



Global Product Certification
EMC-EMF Safety Approvals

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**APPENDIX I
OF
TEST REPORT T130919_F**

USER MANUAL

FCC ID: 2ACNLGPSP-SPI-0001
Manufacturer: GPSports Systems Pty Ltd
Test Sample: HPU (High Performance Unit)
Model Number: SPI HPU
Serial Number: SPI HPU 1206

Date: 18th August 2014

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SPI HPU User Guide

GPSportsSystems



QuickstartGuide

www.gpsports.com



SAFETY INSTRUCTIONS

The SPI HPU is not a medical instrument. It is a training aid that has been designed to indicate your speed, distance, heart rate, impacts and accelerations during sport. Before you begin using the SPI HPU, visit your doctor and consult them as to your specific exercise requirements. People who have heart or circulatory problems and wearers of heart pacemakers should consult their doctor before using the SPI HPU. Do not wear the SPI HPU for activities where injuries are likely to occur. Consulting or changing the operating mode of the SPI HPU while moving is unsafe and could result in collision or other injury.

INFORMATION

The SPI HPU uses Global Positioning Satellite (GPS) technology to measure speed and distance. The SPI HPU is not intended for use where precise measurement of speed and distance are required. The GPS system is operated by the government of the United States of America, which is solely responsible for its accuracy and continued operation. The GPS system is subject to changes that may alter the accuracy of any GPS based equipment including the SPI HPU.

This Quickstart Guide is an introduction to the operation of the SPI HPU athlete tracking unit. For more detailed information, consult the GPSports Team AMS Frequently Asked Questions (FAQ's) manuals provided within the installation software package.

The SPI HPU captures and streams real time speed, heart rate, distance, position and acceleration data on a second by second basis. Maximum, minimum and average statistics can be reviewed for post session analysis. The SPI HPU is ideally suited for performance analysis in a wide variety of outdoor sporting activities including team sports, running, rowing, cycling and orienteering. In addition, the SPI HPU collects data on "accelerations" in 3 axes @ 100 times per second. This data can be

used to examine technique, impacts and body load to ensure that athletes can measure performance, plan improvement and plan appropriate recovery regimes.

How does the SPI HPU System work?

The GPSports Systems® SPI HPU Sports Performance Indicator integrates Global Positioning Satellite (GPS), Accelerometer, Heart rate and Wireless transmission technologies. The SPI HPU uses information transmitted from satellites to determine an athlete's speed, position, altitude and distance traveled. The SPI HPU must be operated outdoors with a clear view of the sky to operate correctly. The integrated accelerometer measures movement and impacts. A heart rate strap worn around the chest transmits heart rate information wirelessly to the SPI HPU.

The SPI HPU System has been designed specifically to

- Manage and Analyse the information collected during Team sporting events
- The system includes stickers which may be labeled to identify particular SPI HPU Units.
- Each SPI HPU can be electronically named to simplify identification when downloading data.

We recommend that you label each unit with a name or number and match that name or number with the electronic assigned name of the SPI HPU.

Where possible SPI HPU units should be assigned to individual players to minimise the potential for confusion.

SPI HPU System and Accessories

- SPI HPU Unit
- SPI HPU Smart Docking Station
- Travel Case
- Heart Rate Monitor set
- 19v Power Pack
- USB connection
- GPS Vest, otherwise known as a GPS “Bro”/ Vest



SPI HPUAccessoriesContinued

'TheBro' GPS Vest



Type equation here.

PuttingaSPI HPUintheBro

(Ensureunitistrackingbefore puttingitintotheBro)



Charging

Before the SPI HPU will operate, the SPI HPU must be charged. SPI HPU units are fully charged when they leave our factory, however partial discharge of the units can be expected during shipping.

The SPI HPU Smart Docking Station should be connected to mains power, using the supplied Power Supply when charging. All SPI HPU units sitting in the Smart Docking Station cradles will be charged alternatively, 15 minutes on and 15 minutes off for 4 hours.

Eg. Cradles: 1,3,5,7,9,11,13,15 will charge, then cradles 2,4,6,8,10,12,14.

To charge the SPI HPU ensure it is seated comfortably into a Docking Station Cradle.

HPU units do not need to be on for charging, but the Smart Docking Station must be.

Initial charging will take approximately 4 hours. A single charge will provide more than 7 hours of logging time per SPI HPU unit.

Button Functions

Turning the SPI HPU On

Note: The SPI HPU can only track GPS outdoors.

Turning the SPI HPU on indoors may cause the device to take longer to determine its location.

To turn the SPI HPU On

Hold down the blue On/Off button for 3 seconds.

- The indicator light will flash solid Red until turning Green.
- The green indicator light will remain steady green while the SPI HPU attempts to establish its location.



When the SPI HPU establishes its location the green indicator light will flash. This may take up to one minute. The SPI HPU will log activity in excess of 7 hours.

If a HR is detected within range of the SPI HPU unit, it will flash alternately with the Green light Red. The range between the unit and the HRM is approximately 50cm.

Turning the SPI HPU Off

To turn the SPI HPU Off

- Press and hold the blue On/Off button,
- The SPI HPU will store information to its memory which can be later downloaded to the Smart Docking Station.

Heart Rate Information

The heart rate sensor must be worn directly on the skin. Adjust the elastic strap so the sensor is pressed firmly against your chest. To achieve better skin contact, moisten the sensor pads and wear the sensor for a few minutes before capturing performance data.

When the SPI HPU is recording heart rate data from the strap the Red indicator light will flash.



SPI RealTime (RT) Software

The SPI RT Software displays the real-time player performance information as streamed by the SPI HPU. The SPI RT software enables end users to objectively monitor the individual performance of a player or compare workloads and efforts among a group. This information allows the objective and immediate manipulation of training loads or game decisions.

SPI RT Software Installation

- Download SPI RealTime from the GPSports website.
- The GPSports SPI RealTime Installer will guide you through the installation process.
- If the installation program fails to start automatically, open the program folder and double-click on the Setup.exe file.

Software

The following configuration allows player names to be displayed within the SPIRT interface.

Plug SPI HPU station into the USB on your laptop/ PC. Use the same COM port when using the SPI HPU system.

Load the SPIRT software by double clicking on the SPIRT icon on your desktop.

1. On the SPI HPU interface, select File then Configure
2. The configuration screen will appear. Select Players
3. The 'Players' window allows you to type in the player names and the unit number they will wear.
4. You may also adjust speed and heart rate thresholds on this page. Some experienced SPI HPU clients may request player specific thresholds. To adjust the player speed or heart rate thresholds, manipulate the numbers in their zones. Thresholds are explained in further detail below under Step 2 'Individual Player Summary'
5. Player positions may also be entered on this page. Assigning player positions allows rapid analysis of a selective position or group (see Quick Summary 5)

No	Player Name	Position	Weight	HR Zone 1	HR Zone 2	HR Zone 3	Speed Zone 1	Speed Zone 2	Speed Zone 3	Impact Threshold
1	Adrian	Not Set	80	160	170	180	16	20	32	5.5
2	Chris	Not Set	80	160	170	180	16	20	32	5.5
3	David	Not Set	80	160	170	180	20	23	30	5.5
4	Morgan	Not Set	80	160	170	180	20	23	30	5.5

You will need to note which player is wearing which unit. A logical approach is to have the lowest unit number correspond alphabetically with the player's name e.g. SPI HPU1=Anderson, SPI HPU2=Curtis, SPI HPU3=Edmund etc. Alternatively you may electronically number a SPI HPU unit so that Player 1 is SPI HPU unit 1. Please refer to Team AMS Quick User Guide for this function.

Enabling the SPIRT software:

1. Select 'File' then 'View'
2. Click on each player's name and enter the number of the unit they are wearing in the 'SPI HPUNumber'
3. Click on the 'Start' button
4. On the view page you can either select a.

Summary

Quick or Detailed Speed/HR/Distance/Impacts

- b. Individual player view i.e. player 1
Speed/HeartRate/Impacts
Or



1. 'QuickSummary' (this information is best viewed during a training drill or a game)

This screen clearly shows the names, efforts and work quality of all players.

Anderson	Morphius	Neo	Trinity	Player 5
Speed km/h	Speed km/h	Speed km/h	Speed km/h	Speed km/h
Now	Now	Now	Now	Now
Max	Max	Max	Max	Max
Heart Rate BPM	Heart Rate BPM	Heart Rate BPM	Heart Rate BPM	Heart Rate BPM
Now	Now	Now	Now	Now
Max	Max	Max	Max	Max
Avg	Avg	Avg	Avg	Avg
Impacts Count	Impacts Count	Impacts Count	Impacts Count	Impacts Count
Distance Metres	Distance Metres	Distance Metres	Distance Metres	Distance Metres
Total	Total	Total	Total	Total
< 1 Min	< 1 Min	< 1 Min	< 1 Min	< 1 Min
< 5 Mins	< 5 Mins	< 5 Mins	< 5 Mins	< 5 Mins
Position	Position	Position	Position	Position Not Set

1. Feature: Player's name, current speed and max speed.
Application: Current and max speed will change colour when a threshold has been achieved. Therefore exercise prescription may be monitored in real time to ensure intended work rates are attained.
2. Feature: Current, max and average heart rate information.
Application: Analysis of heart rate in conjunction with distance per < 1 min or distance per < 5 mins can be used as an indication of fitness or fatigue levels. i.e. high player input (high average and current heart rate) observed with low player output

(lowm/min) may be an indicator of fatigue or poor fitness levels.
Please note this information may also reflect frequent change of direction (drills conducted in a confined space)

3. Feature: Impact count.

Application: The impact threshold can be configured, so that the 'impact count' only reflects selective information i.e. only player collisions. Impact density (impact force and distribution) can be indicative of the intensity of a drill. Refer to accelerometer FAQ for information on impacts.

4. Feature: Total distance covered and meters completed in the last minute. Applications: Meters per minute is an index of player work rate i.e. although player and position specific, the more effort a player is exerting, the more meters they travel per minute. These variables allow the work rates and efforts of players to be compared and are a powerful performance indicator when used in conjunction with heart rate i.e. heart rate indicates player input/stress where as meters per minute indicate the quality of their work. If a player has high heart rate and whilst covering low meters per minute, the player may be fatigued or have poor fitness levels (this however may also indicate frequent change of direction).

Total distance covered allows intended exercise prescription to be achieved i.e. uniform load of players (as opposed to loading variance amongst players due to degree of player efforts and assortment of drills – player A undertaking a volume load of 6km and player B undertaking a volume load of 3km)

5. Feature: Position.

Applications: Display performance information of group or number of positions i.e. Backs

2. 'IndividualPlayerSummary'(thisinformationisbestviewedduringa trainingdrill)



1. Speed.Current,MaxandAverage speed.
2. Totaldistanceanddistanceinthelastminute(workrateinlast minute)– ifdownandheartrateupcanbeanindicatoroffatigue.
3. Heartrate.Max,averageandCurrent
4. Accelerometerinformation.Countcanindicatestressincurredby thebodydueto hardaccelerations,decelerations,collisionsetc.
5. Graph.Eitherspeed/hrorimpacts(Yaxis)overtime(Xaxis).
 - a. LiveSpeedGraphcanindicaterelativespeedquality, speedenduranceandfatiguelevels(obviousduring repeatsprintabilitydrills)
 - b. LiveHeartRate Graphcanindicatecardiovascular fitnesslevels,theextentof their effort(input)and theirabilitytorecover
 - c. Impacts can indicate a player's ability to accelerate, changedirectionandexplodethrough analysis of impactdensityandintensity.

Limited Warrenty

GPSports Systems Pty Ltd warrantsto the originalcustomer that the SPI HPUand itsaccessorieswill be freefromdefectsinmaterial and workmanshipfor a periodof two yearsfromthe date of purchase. Thiswarranty can be extended through GPSports Hardware and Softwaresupport program.

Please keep your receipt of purchase.

Warranty does not cover damage due to misuse, abuse, accidentsor damage due to impropermaintenance.

Warranty does not cover damage or consequentialdamage caused by servicingnot authorizedby GPSports Systems.

Thiswarranty does not alterthe consumer'sstatutory rightsunder the applicablenationalor state lawsinforceor consumer'srights.

OperatingSystem	Windows7
Memory	2GB
Processor	Intel Core 2 Duo minimum
Graphics card	An accelerated graphics card is recommended
DiskSpace	1.5GB free required plus space for data storage

TeamAMSInstallation

- Insert the installation disk into the CD drive.
- The GPSports TeamAMS Installer will guide you through the installation process.
- If the installation program fails to start automatically, open the CD folder and click on the Setup.exe file.

SPIRT

- Insert the installation disk into the CD drive.
- The GPSports SPIRT Installer will guide you through the installation process.
- If the installation program fails to start automatically, open the CD folder and click on the Setup.exe file.

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For your protection, this product has been tested to various national and international regulations and standards.

USA DECLARATION OF CONFORMITY ACCORDING TO FCC PART 15

Responsible Party Name	GPSports Systems Pty Ltd
Address	PO Box 319, FYSHWICK, ACT, 2609
Telephone	+61 2 6162 2060
Declare that	Product Model SPI HPU complies with Part 15 of the FCC Rules

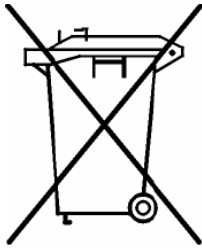
NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice

The user is cautioned that changes or modifications not expressly approved by GPSports could result in the equipment being noncompliant with FCC Class A requirements and void the user's authority to operate the equipment.

Australian and European RFI Statement

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.



USE OF SHIELDED CABLES

Shielded cables are required in order to comply with EMC and FCC emission limits; shielded cables must be used with this equipment.

EU ELECTROMAGNETIC COMPATIBILITY

GPSports declares that this product conforms with the protection requirement of the European Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

FCC OPERATION

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 UNDESIRE OPERATION.

DECLARATION

GPSports declares that this product conforms with the requirements of the European Communities Directive of 73/23/EEC and 93/68/EEC on the harmonization of the laws of Member States for electrical equipment designed for use with certain voltage limits.

PRECAUTIONS

Interference During Exercise

Electromagnetic Interference and Exercise Equipment

Disturbance to the chest strap and/or receiver may occur near high-voltage power lines, traffic lights, overhead lines of electric railways, electric bus lines or trams, televisions, car motors, bike computers, some motor-driven exercise equipment, cellular phones, or when you walk through electric security gates. Microwave ovens, computers and WLAN base stations may also cause interference. To avoid erratic readings, move away from possible sources of disturbance.

If this still does not work, it may be electrically too noisy for reliable heart rate measurement.

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