Global GNSS Installations Excellence

GNSS Installation Excellence from Chronos

APPLICATION NOTE

Introduction

GNSS installations are a highly specialised skill and Chronos' experienced team of engineers has installed over 1500 GNSS systems in more than 50 countries during the past 30 years. Our specialist team has considerable experience in conducting site inspections and installations, even in the most challenging of environments. Whether you require a single site or 200 sites worldwide, we have the skills and expertise to successfully implement and manage your project throughout to meet your requirements, timescale and budget.

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Poor GNSS installations cause systematic performance degradation or malfunction, potentially leading to failure of nearby systems by the introduction of RF interference. Optimal, reliable and durable GNSS infrastructure requires installation by engineers with a high level of understanding of GNSS signal architectures, RF engineering and knowledge of official standards associated with GNSS installation operations.

When customers contact Chronos requiring support for their timing equipment, our team has increasingly noticed that equipment which has been installed in-house or by third party cable contractors is not always up to the high quality standard which is required for precise timing to run a high-performance network.

Expertise

- Over 30 years experience of GNSS GPS installations
- Fully qualified, security cleared expert team certified for working at height and on flat roofs
- GNSS antenna in-line amplifier, lightning arrestor and associated RF cabling installations
- Global coverage
- Military and industrial applications
- Synchronisation and timing equipment installs
- Positioning, Navigation and Timing (PNT) applications
- Critical infrastructure installations

Antenna Location

Since GNSS satellites are approximately 12000 miles away in space, GNSS antennas should be mounted with a clear sky view to avoid degraded performance.

Degradation

Over time, the antenna housing or cables and connectors may degrade which can affect the way the antenna behaves. The antenna receives the native GNSS signal from the sky, it is then amplified and passed to the receiver somewhere in the building. Sometimes, weather extremes will degrade the electronics resulting in the amplified signal being reflected back through the antenna and impacting other GNSS antennas in close proximity. Nearby timing receivers may now start to exhibit relatively large time changes. These time variations could be many hundreds of nanoseconds. This can be avoided with careful placement of antennas.

GPS Installations Excellence

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Busy Roof Space

Busy roof space can also create problems with other systems such as line-of-sight radio links and electrical installations including air conditioning equipment radiating relatively high power or wideband interference.

GNSS Antenna Cable Runs

Cable runs up to a few 100m have been successfully deployed by Chronos installers. Many companies have their own 17th Edition electrical installers, however, this qualification is neither suitable, nor relevant to installing low loss RF cabling.

Lightning Protection

Lightning protection is primarily for the protection of life and to minimise damage to connected equipment. These photos show the devastating effect of poor grounding and poorly installed equipment. The antenna was mounted on a high point on the rooftop of the building and when lightning did strike, the entire installation completely vaporised!

GNSS Repeaters

Installing repeater technology is another area that must be undertaken by skilled personnel with RF gain and link budget experience; particularly where multiple repeaters are to be located near to each other such as in an aircraft hangar. Chronos has successfully installed GNSS repeater systems for military applications, commercial airlines, emergency services, car manufacturers and manufacturer who need to test GPS components on the production line.

GNSS Repeater Licensing

Ofcom has established a light licensing regime in the UK and Chronos can assist customers who wish to deploy indoor repeaters with the licensing

process to ensure that the repeater complies with the Wireless Telegraphy Act. Information relating to the Ofcom repeater standardisation process can be found on our web site.

Installations Expertise

The Chronos installation team has over 30 years' experience in conducting site inspections and installing GNSS / GPS equipment throughout the world for both military and civilian applications.

Working closely with our customers, installations are project managed by our team and backed up with a thorough risk assessment and method statement (RAMS). In line with our ISO 9001 philosophy, we ensure each installation is completed to our customers' entire satisfaction.

GPS timing equipment installation and integration is a highly specialised skill; our team of experts is here to help you get it right first time.