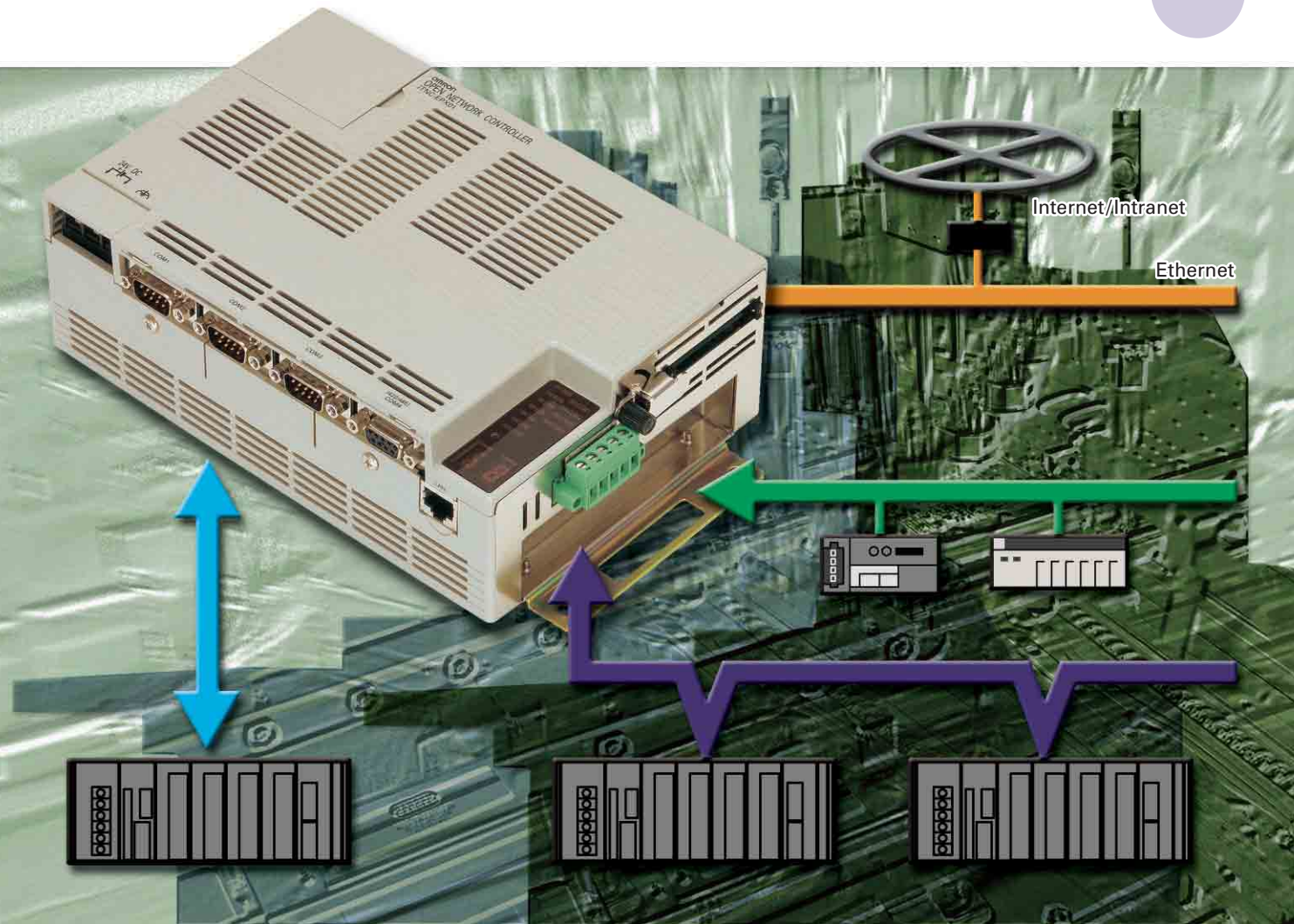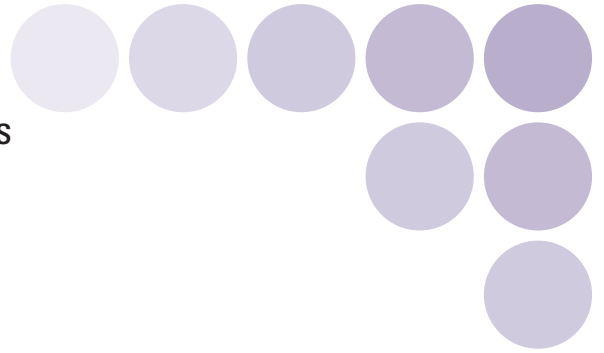**New!**

OMRON

Open Network Controller

ITNC-EPX01(-□□□) Version 2
ITNC-EIS01(-□□□) Version 1 Standard Models
ITNC-EIX01(-□□□) Version 1 Expandable Models

Internet/Intranet

Ethernet

Innovation
in the Solution Age

OMRON INDUSTRIAL AUTOMATION

The Information Station for Manufacturing Sites

Announcing Version 2 of the Open Network Controller (ONC), ever so popular as an Information Station for manufacturing equipment and production lines.
The new ONC models are Faster, have Greater Capacity, and support a PCI Bus.

Open Network Controller Ver. 2
ITNC-EPX01
ITNC-EPX01-DRM

Large Capacity Memory
- Built-in flash disk with 4 times the capacity (8 Mbytes to 32 Mbytes)
- Twice the main memory (16 Mbytes to 32 Mbytes)

High-speed Performance
- Built-in CPU clock at double the frequency (in-house comparison)

Memory Card Slot

Three RS-232C ports
- Another RS-232C added for a total of three ports.

One RS-422A/485 Port

DeviceNet communications connector (ITNC-EXP01-DRM only)

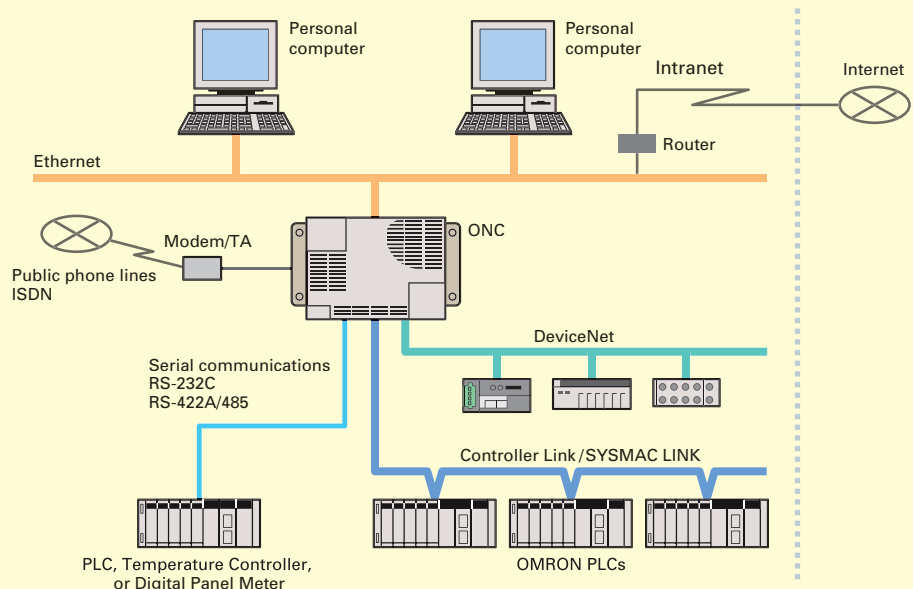**One Ethernet Port** (10Base-T/ 100Base-TX)

Backup Memory
The shared memory portion of event memory is saved in backup memory.

PCI Bus
Controller Link Support Board
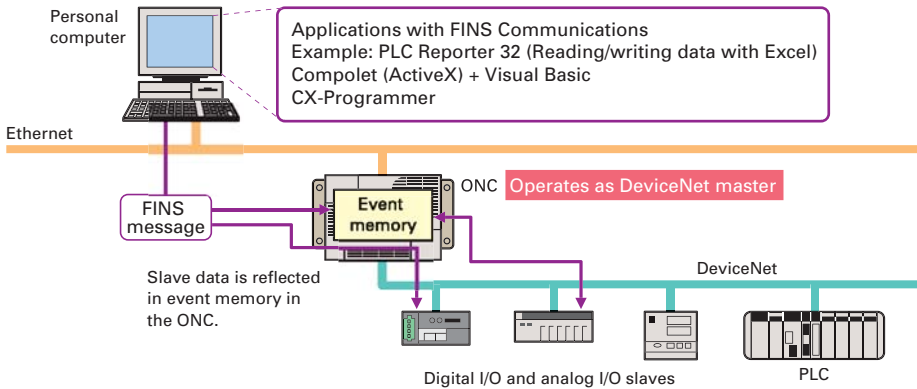SYSMAC LINK Support Board
CS1 Bus Interface Board

What Is the Open Network Controller?

Simply put, the ONC is an information station. It provides onsite information to your information system from manufacturing equipment and production lines by sending data collected from PLCs, DeviceNet, Temperature Controllers, Digital Panel Meters, and other FA components via Ethernet, intranet, and Internet connections. It can be used to add advanced information capabilities without changing the PLC system.

Personal computer

Personal computer

Intranet

Internet

Router

Ethernet

Modem/TA

ONC

Public phone lines
ISDN

DeviceNet

Serial communications
RS-232C
RS-422A/485

Controller Link / SYSMAC LINK

PLC, Temperature Controller,
or Digital Panel Meter

OMRON PLCs

ONC Stand-alone Applications as an Information Gateway

1 Ethernet-to-DeviceNet Remote I/O Communications

Personal computer

Applications with FINS Communications
Example: PLC Reporter 32 (Reading/writing data with Excel)
Compolet (ActiveX) + Visual Basic
CX-Programmer

Ethernet

FINS message

Event memory

ONC Operates as DeviceNet master

Slave data is reflected in event memory in the ONC.

DeviceNet

Digital I/O and analog I/O slaves

PLC

- Data from DeviceNet slaves is reflected in event memory in the ONC. The data in event memory can be read/written from the personal computer, effectively reading/writing actual I/O data for the slaves.
- Data from DeviceNet slaves can be read/written through the ONC without using PLCs.
- Explicit messages can be sent through the ONC to the DeviceNet slaves from the personal computer.
- PLC ladder program maintenance can be performed from the CX-Programmer through DeviceNet.
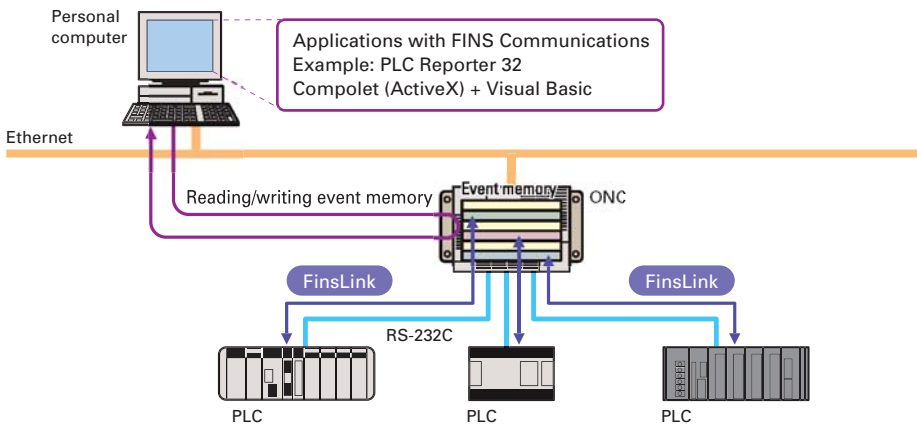
2 Ethernet-to-Serial Communications

2-1. Ethernet-to-Serial Communications: Host Link or CompoWay/F

Personal computer

Applications with FINS Communications
Example: CX-Programmer*
Compolet (ActiveX) + Visual Basic

Ethernet

FINS message

ONC

Conversion

CompoWay/F

Host Link

RS-422A/485

Host Link

RS-232C

C-series PLCs

CS/CJ-series PLCs

OMRON Temperature Controller, Digital Panel Meter, or Power Meter
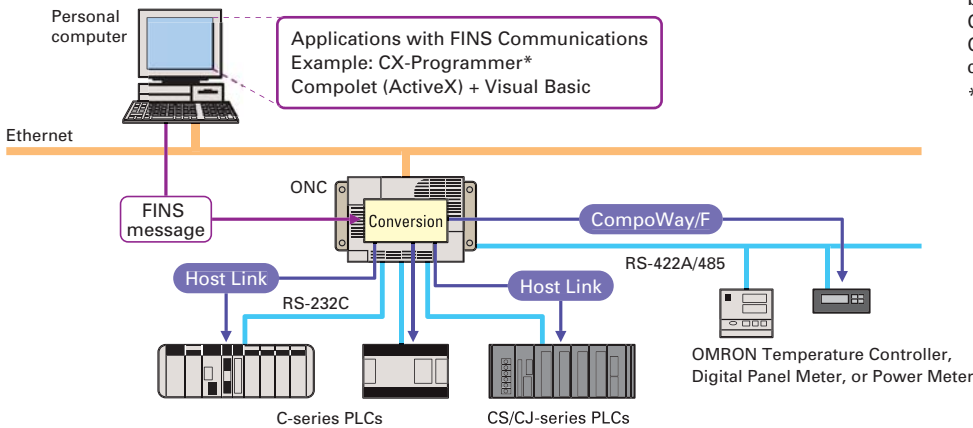
- Communications can be converted between FINS, Host Link, and CompoWay/F for C-series PLCs (e.g., CQM1H and CPM2A/C) and OMRON components.
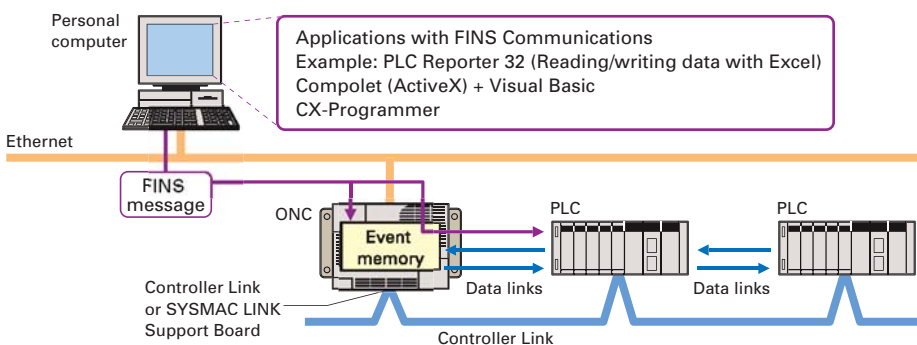- *: Connection from the CX-Programmer is possible only for the CS Series, CJ Series, CVM1, and CV Series.

2-2. Ethernet-to-Serial Communications: FinsLink

Personal computer

Applications with FINS Communications
Example: PLC Reporter 32
Compolet (ActiveX) + Visual Basic

Ethernet

Reading/writing event memory

Event memory ONC

FinsLink

FinsLink

RS-232C

PLC

PLC

PLC

- Data from PLCs connected on serial lines can be reflected in event memory in the ONC using FinsLink. The data in event memory can be read/written from the personal computer, effectively reading/writing data linked in the PLCs.

> FinsLink is a communications protocol for using FINS commands to read data (CIO and DM) from PLCs connected to the ONC via serial lines and to periodically write data to event memory in the ONC.
> It creates virtual data links between the ONC and PLCs using serial communications.

3 Ethernet-to-Controller Link or SYSMAC LINK Data Links

Personal computer

Applications with FINS Communications
Example: PLC Reporter 32 (Reading/writing data with Excel)
Compolet (ActiveX) + Visual Basic
CX-Programmer

Ethernet

FINS message

ONC

Event memory

PLC

PLC

Controller Link or SYSMAC LINK Support Board

Data links

Data links

Controller Link

- Data from multiple PLCs on Controller Link or SYSMAC LINK networks is reflected in event memory in the ONC using the data link function. Changes can be made to data linked in the PLCs by reading/writing event memory in the ONC.
- Remote programming and monitoring can be performed for PLCs from the CX-Programming through a Controller Link network.

Combine the ONC with Data Collection/Distribution Software to Achieve the Following

Application as a Data Collection Station

Collect Data and Send It Using FTP

Collect data under the required conditions from PLCs[1] connected via various networks and from DeviceNet slaves[2] and save it in CSV or binary files in the Memory Card in the ONC. Without any changes to the PLC system, the ONC can be used as a collection station for production, error, inspection, and history data.

*1: CIO and DM Area data from the PLC can be collected if it is set for event memory in the ONC or specified for a serial connection.
*2: ● Periodic collection: Collection at a specified time interval, such as 500 ms.
● Event collection: Collection when some event occurs, such as a change in I/O status or data contents in the PLC or in DeviceNet devices.
Example: Collecting status information when an error occurs by using the occurrence of an error in processing or inspections on the production line as the event.
● Scheduled collection: Collection at specific times, such as each hour.
Example: Collection every hour on the hour, such as 12:00 noon, 1:00 PM, etc. (minimum setting: every minute)
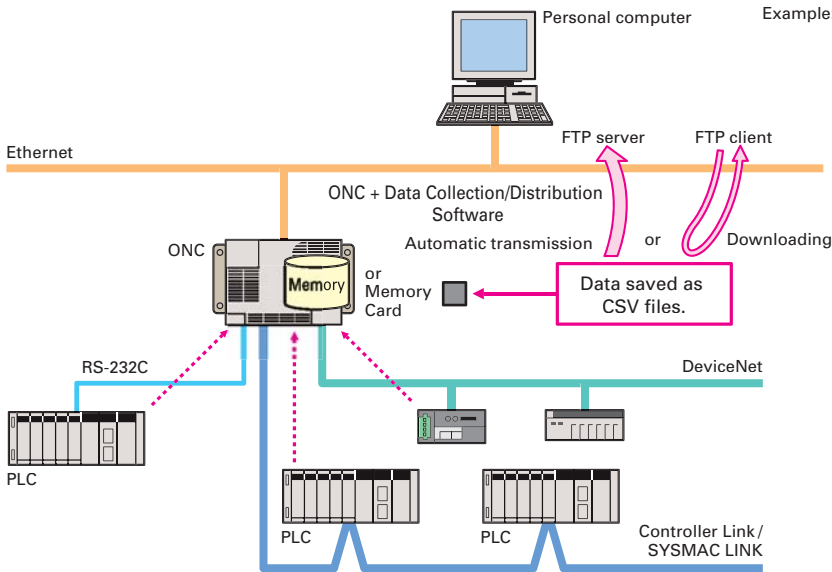
Example: Data collected using the Data Collection/Distribution Software can be displayed in Excel as shown below. A sample CSV file is shown set to collect data when bit 00 in CIO 0000 turns ON. The date can be added each time data is collected, and field names can be attached.


Application as a Station for Changing the System Setup

Write Settings, Such as Recipe Data, to PLCs

The settings required to change the system setup can be written (i.e., "distributed") to the PLCs. Data for changing the setup (A, B, C, ...) is written to CSV files at a personal computer in the host system.

These files are transferred to the ONC, which transfers the data from the CSV files to the specified memory addresses in the PLCs when instructed by the host system (e.g., by turning ON a bit or at a scheduled time).
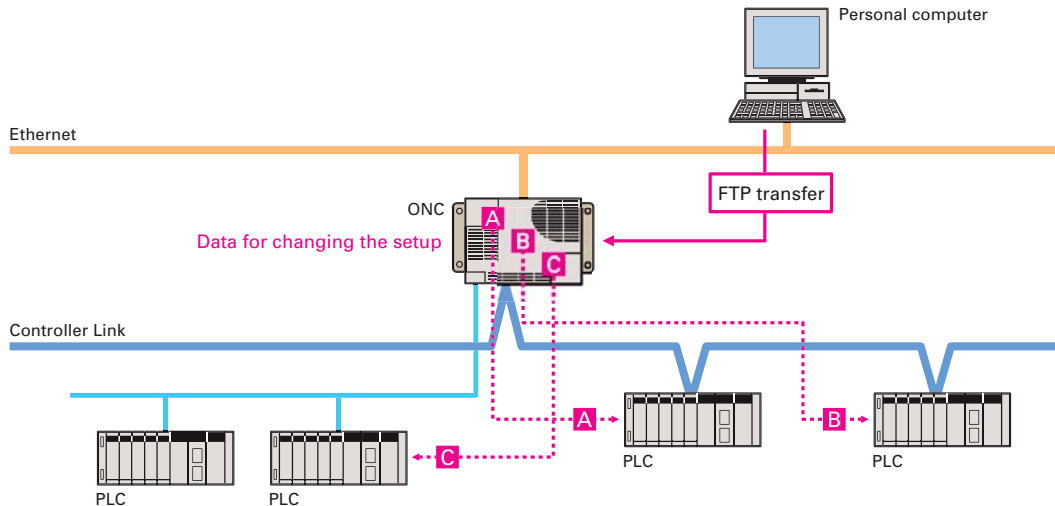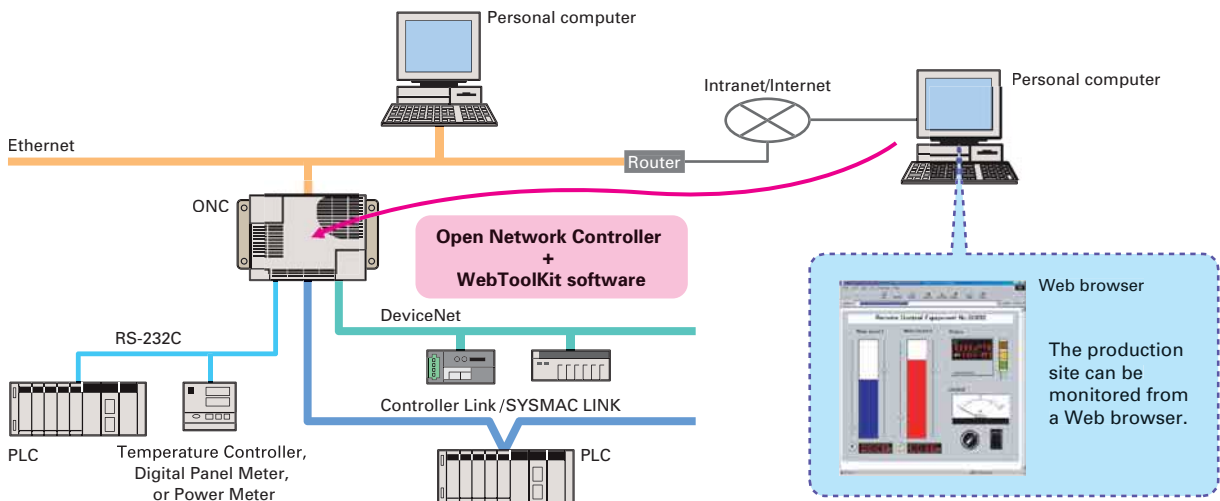
Various Software for Web Monitoring, E-mail Applications, and Database Connections

WebToolKit for ONC Application as a Browser Station

Information from FA components connected to the ONC can be viewed from a Web browser running on a personal computer connected to Ethernet, an intranet, or Internet*. This enables using Internet Explorer on your computer for monitoring. The WebToolKit is a development kit for building Web applications using Visual Basic or Java. The Web application is built in the ONC, allowing Web browsers running on personal computers to monitor data. (The computer is used as a graphic terminal.)
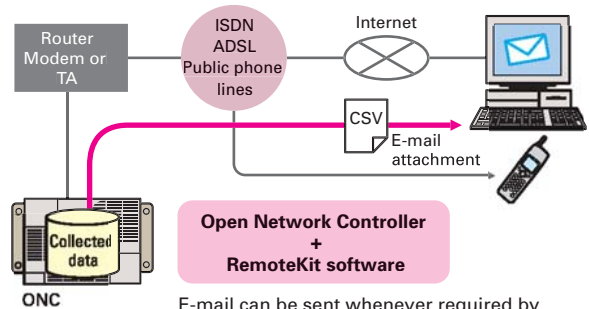
∗: A fixed IP address is obtained from the provider to use Internet.

Personal computer

Intranet/Internet

Personal computer

Ethernet

Router

ONC

Open Network Controller
+
WebToolKit software

Web browser

The production site can be monitored from a Web browser.

RS-232C

DeviceNet

Controller Link /SYSMAC LINK

PLC

Temperature Controller, Digital Panel Meter, or Power Meter

PLC

RemoteKit for ONC Application as an E-mail Station

E-mail can be sent from the ONC to personal computers or cell phones on specified conditions*. Files created by the Data Collection/Distribution Software can also be attached to e-mail sent to personal computers. E-mail can thus be used to provide status reports periodically, when errors occur, or at scheduled times. Dialup connections can be automatically processed through a modem to your ISP.
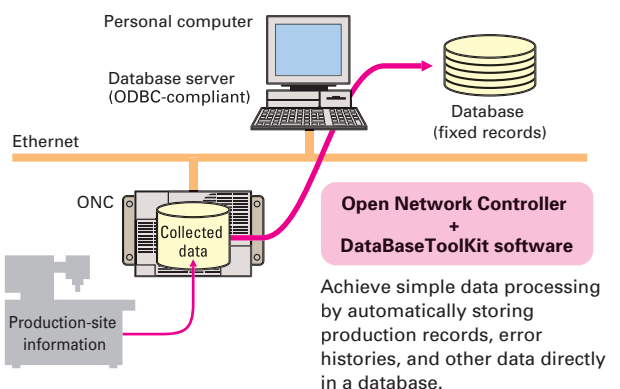
∗: E-mail can be sent based on a schedule or based on changes in bits or analog data from components connected to the ONC, such as PLCs or DeviceNet slaves.

Router Modem or TA

ISDN ADSL Public phone lines

Internet

CSV

E-mail attachment

Collected data

ONC

Open Network Controller
+
RemoteKit software

E-mail can be sent whenever required by installing one ONC in the facility (e.g., gas turbine power generation plants).

DataBaseToolKit for ONC Application as a Database Connection Station

Data from FA components connected to the ONC can be periodically (every second) stored in a database running on a personal computer connected via Ethernet. Files created by the Data Collection/Distribution Software can also be periodically stored in the database.

Personal computer

Database server (ODBC-compliant)

Database (fixed records)

Ethernet

ONC

Collected data

Open Network Controller
+
DataBaseToolKit software

Production-site information

Achieve simple data processing by automatically storing production records, error histories, and other data directly in a database.

Available Models

■ Hardware

Model	Description	Specifications
ITNC-EPX01	Version 2	Expansion slot (See note 1.); 4 COM ports (3 RS-232C and 1 RS-422A/485); No DeviceNet interface
ITNC-EPX01-DRM	Version 2 with DeviceNet	Expansion slot (See note 1.); 4 COM ports (3 RS-232C and 1 RS-422A/485); DeviceNet interface
ITNC-EIS01	Version 1 Standard model	No expansion slots; 2 COM ports (RS-232C); No DeviceNet interface
ITNC-EIS01-DRM	Version 1 Standard model with DeviceNet	No expansion slots; 2 COM ports (RS-232C); DeviceNet interface
ITNC-EIX01	Version 1 Expandable model	Expansion slot (See note 2.); 3 COM ports (2 RS-232C and 1 RS-422A/485); No DeviceNet interface
ITNC-EIX01-DRM	Version 1 Expandable model with DeviceNet	Expansion slot (See note 2.); 3 COM ports (2 RS-232C and 1 RS-422A/485); DeviceNet interface
ITNC-EIS01-CST	Version 1 Standard model with CS1 bus interface	No expansion slots; 2 COM ports (RS-232C); CS1 bus interface (See note 3.)
ITNC-EIX01-CST	Version 1 Expandable model with CS1 bus interface	Expansion slot (See note 2.); 3 COM ports (2 RS-232C and 1 RS-422A/485); CS1 bus interface (See note 3.)
ITBC-CN001-CST	CS1 Bus Interface Cable	Cable length: 1 m
ITBC-CN005-CST	CS1 Bus Interface Cable	Cable length: 5 m
ITBC-CN012-CST	CS1 Bus Interface Cable	Cable length: 12 m
ITNC-AP001	Mounting Bracket for standard model	For version 1
ITNC-AP002	Mounting Bracket for expandable model	For version 1
ITNC-DIN01	Mounting Bracket for DIN track mounting	Common to standard model and expandable model

Note 1: The expansion slot is a PCI bus slot into which a Controller Link Board, SYSMAC LINK Board, or CS1 Bus Interface Board can be mounted. Only 1 slot is provided.
2: The expansion slot is an ISA bus slot into which a Controller Link Board, SYSMAC LINK Board, or SYSMAC Board can be mounted. Only 1 slot is provided.
3: DeviceNet connections are not possible for models with CS1 bus interfaces.

■ Software (for Both Version 1 and Version 2)

Model	Description	Licensed product	Specifications
ITNC-DL1Q-ECD-V2	Data Collection/Distribution Software Ver. 2.0 (See note 2.)	Available (for 1 user, 5 users, or 10 users)	A Memory Card (15-Mbyte or larger) must be purchased separately (See note 1.)
ITNC-WK1Q-ECD	WebToolKit Software Ver. 1.00		
ITNC-RK1Q-ECD	RemoteKit Software Ver. 1.11		
ITNC-DK1Q-ECD	DataBaseToolKit Software Ver. 1.00		
ITNC-MD1Q-EF	Third-party PLC Connection Unit Ver. 1.00 (Mitsubishi A-series Computer Link Unit)	None	————
ITNC-NS1Q-EF	NX-Server for DeviceNet ONC Edition Ver. 2.00		

Note 1: A Memory Card must be purchased separately for ONC version 1. The Memory Card is not required for ONC version 2 as long as there is sufficient space in the internal disk.
2: Using a Memory Card is recommended for ONC version 2 as well.

■ Memory Cards for Open Network Controllers

Model	Description
HMC-EF172	15-MB flash memory
HMC-EF372	30-MB flash memory
HMC-EF672	64-MB flash memory

■ Specifications

	Model	Ver. 1		Ver. 2
Item		ITNC-EIS01 ITNC-EIS01-DRM ITNC-EIS01-CST	ITNC-EIX01 ITNC-EIX01-DRM ITNC-EIX01-CST	ITNC-EPX01 ITNC-EPX01-DRM
CPU		486 compatible, CPU: 66 MHz, equivalent to 486SX		486 compatible, CPU: 133 MHz, equivalent to 486DX
FPU		None (software emulation)		Provided
Memory		16 Mbytes		32 Mbytes
Disk		Flash disk, 8 Mbytes		Flash disk, 32 Mbytes
Interface	LAN	10Base-T		10Base-T/100Base-TX
	Serial ports	2 RS-232C ports	2 RS-232C ports 1 RS-422A/485 port	3 RS-232C ports 1 RS-422A/485 port
	DeviceNet	Yes (ITNC-EIS01-DRM only)	Yes (ITNC-EIX01-DRM only)	Yes (ITNC-EPX01-DRM only)
	CS1 bus interface	Yes (ITNC-EIS01-CST only)	Yes (ITNC-EIX01-CST only)	None
CF card		None	One ISA bus slot (half size)	One PCI bus slot (half size)
Memory Card		1 slot		
Power Supply		24 VDC, 15 W max.	24 VDC, 20 W max.	24 VDC, 20 W max.
Backup memory		None		Yes
Setup utility		No Setup/Maintenance Utility		Setup/Maintenance Utility installed in internal disk

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- Windows is a registered trademark of Microsoft Corporation.
- DeviceNet is a registered trademark of the ODVA (Open DeviceNet Vendor Association).
- The copyright for the software for the DeviceNet parts of the ONC belongs to S-S Technologies, Inc.
- Ethernet is a registered trademark of Xerox.
- Names of systems or products of other companies that appear in this document are trademarks or registered trademarks of the respective company.

Note: Do not use this document to operate the Unit.