CX-One

One software for your complete machine

» Common graphic user interface

» One programming tool

» Control, visualise, position, detect and regulate

OMRON

What is Smart Platform?

The Automation industry has suffered from overuse of technical jargon such as CIM, fieldbus, flexibility, digital motion control or integration for many years, and these 'Marketing phrases' seem to mean totally different things to suppliers and users and the result is that many users now don't believe these claims from suppliers! Omron is trying to make it easy for you, so instead of hiding behind this technical jargon we will instead talk about the functionality that you really want.

Total machine integration, was a dream in the eighties, a vision in the nineties and is now materialising into reality. Enabling complete machine and plant automation from one single platform without having to worry about fieldbuses, communications, integration of various software and above all without being locked with one dominant supplier. Our aim is to minimize the time and effort you spend in automation and focus your resources in creativity.
Hence our motto JUST CREATE.

One software

CX-One, a single programming and configuration environment that enables the user to build, configure and program networks, PLCs, HMIs, motion control systems, drives, temperature controllers and sensors. The result of a single software is to reduce complexity of the configuration and allowing automation systems to be programmed or configured with minimal training.

One software extends to support tag sharing between programming software packages, so for example re-entering the PLC tags in your HMI software is a thing of the past!

One connection

From a single connection point either locally, through networks or from a modem connection the Omron 'Smart Platform' devices on your machine can programmed or parameterised. Apart from easier programming and setup this connectivity allows full remote access or teleservicing of your complete machine to become a reality.

The same transparent communications architecture also allows Omron devices to easily communicate together passing and sharing information and enabling more effective modular machine design.

One minute

'Plug & Work' functionality is achievable with a wide range of Omron products and covers many areas to reduce the 'Total Cost of Ownership' of an Omron system through reduced programming, configuration, wiring, setup and maintenance.

'One minute programming' is through Omron's function block library, device profiles and SMART Active Parts, which can be simply 'drag & drop'-configured in contrast to conventional programing. The SMART Active Parts are pre-defined electronic objects of field devices (e.g. 'read actual speed' of an inverter, view a scene from a vision sensor, represent a temperature controllers etc.) that can be dragged and dropped into the HMI screen.

'One Minute' configuration allows advanced devices such as Vision sensors detecting batch-code data, or advanced gradient temperature controllers can be configured and 'taught' with the single touch of a button.

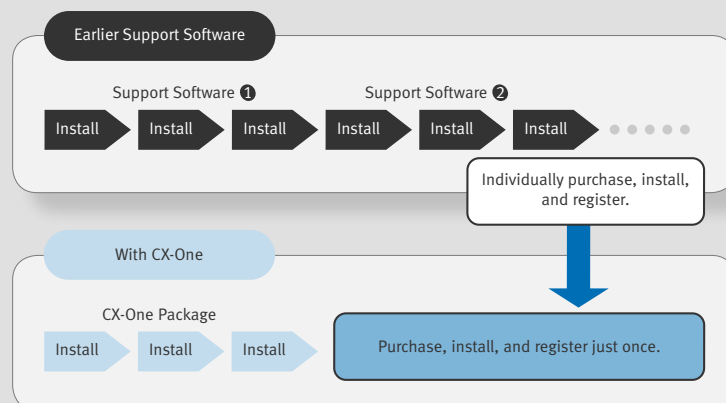# CX-One, One software for your automation system

1. One software

CX-One software

A Network Software	**CX-Interator**
	CX-Prtocol
	CX-Profibus
B Programming & Simulation Software	**CX-Programmer**
PLC Programming	**CX-Simulator**
HMI Programming	**SwitchBox utility**
	CX-Designer
	Ladder Monitor software
C Motion and Drives Software	**CX-Motion, NCF, MCH**
	CX-Position
	CX-Drive
D Regulation and Switching software	**CX-Thermo**
	CX-Process Tool
	NS-series Faceplate builder
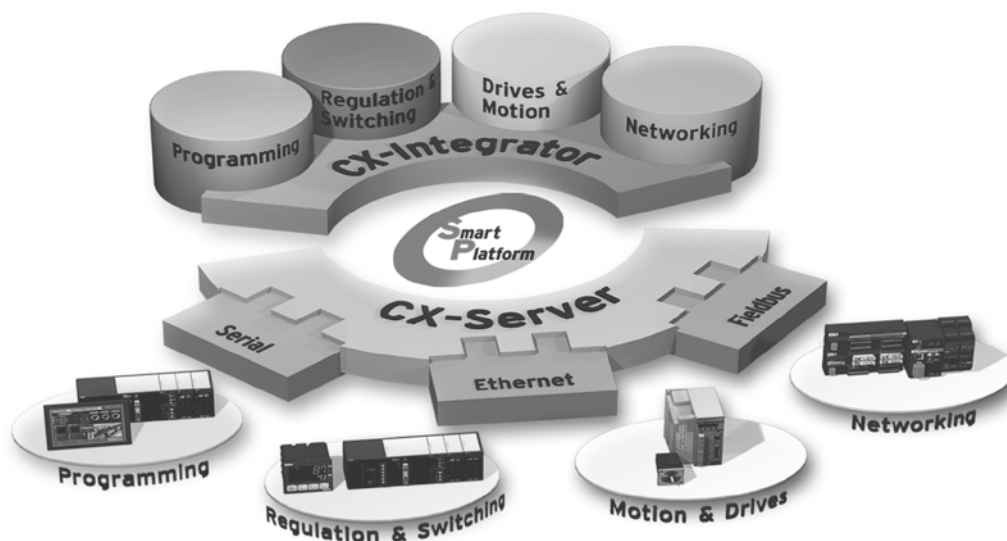
2. One installation

Previously, each Support Software application was purchased separately for each different PLC, Special I/O Unit, or CPU Bus Unit and had to be installed individually in the computer. It was also necessary to register each application separately for support. With the CX-One Package, all of the applications can be purchased and installed together.
In addition, all of the applications can be registered together as a package.

Earlier Support Software

Support Software ❶   Support Software ❷

Install   Install   Install   Install   Install   Install   ● ● ● ● ●

Individually purchase, install, and register.

With CX-One

CX-One Package

Install   Install   Install   Purchase, install, and register just once.

3. Standard look&feel

Common graphical interface and operation for the software, regardless of the device type improves ease of use & reduces training needs. In terms of ergonomics, the general appearance of the software (menus, functions etc.) is the same for all products, which aids familiarisation and reduces time spent on training. As for documentation, it is unique and makes searching is easier.

4. Easy project management

A common file management operates in the background to automatically save all of the settings for the different devices into one common directory on your computer allowing an easy PC backup of a project.

Network Software

Integrated software to simplify network configuration and start-up.
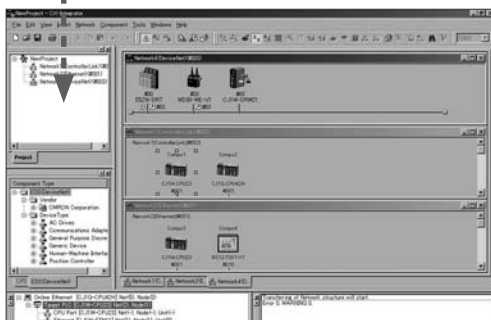Easy configuration for even the most complex of settings.

❶ Integrates together OMRON Automation Network Software

CX-One covers all of the automation network setting and startup procedures. The setting and configuration can be made from any PLC in the network through 'One Connection'. The networks covered include all of the common networks - Ethernet and

Controller Link peer-peer networks, Mechatrolink II motion network, Profibus & DeviceNet fieldbuses and CompoWay/F & Modbus serial networks.

Ethernet

Controller Link

DeviceNet/Profibus CompoWay/F MECHATROLINK-II
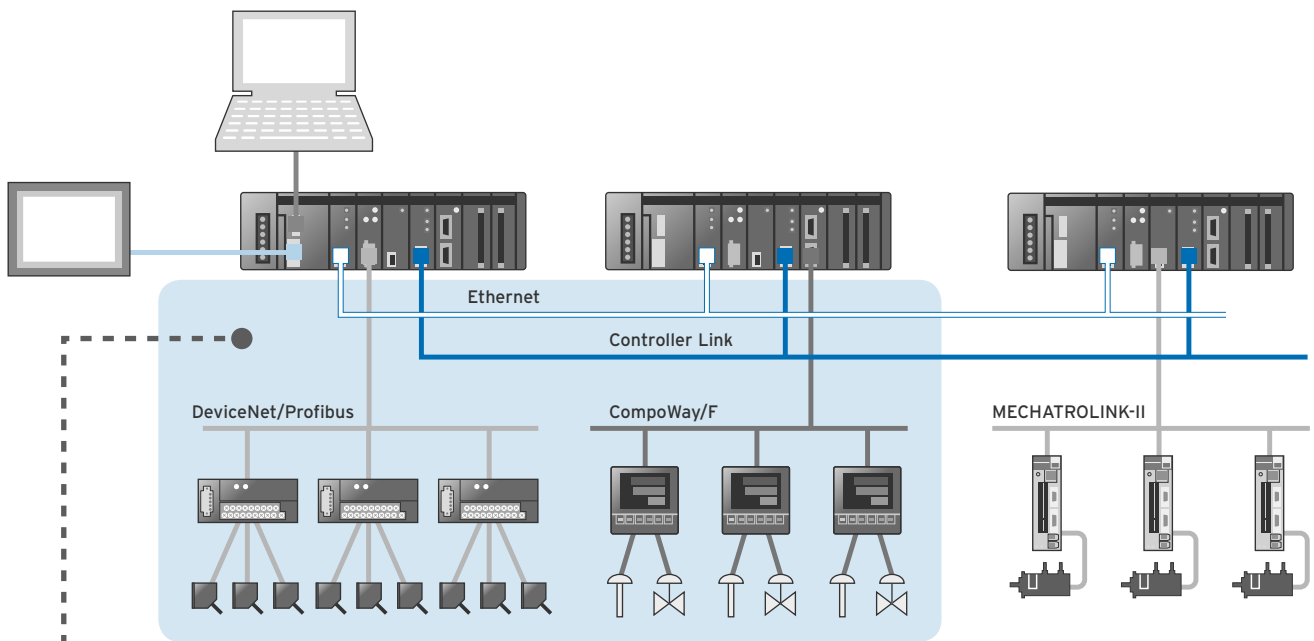
Graphically configure and start-up any network from CX-Integrator

• The current parameter settings of the Communications Units can be brought up in a Window from a PLC in the FA network.

• The online verification function displays differences between the actual Units and settings.

```
<Default>0
<Min>0
<Max>200

<Address>Word:D30210, Bit:0~7
<Type>Unsigned decimal
```

• Each parameter setting window displays the present setting. It is not necessary to refer to the manual when editing, because the CPS file's information identifies each parameter and shows the allowed setting range.

| Item	Set Value	Unit
Slave OUT 1 area	Do not use	
First word in the slave OUT 1 area	0	
OUT 1 area size	0	Byte
Slave IN 1 area	Do not use	
First word in the slave IN 1 area	0	
IN 1 area size	0	Byte

2 Powerful Support Functions Handle Complex FA Network Settings

The CX-Integrator's various support functions reduce the time needed to set up and start a network, even if advanced settings are required in order to use the FA network functions.

### Using the Wizard to set Controller Link Data Link Tables
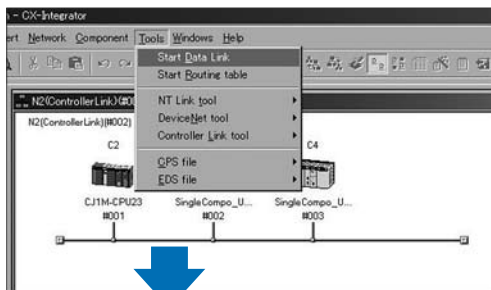
- Start data link table settings from the Tool Menu.

- Basic data link table allocations can be performed easily by specifying the settings in the table with the wizard. The data link allocation is accomplished just by editing the necessary entries.
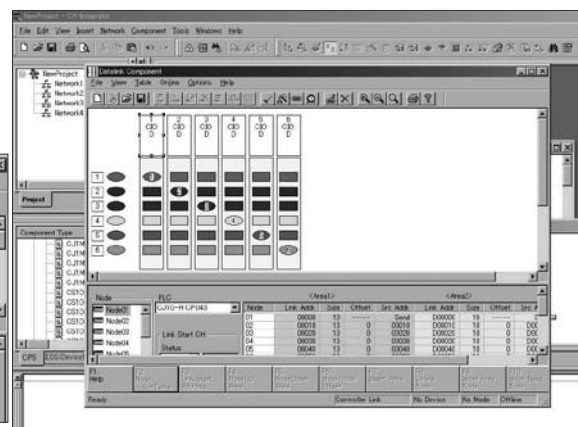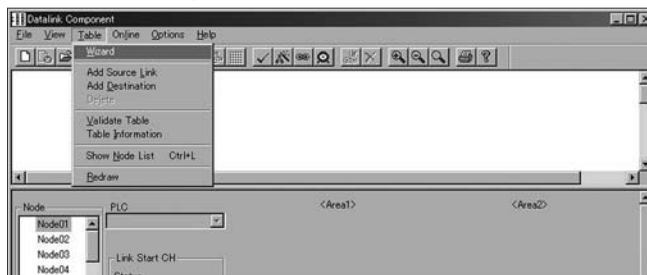
3 Powerful Controller Link Network Diagnosis Tool

The Controller Link Network Diagnostic Tool is a standard feature of the CX-Integrator. This Support Software indicates the status of the connected Controller Link network, status of the participating nodes, parameter settings in each node, connection/disconnection status, and status of signal transmissions.
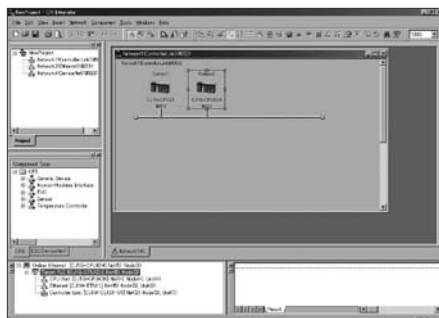
- The software displays the specified Controller Link network's transmission path and the operating/error status of each node.
- Errors occurring in the CPU Unit, Controller Link Units, or Controller Link Support Boards are displayed.
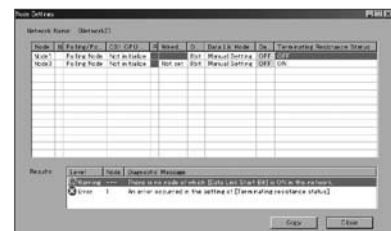
- The settings of each node participating in the specified Controller Link network can be read and checked for consistency.
- If there are errors, they are displayed in 3 levels based on order of importance.
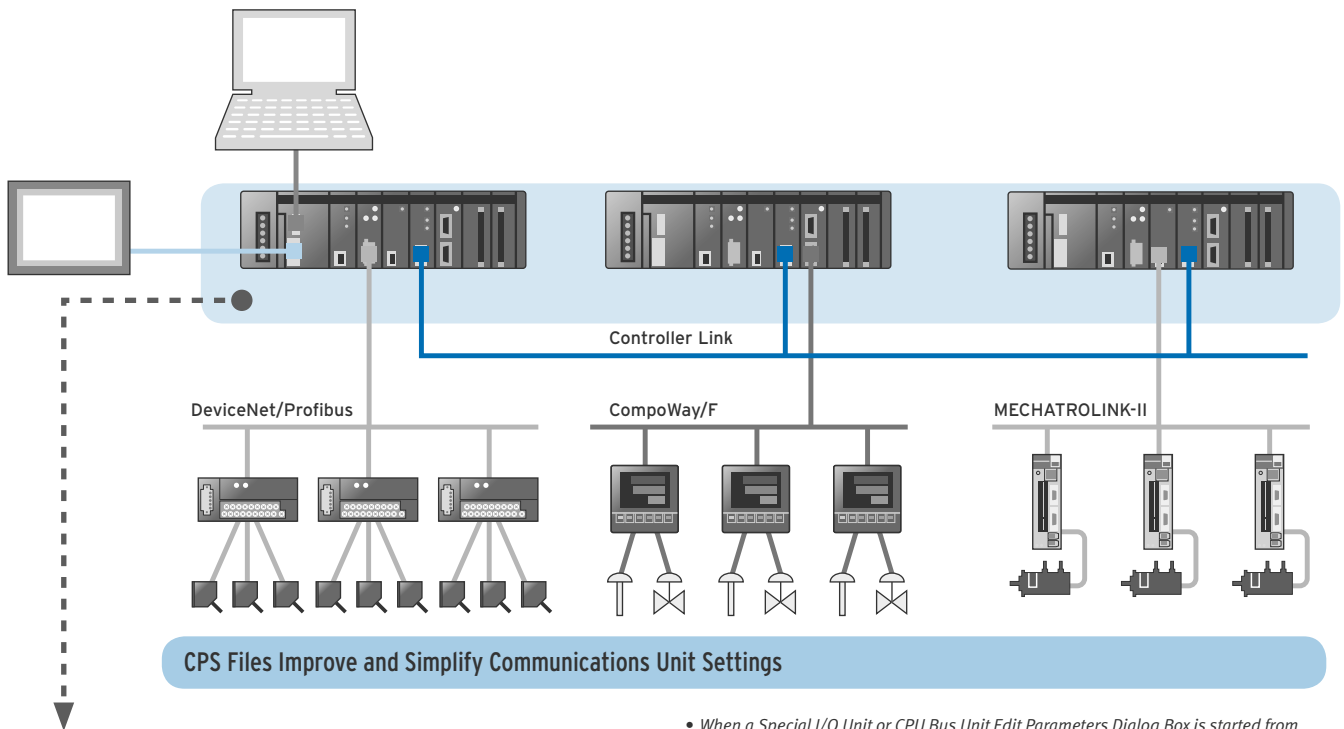
For more information and to get your free 30-day trial version of Cx-One then please go to www.cx-one.com

Programming Software - PLCs

One programming software for all Omron PLCs, with integrated management of all hardware configuration.
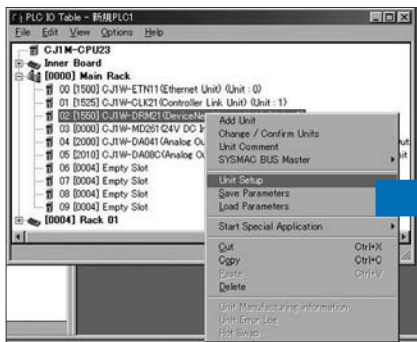
❶ Operations from the PLC I/O Tables

The CX-Programmer Ver. 6.0, which is bundled with the CX-One FA Support Tool Package, has evolved from its earlier role as a PLC Programming Device with the added role as parameter setting software for PLCs, Special I/O Units, and CPU Bus Units.
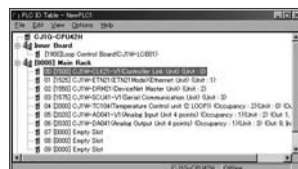
When the PLC I/O Table Component starts, each Unit's settings and parameters can be read, changed, and compared online to the actual Units, so system design time and startup time can be reduced.

Controller Link

DeviceNet/Profibus   CompoWay/F   MECHATROLINK-II

CPS Files Improve and Simplify Communications Unit Settings

- When a Special I/O Unit or CPU Bus Unit Edit Parameters Dialog Box is started from an I/O Table, the present settings are called up in the dialog box. The information from the CPS file clearly shows each parameters function and setting range, so it isn't necessary to refer to the manual when setting the parameters.
- The settings are compared online with the actual Units connected at that time. Any mismatched settings are displayed in orange.

! Information such as the model number, product name, unit version, and unit number are clearly displayed in the I/O table.
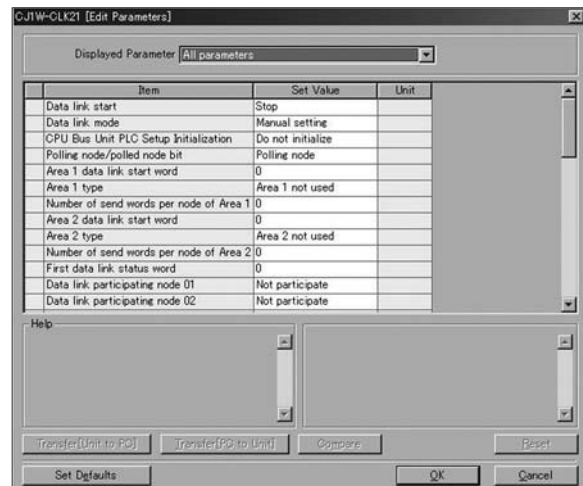
❷ Required Support Software can be started from a PLC I/O Table

The CX-Programmer Ver. 6.0, which is bundled with the CX-One FA Support Tool Package, has evolved from its earlier role as a PLC Programming Device with the added role as parameter setting software for PLCs, Special I/O Units, and CPU Bus Units.

When the CX-Programmer's PLC I/O Table Component starts, each PLC Unit's associated Support Software and the CX-Integrator network configuration software can be started freely.

CPS Files Improve and Simplify Communications Unit Settings

- *The CPS file information is used in the I/O tables, so each Special I/O Unit or CPU Bus Unit's specialized Support Software application can be started easily from the I/O tables.*
- *When the specialized Support Software application starts, required settings, such as the PLC model, Unit information, and online information, are passed to the application so it isn't necessary to enter those settings again.*

Programming Software – PLCs

Easy programming with powerful results reduce your programming and testing time but increase your machine flexibility.

❶ Supports Nested Function Blocks (Multi-level FB Structure)

The FB/ST language programming environment has advanced in CX-Programmer Ver. 6.0. The CX-Programmer now supports nested (multi-level) function blocks. The CX-Programmer achieves a genuine structured programming environment, in which user-defined function block units and OMRON's Smart function block library objects can be combined in levels to create large-scale standard program units.

Earlier Programming Environment

• Processes that are used repeatedly were defined together as a function block (FB). The FB could be called as an element within a section.
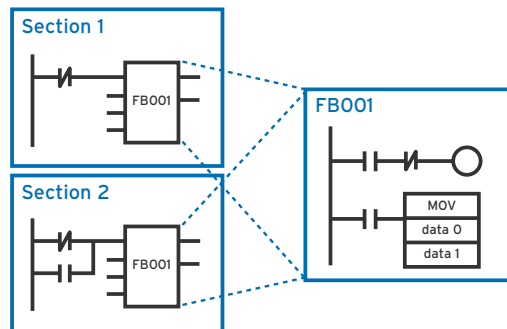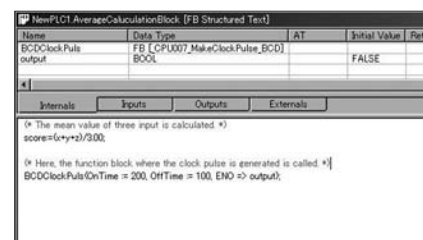
New Programming Environment

• Different FBs defined in a section can be nested up to 7 levels deep. The called FB is either pasted as an instance in another FB (for ladder language programs) or called using an FB call statement (for ST language programs).
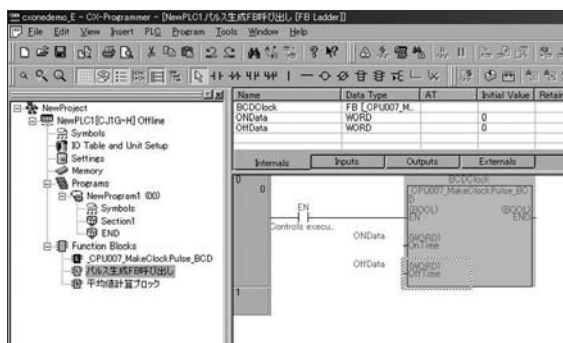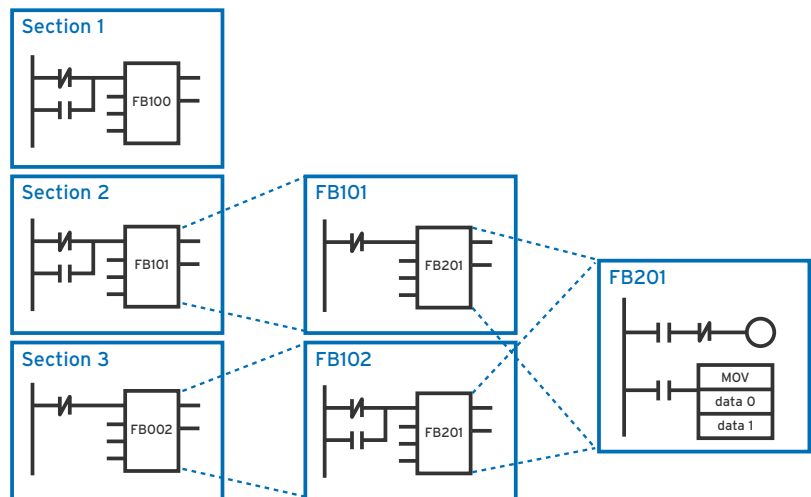
• A standard Smart FB object or user-defined FB can be called from an FB definition created in ladder or ST language.

❷ Better Support with Improved FB Instance Monitoring and FB object Debugging

A ladder instance can now be monitored online when debugging a Smart FB library or user-defined FB object. This feature improves the efficiency of debugging during structured program development.
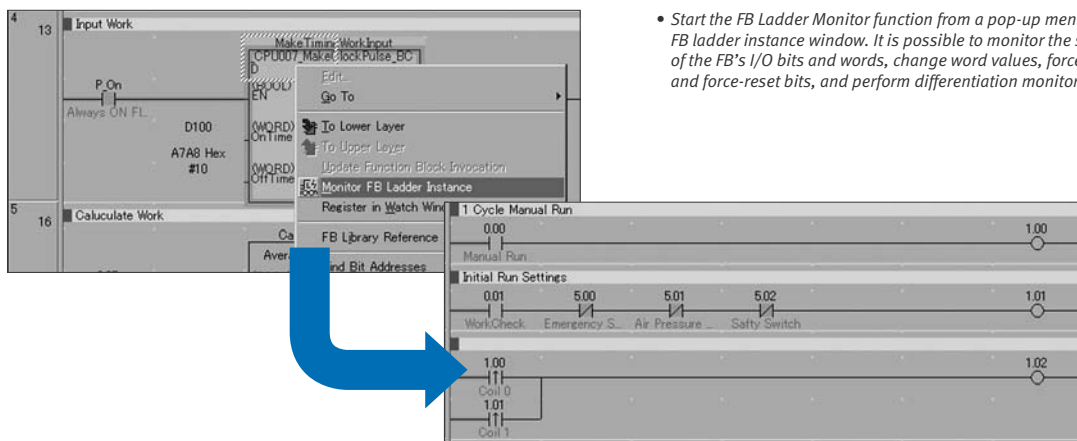

• *Start the FB Ladder Monitor function from a pop-up menu in the FB ladder instance window. It is possible to monitor the status of the FB's I/O bits and words, change word values, force-set and force-reset bits, and perform differentiation monitoring.*

! *The FB definition window can be opened just by selecting and double-clicking the FB instance. This feature simplifies the management of programs that include FBs.*

❸ ST-language Program Development Even Easier with ST Help

When programming in ST language, the ST help menu can be called directly from the editor window to easily reference required information such as ST language syntax and the use of ST functions.
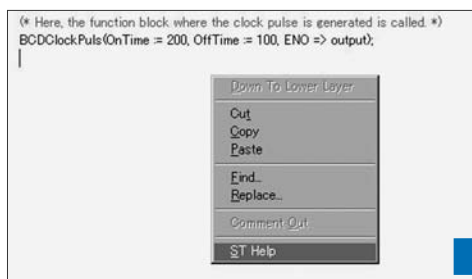
• *The ST help function can be called at any time by displaying the pop-up menu in the ST-language program editor window.*
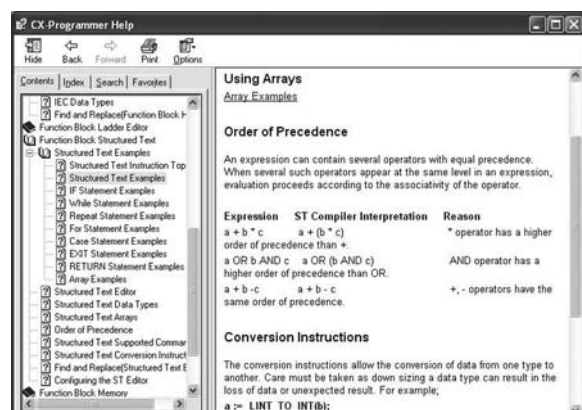
Programming Software – HMIs

Time is money – easy to use software with powerful features to greatly reduce your development efforts.

1 HMI Development Environment Integrated with Connectivity to the CX-Integrator

The CX-Designer can be started from the CX-Integrator's
NT Link Window. Of course, settings such as the PLC and Unit
information are passed to the CX-Designer, so you can start
developing screens immediately after CX-Designer starts.
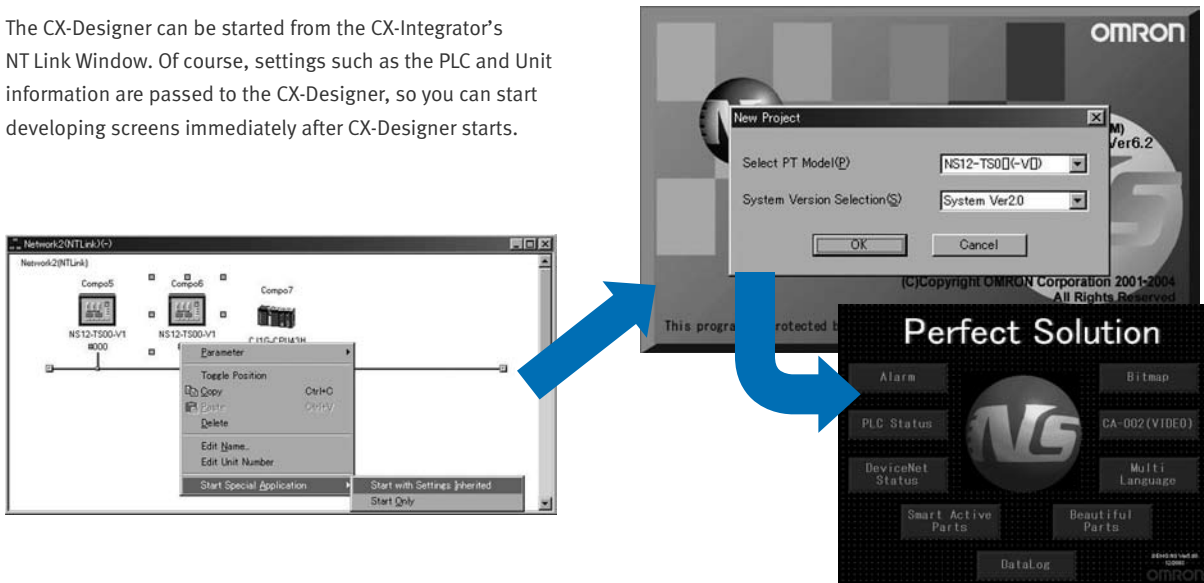
Note: Project data can be called up from the File Menu.

2 Recipe Functions Even Easier to Use

The Ver. 6.2 recipe function (data block function) provides even
more flexibility when switching between production processes.

A. Writing process recipe data as a batch.

- The recipe data created in Excel can be
  displayed in table format.
- The desired process can be selected in the
  window and the data can be written together
  to the PLC addresses.

B. A single process recipe data can be displayed and edited.

- Any setting for any process can be extracted
  and written to a PLC address.

*C. Writing multiple process combinations altogether.*

- Any processes can be combined and written
  to PLC addresses together.
- Processes can be specified in the window using
  indirect specification. Processes 1, 15, and 20
  can be combined and transferred together.

Memory Card

Internet

- Recipe data can be input and edited in Microsoft Excel.
  When the onsite system has changed, the data can be
  transferred by sharing the CSV file in a Memory Card
  or over the internet.
- The CSV files can be transferred directly to the computer
  with the FTP function.

## **3** Expanded Smart Active Parts (SAP Library)

The CX-Designer's Smart Active Parts library has been expanded even further. More parts have been added to the existing selection, connectivity to Temperature Controllers has been improved, and the Motion Controller-related Smart Active Parts has been made easier to use. We plan to continuously improve and add to the library in the future.

- *DeviceNet and serial connections have been added to the SAP library for Temperature Controllers, which previously supported only direct connections between the NS-series PT and Temperature Controller.*
- *Supports the new E5CN-□T and E5CN-□L Temperature Controllers.*
- *The SAP library's usefulness has been further improved. The SAP library can now be accessed in popup menus and start menus.*

NS-series PT

Serial (CompoWay/F) or DeviceNet

Inverter

Temperature Controller

M
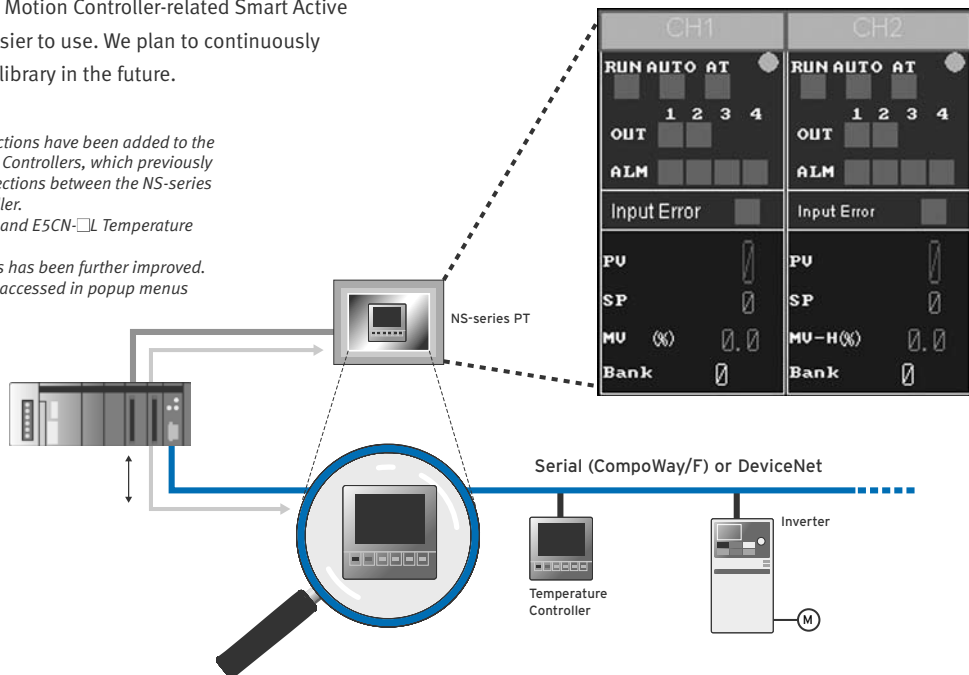
4 Share tags information with CX-Programmer

CX-Designer allows sharing if tag information with other Omron software – CX-Programmer to allow faster development and reduced errors. Simply open both software packages and drag-&-drop the tag which you wish to share.
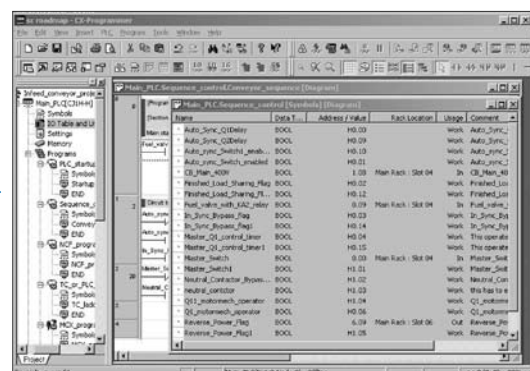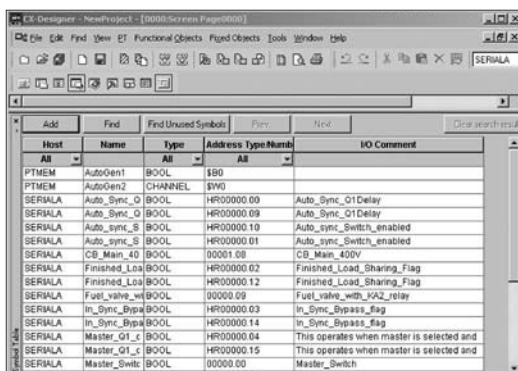
Motion and Drives

Integrated programming and configuration for a comprehensive range of position and motion controllers.

Integrated Support Software for Special Units

The CX-Designer can be started from the CX-Integrator's NT Link Window. Of course, settings such as the PLC and Unit information are passed to the CX-Designer, so you can start developing screens immediately after CX-Designer starts.

The Support Software for Temperature Controllers (CX-Thermo) can be started from the CX-Integrator's Serial Communications Window. Of course, settings such as the PLC and Unit information are passed to the CX-Thermo, so you can start designing HMI screens immediately after the CX-Thermo starts.

Controller Link

DeviceNet

MECHATROLINK-II
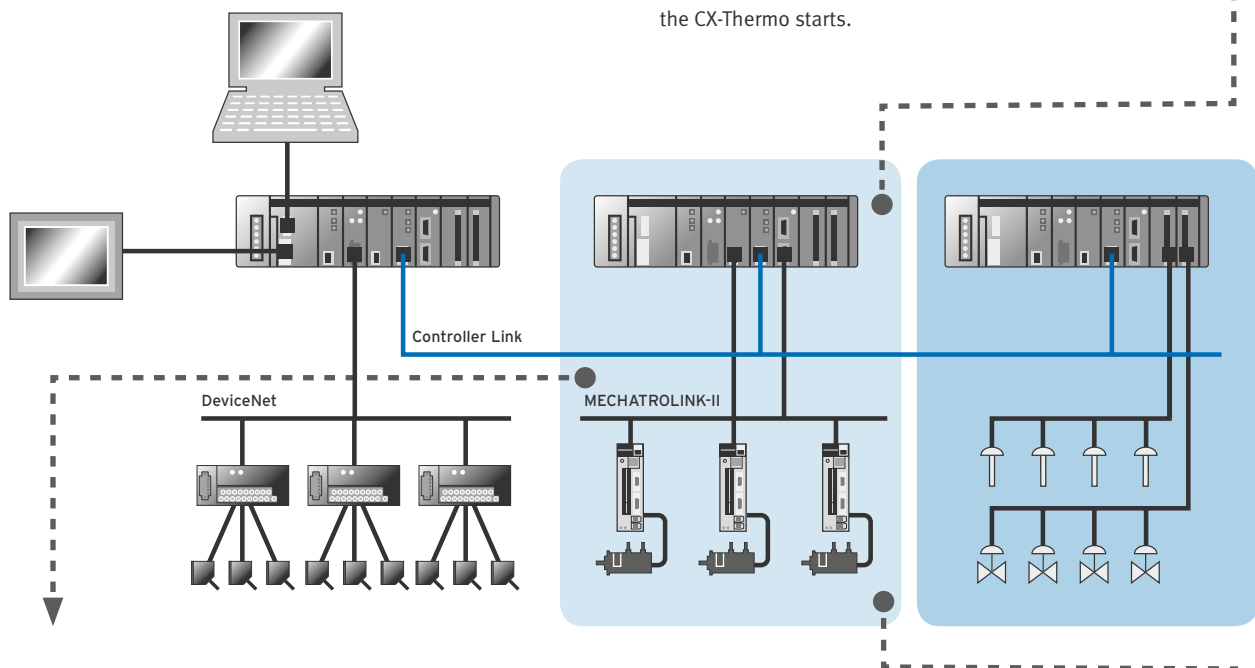
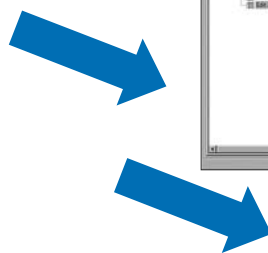Position/Motion Control Unit Support Software Startup with Unit Information inherited from the I/O Table

• Motion Control Unit Support Software (CX-Motion).

• Position Control Unit Support Software (CX-Position).

• The Support Software for a Position Control Unit or Motion Control Unit (CX-Position, CX-Motion, or CX-Motion-NCF) can be started from a CX-Programmer PLC I/O table.
• Parameter settings for complex motion operations can be set much more efficiently and incorrect settings can be avoided because the setting dialog boxes are organized by parameter function and the Support Software has a thorough help function.

• CJ1W-NCF71 Motion Control Unit Support Software (CX-Motion-NCF).

![CX-One logo]
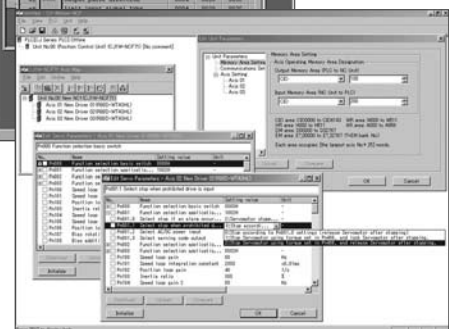
Basic style programming for complex motion tasks using dedicated high-speed motion bus
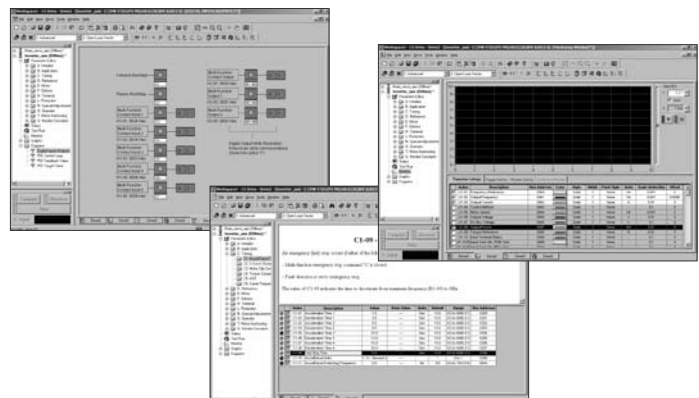

MECHATROLINK-II
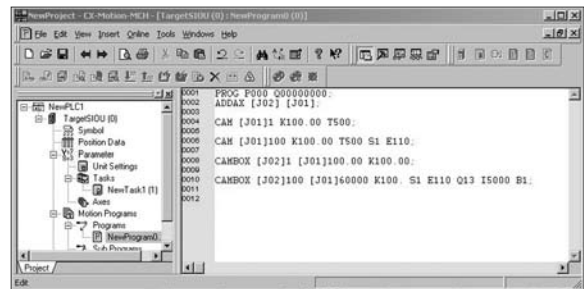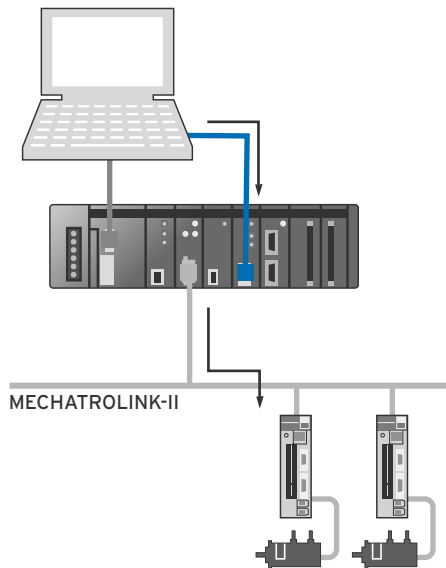
For more complex motion control Basic style programming units can be programmed and configured using CX-One.

CX-Drive – modular software to program, configure and maintain inverters and servos
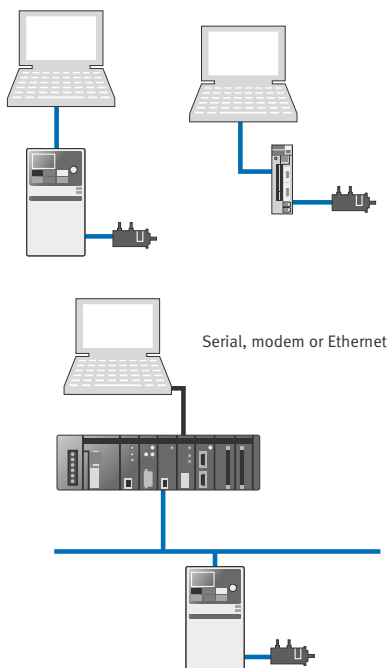
One software is used to configure and maintain the complete range of OYMC inverters and servos, regardless of the connection – serial direct, through a PLC or on a high-speed motion network.

Serial, modem or Ethernet

For more information and to get your free 30-day trial version of Cx-One then please go to www.cx-one.com

Regulation and switching

Programming and configuration for Temperature Controllers
through to complex multi-loop controllers with tools
to automatically create HMI pages.

The Support Software for Temperature Controllers
(CX-Thermo) can be started from the CX-Integrator's
Serial Communications Window. Of course, settings
such as the PLC and Unit information are passed to the
CX-Thermo, so you can start designing HMI screens
immediately after the CX-Thermo starts.

Controller Link

DeviceNet
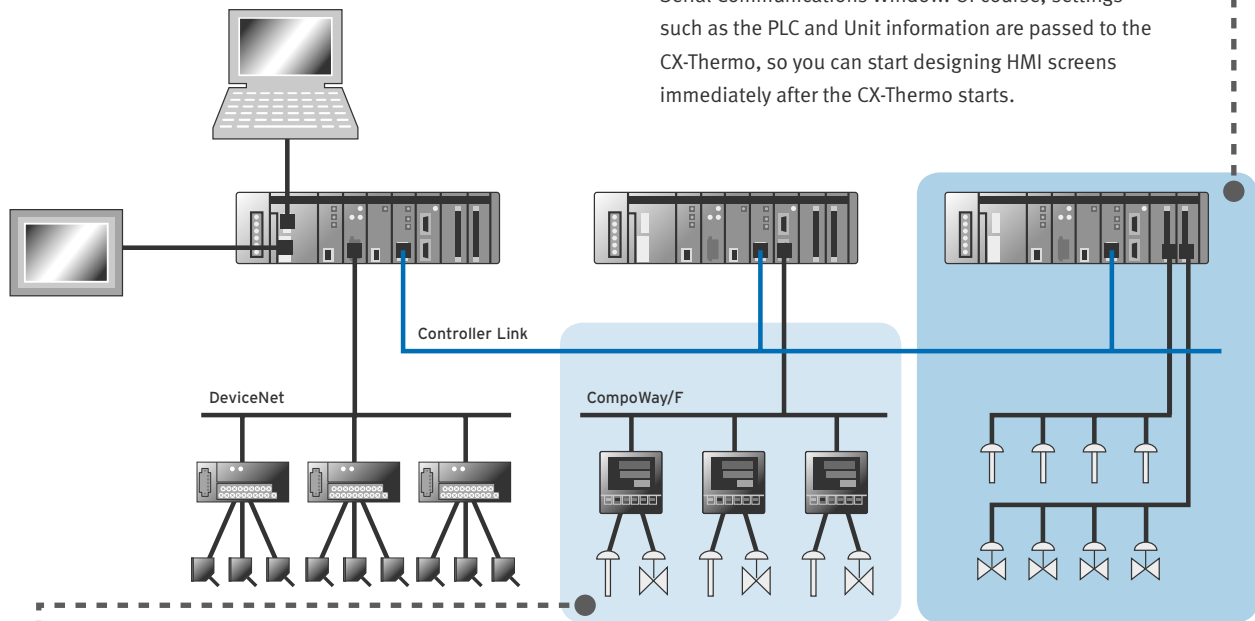
CompoWay/F

Position/Motion Control Unit Support Software Startup with Unit Information inherited from the I/O Table
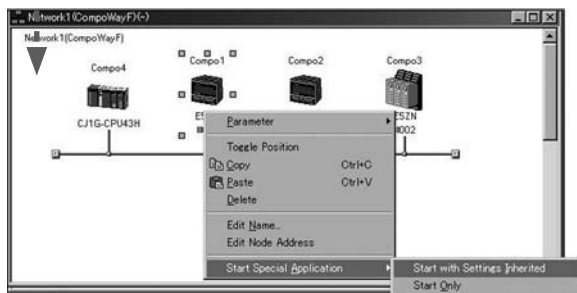
- The CX-Thermo Software can be started from a device in the CX-Integrator's
  serial communications (CompoWay/F) network.
- Parameters can be created, edited, and transferred at the computer.
  The time required to make settings can be reduced when setting the same
  parameters in multiple devices.
- Unused parameters can be freely masked (not displayed) to avoid
  incorrect operations.

*Parameters that need to be set are arranged in the window
to be more visible.*

*The functions and allowed setting ranges of the parameters
are displayed in the Setting Window, so it isn't necessary
to refer to the manuals.*
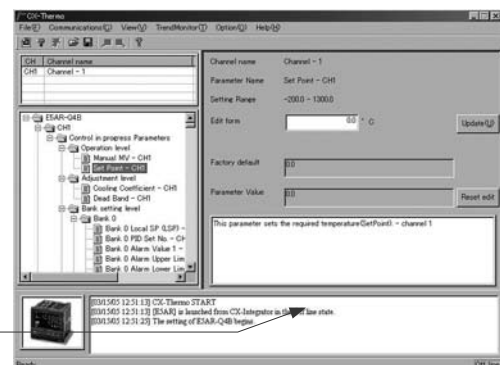
CX-One

Function block diagram

Sequence table
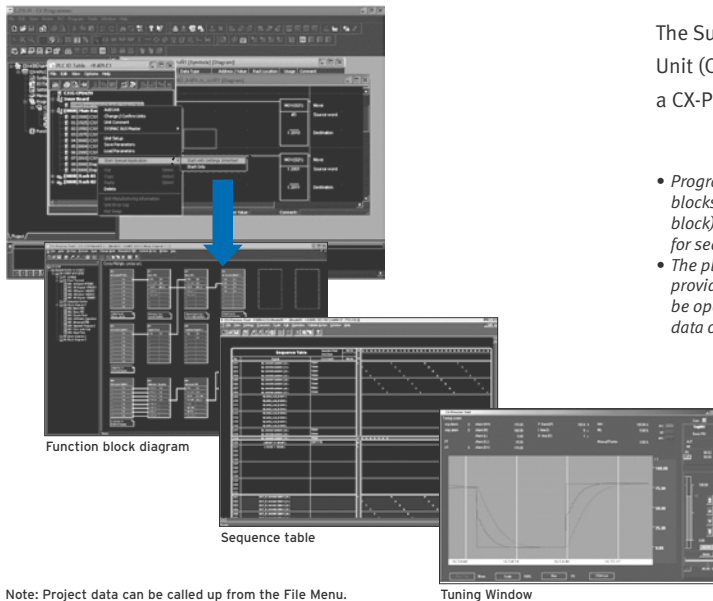
Note: Project data can be called up from the File Menu.

Tuning Window

The Support Software for a Loop Control Board or Unit (CX-Process) can be started directly from a CX-Programmer PLC I/O table.

- Programs can be created just by pasting and connecting function blocks provided for process control (such as the PID calculation block). Step ladder/sequence table language is also provided for sequence control programming.
- The plentiful debugging functions support system startup and provide easy engineering. For example, the tuning window can be opened for operations such as monitoring/changing trend data or parameters and saving trend data.

Create Special Screens for Loop Control. (NS-series Face Plate Auto-Builder)

CX-Process

NS-Designer
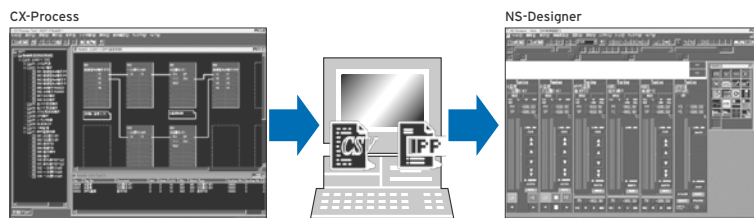
Engineering time can be reduced significantly by combining the LCB/LCU with an NS-series PT.

- This software can automatically build screen data for NS-series Touch Panels from the tag information (tag names, tag comments, scaling, I/O allocation, etc.) created in the CX-Process Tool's Control and Tuning Windows.
- Eliminates time-consuming steps such as allocating communications addresses and ladder programming for the NS-series PTs.
- The created data can be edited and processed freely in the CX-Designer Screen Development Software.

Ordering Guide

CX-One FA Support Tool Package

	Specifications	Model number	Overseas Standards
FA Support Tool Package	CX-One, One license	CXONE-AL01C-E	–
For Windows 98 SE, Me, NT 4.0 (Service Pack 6a),	CX-One, Three licenses	CXONE-AL03C-E	–
2000 (Service Pack 3 or higher), or XP.	CX-One, Ten licenses	CXONE-AL10C-E	–

Note: The computer can be connected to the peripheral port or
RS-232C port of a SYSMAC PLC CPU Unit or the RS-232C port of a Serial Communications Board/Unit.
Note: CX-One Lite includes the CX-Integrator, CX-Programmer, CX-Simulator, Switch Box Utility, CX-Designer, and Ladder Monitor software.
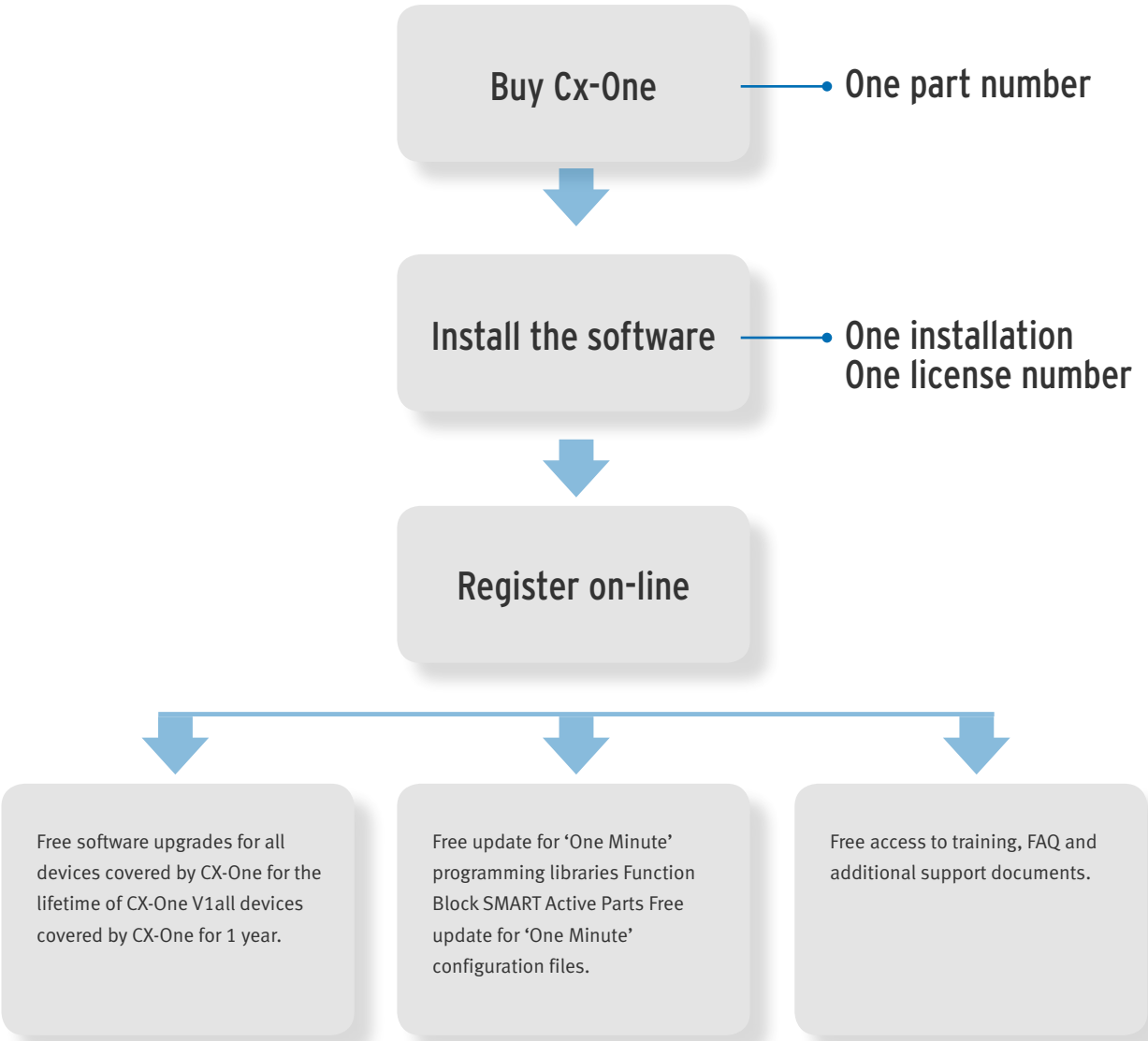
CX-One is compatible with Windows 2000 if service pack 3 or later has been installed. If the service pack has not been updated to SP 3 or later, download the latest service pack from Microsoft's web site: http://www.microsoft.com/windows2000/downloads/servicepacks/default.asp.

- Site licenses are available for users that will operate CX-One on multiple computers. Contact your OMRON representative for details.
- For users of separate Support Software applications contained in the CX-One FA Support Tool Package, there are also versions available to transfer and upgrade to CX-One. Contact your OMRON representative for details.

For more information and to get your free 30-day trial version of Cx-One then please go to www.cx-one.com

Web registration and updates

Thanks to using just one licence number, OMRON has implemented an automatic web update system, based on Windows Update technology. During installation, the user registers the software on the OMRON website only once. Every time the user connects to the Internet, CX-One updates will be installed automatically if the user so wishes. For example, new available configuration files are downloaded automatically, as well as the latest fixes made by developers.

Since Omron would like to offer quality support for CX-One users, a dedicated website will be provided with personalised technical support and free updates.

Buy Cx-One ———• One part number

Install the software ———• One installation
One license number

Register on-line

Free software upgrades for all devices covered by CX-One for the lifetime of CX-One V1all devices covered by CX-One for 1 year.

Free update for 'One Minute' programming libraries Function Block SMART Active Parts Free update for 'One Minute' configuration files.

Free access to training, FAQ and additional support documents.

CX-One

Customer example

Smart platform also includes a host of other benefits compared to tradition system and the overall effect is greatly reduced engineering costs for your automation projects. Below is an example of some of the savings you can expect from using Smart Platform. The 'One Minute' benefit covers more than just programming, it also covers wiring, configuration, programming, machine set-up, and maintenance functionalities.

	Traditional approach	With Smart Platform
1 Wire up	10 core cable for each axis 2 hours	Simple co-ax connection 1 minute
2 Configure	Different software, cables and connections PLC software Motion software 20 minutes	Integrated software 1 minute
3 Test	Detailed studying required before operation 3 hours	Pre-made objects to test motion Move CW 100mm 1 minute
4 Program	Complex ladder code X hours	Drag 'n' Drop standard blocks 1 minute

For more information and to get your free 30-day trial version of Cx-One then please go to www.cx-one.com

Authorised Distributor:

Control Systems
• Programmable logic controllers • Human-machine interfaces • Remote I/O

Motion & Drives
• Motion controllers • Servo systems • Inverters

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• Digital panel indicators • Electromechanical relays • Monitoring products • Solid-state relays
• Limit switches • Pushbutton switches • Low voltage switch gear

Sensing & Safety
• Photoelectric sensors • Inductive sensors • Capacitive & pressure sensors • Cable connectors
• Displacement & width-measuring sensors • Vision systems • Safety networks • Safety sensors
• Safety units/relay units • Safety door/guard lock switches

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