



CASE STUDY

NIHON KOHDEN AMERICA

Medical Equipment Manufacturer
Improves Neuro-diagnostic Reach

Nihon Kohden is a leading manufacturer and developer of medical electronic equipment in Japan with over 650 sales staff and distribution in over 100 countries.

Nihon Kohden America is a wholly owned subsidiary of Nihon Kohden Corporation, Japan, who for more than 50 years, healthcare providers worldwide have relied on for the quality and reliability of comprehensive and innovative neuro-diagnostic and monitoring instrumentation to aid in the diagnosis, information and treatment of their patients. The breadth of their Neurology product portfolio includes epilepsy monitoring, EEG (Electroencephalography), ambulatory recording, Polysomnography, Intra-operative and ICU monitoring, EMG, nerve conduction and evoked potentials (evoked response).



CHALLENGES

- Extending amplifier reach beyond 16 feet (5 metres)
- Powering amplifier through USB connection
- Grounding requirements based on equipment specifications

The Situation

Nihon Kohden Neurofax EEG-9200A is a 32 channel EEG system which measures the electrical activity produced by the brain and incorporates highly sensitive amplifiers with high frequency multichannel sampling capable of operating accurately both in electrically noisy exam and operating rooms, sleep labs and epilepsy centres.

SOLUTION

- ExtremeUSB over Cat 5 at up to 100 metres
- Modified output power and unique grounding circuitry



Due to the extreme precision required to meet the EEG's specifications, Nihon Kohden required high reliability and exacting accuracy in every component in the product. Nihon Kohden's engineers designed the Neurofax EEG for perfect performance for the scanning of brain activity, however they faced challenges when trying to locate the computer in a different room from the amplifier due to the 16 feet (5 metres) distance limitation imposed by the standard USB connection. The product design team was also looking for the USB connection to power the Neurofax EEG in order to give their customers flexibility in EEG location.

"Just like the Ranger 110 product, working with Icron has been seamless and straightforward. USB extension is an integral component of our EEG systems and Icron has really helped ensure that our customers have maximum flexibility in the location of the PC and amplifiers."

- Bryan Kehoe, Business Unit Manager, Nihon Kohden America, Inc.

The Solution

Nihon Kohden tested several USB extenders in the market, but rejected them due to reliability issues and lack of ability to boost the output power of the USB ports to support the amplifier's larger power requirements. "There are inexpensive USB extenders out there, but we wanted a product that was easily customizable to deliver the power requirements we needed and worked flawlessly with our extremely precise equipment." said Bryan Kehoe, Nihon Kohden America Business Unit Manager. Nihon Kohden tested Icron's Ranger 110 product with their EEG machines and it proved to be the most reliable USB extension product on the market. Icron was also able to modify the Ranger 110 to increase the USB output power to meet the Neurofax power requirements. A second modification to the Ranger 110 was a small change to grounding circuitry to ensure there was no interference with the sensitive EEG machines.

With so much still unknown about the human brain, the Neurofax EEG-9200 and Digital EEG-1100 are tools that are helping us understand more about how the brain works through diagnosing, monitoring, and collecting advanced research data on the brain. Nihon Kohden's EEG machines are in use worldwide in hospital operating and emergency rooms, epilepsy centres, and a variety of research facilities. Bryan Kehoe says "Just like the Ranger 110 product, working with Icron has been seamless and straightforward. USB extension is an integral component of our EEG systems and Icron has really helped ensure that our customers have maximum flexibility in the location of the PC and amplifiers."

Nihon Kohden's Neurofax EEG-1100A instruments required a flawless USB extension solution coupled with higher output power for their high end amplifiers. Icron's Ranger 110 extended the maximum USB distance from 16 feet (5 metres) to 328 feet (100 metres) and with some modifications was able to seamlessly power the EEG amplifiers. Icron's ExtremeUSB® USB extension technology proved to be a critical component in the success of Nihon Kohden's breakthrough EEG product line.

About Icron

Icron Technologies' patented ExtremeUSB® technology extends the range of USB in any wired (Cat 5, Fibre, Coax, Powerline) or wireless environment. ExtremeUSB is the only USB extension solution that is USB-IF compliant. Icron's products are deployed globally in a wide range of applications including: industrial automation, medical device, aerospace, KVM and digital home connectivity. ExtremeUSB technology is available in a variety of formats including technology licenses, OEM modules, developer kits, as well as branded and private-label products.

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