



GPS-ANT1HS GPS synchronisation antenna

Description:

The GPS-ANT1HS receiver system has been designed to allow 4860 and 5200 series master clocks, series 400 digital clocks and time zone displays to be automatically synchronised from the GPS satellite time transmissions. This provides a highly accurate source of time regardless of global location.

The GPS-ANT1HS receiver system is housed in a single IP66 rated case containing both the active antenna module and the receiver/decoder interface. The IP65 rated protective housing shields the GPS-ANT1HS 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 GPS-ANT1HS 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 32 mm 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 GPS-ANT1HS system is designed to self-initialise without the necessity of operator data input. On power-up the receiver will automatically begin to search the sky for all available satellites. After three satellites have been acquired a precise date and time will be calculated from the satellite data transmissions.

When the accurate satellite time information is available synchronising time signals are transmitted from the receiver/decoder module to the 4860/5200 master clock.

The connection between the GPS-ANT1HS synchronisation system and the 4860/5200 master clock is by a four core screened twisted pair cable up to 200 m long. This cable also provides power to the receiver/decoder module.

When the 4860/5200 master clock is synchronised with the GPS receiver/decoder module all transmitted signals are accurate to within +/- 50 µs.

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, real-time, worldwide navigation information at a frequency of 1575.42 MHz that anyone with a suitable GPS receiver can use to identify their position, together with a precise local time.

The GPS system 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 orbits every 12 hours at an altitude of 20,200 km (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 GPS receiver. The transmitted information includes current orbital data for each satellite. The GPS receiver is able to identify each satellite by its code and is able to calculate the satellite's exact position in space. The GPS receiver uses the calculated information to determine its distance from several satellites. The receiver then uses a process called triangulation to compute its own position together with a precise local time.

Technical data:

Receiver:	20 channel - capable of simultaneous tracking
Time to first fix:	Typically less than 1 minute from cold start. Output of verified high accuracy time data within 10 minutes.
Accuracy:	+/-50 µs
Cable connection:	including 25 m 4-core screened connection cable 7/0.2 (0.22 mm ²) For distances up to 100 m, the length can be extended by adding an additional length of 7/0.2 (0.22 mm ²) cable. For greater distances, up to maximum of 200 m, 16/0.2 (0.5 mm ²) cable should be used.
MTBF:	> 50.000 h
Operating temperature:	-25 °C ... +45 °C (ambient)
Dimensions (WxHxD):	116 x 71.5 x 125.5 mm (including bracket)
Weight:	400 g (without connection cable)



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