



## 488HS4 GPS Synchronisation System



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## 488HS4 GPS Receiver System

The Wharton® 488HS4 GPS receiver system has been designed to allow the Wharton Electronics digital clocks and master clocks to be automatically synchronised from GPS satellite time transmissions. This provides a highly accurate source of time regardless of global location.

The 488HS4 receiver system is housed in a single IP65 rated case containing both the active antenna module and the receiver/decoder interface. The IP65 rated protective housing shields the 488HS4 receiver system from wind, rain and snow.

The gain pattern of the antenna is designed for full upper hemispherical coverage with the gain diminishing at low elevations. This cross-section is consistent through 360 degrees and so the 3 dimensional gain pattern is a symmetrical spheroid surface.

The 488HS4 receiver system should be horizontally mounted with a clear view of 75% of the sky. If the sky view is reduced, the interval between “switch-on” and system time synchronisation will be considerably increased.

A post mounting clamp is supplied to enable the antenna to be fixed to a suitable horizontal or vertical post of up to 32mm diameter.

The antenna may be mounted on the roof of a building or under a suitable skylight.

To ensure ease of operation and to remove the possibility of operator error the 488HS4 receiver is designed to self initialise without requiring user setup. On power-up the receiver will automatically begin to search the sky for all available satellites. After three satellites have been acquired the precise date and time will be calculated from the satellite data transmissions.

Once locked to the GPS satellites, the time is transmitted from the 488HS4 to the connected clock.

The connection between the 488HS4 receiver and the clock is by four core screen twisted pair cable, which can be extended up to 200m long. This cable also provides power to the receiver/decoder module.

### **What is GPS?**

GPS is a system of satellites in six orbits, each orbital plane equally spaced about the equator and inclined at 55 degrees. The satellites transmit highly accurate realtime, worldwide navigation information at a frequency of 1575.42 MHz that anyone with a suitable receiver can use to identify their position, together with a precise local time.

It was developed by the US government initially for military use and is now available for unlimited commercial access.

### **How GPS works**

GPS satellites travel in nearly circular orbit every 12 hours at an altitude of 20,200km (10,900 nautical miles). The exact position of each satellite can be determined at all times. Each satellite continuously transmits a unique code sequence, derived from atomic clocks, which is tracked by the receiver.

The transmitted information includes current orbital data for each satellite. The receivers are able to identify each satellite by its code and calculate the satellite's exact position in space. The receivers then use a process called triangulation to compute their own position together with a precise local time.

# 488HS4 GPS Receiver System

## Specification

### Operating Temperature:

-25°C to +45°C (ambient)

### Weight:

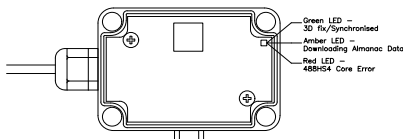
400g (excluding cables)

### Physical Dimensions:

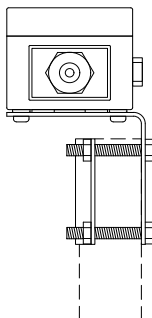
116 x 71.5 x 125.5mm (including brackets)

### Electrical Connections:

System supplied with a captive 25 metre length of 4-core 7/0.2 (0.22mm<sup>2</sup>) screened cable. For distances of up to 100 metres, the length can be extended by adding an additional length of 7/0.2 cable. For greater distances, up to a maximum of 200 metres, 16/0.2 (0.5mm<sup>2</sup>) cable should be used.



Side view:



### Receiver Architecture:

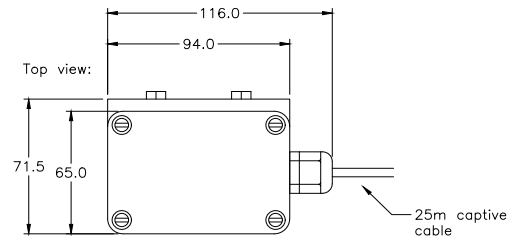
- 20 channel - capable of simultaneous tracking.
- Time to first fix - typically less than 1 min from cold start.
- Output of verified high accuracy time data within 10 min.

### Accuracy:

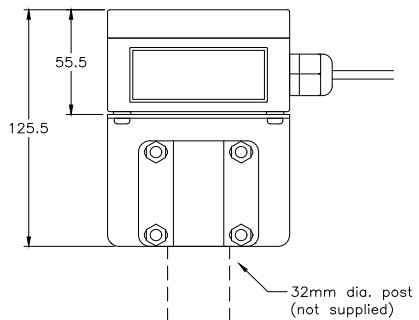
+/-50uS - 5000 Master clock output

### MTBF:

> 50,000 hours



Front view:



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