Case Study
London Stock Exchange

The Challenge

The London Stock Exchange is one of the world's oldest stock exchanges and can trace its history back more than 300 years. It is now the world's fourth largest stock exchange.

Following our successful implementation of a master clock system at the previous London Stock Exchange building in Central London some time before, we were tasked to provide a new 'microsecond accuracy time synchronisation' solution to numerous clients involved in sophisticated Algorithmic trading transactions.

The criteria was that our solution had to be GPS synchronised, have a degree of built-in redundancy and provide both NTP and IRIG timecode outputs.

The Solution

We provided a pair of M211 Modular Timing Systems working in parallel redundant configuration. This provided a more than adequate level of redundancy to fulfil the client's criteria but also kept the cost down (as opposed to a traditional dual redundant configuration).

In addition, we supplied a pair of FDA1050 Frequency Distribution Amplifiers to offer multiple timecode outputs, plus two NTP-synchronised M355 LED Digital Time Displays. Both the FDA1050s and M355s receive feeds from the M211 Timing System. The FDA1050s in turn feed into the client server which read the timecode signal as highly precise time information

The Result

The LSE was equipped with a fully synchronised, highly reliable master clock system, generating both NTP and IRIG timecode outputs in line with their criteria.

In addition, their internal systems have precisely synchronised time throughout the entire network.

The feedback has been positive and the number of Stock Exchange clients has grown since the installation was completed.
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M211 Parallel Redundant System

Configuration for LSE

M211 Modular Time & Frequency System

- Ideal where synchronisation of many different output interfaces is required
- 9-slot module output capacity
- Choice of clock synchronisation options
- Choice of master clock accuracy
- Large range of output options
- 3 U high standard 19" rack mount
- 5 button front panel keyboard for equipment configuration and control
- Alphanumeric display of time, date and status
- Equipment configuration stored in non-volatile memory
- Synchronised to an external time and frequency source
- High accuracy internal oscillator options available
- Remotely controllable

Each of the pair of M211's was fitted with the following to comply with the requirement criteria:

• Long Distance GPS Antenna System

Provides a stable GPS time input overcoming any signal loss experienced when routing the GPS L1 carrier over long cable lengths to the master clock system.

• NTP Time Server Module (100-BaseT)

Distributes time information across an Ethernet network using Network Time Protocol (NTP). Client systems and Sub-Timing Systems can then be synchronised to the timeserver by accessing it across the network. Inclusion of this module also provides the capability of remote monitoring of the entire CTS using SNMP.

• Intelligent 5-channel Timecode Module
Generates five independent IRIG-B timecode outputs. Intelligent data processing is achieved through an on-board CPU.

FDA1050 Distribution Amplifier

- Ideal where a frequency from a master system must be distributed to several local or remote areas or sub systems
- Multiple frequency outputs from a single input source
- Up to 10 independently buffered output channels
- Wideband circuits allow any frequency distribution up to 10MHz.
- LED status indicator for each output channel
- 1U high 19 inch rack-mountable enclosure
- Outputs via back panel as option

M355 LED Digital Time Display

- Clear indication of time for interior applications
- Single-sided display
- Seven segment high-intensity LED digits
- Choice of 4, 6 or 9 digit
- Available in Serial/Timecode or NTP versions
- Excellent readability through clear glass or acrylic window
- Wall or desk mounting options available
- Range of colours and styles available

M211 High Capacity Modular Time & Frequency System

FDA1050 Frequency Distribution Amplifier

M355 LED Time Display

TIME & FREQUENCY SOLUTIONS LTD