HMS Networks acquired Red Lion Controls

End of last year, the CiA member HMS Networks (Sweden) entered into a binding agreement to acquire Red Lion Controls (U.S.A.), also a CiA member. Both companies offer products with CAN-based interfaces.

Figure 1: "The companies are a great match both when it comes to products, geographic presence, and cultural aspects," stated Staffan Dahlstroem (Source: HMS)

The acquisition of Red Lion Controls represents a key milestone in HMS's growth strategy, bringing together two innovators in the industrial automation sector. This collaboration leverages the complementary strengths of both companies, providing customers with a comprehensive suite of cutting-edge solutions designed to meet the evolving demands of the Industrial Internet of Things (IIoT) landscape.

"The combination of Red Lion's product portfolio, which is complementary to HMS' offering and has limited overlap, and the geographic match with Red Lion having a strong position in the attractive North American market, and HMS with its core markets in Europe, will generate good cross-selling opportunities," said Staffan Dahlstroem, CEO (chief executive officer) of HMS. The Swedish company sells generic CAN-connectable interfaces and tools under the Ixxat brand.

Red Lion Controls, known for its advanced automation and networking solutions, contributes its expertise to further enhance HMS's portfolio. Marcel van Helten, President of Red Lion Controls stated: "This is a great step for Red Lion. I would like to thank Spectris and Andrew Heath for their support in our growth over the past several years. I am looking forward to being able to work with the HMS team to make this a great success."

In the first glance, there will be no changes for the customers: Both companies produce and ship their products as before. In the future, the merger of the two companies will provide synergies, especially as it widens the American market for HMS and the European market for Red Lion. The greatest proportion of Red Lion's sales comes from North America, through its distributor network that HMS will be able to utilize to drive sales of HMS' gateway and remote access offering. With about 60 percent of its sales in the large automation markets in Europe and well-developed and targeted market channels, HMS will be able to cross-sell selected Red Lion's products in Europe.

HMS Networks offers several CAN, CANopen, and DeviceNet interface modules for its Anybus series. Additionally, the company provides the ET 200S CAN interface module for Simatic host controllers from Siemens. The Swedish company uses the Ixxat brand to promote a broad range of CAN-related products. Ixxat has been acquired in by HMS in 2013.

J1939 and CAN sleds

Recently, Red Lion Controls has expanded its Flexedge modular automation device platform by means of J1939 and CAN sleds. Additionally, the company has introduced configurable strain-gauge modules. They come in both SSR (solid state relay) output and relay output options. Both offer single loop PID capabilities to monitor, to measure, and to control equipment. Designed to thrive in harsh environments, the modules accept signals from load cell, pressure, and torque bridge transducers. With a software-selectable 5-V_{DC} or 10-V_{DC} bridge excitation voltage, each strain-gauge module can drive up to four 350-W bridges. The inputs are also software selectable for low-level inputs at ±20 mV, ±33 mV, and ±200 mV (full scale).

The J1939 and the CAN sleds provide galvanic-isolated CAN ports. The on-board termination resistor is switch selectable. It is rated for 100 Ω at 1 W. The CAN sled provides two channels, supporting bit rates up to 1 Mbit/s. The J1939 sled is specified for a bit rate of 250 kbit/s. These sleds can be powered and configured from the Flexedge DA50 or DA70 controller using Red Lion's Crimson software.

CAN driver software on Github

For the PC-to-CAN interface modules under the Ixxat brand, HMS offers on Github regularly updated software drivers, APIs (application programming interfaces), and programming examples. This includes .NET, VCI-interface, .NET-wrapper, and Python support for various CAN interfaces. These software packages offered free of charge are continuously maintained and updated.

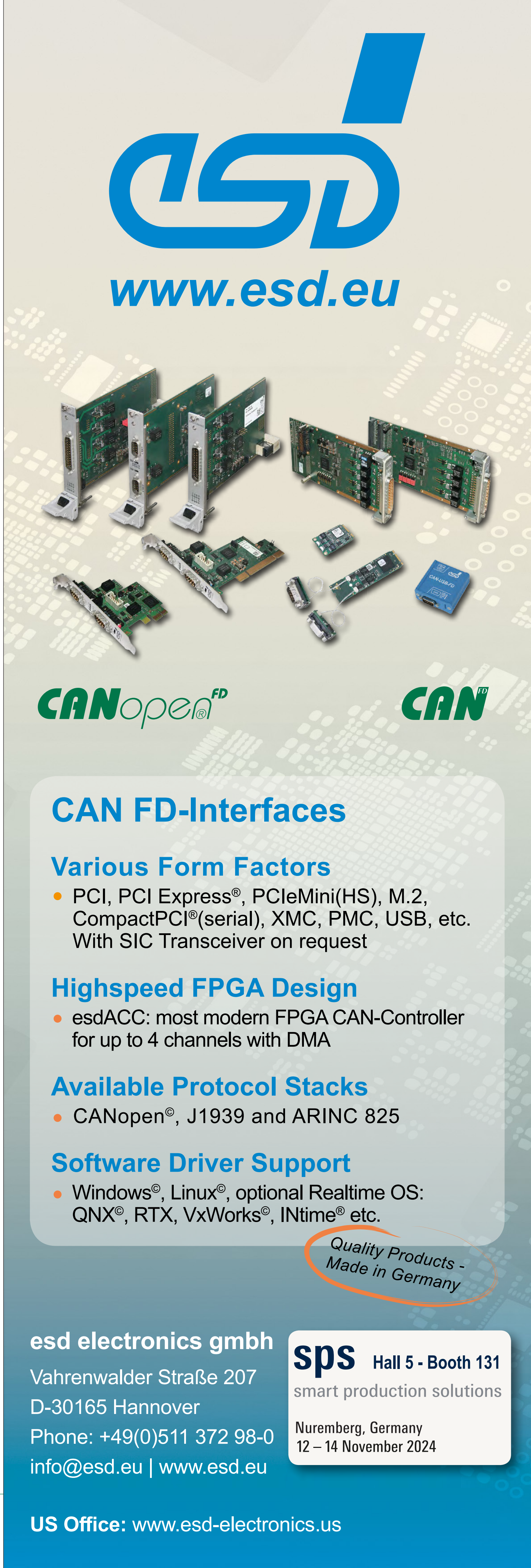
Figure 2: Several free-of-charge CAN-related software products are available on Github (Source: HMS/Ixxat)

In addition to HMS' own .NET package, a Python interface is available on the open-source platform that supports CAN interfaces from various manufacturers. In combination with the Ixxat VCI-V4 driver, the Python package enables access to the Ixxat interface modules for sending and receiving CAN data frames.

CAN in battery energy systems

HMS Networks offers communication solutions for the growing battery market, focusing on battery energy storage systems (BESS). They support CAN connectivity, remote monitoring, and integrate various devices in large battery parks.

Since "green" energy sources, such as wind and sun light, are not always available, large battery parks can make it possible to store the energy to use when there is less sun or wind. A BESS is made up of battery cells, which are combined into battery packs, which can then be combined into containers. The latter in turn, can make up ▷



battery parks with the size of several football fields. It can use new or recycled batteries and combine many different components. However, these large battery parks need a lot of communication capabilities in order to work. HMS now presents a comprehensive package of communication solutions catered for this application area.

Figure 3: Battery energy storage systems (BESS) often use CAN-based networks applying gateways to integrate other communication technologies (Source: HMS/Ixxat)

Since the battery market has been spearheaded by the car industry, CAN is often the communication system of choice. Here, HMS offers a portfolio of communication solutions via the Ixxat brand – for PC connection, networking, line extension, galvanic isolation, and more. In networking, the protection of devices is crucial, both from external sources (like lightning strikes) and from system-related issues (AC/DC noise). Device protection is a must to avoid damages. Therefore, a BESS often combines a variety of different equipment from different industries within a single application – batteries, BMS (battery management system), PLCs (programmable logic controller), fire-detection units, or air-conditioning systems. To combine different equipment, it is necessary to interconnect various communication systems. CAN/CANopen, Modbus, BACnet, KNX, and other protocols can be linked via gateways from HMS, which handle the data exchange while also enabling centralized control. In addition, these gateways can selectively filter, map and, if necessary, manipulate the data in order to realize the best possible data exchange.

One of the customers is Super-B in the Netherlands. The Dutch company offers lithium iron phosphate batteries. Its battery management system (BMS) is based on CAN/CANopen products by Ixxat. It enables an increased power outtake as the batteries can be connected to a chain. Another important feature is connecting batteries to external systems by means of a CAN-to-USB dongle. The BMS also comprises the protocol software by Ixxat as the basis for the operating system of the CANopen-based monitoring system.

The BMS can adapt the balancing according to the battery charge and discharge current, as well as balancing individual batteries, if they are connected to the CAN network. The system is also used to monitor the batteries' state, to report secondary data, to protect the battery, to control the environment, and to balance it. This is done by transmitting battery alarms and information to the CAN interface so it can be displayed on a PC. The system can manage over-voltage, under-voltage, deep-discharge as well as over-charge and can control the temperature of the batteries. Furthermore, the Ixxat bootloader enables the remote update of the multi-processor firmware inside the battery.

"The Ixxat protocol software stacks were especially well-suited for this project as they enable very quick re-connect times", said Kurt van Buul from Super-B. "The batteries are always on, even if they are not discharging energy, but the CAN bus can go up and down, and therefore it is important that the re-connecting does not take a long time." The project was accompanied by the HMS partner Twincomm located in Veldhoven, Netherlands.

"We have very skilled programmers in-house for our own electronics systems, but we needed help to implement the CANopen parts," explained Super-B engineers. "Twincomm did a really good job implementing the system and the Ixxat USB-to-CAN V2 product works great with very few issues. We have had to work a bit with the stacks to get them working the way we want, but we've found that the support from Twincomm and HMS has been quick and efficient, which has been important for us."

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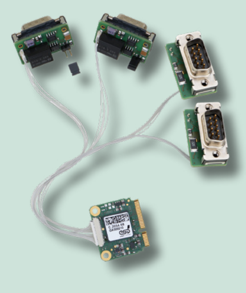
PCI Express mini with four CAN FD ports

ESD Electronics released CAN-PCIeMiniHS/402 interface board in PCI Express mini half-size format. The card enables expansion with up to four CAN FD ports in tiny computers and SBC (single-board computer) applications. The interface card is also available as a variant with extended temperature range. The four ports are connected to the CAN network via separate compact D-Sub 9-pin adapters with integrated galvanic isolation and on-board CAN terminating resistors that can be switched via jumpers.



CAN-PCIeMiniHS/402 interface board (Source: ESD Electronics)

For the exchange of CAN data, the card has an integrated bus-mastering unit (first-party DMA). At high data rates, this reduces the CPU load on the host system and the overall system latency.

Thanks to the support of MSI (message signaled interrupts), the mini card is suited for use in hypervisor environments. In addition, the module supports high-resolution 64-bit hardware time-stamps to enable high-precision reception and sending of CAN frames.

Software drivers for Windows and Linux are included in the delivery. On request, the company also provides drivers for various real-time operating systems such as QNX, RTX64, VxWorks, etc. Individual adjustments to hardware or software can be implemented according to the customer's requirements.

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