

Hardy Chooses netX to Deploy PROFINET in Weight Controller



Hilscher's chip simplifies certification, speeds market launch

Weighing company Hardy Process Solutions has added PROFINET communications to its HI 6200 single-channel weight controller/indicator.

The decision to implement PROFINET came about because of growing home market demand, and the fact that Hardy is increasingly supporting world markets where PROFINET has achieved significant market penetration. There's also a growing trend for the adoption of IoT strategies.

"We've always been protocol agnostic," says Tim Norman, Hardy Product Manager. "For example, back in the days of the fieldbus wars, we were one of the first North American companies to introduce PROFIBUS into our products, to complement the protocols used here in North America. We strongly believe that our customers should be free to use whatever communications protocol they prefer."



Figure 1: The HI 6200 single channel weight controller/indicator has been upgraded to support PROFINET using Hilscher's netX 52 networking chip.

The HI 6200 has been available with EtherNet/IP, ModBus and Ethernet TCP/IP communications since launch. The decision in 2020 to add PROFINET came about because a significant amount of product sales now come from European, Asian and South American markets. Norman says there's a clear need to support the widest range of international standards. "The increasing trend towards deploying IoT, particularly remote monitoring, means that our products must have the latest technologies available," says Norman. "That requires ever more and better connectivity. We see PROFINET as key in those global markets."

The HI 6200 is an ultra-compact, DIN rail-mounted device measuring just 2 inches wide and 3.25 inches high. It allows for high-density panel designs compared with traditional weighing instrumentation, reducing both machine costs and control cabinet footprints. It has a 32-bit ARM core for processing which, along with Hardy's proprietary WAVESAVER technology and a single-button-press calibration method, delivers accurate, stable and fast weight readings in the type of adverse conditions that plague process control.

The HI 6200 supports proactive maintenance strategies while delivering the benefits of IIoT device-level connectivity through built-in web servers or directly via the UDP transport layer. It can also be used as a co-processor for a control system such as a PLC, DCS or PAC, delivering 100 updates per second of processed weight data at resolutions exceeding 1:10,000.

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Integrating PROFINET proved to be a bigger challenge than expected, mainly because the ultra-compact design means there are limited resources available on the current motherboard. Norman says, "We initially purchased a PROFINET software stack to reside on our existing Ethernet platform. However, the stack required an extensive rework and optimization, and after many months of engineering effort it still wouldn't pass PROFINET certification. As we were in a hurry to get the product released, we decided to stop that approach and look for an integrated hardware and firmware solution."



Hilscher's netX Family Provides Multiprotocol Solutions

Hilscher's netX family of network adapters were introduced over 20 years ago, when the industrial world was riven with incompatible connectivity protocols. Hilscher sought to make things easy by offering solutions that made interoperability possible. The resulting products — many of which remain a necessity today — include PC interface boards, embedded boards, network gateways, chip carriers, network bridges, protocol converters and much more. Central to the portfolio is the **netX chip family**, which began with the netX 5, a fieldbus node. The netX family has continually expanded in response to technological advances and growing market demands such as real-time Ethernet systems, remote connectivity, security, Industrial Internet of Things (IIoT) and cloud-based strategies.

The netX family supports all popular networking protocols. Users deploy their protocol of choice by simply changing the firmware. Fully certified protocol stacks are available. This removes the headache of network implementation, allowing developers to concentrate on their application.

The netX 52 used by Hardy Process Instruments remains a popular solution. However, Hilscher is also leading the move to direct field-to-internet connectivity. The netX 90, a recently launched chip, features two ARM processors, one supporting the external networking side and the other supporting the application side. Separation enhances network security while Root of Trust concepts such as Secure Boot make the chip highly resistant to attack.

Protocol choice is firmware-based as usual. The application side offers soft support for sensor input types, plus resources for local application processing. Chip-carrier versions of netX 52 and netX 90 are available to speed development time. Upcoming products will deliver sophisticated solutions for controller class applications.

Hilscher complements netX with cloud-based data processing systems such as sensorEDGE and netFIELD, which can transmit data directly to the cloud for remote monitoring and enterprise processing. Hilscher also offers application-specific solutions based on netX; for example, netMOTION for motion control. Visit **Hilscher** for more information.

Hardy evaluated several possible options and chose to use the netX 52 chip from Hilscher. "Our engineering staff already had experience with this chip from an earlier product upgrade to our HI 4050+ single-scale weight controller," says Norman. "That's quite an old product but we were able to add PROFINET using the netX 52. So, it made sense to use the same chip when upgrading the HI 6200."



Hardy's HI 4050+ already uses the netX 52 to support PROFINET communications.

Part of Hilscher's netX family of network interfaces, the netX 52 is a PROFINET node device. The netX range is unique — devices support all popular industrial networking protocols by deploying appropriate firmware. The netX 52 supports up to 14 industrial networking protocols. Fully certified stacks are available for all supported protocols and simply loaded into a chip as needed.

Using netX devices enables an OEM to create a single hardware platform and install the communications protocol after manufacture to meet a customer's particular requirements. Hilscher provides starter kits for developers and offers full engineering support.

Engineers from Hardy Process Solutions visited Hilscher North America in Chicago on several occasions to receive local engineering training and guidance. With the netX 52, it took Hardy less than six months to achieve a certified PROFINET weighing solution for the upgraded HI 6200.



The netX 52 chip is shown on a typical network adaptor board.

Now the company is looking to use the netX 52 a third time, in a future flagship product designed to meet the growing demand for a weight controller that can support IoT-compliant systems and strategies.



ABOUT HILSCHER

Hilscher Gesellschaft für Systemautomation mbH (www.hilscher.com) is a global specialist in network connectivity solutions for device makers, OEMs, and end-user manufacturers. Founded in 1986 and with locations worldwide, Hilscher focuses on industrial communications, with solutions spanning single-chip ASICs, embedded modules, PC cards, protocol converters and gateways, along with supporting software and development tools and services.

Hilscher's own netX "[system-on-a-chip](#)" network controller is at the heart of every solution. netX allows for universal Master and/or Slave connection to all popular communications protocols, including: Fieldbuses, such as DeviceNet, Modbus, CC-Link and PROFIBUS; Real-Time Ethernets, such as EtherNet/IP, EtherCAT, PROFINET, Modbus TCP, CC-Link IE, POWERLINK, Sercos; TSN; and IIoT protocols, such as OPC UA and MQTT.

To bring the benefits of Industry 4.0 and the Internet of Things to its customers, Hilscher has developed the [netFIELD portfolio](#), a solutions platform for simplifying IIoT deployment. The netFIELD portfolio comprises: netFIELD Sensor-level Devices; netFIELD Edge Gateways; netFIELD Cloud, with a Software-as-a-Service Platform and Portal; and netFIELD Applications to provide functions such as configuration and connectivity to automation protocols and commercial clouds.

Hilscher North America, Inc., based in a Chicago suburb, is a wholly owned subsidiary of Hilscher Gesellschaft für Systemautomation mbH.

