

News Release

FOR IMMEDIATE RELEASE

Hitachi Group Develops Next-generation Industrial Controllers for IoT and Global Rollout; Sales to Begin Next Spring

Achieves high performance and simple configuration with open technologies

Tokyo, Japan, November 16, 2015 --- Hitachi, Ltd. (TSE: 6501, "Hitachi"), Hitachi Industrial Equipment Systems Co., Ltd. ("HIES") and Hitachi Industry & Control Solutions, Ltd. ("Hitachi Industry & Control Solutions") announced today that they have developed next-generation industrial controllers that achieve high performance and simple configuration with open technologies, to accommodate global rollout and the Internet of Things (IoT^{*1}), which is the latest trend in the industrial world. The middle range version of these next generation industrial controllers will be offered by HIES, and the high-end version by Hitachi Industry & Control Solutions. Sales are set to begin in stages from April 2016. The controllers will be marketed to a broad range of industries; most notably, the packing machinery, material handling equipment, machine tool, semiconductor/liquid crystal manufacturing equipment, and instrumentation fields.

In recent years, in the manufacturing industry, along with the globalization of the supply chain, there has been a demand for a revolution in production and services using IoT. In that backdrop, many companies are conducting activities in the field of automation systems, focusing mainly on Programmable Logic Controllers^{*2}, which control various plant facility devices, and IPCs (industrial PCs), which are responsible for gathering data from facility devices and communicating with servers and other higher level information systems. In addition to controlling facility devices, by seamlessly transmitting information on facility devices to the cloud and analyzing that information, these companies are striving to optimize entire plants and the supply chain as a whole. In the past, however, because automation systems have been constructed by combining unique networks with PLCs running original programming languages that differ from one manufacturer to the next, it has been difficult to ensure affinity in communications with facility devices in the context of IoT, and to secure engineers with sufficient expertise for global rollout.

In order to respond to these issues, the Hitachi Group created a series of next-generation industrial controllers to accommodate IoT and global rollout. Following are the main characteristics of the recently developed industrial controllers.

(1) Open Technologies

By adopting a programming language that is in conformance with IEC61131-3^{*3} international standards, the new controllers make it easy to secure programming engineers throughout the world, and supports the construction of global production systems. Furthermore, the adoption of EtherCAT^{*4}, an open industrial network that has rapidly gained popularity in recent years, enables connections with many facility devices that support EtherCAT, providing an environment in which data can be transmitted seamlessly to the cloud.

(2) High Performance

By leveraging CPU performance that has been characterized by increasingly rapid processing speeds in recent years, and by incorporating CODESYS^{*5}, a software PLC^{*6}, a single CPU in the controller is able to simultaneously execute sequence control^{*7} (controls implemented according to a previously determined order) and advanced motion control synchronized with sensors.

(3) Simple Configuration

Hitachi has developed a series of next-generation industrial controllers as PAC^{*8} (programmable automation controllers) with both PLC and IPC functions. These controllers have a smaller footprint than existing systems, and contribute to reductions in the cost of introduction, development, and maintenance.

The introduction of these next-generation controllers supports the shift to open technologies in the customers' automation systems, while at the same time reducing costs and the burden on engineers, thereby achieving compatibility with IoT and simplifying global rollout.

Hitachi is strengthening its global competitiveness in the industrial device business – for example, by establishing the Industrial Products Company on May 1 of this year – and is devoting its energy toward expanding business in the IoT field through open innovations. The industrial controllers scheduled for release next spring were developed based on these policies. By actively marketing products, Hitachi, HIES, and Hitachi Industry & Control Solutions will contribute to the development of industries throughout the world.

*1 IoT (Internet of Things): Technologies that expand the range of “things” connected to the Internet, going beyond the current scope of PCs, servers, and other IT devices.

*2 PLC (Programmable Logic Controller): A type of miniature computer, generally used for control in factory automation applications.

*3 IEC61131-3 standard: An international standard issued in December 1993 by the International Electrotechnical Commission (IEC), defining five types of programming languages for PLC applications: Ladder Diagram (LD); Sequential Function Chart (SFC); Function Block Diagram (FBD); Structured Text (ST); and Instruction List (IL).

*4 EtherCAT: A patented technology licensed by Beckhoff Automation GmbH in Germany, and a registered trademark for that technology. EtherCAT (Ethernet for Control Automation Technology) is an Ethernet-based open network for industrial applications. It is a control network for factory automation equipment such as semiconductor manufacturing equipment, electronic parts assembly equipment, and plastic processing machines, which demand high speed and high synchronization accuracy.

*5 CODESYS: A programming system, offered by 3S-Smart Software Solutions GmbH in Germany, that is in compliance with the international standard IEC61131-3, and the registered trademark for that programming system.

*6 Software PLC: Programming environment / execution environment software to achieve PLC functions on general-purpose computer operating systems.

*7 Sequence control: A system in which controls are executed one by one in stages, in accordance with a previously defined order or procedure. Used in a variety of fields, including household electrical fixtures and automated control devices at production plants.

*8 PAC (Programmable Automation Controller): A new type of controller with functions that respond to a variety of needs, in addition to typical existing PLC functions; for example, more advanced controls, multifunction networks, and human machine interfaces (HMI).

Middle range unit: The “HX Series” Next-generation Industrial Controller for IoT Applications (HIES)



Fig. 1: Image of the “HX Series” controller

Leveraging the technical expertise that it has cultivated over many years as a PLC manufacturer, HIES will begin sales of four middle range controller models in April 2016 for IoT applications: a standard model, a high functioning model, a motion model, and a redundancy model.

The HX Series controllers are compact units that can be installed in facility devices. The main CPU module is equipped with three built-in LAN ports (in the high functioning, motion, and redundancy models), so the controllers can communicate independently on three network systems: with facility devices, industrial controllers, and higher-level information systems. The three LAN ports can also be used to achieve a variety of communications.

- HX Series specifications

Item / CPU Model		Standard	High functioning	Motion	Redundancy
Processing method		Stored program cyclic processing			
External I/O	I/O updating cycle	Refresh processing			
	Maximum number of points	4,224 points, when using 64-point module			
	Number of mounted module	66 (max.)			
	Number of expansion base	5 (max.)			
Program memory	User programs	8MB	16MB		
	Source programs	8MB	16MB		
Data memory	Non retain	8MB	16MB		
	Retain	0.5MB			
Programming language	PLC languages	Five languages, in conformance with IEC61131-3 standard			
	Motion language	–	–	PLCopen library + CNC (G code)	–
Interface (CPU module)	LAN ports	2 ports (support EtherCAT)	3 ports (support EtherCAT)		3 ports (support EtherCAT redundancy)

	USB host	USB 2.0 A Type x1
	USB function	USB 2.0 Mini-B Type x1
	Serial port	RS-485 x1
	SD card	SD/SDHC 32GB x1
I/O module	Accepts EHV Series module	
Communication and network module		

High end unit: The “HF-W/IoT Series” Next-generation Industrial Controller for IoT Applications (Hitachi Industry & Control Solutions)



Fig. 2: Image of the “HF-W/IoT Series” controller

Hitachi Industry & Control Solutions will begin sales in April 2016 of two high-end models – a single disc model and a RAID model – for IoT applications. These controllers leverage the expertise that Hitachi Industry & Control Solutions has cultivated through its “HF-W Series” industrial computers, which demonstrate high reliability, and which assume long usage periods (up to 10 years) and 24-hour continuous operations.

Featuring a CPU equipped with an Intel® Core™ i3-4360 processor to enable high processing performance, these controllers also offer high volume data storage, and demonstrate excellent affinity with operators based on the Windows human-machine interface.

- HF-W/IoT Series specifications

Item	Single disc model	RAID model
OS	Windows 10 IoT Enterprise (64bit)	
Software PLC	Five languages, in conformance with IEC61131-3 standard	
Software motion	PLCopen library	
Processor	Intel® Core™ i3-4360 Processor 3.7GHz (2Core/4thread)	
Main memory	DDR3: 4 slots; 4GB/8GB/16GB (with ECC)	
Display resolution/colors	Display Port: Resolution: 3840x2160; DVI-I, DVI-D: Resolution: 1920x1200	
HDD (3.5inch Type)	500GB	500GB x2
DVD	DVD MULTI drive	

Expansion slots		PCI x1, PCI-E (x16) x1, PCI-E (x4) x1
Standard I/O interface	LAN ports	2 ports (support EtherCAT)
	USB ports	Front: USB2.0 x2; USB3.0 x2 / Back: USB3.0 x4
	Serial port	RS-232C x1
	Audio	Line out x1; line in x1
External dimensions: (WxDxH)		93mmx356mmx325mm (excluding rubber feet and stand)
Power supply		AC100-240V, 50/60Hz, 300W or less
Ambient temperature		5-40°C
Repair period		Standard: 7 yrs. (max. 10 yrs.)

Trade show exhibits

- Embedded Technology 2015
 Dates: November 18 (Wed.) – 20 (Fri.)
 Location: Pacifico Yokoyama, Japan
 Exhibit models: HF-W/IoT Series

- SPS IPC Drives 2015
 Dates: November 24 (Tues.) – 26 (Thur.)
 Location: Nuremberg, Germany
 Exhibit models: HX Series

- System Control Fair / Measurement and Control Show 2015
 Dates: December 2 (Wed.) – 4 (Fri.)
 Location: Tokyo Big Sight, Japan
 Exhibit models: HX Series and HF-W/IoT Series

- SEMICON Japan 2015
 Dates: December 16 (Wed.) – 18 (Fri.)
 Location: Tokyo Big Sight, Japan
 Exhibit models: HF-W/IoT Series

Notes:

- PLCopen is an organization that promotes the proliferation of IEC61131-3, an international standard for PLC programming languages. The “Motion Control Function Block” represents technical specifications that promote global standardization as part of the organization’s activities.
- “Windows” is a trademark or registered trademark of Microsoft Corporation in the United States and other countries.
- Intel and Intel Core are trademarks of Intel Corporation in the United States and other countries.
- When exporting this product, please undertake the necessary procedures after confirming regulations based on foreign exchange and foreign trade laws, as well as American export control regulations and other export related laws and

regulations in the relevant countries.

Inquiries

[Person in charge: Mr.Azumi]

Control Systems Department, Electrical Systems Engineering Division,
Electrical Systems Division, Industrial Products Company, Hitachi, Ltd.
AKS Building
3 Kanda Neribei-cho, Chiyoda-ku, Tokyo 101-0022, Japan
Tel: +81-3-4554-2620

[Person in charge: Mr. Fujita]

Business Planning Department, Business Operations Group,
Drive Systems Division, Hitachi Industrial Equipment Systems Co., Ltd.
AKS Building
3 Kanda Neribei-cho, Chiyoda-ku, Tokyo 101-0022, Japan
Tel: +81-3-4345-6072

[Person in charge: Mr. Kawaguchi, Mr. Shimizu]

Marketing and Sales Promotion Department, Sales Group,
Hitachi Industry & Control Solutions, Ltd.
Akihabara Daiei Building
6-1 Akihabara, Taito-ku, Tokyo 110-0006, Japan
Tel: +81-3-3251-7253

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges with our talented team and proven experience in global markets. The company's consolidated revenues for fiscal 2014 (ended March 31, 2015) totaled 9,761 billion yen (\$81.3 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes power & infrastructure systems, information & telecommunication systems, construction machinery, high functional materials & components, automotive systems, healthcare and others. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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