.

The transponder detection data, current GPS time and position of the Track Box is all uploaded to the server making it easier than ever to track participants.

Beyond sports timing, many other areas of application are conceivable where tracking or monitoring of individuals is required such as contact tracing within a facility. To find out more, visit our [TAVI solution website](#).

With a weight of just 1.7kg/3.7lbs and thanks to its small form-factor, the Track Box Passive is easy to carry and setup takes only a few seconds. The box can run autonomously and be managed via an online interface. The battery can last for a full race day and directly connecting a solar panel allows for permanent installations with minimal hardware. The design contains a foldable mounting arm with magnets to attach the device to metal surfaces and a stable stand to place it on the ground.

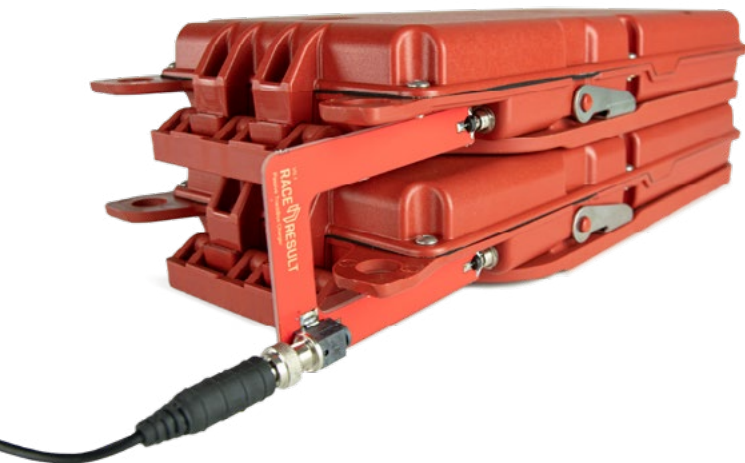
Track Box Passive Features

- LEDs indicating GPS, network and reader status at any time
- Antennas for 4G/3G/2G, 2.4GHz, GPS and UHF RFID
- GPS location recorded for each passing (even when box is moving)
- Automatic NTP/GPS UTC time synchronization
- Automatic interference avoidance among close Track Boxes (patent pending #EP19213045)
- Automatic standby when laid flat facing upwards

- Remote control possible via RACE RESULT 12 Software:
 - Standby (reduce battery consumption)
 - Lock (button disabled, LEDs OFF)
 - Status indication (battery, noise, errors)
- Easy boot up with a single button
- Simple open protocol:
 - Optimized for low data volume and low power consumption
 - HTTP-POST interface (see documentation in our KB)
 - User-configurable server address
 - Automatic over-the-air firmware upgrade
- Auto standby option

Custom RACE RESULT RFID Reader

- Lowest power consumption in the market (4W)
- RAIN UHF Gen2 protocol parameters tailored specifically for sports timing applications
- Custom integrated antenna design




Standards & Dimensions	
Protection class (power connector plugged in or closed)	IP54 -water resistant-
Regulatory conformity and standards	EN60950 (safety) EN50581:2012 (RoHS) EN302208 (UHF RFID) EN301489 (2.4GHz) FCC Part 15.247 (UHF RFID) FCC Part 15 (2.4GHz) ARIB-STD-T106 (UHF RFID)
Regulatory regions	ETSI_LOW, ETSI_HIGH, FCC, CANADA, JAPAN, AUSTRALIA, CHINA,...
Versions	1) 866MHz/ETSI LOW 2) 915Mhz/FCC 3) 915Mhz/ETSI HIGH, CANADA, AUSTRALIA, CHINA, JAPAN,...more
Temperature range	-20°C to 50°C
Dimensions/weight	335x160x55mm/1.7kg
Compatible Transponder type	RACE RESULT Passive Transponder (manufacturing date after September 2018)

Power & Battery	
Battery	3x4000mAh 3,7V Li-Po (45Wh total capacity)
*Battery life	12-18h (UHF on - blue LED ON) (standby) 10 days
Charging time (0% to 90%)	6h (reader OFF - blue LED OFF) 10h (reader ON - blue LED ON)
Charging temperature	0°C...40°C
Power consumption 12V DC supply	4W (reader ON, battery full) 10W (battery charging)
DC power supply	12V...15V, 800mA (battery charging) 10.8V PB battery undervoltage protection
AC power supply	100...240V 50/60Hz
Solar power supply	5V...25V(4W/6W/8W/10W) 30W or 50W "12V" panel recommended DC>17V switches box into solar mode

Detection & Passings	
Memory	40.000 passings (not persistent)
Timing resolution	1/10 th second
Timing accuracy	Up to 200ms, depends on speed and distance between box and transponder
Detection rate (clear line of sight to visible transponders at 5x transponders per second = 300x/min)	>99% within 4m of a single box >90% within 8m of a single box >99% between two boxes with 8m distance
Max speed	100km/h/60mph (single transponder in read zone)
Max simultaneous transponders	40x transponders in read zone
Max theoretical throughput	300x transponders per minute

*Depending on chips in range and temperature

RF Characteristics	
2.4GHz channel frequencies [MHz] (worldwide compliance)	1:2480/2410 5:2415/2445 2:2405/2470 6:2460/2430 3:2425/2465 7:2435/2455 4:2475/2440 8:2450/2420
2.4 GHz TX power	10dBm EIRP (3,5dBm + 6.5dBi Antenna Gain)
2.4Ghz Signal	0-QPSK IEEE 802.15.4 (5MHz Channels)
2.4 GHz range	50...150m
UHF bands	
ETSI LOW	865.7/866.3/866.9/867.5MHz
FCC/CANADA	51x channels 902.5...927.5 MHz (500kHz spacing)
ETSI HIGH AUSTRALIA CHINA JAPAN	900...930MHz Bands depending on regulatory settings
UHF TX power	36dBm EIRP typical (up to 39dBm EIRP, depending on regulations)
UHF RX sensitivity	-85dBm
UHF Modulation	PR-ASK / CW
Integrated UHF antenna	6dBi gain 90° beamwidth

Connectivity & GPS	
Internal GPS	Qualcomm gpsOne Gen8c with GPS, GLONASS, BeiDou/Compass, Galileo and QZSS
29-band 4G/LTE/3G/2G module worldwide coverage	FDD: B1/B2/B3/B4/ B5/B7/B8/B12/B13/B18/B19/B20/B26/B28 TDD: B38/B39/B40/ B41 WCDMA: B1/B2/B4/ B5/B8/B6/B19 GSM: B2/B3/B5/B8
SIM-Card	Standard/mini-size 
Antennas	Internal (3.5dBi peak gain)

Sold as Pack with 2 Track Boxes	
Content	Foam-padded case with shoulder strap 2x Track Boxes 2x tripod mounts 2x stakes 2x adapter for tripods with standard thread (1/4" UNC) 1x double charge adapter 1x 12V AC adapter 1x mains power lead
Dimensions/weight	390x300x135mm/5kg

Active Extension

Using the Active Extension, your RACE RESULT System also supports the RACE RESULT active transponders. Active transponders ensure highest precision, accuracy and reliability for cycling, triathlons, inline, skiing or motor sports.

Active Extension Features

- Unmatched precision: up to 0.004s
- Reliable detection at up to 250km/h
- Detection height: up to 2.5m
- Loop length: up to 25m
- 2.4GHz wireless interface
- Detects up to 250 transponders at once
- Compatible with all RACE RESULT active devices

Version 2

- Increased 2.4GHz range
- 3.5mm jack audio output / impulse input
- Switch for blink on repeated passings
- Improved channel monitoring



2.4 GHz RF & Loop Specification

Transponder 2.4 GHz channel frequencies main / backup (worldwide compliance)	1: 2.480MHz/ 2.405MHz 2: 2.405MHz/ 2.470MHz 3: 2.425MHz/ 2.465MHz 4: 2.475MHz/ 2.440MHz 5: 2.415MHz/ 2.445MHz 6: 2.460MHz/ 2.430MHz 7: 2.435MHz/ 2.455MHz 8: 2.450MHz/ 2.420MHz
2.4GHz TX power	17.5dBm
Loop frequency & data	125kHz Data-Packet = Loop ID + channel Packet rate: 150Hz OOK-modulation, manchester encoded, 16 bit anti-false-wakeup pattern
Loop power	100% = 250mA RMS regulated peak current

Loop cable & length	5m - 25m, >0,5mm ² standard 4mm banana plugs
Data cable	5m (standard), 15m, 30m
Read range	60cm (2ft)
25% loop power	2.5m (8ft)
100% loop power	
Detection rate	100%
read rate	> 100 chips per second burst for 20 seconds > 50 chips per second continuously
Internal data buffer	1,000 passings
Clock stability	24/1,000th second per day 0.28ppm TCXO calibrated to rubidium frequency standard traceable to NIST
Forewarn data delay	100ms (from entering the loop field)
Max passing data delay	250ms (after loop center)
Repetitive passing rate over loop	1 per second

Safety & Conditions Active Extension V2

Protection class with cable / antenna screwed on	IP67 -waterproof-
Safety norm	EN60950
Regulatory conformity	CE, RoHS, FCC
Temperature	-30°C to 70°C
Dimensions / weight	27 x 66 x 117mm / 190g

RACE RESULT System firmware version 1.94 or higher recommended

Active Transponders

Tailored to your needs

The four V3 transponder options are tuned to different application scenarios. Different transponders can be used in the same race (e.g. ActivePro V3 Performance for elite athletes, ActivePro V3 for amateurs).

ActiveBasic V3



The budget choice. For clubs and events that appreciate the reliability of active technology and can do without highest accuracy, tracking and store mode.

Accuracy 0.2 s	Max. Speed 60 km/h	Warranty 4 years	Activation Antenna 2D
Store Mode -	Tracking Mode -	Tracking Lifetime -	Temperature -25 °C – 70 °C

ActivePro V3



The best choice for most events. Combines high accuracy and speed with long battery life, store mode and tracking.

Accuracy 0.004 s	Max. Speed 120 km/h	Warranty 5 years	Activation Antenna 3D
Store Mode ✓	Tracking Mode ✓	Tracking Lifetime 400 / 1000 days	Temperature -25 °C – 70 °C

ActivePro V3 Performance



High-end transponders for pro races. Delivers the highest accuracy, most stable data transmission in sprint finishes, additional tracking data and store mode.

Accuracy 0.004 s	Max. Speed 150 km/h	Warranty 3.5 years	Activation Antenna 3D
Store Mode ✓	Tracking Mode ✓	Tracking Lifetime 150 / 300 days	Temperature -25 °C – 70 °C

MotorKart V3



Special transponder for timing go-karts, trimmed for avoiding electrical interferences and detection heights < 0.5m. Ensures highest reliability and precision over tens of thousands of rounds of kart racing.

Accuracy 0.004 s	Max. Speed 120 km/h	Warranty 3.5 years	Activation Antenna 3D
Store Mode ✓	Tracking Mode ✓	Tracking Lifetime 150 / 300 days	Temperature -25 °C – 70 °C

V3 Advantages

✓ No hidden costs

Once you purchase the transponder, it's yours! There are no follow-up costs such as activation or subscription fees, renewal costs, expiration dates etc.

✓ Highest accuracy

Our active transponders already were among the most accurate timing solutions on the market. With the V3 transponder we were able to implement an even further improved timing algorithm. The result is a significantly improved accuracy - according to measurements, the best in this transponder class.

✓ Improved power consumption

Utilizing the latest semiconductor technology, V3 has a significantly reduced power consumption compared to any existing transponders. This allows for new functionalities, exceptionally long activation duration, more store mode and tracking mode usage.

✓ Unique features

With "Store Mode" and "Tracking Mode" the application scenarios of the RACE RESULT Active transponder* can be expanded. No other timing transponder on the market offers these functions. V3 consumes significantly less battery in tracking mode, so the feature can be used even more frequently.

✓ Works in any orientation

No matter what position the transponder is in when crossing the timing line, thanks to the 3D activation antenna, the times are always precisely recorded and transmitted. (The ActiveBasic V3 has a 2D antenna, so it must be mounted vertically.)

✓ High performance in low temperatures

V3 delivers reliable timing data even at low temperatures and low battery levels. Active transponder can be used from -25 °C to +70 °C.

✓ Extra transponder code

Store your own data on the transponder. An individually programmable and changeable code (0 ... 30000 / A-000 ... Z-999) is transmitted with each passing.

In addition, each transponder has a key-value-store that you can assign as you wish (e.g. "Owner": "MyTiming-Company"). This code can be changed and read out via the Management Box.





✓ Ergonomic and robust

All active transponders are 100 % waterproof. With a weight of only 16.8 g and a size of 36 x 40 x 9 mm, they are comfortable to wear and easy to attach. Smooth edges increase comfort for athletes.



*Not available for ActiveBasic V3 transponders

Technical Specifications

	ActiveBasic V3	ActivePro V3	ActivePro V3 Performance	MotorKart V3
				
Warranty* / Battery Lifetime				
Years	4 years	5 years	3.5 years	3.5 years
Passings	50,000	100,000	50,000	300,000
Tracking fast / slow	–	400/1000 days	150/300 days	150/300 days
Detection				
Accuracy	0.2 s	0.004 s	0.004 s	0.004 s
Max. speed	60 km/h	120 km/h	150 km/h	120 km/h
Resolution**	0.001 s	0.001 s	0.001 s	0.001 s
2.4 GHz backup	dual	dual	quad	dual
Exit passing precision	170 ms	100 ms	50 ms	170 ms
Reaction time	500 ms	250 ms	125 ms	125 ms
Loop Antenna	2D	3D	3D	3D
Prewarn	–	–	✓	–
Detection Height	2 m	2 m	2m	0.5m
Tracking				
Max. time between Track Boxes	–	5 h	5 h	5 h
Max. time between Loops	–	25 h	25 h	25 h
Typical track ping range	–	50 m	200 m	50 m
Activation	–	Loop ID 8 + Channel ID 8	Loop ID 8 + Channel ID 8	Management Box
Adaptive track ping intervals	–	5 s / 2 s / 1 s	1 s / 0.5 s	1 s / 0.5 s
Store Mode				
Max. passings stored	–	64	128	128
Max. store time	–	12 h	24 h	12 h
Store Mode precision	Temperature compensated +-5ppm			
Temperature	-25 °C - 70 °C			
Features				
Extra transponder code	✓	✓	✓	✓
Adaptive noise avoidance	✓	✓	–	–
Key-value store	✓	✓	✓	✓
Deep sleep mode	✓	✓	✓	✓

Please note: All data apply to the optimal configuration of the RACE RESULT hardware. More information about the setup can be found in our Knowledge Base.

* the value reached first is applied

** when using Ubidium

Active Loop Box

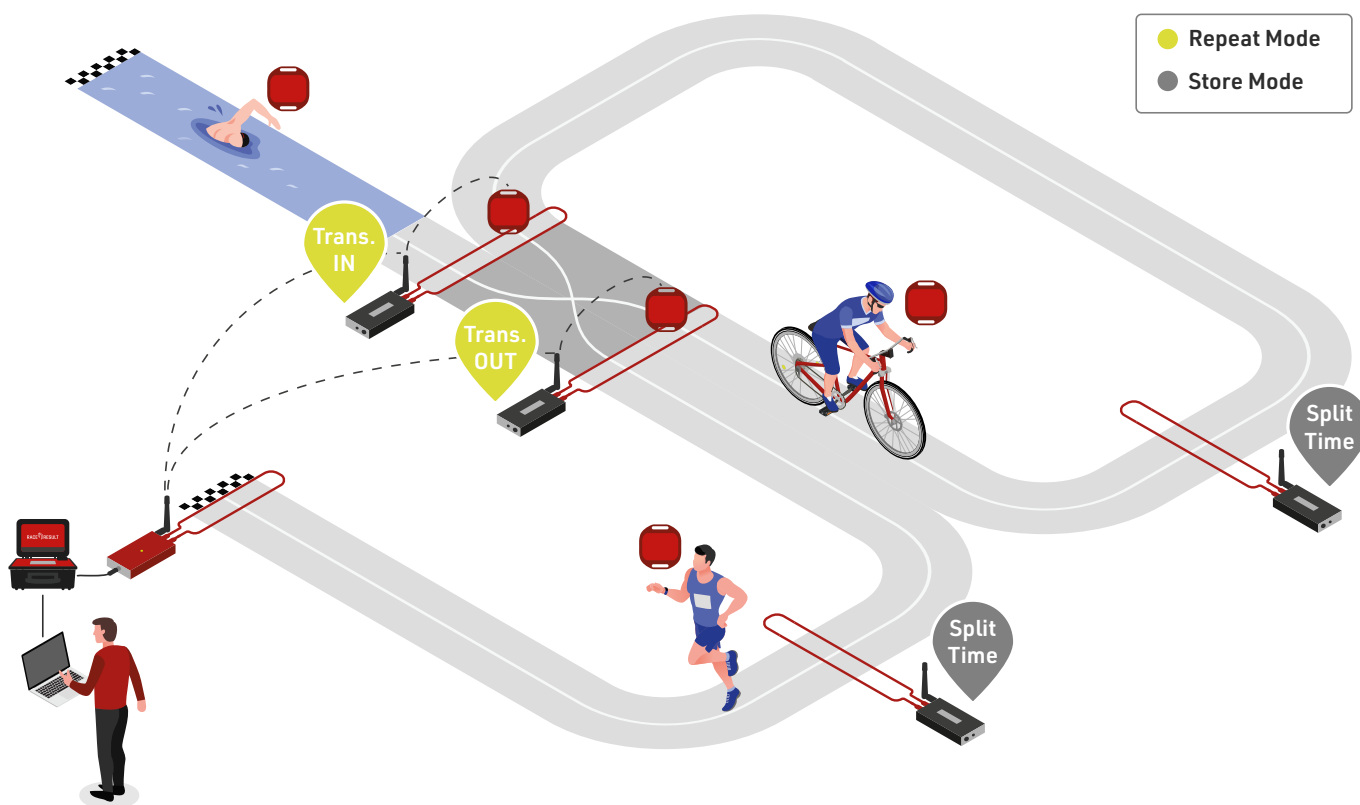
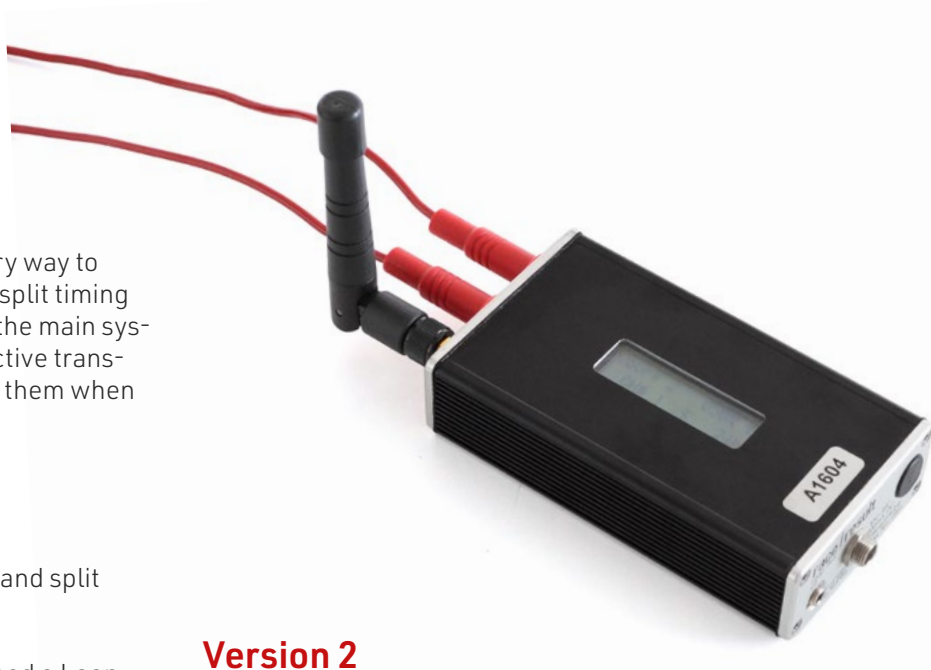
The stand-alone Loop Box is a revolutionary way to collect split times. Loop Boxes at close-by split timing points will repeat detections wirelessly to the main system. In case of remote timing points, the active transponder saves the times and then transmits them when arriving at the finish.

Loop Box Features

- **Easy setup**
No wiring needed between main system and split timing points.
- **Small investment**
For an additional timing point you only need a Loop Box instead of a complete timing system.
- **Stand-alone**
With its internal battery the Loop Box can run for 12-20 hours.

Version 2

- **Increased repeat mode range**
of up to 900m
- **3.5mm input-/output-plug**
Audio output or start impulse input



Safety & Conditions Loop Box	
Protection class with cable / antenna screwed on	IP52 - water resistant- IP54 usage with Bumper
Safety norm	EN60950
Regulatory conformity	CE, RoHS, FCC
Temperature	-30°C to 70°C
Dimensions / weight	27 x 66 x 117mm / 272g

Loop Box	
Maximum repeat range	Up to 900m with direct line of sight
Passings transmission	Up to 40/second continuously
Passing transmission delay	200ms - compensated
Internal data buffer	1,000 passings

Power & Battery	
AC power supply Loop Box V2	110 V-230 V 50-60Hz (2 A fuse)
Loop Box V2	10V-15V, 100mA (at 100% loop power)
Battery	LiPo, 4,000mAh, 3.7V 12-20h depending on loop power

USB Timing Box

The RACE RESULT USB Timing Box enables you to setup your timing line in a split second: directly connected to a computer, the USB Timing Box does not require a decoder.

The USB Timing Box is used best to time sporting events, to scan tags at race pack pick-up, or for just about any other application: the open-source software of the USB Timing Box allows you to develop any solution that may have nothing to do with sports timing.

USB Timing Box Features:

- Wireless reception of split times from a Loop Box
- 100% detection rate
- Open software development kit
- Internal memory stores 1,000 detections
no lost times - even if your computer crashes
- Internal backup battery for 12h
- Highest clock stability on the market: 0.28ppm
- Compatible with all RACE RESULT active devices
- Works with low end computers
only requirement USB 1.1
- Loop power can be set by user

2.4GHz RF & Loop Specification

Transponder 2.4GHz channel frequencies main / backup (worldwide compliance)	1: 2.480MHz / 2.405MHz 2: 2.405MHz / 2.470MHz 3: 2.425MHz / 2.465MHz 4: 2.475MHz / 2.440MHz 5: 2.415MHz / 2.445MHz 6: 2.460MHz / 2.430MHz 7: 2.435MHz / 2.455MHz 8: 2.450MHz / 2.420MHz
2.4GHz TX power	17.5dBm
Loop frequency & data	125kHz data-packet = loop ID + channel packet rate: 150Hz OOK-modulation, manchester encoded, 16bit anti-false-wakeup pattern
Loop power	100% = 250mA RMS regulated peak current
Loop length	5m - 25m, >0.5mm ² standard 4mm banana plugs
Internal data buffer	1,000 transponders
Read range 25% loop power 100% loop power	60cm (2 ft) 2m (6 ft)
Detection rate Read rate	100% > 100 chips/second burst for 20 seconds > 50 chips/second continuously
Battery	LiPo, 4,000mAh, 3.7V 12 hours
USB 1.1	500mA

Safety & Conditions USB Timing Box

Protection class with cable / antenna screwed on	IP52 -water resistant- IP54 usage with Bumper
Safety norm	EN60950
Regulatory conformity	CE, RoHS, FCC
Temperature	-30°C to 70°C
Dimensions / weight	27 x 66 x 117mm / 266g

The **smallest & most costeffective** timing system in the world!

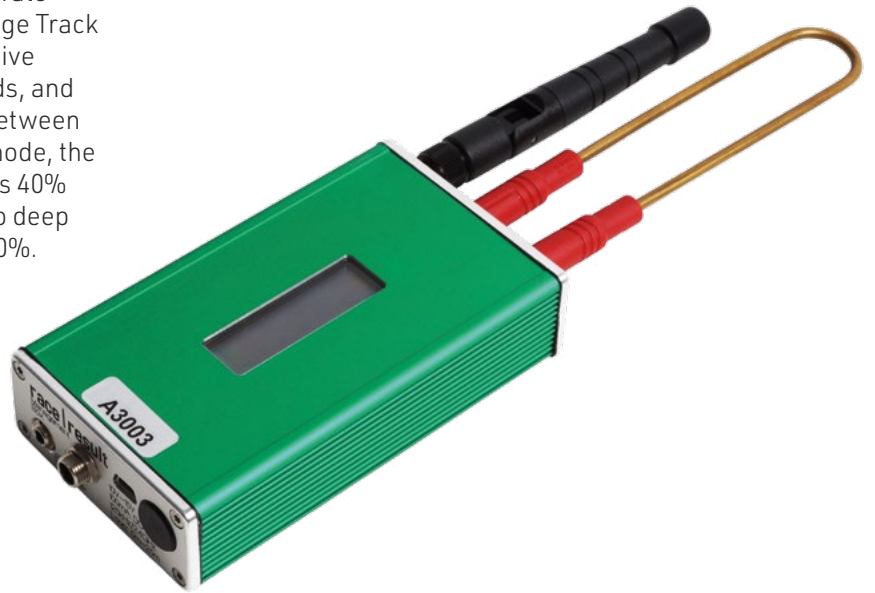


Active Management Box

The Management Box is a key element of the RACE RESULT tracking solution, as it is required to activate tracking mode on the transponders, and to manage Track Boxes. It also allows you to keep track of your active transponders, generate chip files in a few seconds, and set the active transponders to deep sleep mode between events to extend their battery life. In deep sleep mode, the energy consumption of your active transponders is 40% lower. Systematically setting your transponders to deep sleep mode may increase their lifespan by up to 30%.

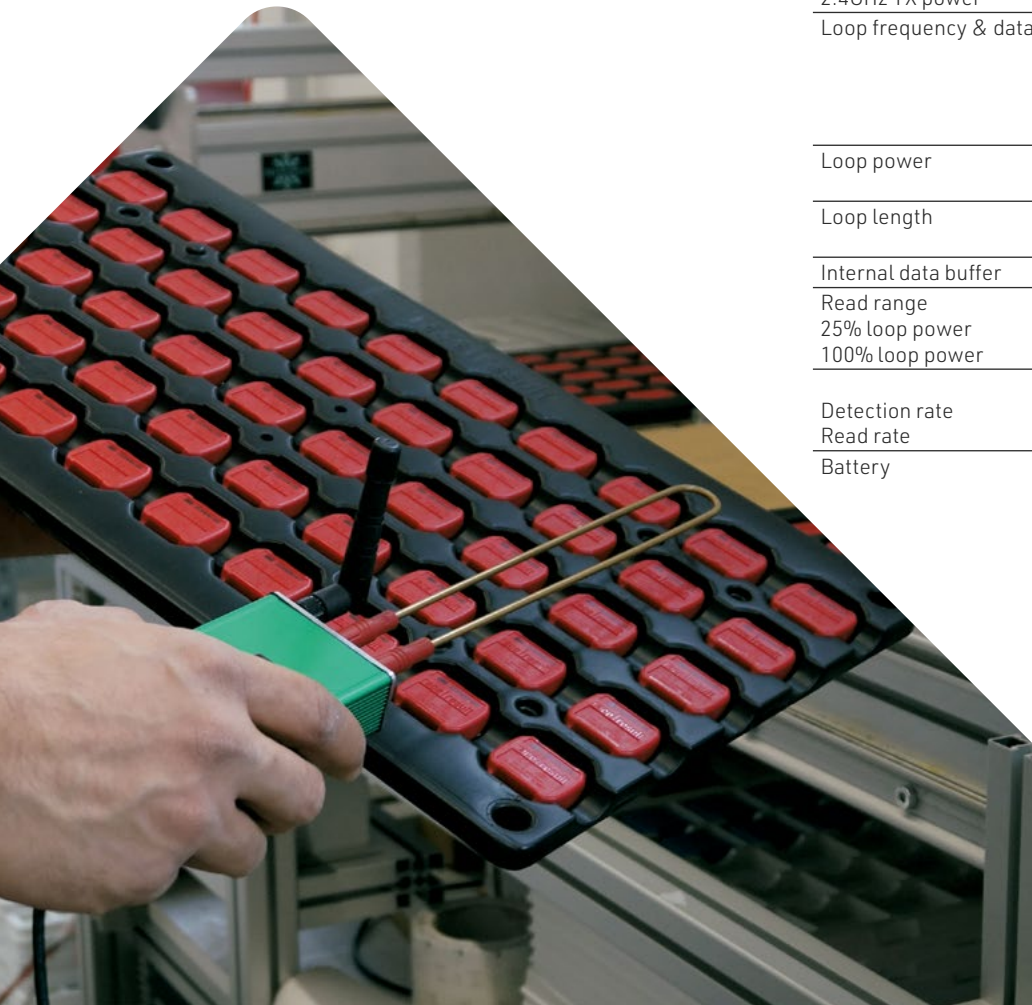
Management Box Features

- Activate and deactivate tracking
- Manage Track Boxes
- Set transponders to deep sleep mode
- Keep track of transponder battery status
- Generate chip files
- Scan trays to check
- USB connection



Safety & Conditions Management Box	
Protection class with cable / antenna screwed on	IP52 -water resistant- IP54 usage with Bumper
Safety norm	EN60950
Regulatory conformity	CE, RoHS, FCC
Temperature	-30°C to 70°C
Dimensions / weight	27 x 66 x 117mm / 274g

2.4GHz RF & Loop Specification	
Transponder 2.4GHz channel frequencies (worldwide compliance)	1: 2.480MHz / 2.405MHz 2: 2.405MHz / 2.470MHz 3: 2.425MHz / 2.465MHz 4: 2.475MHz / 2.440MHz 5: 2.415MHz / 2.445MHz 6: 2.460MHz / 2.430MHz 7: 2.435MHz / 2.455MHz 8: 2.450MHz / 2.420MHz
2.4GHz TX power	17.5dBm
Loop frequency & data	125kHz data-packet = loop ID + channel packet rate: 150Hz OOK-modulation, manchester encoded, 16 bit anti-false-wakeup pattern
Loop power	100% = 250mA RMS regulated peak current
Loop length	5m - 25m, >0.5mm ² standard 4mm banana plugs
Internal data buffer	1,000 transponders
Read range	25% loop power 60cm (2ft) 100% loop power 2m (6ft)
Detection rate	100%
Read rate	> 100 chips/second burst for 20 seconds > 50 chips/second continuously
Battery	LiPo, 4,000mAh, 3.7V



Track Box Active

With the Track Box, you can provide tracking and timing with the same transponder. Track Boxes placed along the course or on race vehicles receive pings from all tracking-enabled transponders within a 50m radius and transmit the data live online.

You can then use this data to produce live tracking visualisation, and to publish an unprecedented amount of timing data. Have you ever dreamt of covering an extreme triathlon with 30 splits and a 3 persons crew? Now you can!

Track Box Features:

- Receive track pings from active transponders in a 50m radius
- Upload GPS tracking data live online
- Up to 5 days battery life
- Built-in magnets for easy mounting
- Practical stack charging



Safety & Conditions Track Box

Protection class	IP64 -water resistant-
Safety standards	EN60950
Regulatory conformity	CE, RoHS, FCC
Temperature	-20°C to 70°C
Dimensions / weight	165 x 102 x 32mm / 400g

Connectivity

Internal GPS	Qualcomm gpsOne Gen8 with GLONASS
Internal 4G	29-band 4G/LTE/3G/2G Module for worldwide coverage Standard SIM-Card

Battery

Battery type	LiPo, 4,000 mAh, 3.7 V
Charge current	230mA at 15V (full in 5h) 150mA at 12V (full in 10h)
Battery life	Moving: 1 day Stationary: 3-5 days

2.4GHz RF Specification

Transponder 2.4GHz channel frequencies (worldwide compliance)	1: 2.480MHz 2: 2.405MHz 3: 2.425MHz 4: 2.475MHz	5: 2.415MHz 6: 2.460MHz 7: 2.435MHz 8: 2.450MHz
2.4GHz TX Power	3,5dBm	
Internal Data Buffer	10,000 tracking records	
Read Range	50m - 150m	

10 Track Boxes Pack

Content	Foam-padded suitcase with shoulder strap 10 Track Boxes Track Box charge adapter 15V AC adapter with universal power inlet Mains power lead
Dimensions / weight	390 x 300 x 135mm / 5.5kg

Headquarters Germany

race result AG

Joseph-von-Fraunhofer-Straße 11
76327 Pfinztal

Phone +49 (721) 961 409 01
info@raceresult.com
www.raceresult.com