Open architecture...

Enabling you to operate and monitor your process anywhere, anytime using commercial off-the-shelf (COTS) components. STARDOM autonomous controllers are FOUNDATION fieldbus™ certified and can be adapted to your infrastructure to integrate all process information.

Predictive maintenance...

Bringing you maximum return on your assets. Besides reliable control function, STARDOM autonomous controllers offer full maintenance functionality with all the benefits of FOUNDATION fieldbus collaborating with PRM, and become compact asset management systems with minimum investment.

Remote operation...

Allowing you to operate facilities distributed over a wide area, in real time. STARDOM autonomous controllers have great remote management and stand-alone capability, and reduce running costs by making flexible use of e-mail, the Web, and SCADA technology.

Open and powerful communications without limits...

...through the simple implementation of the latest information technology on reliable hardware. Whatever your challenge, the answer is STARDOM, the Network-based Control System (NCS).

Open System
- Easily fitted into your existing network infrastructures and systems
- Offers total solution for your process, collaborating with all Yokogawa products

Reliable Hardware
- Industry specific installation, environment resistance
- Dual redundant configuration for all key components including CPU, FOUNDATION fieldbus module, and power supply
- Rich self diagnostic features and rugged design

Network Ability
- TCP/IP based flexible network configuration
- Compliant with FOUNDATION fieldbus, HART, Modbus, DN3, DeviceNet
- Dual redundant control, FOUNDATION fieldbus and OPC networks

Engineering Efficiency
- Supports all five IEC61131-3 programming languages
- Application encapsulation for the secure reuse of your know-how
- Extensive libraries reduce engineering workload

Autonomous Functions
- Monitoring and operation via the Web and alarm notification via e-mail
- Data storage and transmission using FTP
- Easy GUI-based configuration of information transmission settings

vigilantplant®
The clear path to operational excellence

STARDOM™ is a core building block of Yokogawa’s VigilantPlant® solutions that promise to bring operational excellence to visionary plants, creating an environment where plant personnel can See Clearly, Know in Advance, and Act with Agility. The VigilantPlant solutions eliminate unplanned downtime, improve asset utilization, and allow businesses to adapt to shifting market conditions and customer demands quickly and efficiently.
STARDOM autonomous controllers can be easily adapted to your network infrastructure and your existing systems. Combined with other Yokogawa products, STARDOM autonomous controllers offer a high-performance total solution.

One network...

The use of TCP/IP enables a seamless connection between control and information networks using COTS network components. Also, STARDOM autonomous controllers can be easily adapted to existing high- and low-bandwidth network infrastructures employing a PSTN, leased line, ISDN, GSM/GPRS, satellite, RF, xDSL, or optical fiber connection.

...but dual redundant...

A dual redundant network configuration is a fundamental prerequisite for reliability in control systems. STARDOM autonomous controllers enable complete redundancy in control, field and OPC networks.

Open System

How comprehensive is a STARDOM solution?

STARDOM autonomous controllers integrate production data with MES, MIS, and other types of management systems, guaranteeing continuous control while maximizing your return on assets.

HMI (Human Machine Interface) and SCADA (Supervisory Control And Data Acquisition) Solutions

- Yokogawa VOS (Versatile Data Server) SCADA system
  VOS software running on COTS PCs uses leading-edge Web technology that is well suited for the requirements of small- to medium-scale processes. Monitoring and operation can be done without dedicated software and require only a web browser and access to the Internet or an intranet. OPC server and client functions are embedded for connection with upper-level systems and other SCADA systems.
- Yokogawa FAST/TOOLS (Flexible Advanced System Techniques / TOOLS) SCADA system
  The FAST/TOOLS is a SCADA system suitable for medium- to large-scale applications and highly distributed processes. Simple object import wizards dramatically reduce engineering workload.
- Other vendors' HMI and SCADAs
  Other vendors' HMI's and SCADAs can easily acquire or send data from/to STARDOM autonomous controllers using an OPC connection package (OPC Server for Windows).

PAM (Plant Asset Management)

- The Yokogawa PRM (Plant Resource Manager) PAM system comprehensively manages and maintains intelligent field devices through FOUNDATION Fieldbus or HART, thereby improving maintenance efficiency.

PIMS (Plant Information Management System)

- The Yokogawa Exaequor PIMS stores and transforms process data and alarm events acquired from the production control system, enabling upper-level applications to freely handle the acquired information.

DCS (Distributed Control System) and SIS (Safety Instrumented System) Solutions

- The Yokogawa CENTUM DCS-HIS (human machine interface) acquires process data from the STARDOM autonomous controllers and provides an integrated operation environment. The CENTUM FCS (Field Control Station) and the ProSafe-RS Safety Instrumented System can exchange field information directly with STARDOM autonomous controllers.

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**Reliable Hardware**

Why is it so important to have reliable hardware?

Avoiding downtime is a key issue for any continuous production line. Our DCS experience went into the development of STARDOM autonomous controllers and produced hardware that is reliable in every respect.

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**Risk diversification**

Each STARDOM autonomous controller has independent control functions including sequence and loop control, alarm monitoring, and data storage. By distributing independent controllers at remote sites or mounting them on individual pieces of equipment, you no longer need to worry what will happen if your network goes down. Thanks to the data storage functions of STARDOM’s autonomous controllers, data is never lost. When STARDOM autonomous controllers are used in combination with FAST/TOOLS, time stamped data stored on the controllers are merged into FAST/TOOLS historical data base and become available as soon as the network recovers. Also, these data on the controllers can be monitored on demand via a dial-up, RF, or other network connection, further reducing operational expenditure (OPEX) for your process.

**Wide Ranging Product Line**

Suitable size for your application

There are two types of STARDOM autonomous controllers

- **Field Control Node (FCN)**
  A modular controller with a wide range of I/O modules and two expansion units. Suitable for small to mid-size applications.

- **Field Control Junction (FCJ)**
  An all-in-one compact controller with built-in I/O. (213.8 mm W x 156 mm H x 95 mm D)

Suitable for direct installation on equipment or utilities

Analog modules

In addition to digital input and output modules, the FCN supports a wide range of analog modules.

- 4-20mA, 1-5V, 0-10V, HART, RTD, TC, mV
- Isolated channel / Isolated / Non-isolated

Input, Output, Input and output combined

The 4-20mA analog module includes a HART module and can supply power to two-wired transmitters, eliminating the need for a dedicated power supply. A terminal block with surge protection is also available.

**High Speed Regulatory Control**

High-speed CPU scan time

STARDOM autonomous controllers are high-speed and accurate control systems featuring 50μsec analog control and a 10μsec CPU scan time.

Time stamping

Time synchronization between controllers is done without PC software, using a simple network time protocol (SNTP) server and client function embedded in the STARDOM autonomous controller. Using the system’s GPS receiver, the system time is synchronized with GPS time to give the precise local time in each time zone.

With this high-level of accuracy, alarm and events have 1μsec time resolution.

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**Dual Redundant Configuration**

System availability is significantly improved with the dual redundant configuration.

- **Simple duplicated CPU architecture**
  The duplicated CPU configuration dramatically reduces the chance of process downtime. When the CPU in service fails, the standby CPU takes over immediately and resumes control without any impact on the process. When the failed CPU is replaced, the database/applications on the new CPU are automatically equalized without stopping the process.

- **Dual redundant configuration**
  Not just the CPU, all key components such as the power supply, control network, I/O expansion bus, and Foundation fieldbus H1 fieldbus network can be dual redundant. Even the bus between the CPU and I/O modules is redundant.

**Compact design**

The duplicated CPUs are located on the same basic module and the power is supplied from the basic module. Duplicated CPU systems have a compact design and eliminate single points of failure.

**Robust Hardware**

Explosion proof

STARDOM autonomous controllers with Class I Division 2 FM approval and ATEX Type n are designed for surviving in a harsh industrial environment (corrosion proof coating is available). Pan-less architectures and analog current input modules with surge protection circuits also reduce the downtime risk.

**Minimize Downtime Losses**

Hot swappable I/O module

I/O modules are hot swappable. Neither other I/O modules nor CPUs are affected by changing an I/O module.

- To facilitate hot swapping, MIL terminals and pressure damper terminals can be easily disconnected without rewiring.

**Downtime action**

Even if you have a single CPU configuration, output modules will not take unexpected actions if the CPU goes down. “Hold last value” or “User preset value” can be selected for the output modules to keep your process stable.

**Advanced Self Diagnosis**

In addition to the CPU and power supply current status indicated on the front panel LEDs, the CPU temperature, SRAM memory, and I/O module status can be viewed using rich self diagnostic functions. Besides the CPU, analog input modules have embedded self diagnostic functions which detect disconnected wires or short circuits by continuously monitoring the loop status. The checked status can also be viewed on the front panel LEDs. All data processed by Error Check and Correct (ECC) memory is accurate and has the data status attached.
Network Ability

TCP/IP based STARDOM autonomous controllers can easily fit into your existing systems and network infrastructure without adding gateways or laying dedicated networks.

Plant Resource Manager

With the diagnostic features of FOUNDATION fieldbus and HART Communications, STARDOM autonomous controllers are a valuable asset management system.

Wide Support of Field Networks

Variety of field network
STARDOM autonomous controllers support a wide variety of field networks:
- FOUNDATION Fieldbus
- HART
- Modbus RTU/ASCII (Master/Slave)
- Modbus TCP (Server/Client)
- DeviceNet
- Profibus DP*
- DNP3
* Check for availability

Controller Communication

STARDOM autonomous controllers have embedded peer-to-peer communication functionality. They also have embedded drivers for communications with Yokogawa’s PA-3 PLCs, PLCs from other vendors, temperature controllers, and power monitors. Via RS-232-C and RS-422/RS-485 interfaces, STARDOM autonomous controllers can read raw data even from devices such as bar-code readers which do not support Modbus or other protocols. STARDOM autonomous controllers can acquire data from a wide variety of field equipment.

Does system expansion take a lot of time and effort?

With the full benefits of FOUNDATION fieldbus and the Plant Resource Manager (PRM) software package, a compact STARDOM autonomous controller becomes a complete asset management system which can be directly embedded in your utilities and processes.

Maintenance efficiency

When a STARDOM autonomous controller is used in combination with PRM, which has such advanced features as plug-and-play device registration and automatic collection and storage of detected device events, the time and effort required to build and maintain an asset database is dramatically reduced. An audit trial of maintenance activities such as parameter modification and inspection that are executed by PRM is also integrated into the same database, making your maintenance activities much more efficient. PRM supports FOUNDATION fieldbus H1 and HART communications.

Device diagnosis

For greater maintenance efficiency, PRM also provides advanced diagnostic functions for predictive maintenance. With these functions, it is possible even when a plant is operating to define and perform a diagnosis that uses information from multiple devices; it is also possible under these circumstances to receive a highly process-dependent diagnosis.

Yokogawa FOUNDATION Fieldbus devices

Our completely integrated FOUNDATION Fieldbus solutions include:
- Differential pressure/pressure transmitters (DP/HP; EU/EKJ series)
- Vortex flowmeters (Digital VSMFLOW series)
- Magnetic flowmeters (ADMAG AE series)
- Temperature transmitters (YTA80)
- Valve positioners (YVP110)
- pH and conductivity meters (EC202, EC202, and P=202 series)
- Paperless recorders (CAX2ETATION EX series)
Improves engineering efficiency and maintainability. Our support of the international standard programming languages and provision of efficient simulators dramatically improves engineering efficiency and maintainability.

IEC 61131-3 Language Support

IEC 61131-3 International Standard Language
The Logic Designer engineering tool for the STAR Room autonomous controllers supports the five programming languages of the International Electrical Commission’s IEC61131-3 standard: Function Block Diagram (FBD), Ladder Diagram (LD), Sequential Function Chart (SFC), Structured Text (ST), and Instruction List (IL). IEC61131-3 is the de facto programming standard for control logic, is platform independent, and has great reusability. Both loop and sequence control can be developed in this environment. By conforming to this international standard, control applications can run on any platform and can be easily ported to other systems without the loss of application know-how.

Reuse of programs
Applications are the product of considerable engineering know-how. Therefore, the ability in reuse of such applications is a key to enhance engineering efficiency.

POU
Program Organisation Units (POUs) are the smallest software units of a user program. Reused logic can be encapsulated into a POU. The source code for the POUs, which are the intellectual property, can be protected by password. Encapsulated logic can be used in other various PLCs since IN and OUT variables of POUs are independent from the hardware.

Network Template
Network template allows a group of POUs with connecting lines, called Network, to be inserted into a worksheet as they are. Unlike the ordinary copy functions, variables, instance names and comments of network templates are replaced as the specified names when they are inserted.

Online download
You can modify your applications online without interrupting your control functions, giving you the flexibility you need to quickly adapt your product in response to a customer’s changing needs. And whenever an application is changed, notification is made to the Yokogawa SCADA in real-time.

Efficient Simulation Tool
Software wiring
Software debugging can be performed virtually by defining the wiring in the software. This software wiring enables loop checks and ladder sequence tests without having to actually wire the input and output modules. With this function, a calibrator and test switch are no longer necessary.

Simulator
Simulation software for the controllers can run on PCs. In the test phase, an engineer can debug the modules using Logic Designer without actual controllers. Also, as the Yokogawa SCADA can be installed on the same PC, its functionality can be checked at the same time.

Engineering Support
Specialized Libraries
Various software libraries, called Application Portfolios (APPF), are prepared to improve engineering efficiency. These libraries include:
- Regulatory Control Blocks
- Communication Blocks
- Application-Oriented Blocks

Effective in the specified application, such as gas flow calculation
Network Template Sample
Typical applications for control, such as cascade control, are provided as network templates on STAR Room membership site. Use of the provided network template improves the application quality and reduces the debugging time since they are all tested in Yokogawa laboratory.
Features and Benefits

STAROM autonomous controllers' PC/PCI realize an all in one solution by including control functions, PC-based information technology and logging functions embedded on rugged hardware. They are the best substitute for PC-based remote monitoring system to reduce TCO (Total Cost of Ownership) and improve TVO (Total Value of Ownership).

Secure data on rugged hardware

STAROM autonomous controllers log process data and create reports. In addition to the real-time data, logging data can be displayed using a Web browser from remote locations. This capability enables remote monitoring, without requiring personnel to visit hazardous and remote areas, and helps reduce patrolling costs.

Alarm and message notification

STAROM autonomous controllers generate alarms and message E-mails according to user-defined rules and send them to COTS PCs or mobile phones. This function enables the detection of unexpected situations at an early-stage.

Stable environment

PC-based systems are often used for remote monitoring because they suit information transmission via Web or FTP. However, maintaining PCs by patching and updating the OS is a challenge. Installation of patch update systems in each location and the purchase of new OS every few years increases TCO. The total system configuration becomes more complex and difficult to maintain. Replacing them with STAROM autonomous controllers eliminates the time and expense of COTS PC OS updates.

Embedded Web HMI

STAROM autonomous controllers are embedded with Web server functions. Web-based HMI (Human Machine Interface), integrated into controllers, enables remote site operation and monitoring without requiring any dedicated software on COTS PCs or any programming.

Selectable data display corresponding to the monitoring and operation style

Logging & Report

STAROM autonomous controllers log the data and create the report files. COTS PC can upload all files using FTP server functions embedded on the controllers, and report files can be also sent to COTS’ PC as e-mail attachments.

Reporting type
- Various logging files can be created:
  - Data Logging
  - Continuous logging
  - Batch logging
  - Snapshot logging
  - Message logging

Embedded viewer and Setting tool

Logging data viewer and setting tools are all embedded in the controller. No dedicated software is required on COTS PC.

E-mail

Message E-mail

STAROM autonomous controllers send PC/PCI system or application messages via e-mail.

Alarm E-mail

STAROM autonomous controllers send alarm e-mail when data exceeds high or low limits or discrete data status changes.

Application Examples

Remote monitoring under harsh conditions, such as corrosive gas environment, dust, high temperature and vibration, is a feat for STAROM autonomous controllers.

- Controllers on vehicles enable mobile patrol systems
- Real-time data monitoring on handy terminals with browser allows site device calibration.
- Networkable PC remote controllers is used as a graphic panel.

Gas distribution
- Truck refueling (LNG)
- Cryogenic gas tanker leading/delivery
- Environment monitoring
- Water pollution monitoring
- Wind power generation
- Wind turbine monitoring and control
- Tank monitoring
- Tank level monitoring
- Water intake valve and monitoring

On remote site
- Valve control Logging dispensed flow volume Tuning remote site equipment

On the vehicle
- Valve control Logging dispensed flow volume

Supports a wide variety of field devices and interfaces with various network infrastructure, as information transmission between the field and control room becomes a wireless using STAROM.

All in One Solution

Real-time Remote Monitoring and Operation using Web browser

Logging Data View using Web browser

Alarm and Event Notification via E-mail/Office

Embedded Web HMI

Web Page

Control + Data Acquisition

Modbus

Supports a wide variety of field devices

Logging & Report

Logging dispensed flow volume

Wiring diagram

Embedded viewer and Setting tool

Reporting
daily/monthly/annual report

E-mail

Message E-mail

Alarm E-mail

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Movable controller - anywhere, anytime

How can the latest information technology benefit our process?

Readily available leading edge technologies can produce dramatic improvements in the efficiency of your remote operations with such functions as alarm notification via e-mail and process monitoring and operation through a web browser.
Media for FCN/FCJ Software

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCN/FCJ Software Medium</td>
<td>N701A</td>
<td>CD-ROM containing Application Programs except for FCN Modules, and electronic documents</td>
</tr>
<tr>
<td>Application Program Licenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Platform License</td>
<td>N704M</td>
<td>License to use a library of functions for process control, such as FCJ controller and switch panel control.</td>
</tr>
<tr>
<td>System Platform License</td>
<td>N7012A</td>
<td>License to use a library of functions compatible with Advanced Motion Control Association (AMCA), and often used in power processes.</td>
</tr>
<tr>
<td>Application Function Library</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FNC Function Library</td>
<td>N704A</td>
<td>License to use a library of functions in FNC, providing a comprehensive library of functions for process control.</td>
</tr>
<tr>
<td>Hardware Function Library</td>
<td>N7000A</td>
<td>License to use a library of functions in Hardware, providing a comprehensive library of functions for hardware control.</td>
</tr>
<tr>
<td>Linkage Function Library</td>
<td>N7012B</td>
<td>License to use a library of functions in Linkage, providing a comprehensive library of functions for linking control systems.</td>
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</table>

FCN/FCJ Basic Software Licenses

<table>
<thead>
<tr>
<th>Name</th>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCN/FCJ Basic Software License for Single CPU N711A</td>
<td>FCN/FCJ Basic Software License for Single CPU N711A</td>
<td>License to run basic software for implementing control logic on FCN or FCJ. (Single CPU or with no Java function to be used. Duplicated CPU only comes with Java functionality.)</td>
</tr>
<tr>
<td>Additional FCN/FCJ Basic Software License for Duplicated CPU N711A</td>
<td>Additional FCN/FCJ Basic Software License for Duplicated CPU N711A</td>
<td>License for adding Java functions to N704A without Java function.</td>
</tr>
<tr>
<td>Font/Canvas Library License</td>
<td>N7012A</td>
<td>License to use a library of functions for developing control logic and configuring the software on an FCJ.</td>
</tr>
<tr>
<td>FCN/FCJ Simulator License</td>
<td>N7012A</td>
<td>License to run on a PC and simulate control applications.</td>
</tr>
<tr>
<td>FCN/FCJ OPC Server for Windows N711A</td>
<td>FCN/FCJ OPC Server for Windows N711A</td>
<td>Implement OPC interface for Ethernet to ensure compliance with OPC, IEC 61499, OPC-based communication Control Data Exchange (CDE), and Alarm and Events.</td>
</tr>
<tr>
<td>Global Network Program N7012A</td>
<td>Global Network Program N7012A</td>
<td>Program for developing network communication between FCN/FCJ and OPC servers.</td>
</tr>
<tr>
<td>FCN/FCJ Java Application Library N7012F</td>
<td>FCN/FCJ Java Application Library N7012F</td>
<td>License to use functions necessary for Java application development and debugging.</td>
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</tbody>
</table>

Application Portfolio Licenses

<table>
<thead>
<tr>
<th>Name</th>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APP/FCN Function Library</td>
<td>N704A</td>
<td>License to use a library of functions in APP/FCN function library.</td>
</tr>
<tr>
<td>APP/PC Function Library</td>
<td>N7000A</td>
<td>License to use a library of functions in APP/PC function library.</td>
</tr>
<tr>
<td>APP/OPC Function Library</td>
<td>N7012B</td>
<td>License to use a library of functions in APP/OPC function library.</td>
</tr>
<tr>
<td>APP/PC/OPC Function Library</td>
<td>N7012B</td>
<td>License to use a library of functions in APP/PC/OPC function library.</td>
</tr>
</tbody>
</table>

Hardware for FCN

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Base Module</td>
<td>N751U04</td>
<td>With 1/4 module slots.</td>
</tr>
<tr>
<td>Power Supply Module</td>
<td>N75W41</td>
<td>140V to 180V AC input.</td>
</tr>
<tr>
<td>N75W42</td>
<td>200V to 260V AC input.</td>
<td></td>
</tr>
<tr>
<td>N75W44</td>
<td>24 V DC input.</td>
<td></td>
</tr>
<tr>
<td>CPU Module</td>
<td>N71N100</td>
<td>With two Ethernet ports and PC-G220-C port.</td>
</tr>
<tr>
<td>SS Bus Repeater Module</td>
<td>N71S100</td>
<td>Module used to connect an OPX expansion unit.</td>
</tr>
<tr>
<td>SS Bus Cable</td>
<td>N71S100</td>
<td>Cable connecting Sb bus repeater module to each other.</td>
</tr>
<tr>
<td>Analog Input Modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFA133</td>
<td>Eight to 4 mA DC outputs, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>NFA143</td>
<td>Eight to 4 mA DC outputs, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>NFA144</td>
<td>Eight to 4 mA DC outputs, point-to-point isolated, field-to-circuit isolated.</td>
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<tr>
<td>NFA145</td>
<td>Eight to 4 mA DC outputs, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>NFA146</td>
<td>Eight to 4 mA DC outputs, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>NFA147</td>
<td>Eight to 4 mA DC outputs, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>Digital Input Modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NVD162</td>
<td>Thirty-two digital inputs, 24V DC, point-to-point isolated, field-to-circuit isolated.</td>
<td></td>
</tr>
<tr>
<td>NVD47</td>
<td>Eight to 4 mA DC outputs, 24V DC, point-to-point isolated, field-to-circuit isolated.</td>
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<tr>
<td>NVD48</td>
<td>Eight to 4 mA DC outputs, 24V DC, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>NVD49</td>
<td>Eight to 4 mA DC outputs, 24V DC, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>NVD50</td>
<td>Eight to 4 mA DC outputs, 24V DC, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>NVD51</td>
<td>Eight to 4 mA DC outputs, 24V DC, point-to-point isolated, field-to-circuit isolated.</td>
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</tr>
<tr>
<td>Relay Output Module</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFT111</td>
<td>Four-channel I/O module, pulse with output, 24V DC, point-to-point non-isolated, field-to-circuit isolated.</td>
<td></td>
</tr>
<tr>
<td>Communication Modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFT111</td>
<td>Two RS-422/485 communications, 300Kbps to 115.2Kbps.</td>
<td></td>
</tr>
<tr>
<td>NFT121</td>
<td>Two RS-422/485 communications, 300Kbps to 115.2Kbps.</td>
<td></td>
</tr>
<tr>
<td>NFT122</td>
<td>Two RS-422/485 communications, 300Kbps to 115.2Kbps.</td>
<td></td>
</tr>
<tr>
<td>Dc Module</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFT123</td>
<td>Dummy module.</td>
<td></td>
</tr>
<tr>
<td>NFT124</td>
<td>Dummy module for power supply module slot.</td>
<td></td>
</tr>
<tr>
<td>Dc Module Cover</td>
<td>NFT100</td>
<td>NFT101 Cable Connector Cover.</td>
</tr>
<tr>
<td>SS BUS T-Piece</td>
<td>NFT101</td>
<td>SS BUS T-Piece.</td>
</tr>
<tr>
<td>ChFCU Software License Support Contract</td>
<td>ChFCU License Support Contract</td>
<td>License to use ChFCU software for support contracts.</td>
</tr>
<tr>
<td>System Card f/ChFCU Spare Parts</td>
<td>NFT100</td>
<td>System card spare parts.</td>
</tr>
</tbody>
</table>

Hardware for FCJ

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC-FCJ Controller</td>
<td>NFT-7100</td>
<td>With channel inputs, 2 analog outputs, 16 digital inputs, 16 digital outputs, 2 Ethernet ports, and optionally 27 KJ200 Ebus ports.</td>
</tr>
</tbody>
</table>

**Note**: Compatibility information may vary depending on specific requirements and configurations. Please consult the manufacturer’s documentation for detailed specifications.