OMRON

CompoNet™

Open Network for High-Speed Control

High Speed Sensor & Actuator Network

» Extremely Fast Communications
» Powerful Diagnostic Information
» Simple Installation & Low Cost Solutions

Key Features
and Benefits

Extremely Fast Communications
» Over 1000 I/O update in 1 ms
» Fast I/O updates can allow for higher production rates in less time, saving time and lowering costs.

Powerful Diagnostic Information with Smart Slaves
Preventative maintenance & diagnostic information built into the Smart Slaves save time and money by maximizing Up-time and minimizing downtime.

Simple Installation & Low Cost Solutions
Flat cable allows for easy One-Touch Installation, installation time is 1/30 required time for other systems. The slave nodes automatically match baud rate with the master saving set-up time.

Other Key Features
and Benefits:

Maintenance data logging minimizes downtime

All SmartSlice I/O units automatically collect and store the information that will help you plan machine maintenance. Timely detection of reduced performance will minimize unplanned downtime and keep machine performance fast and reliable.

Early-warning system prevents breakdowns

Every CompoNet Slave unit has its own built-in early-warning functions, enabling you to schedule maintenance and prevent breakdowns. Warnings include:

» Supply voltage out of safe range – e.g. due to damaged cable or poor connection.

» Preset maintenance interval exceeded – which can be a time interval or a target number of operations, to indicate that an inspection of (electro)mechanical parts is required.

» Maximum allowed delay between two I/O signals is exceeded – to indicate that wear or lack of lubrication is causing a machine to work slower than intended.

Smart I/O to reduce your programming effort

Analog I/O units will also help you reduce PLC programming. Many useful functions are already built in, and only require some settings to match your application's characteristics.
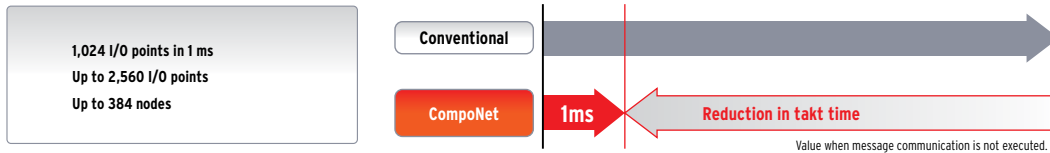
CompoNet High Speed Sensor & Actuator Network

Fast Communication Fast multipoint communication reduces takt times

■ Fastest Communication Speeds in the Industry

Provides the fastest communication speeds in the industry for a sensor-actuator level network.
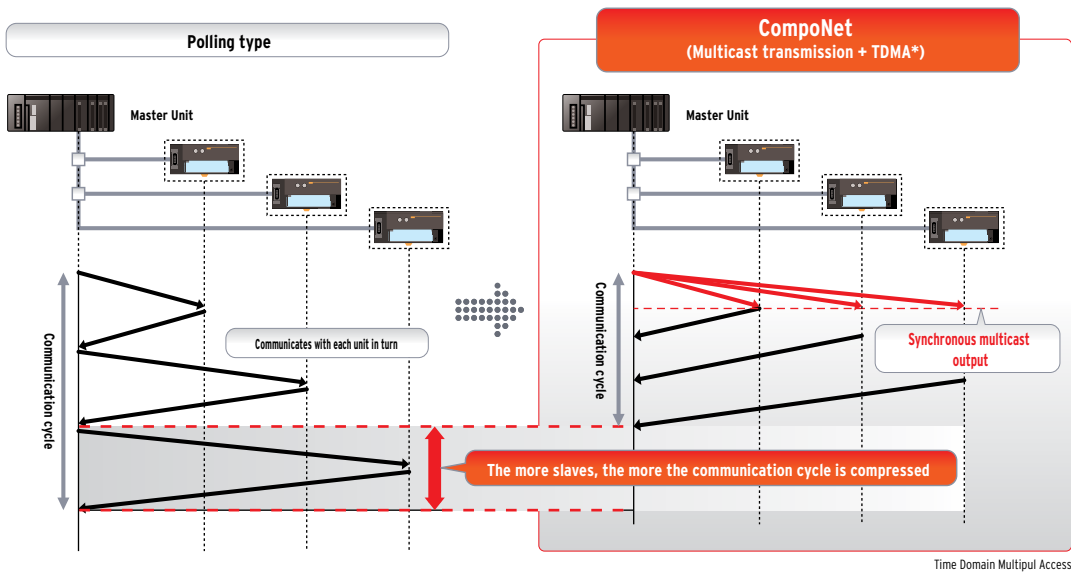It is possible to send data consisting a large number of control points on multiple nodes. There is no response time delay, even with repeater units.

1,024 I/O points in 1 ms
Up to 2,560 I/O points
Up to 384 nodes

Conventional

CompoNet 1ms Reduction in takt time

Value when message communication is not executed.

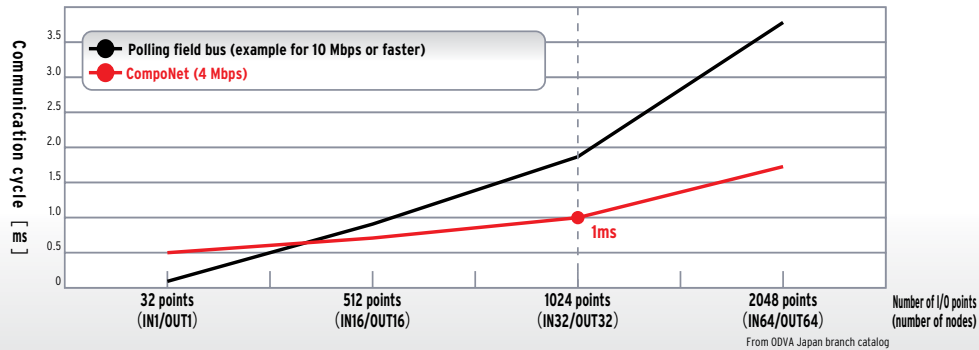### ■ Fast Communication Technology even at Low Baud Rate of 4 Mbps

Provides excellent performance in applications with large numbers of control points and also in expansion work.
Efficient multicast transmission enables stable and fast communication even when the number of slaves increases.

Polling type

Master Unit

Communication cycle

Communicates with each unit in turn

CompoNet
(Multicast transmission + TDMA*)

Master Unit

Communication cycle

Synchronous multicast output

The more slaves, the more the communication cycle is compressed

Time Domain Multipul Access

Advantage of high-speed CompoNet technology

1 Fast communication is maintained even with an increased number of control points.

Communication cycle [ms]

● Polling field bus (example for 10 Mbps or faster)
● CompoNet (4 Mbps)

3.5
3.0
2.5
2.0
1.5
1.0
0.5
0

1ms

| 32 points (IN1/OUT1) | 512 points (IN16/OUT16) | 1024 points (IN32/OUT32) | 2048 points (IN64/OUT64) | Number of I/O points (number of nodes) |

From ODVA Japan branch catalog

2 Easier wiring (branching is possible even in fast mode)

3 Regular cables can be used.

4 High resistance to noise.

Simple and Low-Cost   Slashes start-up workload and equipment cost!

■ Flat Cable for Easy One-Touch Installation

Flat cable shortens installation time.
It also prevents connector installation mistakes.

Shield cable for field networks

1 Peel away the cable coating.
2 Take out the shield wire.
3 Peel away the lead coating.
4 Attach the 5 crimp terminals.
5 Insert the cable and fasten with 5 screws.

Flat cable

Slashes installation work to 1/30 of the required time!

1 Insert the cable into the connector.
2 Snap fit with tool. **Snap**

■ Smooth Start-Up with Simple Setup

Just set the master baud rate and the slave node addresses and the system is ready for start-up.
The slave baud rate is automatically set to match the master unit baud rate.
The allocation areas are automatically set by the node addresses.

CX-Integrator *[1]

Automatic recognition of master unit baud rate

For the slave, just set the node address.

*1. Using CX-Integrator makes detailed settings and monitoring possible.
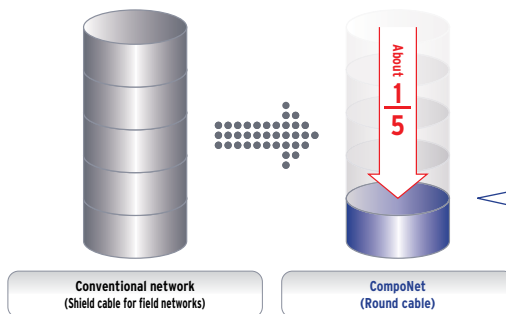
Rotary switch used
Easy-to-understand decimal switch

MS NS

Reduces setting mistakes.

NODE ADDRESS   DR
1 2 4 8 16 32   0 1

DIP Switch (hexadecimal)
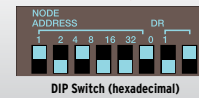
■ Can Use Regular Round Cables for Fast Communication

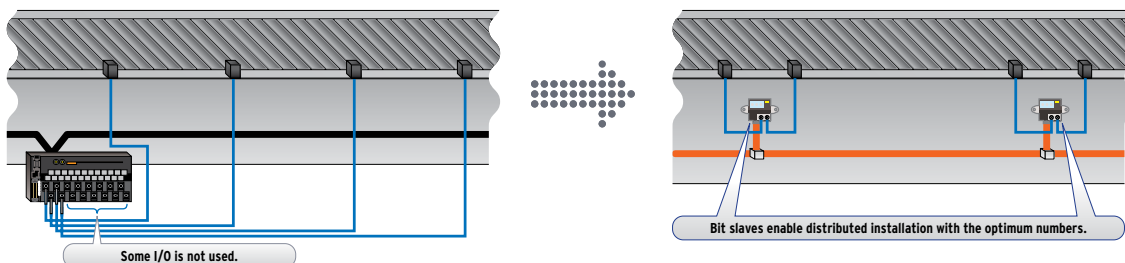Regular round cables can be used as the communication cables.

About 1/5

Round Cable

■ Can use regular cables that are inexpensive and easy to find.
■ Uses round cables (4-wire) to supply power to the slave units.
■ Can also use regular highly flexible cables and oil-resistant cables.
■ When communication power is supplied to the slaves, round cables (2-wire) can also be used.

Conventional network
(Shield cable for field networks)

CompoNet
(Round cable)

* Use round cables that comply with ODVA specifications.

■ Bit-level distribution for effective I/O installation

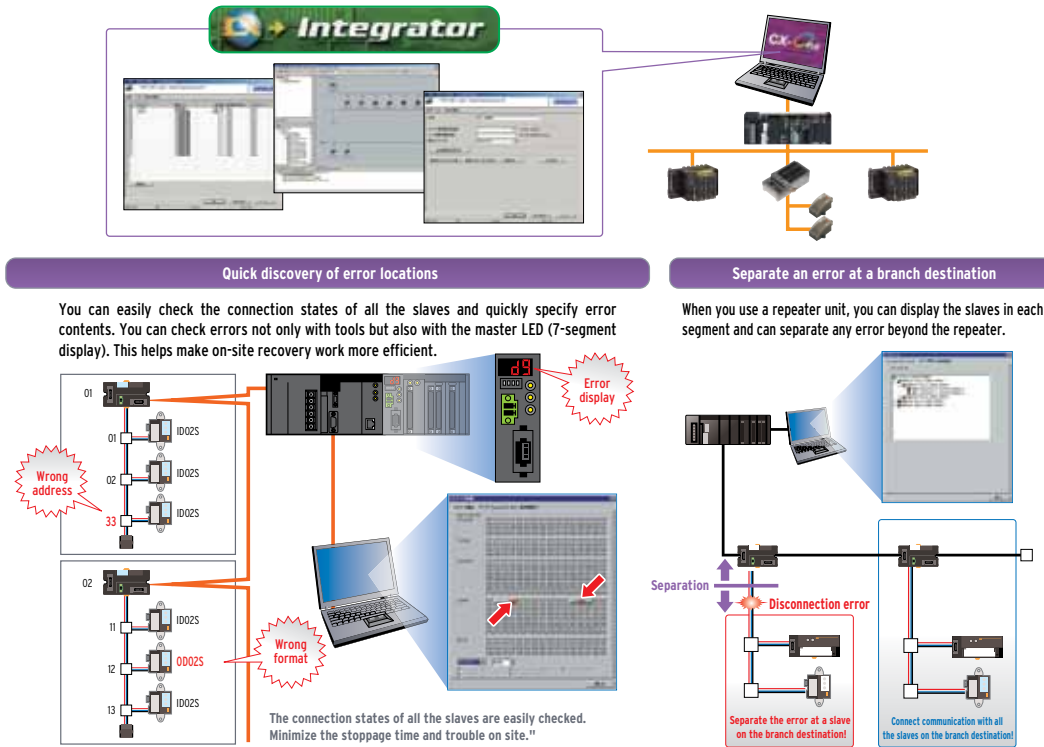Bit slaves enable optimum I/O configuration and wiring becomes more efficient.

Some I/O is not used.

Bit slaves enable distributed installation with the optimum numbers.

CompoNet High Speed Sensor & Actuator Network

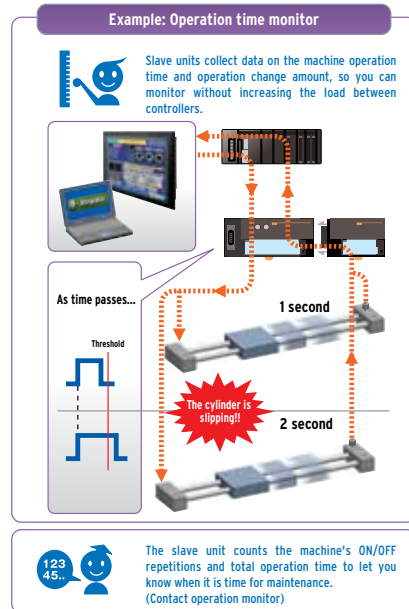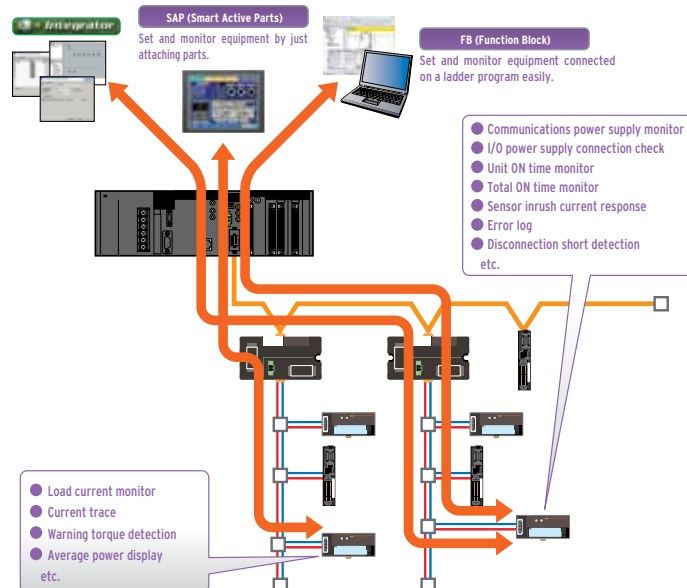## Diagnostic Information — Reducing the start-up time and maintenance work

CX-Integrator Makes Start-Up and Recovery Work More Efficient

CX-Integrator software lets you set the PLC network/serial communication system configuration from a computer.
CX-Integrator makes it easy to handle CompoNet assignment, parameter setting, connection state monitoring, comment setting, network diagnosis, etc. from a computer.

Quick discovery of error locations

You can easily check the connection states of all the slaves and quickly specify error contents. You can check errors not only with tools but also with the master LED (7-segment display). This helps make on-site recovery work more efficient.

Error display

Wrong address

01   ID02S
02   ID02S
33   ID02S

Wrong format

11   ID02S
12   OD02S
13   ID02S

The connection states of all the slaves are easily checked. Minimize the stoppage time and trouble on site."

Separate an error at a branch destination

When you use a repeater unit, you can display the slaves in each segment and can separate any error beyond the repeater.

Separation

Disconnection error

Separate the error at a slave on the branch destination!

Connect communication with all the slaves on the branch destination!

Informatization of the all Equipment

Smart features are features of the slave main units that collect a variety information used for from start-up to maintenance.
Monitor network power supply voltage with tools and display units. Slaves collect a variety of information helpful for preventive maintenance and detect errors in connected equipment before problems occur. No need to write a program for monitoring.

SAP (Smart Active Parts)
Set and monitor equipment by just attaching parts.

FB (Function Block)
Set and monitor equipment connected on a ladder program easily.

- Communications power supply monitor
- I/O power supply connection check
- Unit ON time monitor
- Total ON time monitor
- Sensor inrush current response
- Error log
- Disconnection short detection
etc.

- Load current monitor
- Current trace
- Warning torque detection
- Average power display
etc.

Example: Operation time monitor

Slave units collect data on the machine operation time and operation change amount, so you can monitor without increasing the load between controllers.

As time passes...

1 second

Threshold

The cylinder is slipping!!

2 second

The slave unit counts the machine's ON/OFF repetitions and total operation time to let you know when it is time for maintenance. (Contact operation monitor)

Wiring

Flexible Installation

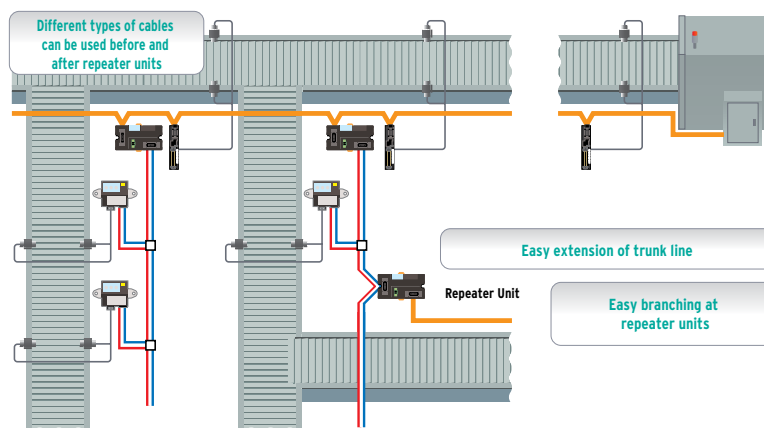### Select the best branching method for your application.

CompoNet provides both fast communication and easy wiring.
Branch wiring is a powerful tool for installing large numbers of slaves in a variety of locations.
You can optimize your cable layout to match the layout of your equipment.

Distance can easily be extended.

A maximum distance of 1500 m is possible (when baud rate is 93.75 kbps).

Different types of cables can be used before and after repeater units

Easy extension of trunk line

Repeater Unit

Easy branching at repeater units

Select the best branching method for your application
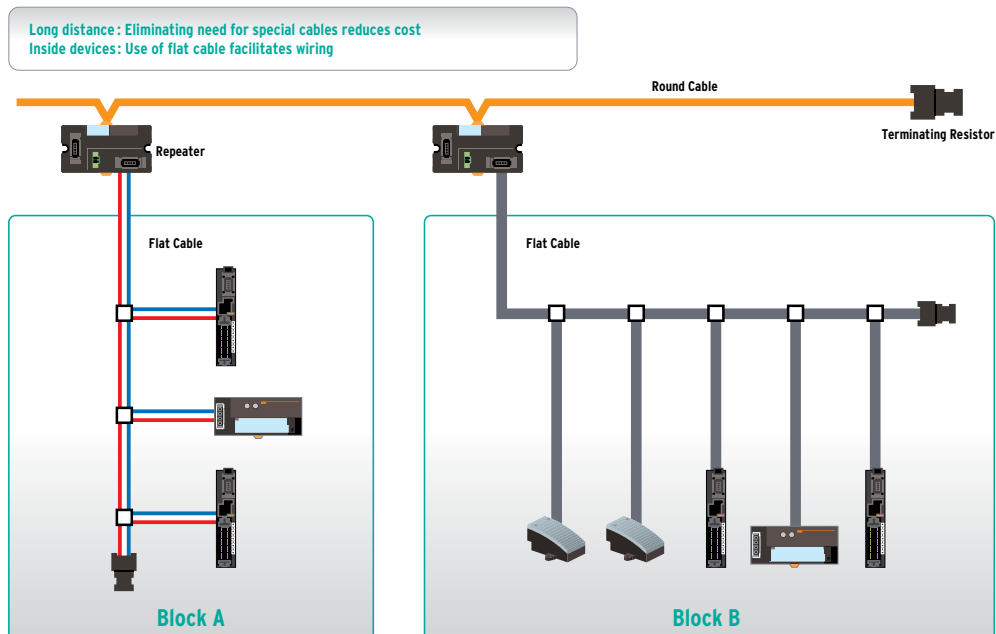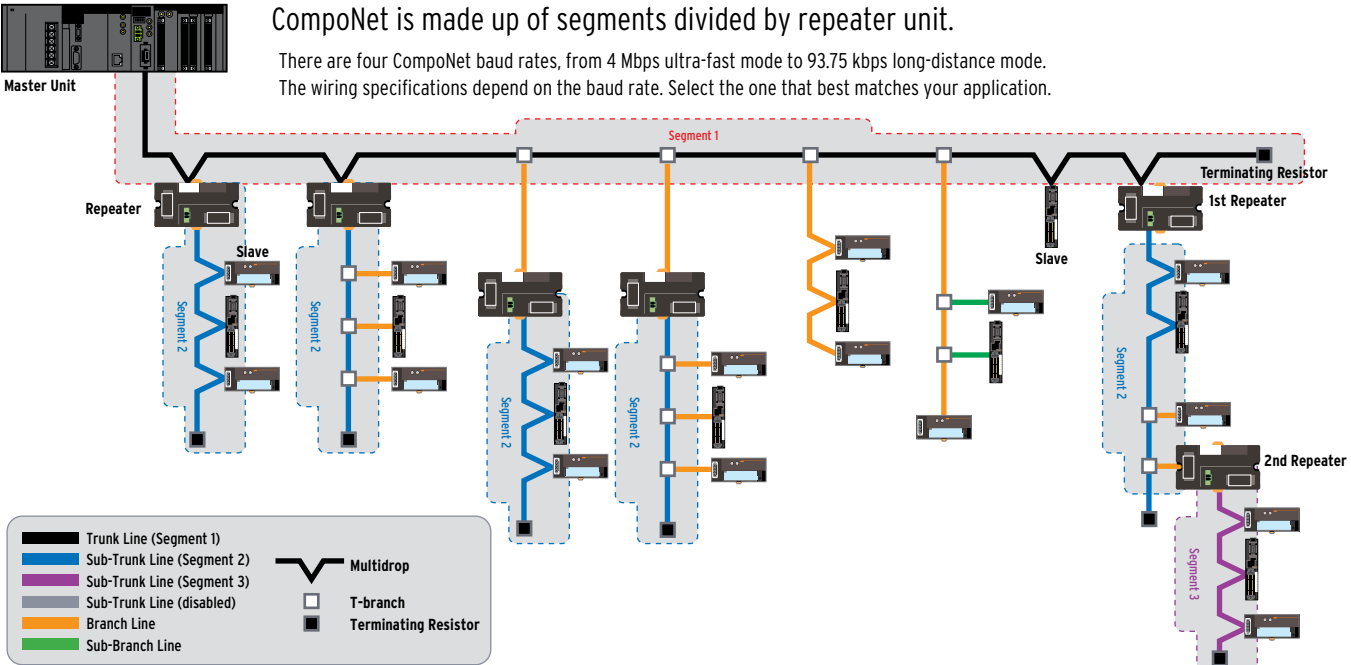
Flat Connector Socket + Fat Connector Plug

Multidrop Type

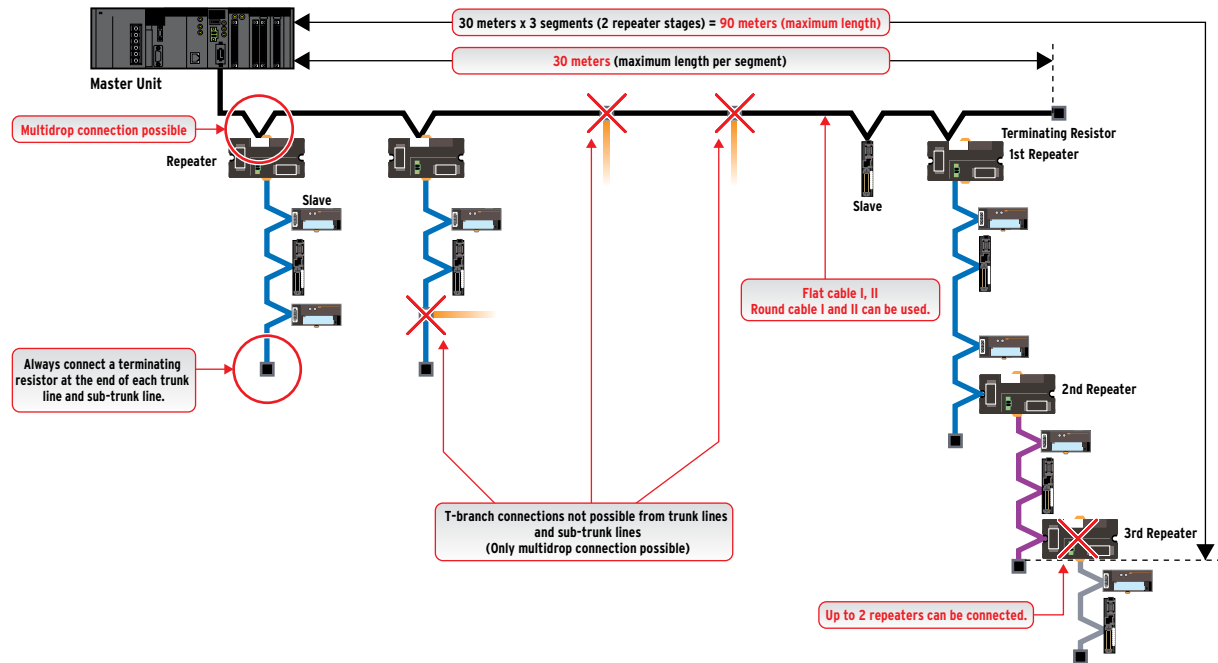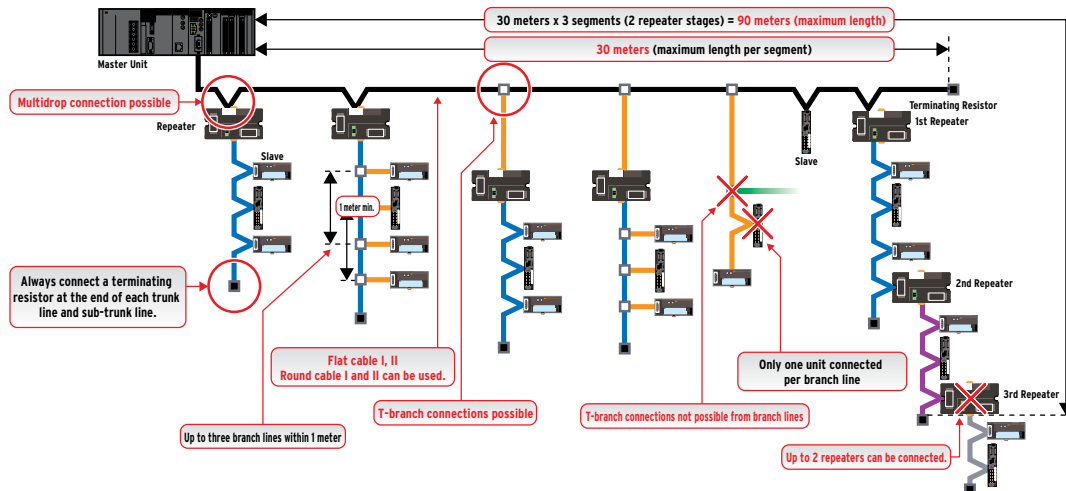Repeater Unit

Different types of cables can be mixed.

Long distance : Eliminating need for special cables reduces cost
Inside devices : Use of flat cable facilitates wiring

Round Cable

Terminating Resistor

Repeater

Flat Cable

Flat Cable

Block A

Block B

CompoNet High Speed Sensor & Actuator Network

Network Specifications

Master Unit

CompoNet is made up of segments divided by repeater unit.

There are four CompoNet baud rates, from 4 Mbps ultra-fast mode to 93.75 kbps long-distance mode.
The wiring specifications depend on the baud rate. Select the one that best matches your application.

Legend:
- Trunk Line (Segment 1)
- Sub-Trunk Line (Segment 2)
- Sub-Trunk Line (Segment 3)
- Sub-Trunk Line (disabled)
- Branch Line
- Sub-Branch Line
- Multidrop
- T-branch
- Terminating Resistor

Baud rate	Cable type		Trunk line and sub-trunk line length (When 2 repeaters are used.)	Number of slaves per segment (Including number of repeaters)	Branch line length	Total branch line length per segment	Branch location restrictions	Number of slaves per branch line	Sub-branch line length	Total sub-branch line length per segment
4Mbps	Round cable I, II Flat cable I, II		30m (90m)	32	—	—	—	—	—	—
3Mbps	Round cable I, II Flat cable I, II		30m (90m)	32	0.5m	8m	3/meter	1	—	—
1.5Mbps	Round cable I	Without branches	100m (300m)	32	—	—	—	—	—	—
		With branches	30m (90m)	32	2.5m	25m	3/meter	3	—	—
	Round cable II Flat cable I, II		30m (90m)	32	2.5m	25m	3/meter	3	0.1m	2m
93.75kbps	Round cable I		500m (1500m)	32	6m	120m	3/meter	1	—	—
	Round cable II Flat cable I, II		200m (600m)	32	200 meter free wiring total wire length per segment					

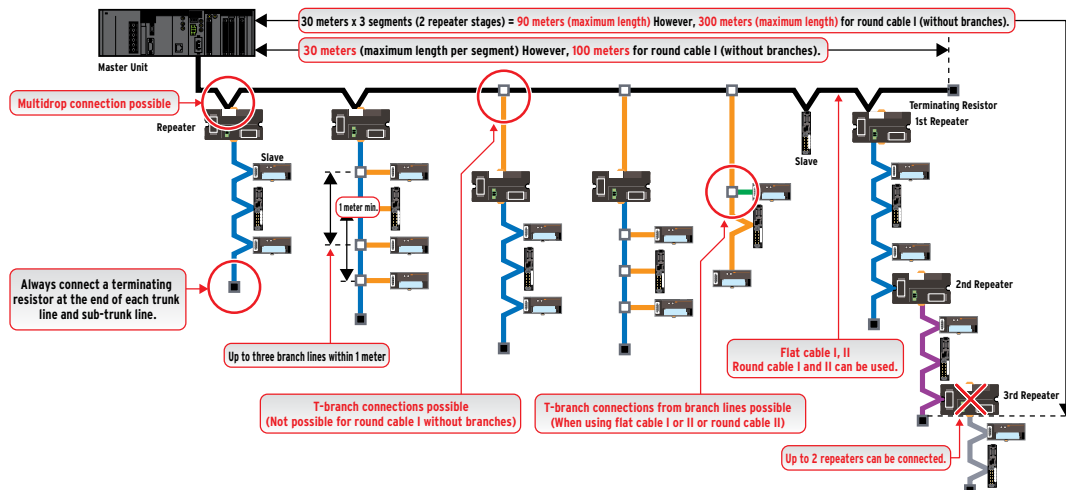### Example of wiring for 4Mbps baud rate (Application: Ultra-fast communications)

Master Unit

30 meters x 3 segments (2 repeater stages) = 90 meters (maximum length)

30 meters (maximum length per segment)

Terminating Resistor

1st Repeater

Multidrop connection possible

Repeater

Slave

Slave

Always connect a terminating resistor at the end of each trunk line and sub-trunk line.

Flat cable I, II
Round cable I and II can be used.

2nd Repeater

T-branch connections not possible from trunk lines and sub-trunk lines
(Only multidrop connection possible)

3rd Repeater

Up to 2 repeaters can be connected.

Network Specifications

Example of wiring for 3Mbps (Application: Fast communications with branching)

30 meters x 3 segments (2 repeater stages) = 90 meters (maximum length)

30 meters (maximum length per segment)

Master Unit

Multidrop connection possible

Repeater

Slave

Slave

Terminating Resistor
1st Repeater

1 meter min.

2nd Repeater

Always connect a terminating resistor at the end of each trunk line and sub-trunk line.

Flat cable I, II
Round cable I and II can be used.

3rd Repeater

Only one unit connected per branch line

T-branch connections possible

T-branch connections not possible from branch lines

Up to three branch lines within 1 meter

Up to 2 repeaters can be connected.

Example of wiring for 1.5 Mbps (Application: Balance of fast communications and branching)

30 meters x 3 segments (2 repeater stages) = 90 meters (maximum length) However, 300 meters (maximum length) for round cable I (without branches).

30 meters (maximum length per segment) However, 100 meters for round cable I (without branches).

Master Unit

Multidrop connection possible

Repeater

Slave

Slave

Terminating Resistor
1st Repeater

1 meter min.

2nd Repeater

Always connect a terminating resistor at the end of each trunk line and sub-trunk line.

Flat cable I, II
Round cable I and II can be used.

3rd Repeater

Up to three branch lines within 1 meter

T-branch connections possible
(Not possible for round cable I without branches)

T-branch connections from branch lines possible
(When using flat cable I or II or round cable II)

Up to 2 repeaters can be connected.

Example of wiring for 93.75 kbps (Application: Long-distance wiring and free wiring)

Example using round cable I

When using round cable I ································· 500 meters x 3 segments (2 repeaters) = 1500 meters (maximum length)
When using flat cable I or II or round cable II ···· 200 meters x 3 segments (2 repeaters) = 600 meters (maximum length)

When using round cable I ··· 500 meters (maximum length per segment)
When using flat cable I or II or round cable II·············· 200 meters (maximum length per segment)

Master Unit

Multidrop connection possible

Repeater

Slave

Slave

Terminating Resistor
1st Repeater

1 meter min.

2nd Repeater

Always connect a terminating resistor at the end of each trunk line and sub-trunk line.

3rd Repeater

Up to three branch lines within 1 meter
(Only when using round cable I)

T-branch connections possible

T-branch connections not possible from branch lines
(Only when using round cable I)

Only one unit connected per branch line
(Only when using round cable I)

Flat cable I, II
Round cable I and II can be used.

Up to 2 repeaters can be connected.

Free wiring (when using flat cable I or II or round cable II)
Free wiring is a form of connection that does not distinguish between trunk lines and branch lines. As long as the total wire length per segment is not more than 200 meters, you can wire freely without restrictions on the number of branches.

CompoNet High Speed Sensor & Actuator Network

Configuration Examples and Peripheral Devices

Example with round cable I (2-wire)

Required peripheral equipment

Specification	Model	Number of units	Remarks
Open connector (for unit connection)	DCN4-TB4*	4	—
Terminating resistor	DRS1-T	1	—
Round cable I (2-wire)	—	1	Commercially available
Communications power supply	—	1	24 VDC
I/O power supply	—	1	24 VDC

CJ Series CPU Unit

For CJ Series CompoNet Master Unit

Open Type Connector (for connecting Units) DCN4-TB4

Terminating Resistor DRS1-T

Open Connector (for unit connection) DCN4-TB4

Open Connector (for unit connection) DCN4-TB4

Open Connector (for unit connection) DCN4-TB4

CRT1-OD16 + XWT-ID08

CRT1-ID16

CRT1-OD16

24 VDC (Communications power supply)

24 VDC (I/O power supply)

Example with round cable II (4-wire)

Required peripheral equipment

Specification	Model	Number of units	Remarks
Open connector (for unit connection)	DCN4-TB4*	4	—
Flat connector socket	DCN4-TR4*	1	For terminating resistor connection
Terminating resistor	DCN4-TM4*	1	—
Round cable (4-wire)	—	1	Commercially available
Special tool	DWT-A01	1	—
Communications power supply	—	1	24 VDC
I/O power supply	—	1	24 VDC

CJ Series CPU Unit

For CJ Series CompoNet Master Unit

Open Type Connector (for connecting Units) DCN4-TB4

Mount the terminating resistor (DCN4-TM4) in the flat connector socket (DCN4-TR4) already mounted on the cable.

Round Cable II

Terminating Resistor DCN4-TM4

Flat Connector Socket

Flat Connector Socket DCN4-TR4

Terminating Resistor DCN4-TM4

24 VDC (Communications power supply)

Open Connector (for unit connection) DCN4-TB4

Open Connector (for unit connection) DCN4-TB4

Open Connector (for unit connection) DCN4-TB4

CRT1-OD16 + XWT-ID08

CRT1-ID16

CRT1-OD16

24 VDC (I/O power supply)

* Order in units of 10.

Configuration Examples and Peripheral Devices

Example with flat cable I (without sheath)

Required peripheral equipment

Specification	Model	Number of units	Remarks
Flat connector socket	DCN4-TR4*	6	—
Flat connector plug	DCN4-BR4*	11	—
Multidrop connector	DCN4-MD4*	1	For connecting repeater units
Terminating resistor	DCN4-TM4*	2	—
Flat cable I (without sheath)	DCA4-4F10	1	Units of 100 meters
Special tool	DWT-A01	1	—
Communications power supply	–	2	24 VDC
I/O power supply	–	1	24 VDC

For a bit slave, the current consumed by external I/O (sensors and actuators) is supplied (via flat cable I (without sheath)) from the communications power supply connected to the master unit or repeater unit, the same as the current consumed for the communication power supply.

CJ Series CPU Unit

For CJ Series CompoNet Master Unit

Flat Connector Plug DCN4-BR4

Flat Connector Plug DCN4-BR4

Flat Connector Plug DCN4-BR4

Flat Connector Plug DCN4-BR4

Flat Connector Socket DCN4-TR4

Flat Connector Socket DCN4-TR4

Flat Connector Socket DCN4-TR4

Flat Connector Plug DCN4-BR4

Flat Connector Plug DCN4-BR4

Flat Connector Plug DCN4-BR4

CRT1-ID16

CRT1-OD16 + XWT-OD08

CRT1-OD16

Multidrop Connector DCN4-MD4
Flat Connector Plug DCN4-BR4
Terminating Resistor DCN4-TM4

24 VDC (Communications power supply)

24 VDC (I/O power supply)

Repeater Unit CRS1-RPT01

Flat Connector Socket DCN4-TR4

Terminating Resistor DCN4-TM4

Flat Connector Plug DCN4-BR4

Flat Connector Plug DCN4-BR4

Flat Connector Plug DCN4-BR4

Flat Connector Socket DCN4-TR4

Flat Connector Socket DCN4-TR4

24 VDC (Communications power supply)

Bit slave 2-point input CRT1B-ID02S

Bit slave 2-point output CRT1B-OD02S

Example with flat cable II (with sheath)

Required peripheral equipment

Specification	Model	Number of units	Remarks
Flat connector socket	DCN5-TR4*	4	—
Flat connector plug	DCN5-BR4*	4	—
Terminating resistor	DCN5-TM4*	1	—
Flat cable II (with sheath)	DCA5-4F10	1	Units of 100 meters
Special tool	DWT-A02	1	—
Communications power supply	—	1	24 VDC

For a bit slave, the current consumed by external I/O (sensors and actuators) is supplied (via flat cable II (with sheath)) from the communications power supply connected to the master unit or repeater unit, the same as the current consumed for the communication power supply.

CJ Series CPU Unit

For CJ Series CompoNet Master Unit

Flat Connector Plug DCN5-BR4

Flat Connector Plug DCN5-BR4

Flat Connector Plug DCN5-BR4

Flat Connector Plug DCN5-BR4

Terminating Resistor DCN5-TM4

Flat Connector Socket DCN5-TR4

Flat Connector Socket DCN5-TR4

Flat Connector Socket DCN5-TR4

Flat Connector Socket DCN5-TR4

24 VDC (Communications power supply)

Bit slave 2-point input CRT1B-ID02SP

Bit slave 2-point output CRT1B-OD02SP

Bit slave 2-point input/2-point output CRT1B-MD04SLP

* Order in units of 10.

Application Examples

CompoNet Applications for Every Type of Manufacturing Site

These applications offer high-performance communication and superior installability that aid in reducing takt times and cutting down the work of start-up and maintenance. Customers use CompoNet in a wide variety of applications.

Transfer lines

Advantages of introduction

▶ Bit-level distribution with bit slaves.
▶ Flat cable makes wiring simple.
▶ Extending wiring with repeater units.
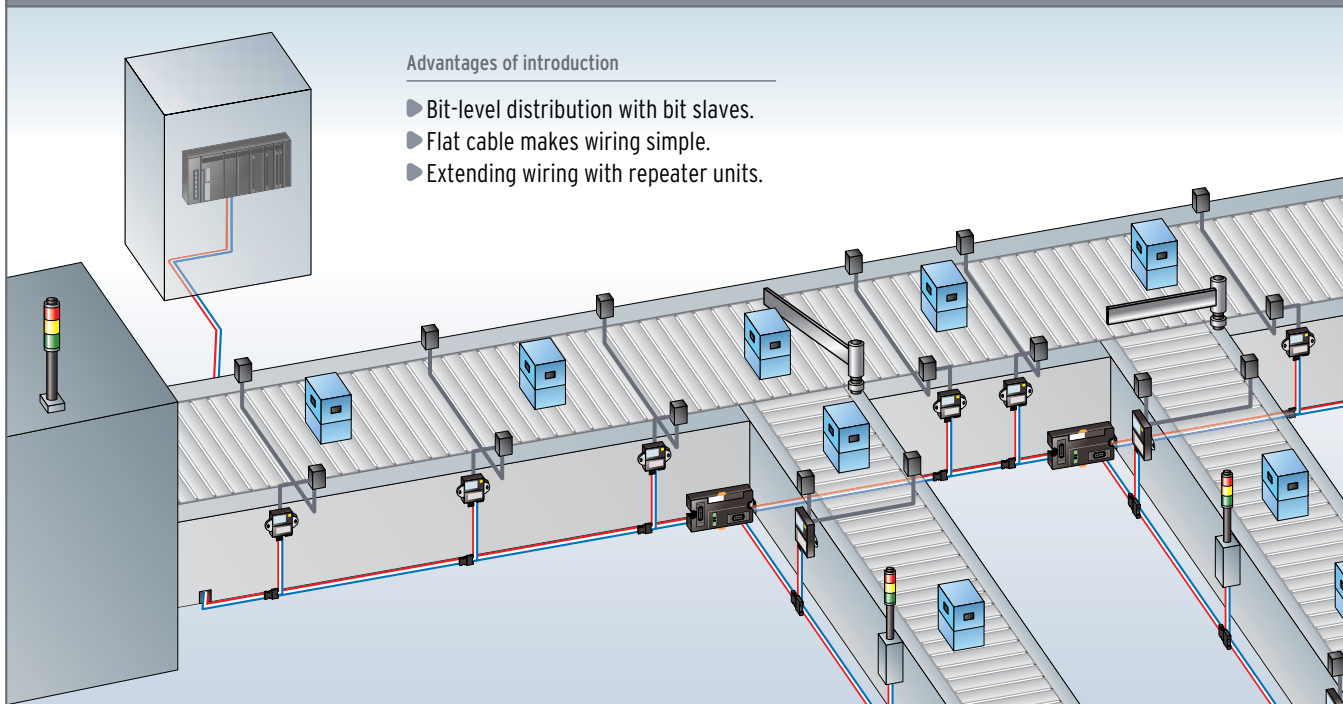
Electronic parts manufacturing device

Advantages of introduction

▶ Reduces wiring and saves space.
▶ Fast communications even for many control points.
▶ Cut costs by using regular cable.
▶ Supports a wide variety of equipment.
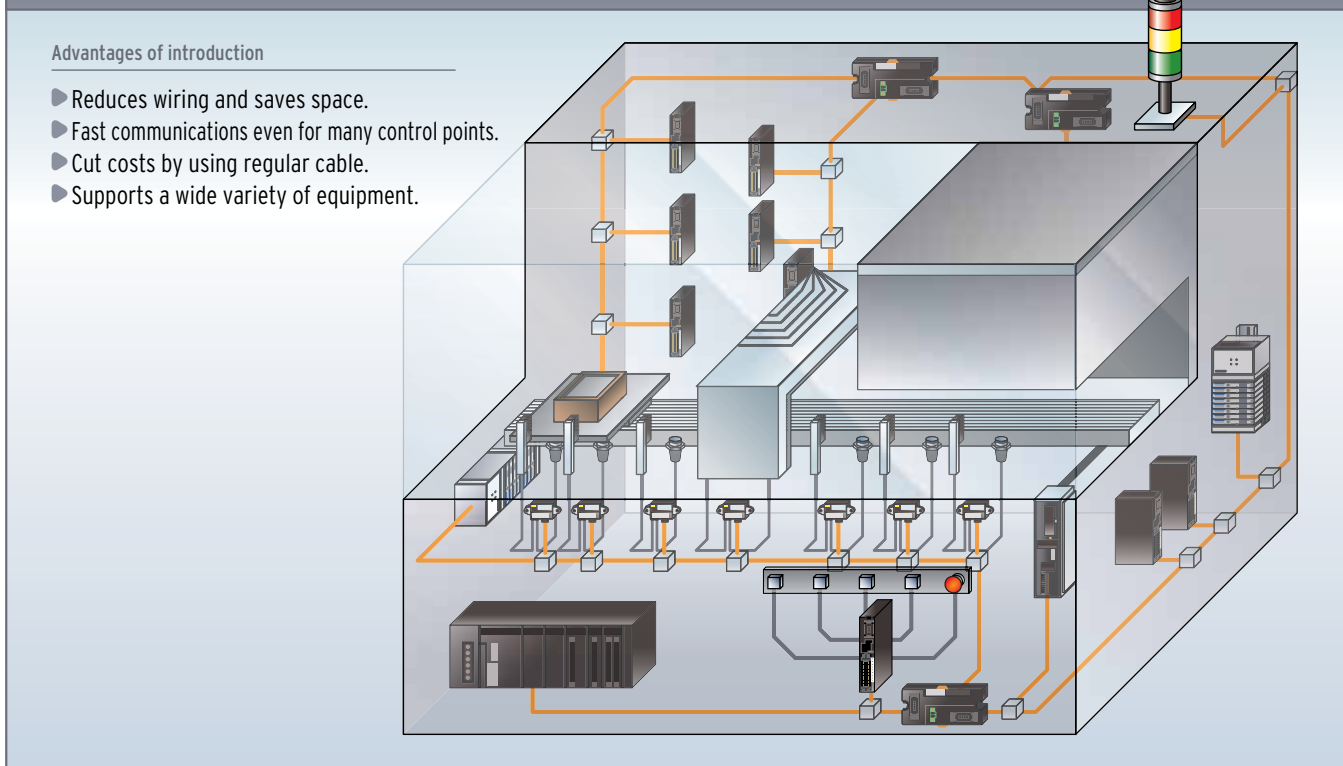
Application Examples

Building automation

Advantages of introduction

- ▶ Wiring up to 1500 meters.
- ▶ Regular cables can be used.
- ▶ Plenty of connection capacity even for distributed installation.
- ▶ High resistance to noise.

Ethernet wiring
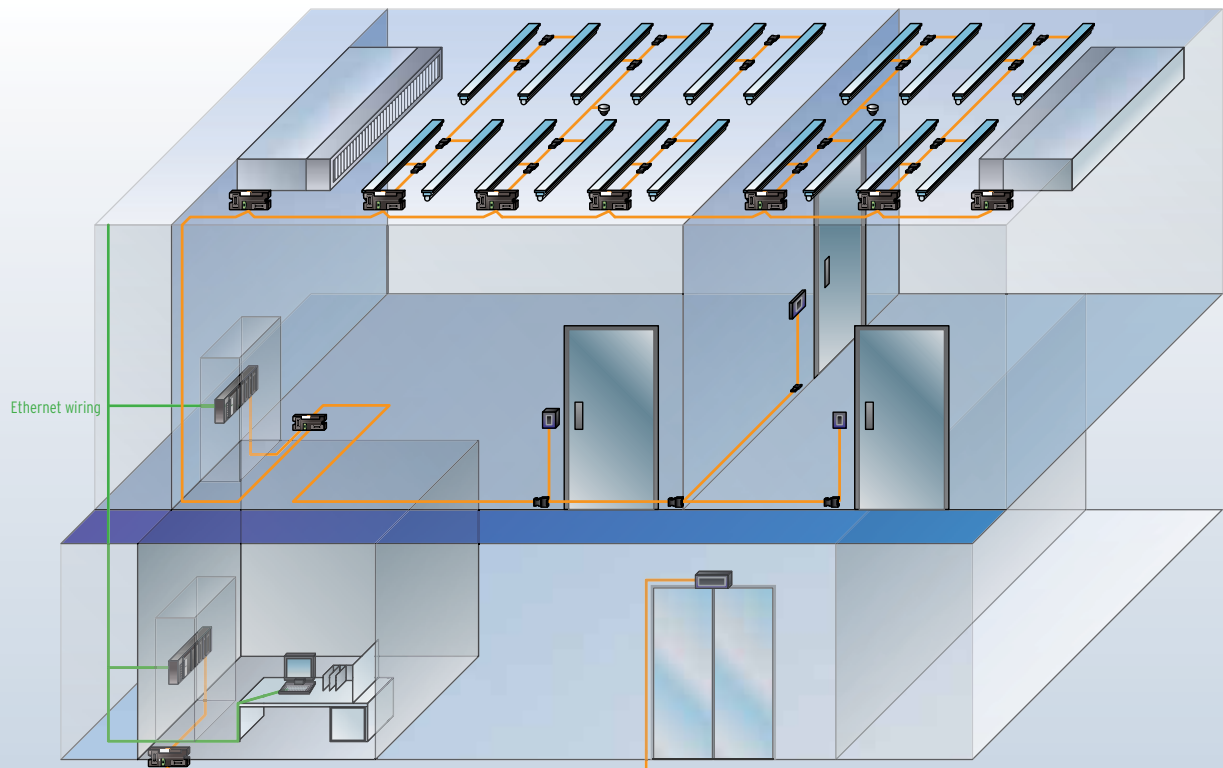
Manufacturing Site
Moving into the Global Open Network Era

Information layer
Controller layer

EtherNet/IP™

Device layer

DeviceNet™

Sensor & Actuator layer

CompoNet™

CompoNet

The drastic changes to the environment faced by today's manufacturing industry has led a wide range of issues such as the standardization of system infrastructure and the shift to more advanced functions. In order to solve these issues, it is necessary to share on-site data, such as for product quality and how to respond to changes in the enviroment, to vertically start up devices utilizing this data and execute preventive maintenance universally and quickly. That is why attention is focusing on utilizing globally standardized "open networks" in the plant management layer, the control layer, and the device layer.

SmartSlice   I/O Slave Unit

DeviceNet Safety

Bit Slave Unit   Word Slave Unit   Smart Sensor   Valve   Inverter
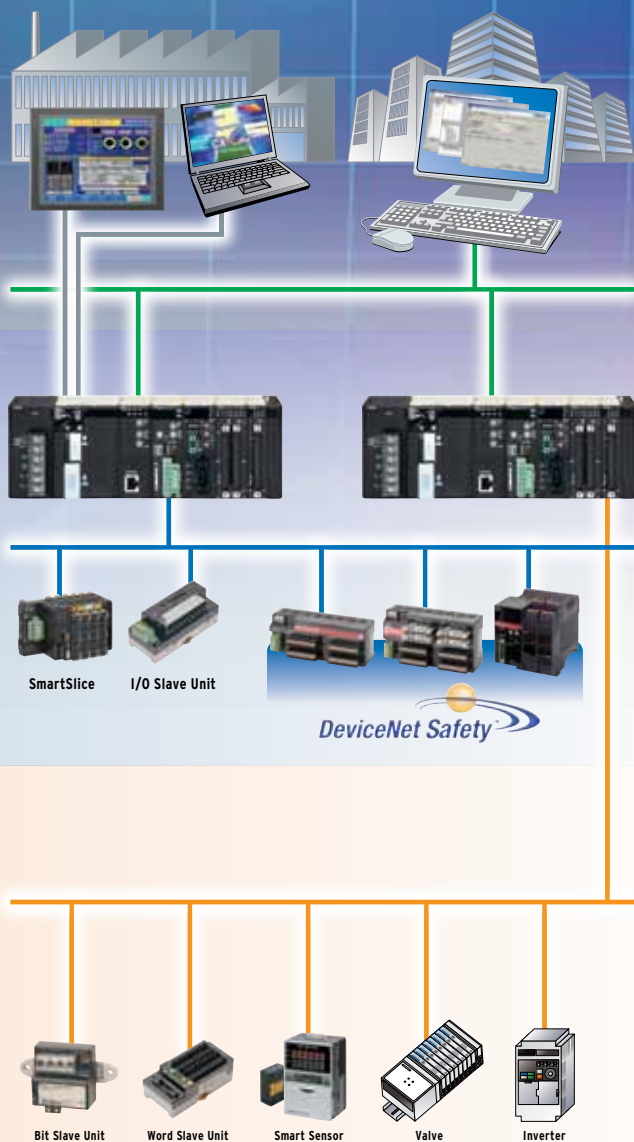
"CompoNet" globally standardized open network in the sensor & actuator layer
——「CompoNet」——

CompoNet is the latest sensor & actuator layer open network. It was introduced and its specifications given by ODVA *1 in 2006.

This open network fuses CIP network technology *2 and high-level communications technology that consolidates the know-how for reducing the amount of wiring developed over many years at actual manufacturing sites.

CompoNet attains the industry's fastest class of communications, 1000 signals per ms between connected devices and the controller and provides a high-performance network environment never seen before.

The open network means reduced device costs, improved functions, the quality of procurement on a global level, and standardization turns design know-how into assets.

With the rapid expansion of family devices by many control equipment makers in Japan and overseas, CompoNet is establishing a multi-vendor environment that is a truly global open network.

*1 The abbreviation for Open DeviceNet Vendor Association, a non-profit organization in the United States. ODVA supports networks based on CIP technology and is run by the main vendors inside and outside Japan. It has active bases in America, Europe, China, South Korea, and Japan.
*2 CIP is the abbreviation for Common Industrial Protocol. This is a protocol that enables communications between open networks of equipment from multiple vendors. Control of each piece of equipment, programming, data collection, etc. can be standardized free of any restrictions due to the network type of differences among equipment.

Note: CompoNet, DeviceNet, and EtherNet/IP are registered trademarks of ODVA. ODVA Website:http://www.odva.org/

CompoNet High Speed Sensor & Actuator Network

Product Introductions

Master Units

■ CJ Series
CJ1W-CRM21

■ CS Series

Digital I/O Slaves

Two-tire Screw Terminal Block

■ Input Unit
CRT1-ID08 (-1)
CRT1-ID16 (-1)
■ Output Unit
CRT1-OD08 (-1)
CRT1-OD16 (-1)
■ Input/Output Unit
CRT1-MD16 (-1)

Screw-Type Terminal Block, Relay Output/SSR Output

■ Relay Outputs
CRT1-ROS08
CRT1-ROS16
■ SSR Outputs
CRT1-ROF08
CRT1-ROF16

Three-tire Screw Terminal Block

■ Input Units
CRT1-ID08TA (-1)
CRT1-ID08TAH (-1)
CRT1-ID16TA (-1)
CRT1-ID16TAH (-1)
■ Output Units
CRT1-OD08TA (-1)
CRT1-OD08TAH (-1)
CRT1-OD16TA (-1)
CRT1-OD16TAH (-1)

■ I/O Unit
CRT1-MD16TA (-1)
CRT1-MD16TAH (-1)

Horizontal Slaves with e-CON Connectors

■ Input Units
CRT1-ID16S (-1)
CRT1-ID16SH (-1)
CRT1-ID32S (-1)
CRT1-ID32SH (-1)
■ Output Units
CRT1-OD16S (-1)
CRT1-OD16SH (-1)
CRT1-OD32S (-1)
CRT1-OD32SH (-1)

■ I/O Unit
CRT1-MD16S (-1)
CRT1-MD16SH (-1)
CRT1-MD32S (-1)
CRT1-MD32SH (-1)

Vertical Slaves with e-CON Connectors

CRT1-VID08S (-1)
CRT1-VOD08S (-1)

Vertical Slaves with MIL Connectors

CRT1-VID16ML (-1)
CRT1-VOD16ML (-1)

CRT1-VID32ML (-1)
CRT1-VOD32ML (-1)
CRT1-VMD32ML (-1)

Horizontal Slaves with Clamp Terminals

CRT1-ID08SL (-1)
CRT1-OD08SL (-1)

CRT1-ID16SL (-1)
CRT1-OD16SL (-1)
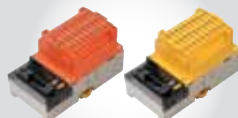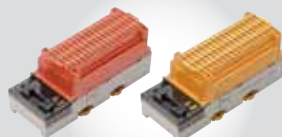
CRT1-MD16SL (-1)

Product Introductions

Word Slaves

Analog I/O Slaves

Screw Terminal Block

■ Analog Input Unit
CRT1-AD04
■ Analog Output Unit
CRT1-DA02

Vertical Slaves with e-CON Connectors

CRT1-VAD04S
CRT1-VDA02S

Numerical Indicator Type
CRT1-VAD02SD
CRT1-VDA02SD

Vertical Slaves with MIL Connectors

CRT1-VAD04ML
CRT1-VDA02ML

Numerical Indicator Type
CRT1-VAD02MLD
CRT1-VDA02MLD

Temperature Input Slaves

■ Input Units
CRT1-TS04T
CRT1-TS04P

Expansion Units

■ Input Units   XWT-ID08 (-1)
               XWT-ID16 (-1)
■ Output Units   XWT-OD08 (-1)
               XWT-OD16 (-1)

■ Output Units   XWT-VOD08S (-1)
                  XWT-VOD16ML (-1)
■ Input/Output Units XWT-VMD08S (-1)
                  XWT-VMD16ML (-1)

SmartSlice GRT1 Series

CompoNet Communications Unit

GRT1-CRT

SmartSlice I/O Units

GRT1-ID4 (-1)
GRT1-OD4 (-1)
GRT1-ID8(-1)
GRT1-OO8(-1)
GRT1-ROS2
GRT1-AD2
GRT1-DA2C
GRT1-DA2V
GRT1-TS2P
GRT1-TS2PK
GRT1-TS2T
GRT1-CT1 (-1)

Bit Slaves

e-CON Connector Type

e-CON Connector Type

■ Input Unit (IP20 compliant)
CRT1B-ID02S (-1)
■ Output Unit (IP20 compliant)
CRT1B-OD02S (-1)

■ Input Unit (IP54 compliant)
CRT1B-ID02SP (-1)
CRT1B-ID04SP (-1)
■ Output Unit (IP54 compliant)
CRT1B-OD02SP (-1)

Clamp Type

Clamp Type

■ Input/Output Unit (IP54 compliant)
CRT1B-MD04SLP (-1)

Repeater Unit

Repeater Unit

CRS1-RPT01

Sensor Communications Unit

Sensor Communications Unit

ZS-CRT

Product Introductions

The CompoNet network lets you connect to units and branch and extend cables by just mounting connectors on communications cables and units. The cable connection and branching methods depend on the cable type and branching form.

■ **Four types of cable can be used on CompoNet networks.**

- ● Round cable I (2-wire), commercially available
- ● Round cable II (4-wire), commercially available
- ● Flat cable I (without sheath) DCA4-4F10
- ● Flat cable II (with sheath) DCA5-4F10

■ **The terminating resistors, connectors, and special tools depend on the cable type.**

Peripheral equipment

Cable type	Unit connection and branching connector	Terminating resistor	Tool
Round Cable I (2-wire) Commercially available	■ Open Type Connector (For connecting Units) DCN4-TB4 	■ Terminating Resistor DRS1-T 	
Round Cable II (4-wire) Commercially available	■ Open Connector (For connecting Units) DCN4-TB4 	■ Terminating Resistor DCN4-TM4 ■ Flat Connector Socket DCN4-TR4 Mount the terminating resistor (DCN4-TM4) in the flat connector socket (DCN4-TR4) already mounted on the cable. Round Cable II Terminating Resistor DCN4-TM4 Flat Connector Socket	■ Special Tool For flat cable I (without sheath) DWT-A01
Flat Cable I (without sheath) DCA4-4F10	■ Flat Connector Socket DCN4-TR4 ■ Flat Connector Plug DCN4-BR4 ■ Multidrop Connector DCN4-MD4 	■ Terminating Resistor DCN4-TM4 	■ Special Tool For flat cable I (without sheath) DWT-A01
Flat Cable II (with sheath) DCA5-4F10	■ Flat Connector Socket DCN5-TR4 ■ Flat Connector Plug DCN5-BR4 	■ Terminating Resistor DCN5-TM4 	■ Special Tool For flat cable II (with sheath) DWT-A02

Reference Data

	AS-I V2.1	CC-Link/LT	CompoNet
Cyclic Time	10ms/434 points	2.0ms/1024 points at 2.5Mbps	1.0ms/1024 points at 4Mbps
IO Numbers	434 (248/186) (v2.1)	2048 (1024/1024)	2560 (1280/1280)
Length	Total: 100m	Trunk: 35m at 2M	Trunk: 500m at 93.75K Trunk: 100m at 1.5M Trunk: 30m at 4M, 3M Triple the trunk line w/ repeater
IO Message	Polling	Broadcast polling + Interval Timed Response	Multicast poling
Message Communication	Not Supported	Not Supported	Supported
Noise Immunity	IEC61000	IEC61000	IEC610000
Communication Units	62 nodes	64 nodes	384 node Word type 128 nodes Bit type 256 nodes
Cable	Special 2 pair cables	» Special 4 pair Flat cables » Round cable (VCTF)	» Special 4 pair Flat cables » Round cable (VCTF, Belden)

CompoNet High Speed Sensor & Actuator Network

Family

Master

YASKAWA ELECTRIC CORPORATION
☎ +81-4-2962-5823
URL www.e-mechatronics.com

265IF-01(CompoNet Master Communication Module)
【JAPMC-CM2390-E】

▶ Features
1. 265IF-01 can be connected to the abundant slave group as a CompoNet master.
2. 265IF-01 is attached to the optional slot of the MP2000 series controller.

Solenoid Valves

SMC CORPORATION
☎ +81-3-5207-8249
URL www.smcworld.com

Overseas sales areas:
Europe, North America,
Asia-Pacific, China

Fieldbus System Compatible with CompoNet™
【EX120/121/122 Series】

▶ Features
1. Output type : Compatible with NPN(+COM.)/PNP(-COM.)
2. Applicable Solenoid Valve Series : SY,SV,VQ Series
3. Low Power Consumption : SY Series also available with a power saving 0.1W circuit.

CKD CORPORATION
✉ Europe
TEL : +81-(0)568-74-1303
North America
TEL : +81-(0)568-74-1303
Asia-Pacific
TEL : +81-(0)568-74-1303
China
TEL : +81-(0)568-74-1303
URL www.ckd.co.jp/english
Overseas sales areas:
Europe, North America, Asia-Pacific,
China, Other

Pilot type 3・5 ports pilot valve
【4G series】

▶ Features
1. Very long life: more than 60 million times due to elastic seal with few air leakage.
2. Enhanced safety function: Manual override button with protective cover and integrated check valve
   preventing back pressure.

Koganei Corporation
☎ +81-42-383-7271
URL www.koganei.co.jp

Overseas sales areas:
Europe, North America, Asia-Pacific

CompoNet-compatible Solenoid Valves
【JA Series】
▶ Features
1. Thin and Compact: Valve width of only 10 mm with effective area of
   3.5 mm2.
2. Lower power consumption.
   Standard: 0.5 W Low current type: 0.25 W
3. Two 3-port valves in one body.

CompoNet-compatible Solenoid Valves
【F Series】
▶ Features
1. Single/double dual-use valves.
2. Three of valve widths: 10, 15 and 18 mm
3. Uses dual-use fittings for different tube sizes.

Controllers and Signal Towers

IAI Corporation
URL www.intelligentactuator.com/
Overseas sales areas:
Europe, North America,
Asia-Pacific, China

ROBO CYLINDER   Controller

ACON-C   PCON-C

Controller for RCA/RCA2 Series ROBO CYLINDER
【ACON-C/CG】
▶ Features
1. Designed for 24 VDC servomotors.
2. Multipoint positioning: up to 512 points.
3. High speed: Up to 800 mm/s.

Controller for RCP2/RCP3 Series ROBO CYLINDER
【PCON-C/CG】
▶ Features
1. Designed for 24 VDC pulse motors.
2. Multipoint positioning: up to 512 points.
3. High power in lower speed range.

PATLITE Corporation
☎ +81-6-6763-8220
URL www.patlite.com

Overseas sales areas:
Europe, North America,
Asia-Pacific, China

CompoNet Supported Signal Tower
【LE-K3（B）P/W-RYG】
▶ Features
1. Use of ultra-bright LED enhanced for illumination.
2. Two selectable sound patterns with adjustable volume.

CompoNet Supported Wall-Mount Signal Tower
【WEP-K3（B）-RYG】
▶ Features
1. A 37.5 mm-thin design that significantly enhances integration with
   equipment as a built-in signal system.
2. Clear vertical cut lens enhanced for illumination over a wide
   perspective.
3. Built-in audible alarm.

Gateway

JSK CO., LTD.
☎ +81-72-661-4071
URL www.nihon-seigyo.co.jp

CompoNet-RS422/485 Converter
【DWPC-001】

▶ Features
1. Connects conventional RS422/485 control devices to CompoNet.
2. Programmable RS422/485 interface realizes easy software implementation.
3. DeviceNet, CC-Link, other protocols are coming soon.

AIOI・SYSTEMS CO.,LTD.
☎ +81-3-3764-0228
URL www.hello-aioi.com/en
✉ info@hello-aioi.com
Overseas sales areas:
Europe, North America,
Asia-Pacific, China Other

Gateway Controler for CompoNet
【TW2118】

▶ Features
1. AI-NET-Componet Gateway Controler.
2. Maximum coDrop Light Modules Number is 64.

Family

Connector

Honda-connectors

📞 +81-6-6376-4717

URL www.honda-connectors.co.jp

Overseas sales areas:
Europe, North America, China,
Asia-Pacific, Southeast Asia

Connector
【HCN- (S)4( )( )FDG +】
【HCN-TB 4LMZG +】

▶ Features
1. PCB SIDE
・Smaller than conventional product
・Mating area of SLIM TYPE is 8mm, compared with 10mm of conventional product.
2. CABLE SIDE
・INSIDE HOOK(LOCK SYSTEM INSIDE CASE)
・Possible to lead cables to 2 directions out.

Tayco Electronics AMP K.K

📞 +81-44-844-8080

URL www.tycoelectronics.com

RITS Connector（e-CON）
【X-1473562-4】

▶ Features
1. New Chisel Press Contacts for sensor cables.
2. No special crimping tool required for easy termination.
3. Two contact points for good connection and more security.

3M Company

URL www.3M.com/interconnects

Mini-Clamp Connector:
【3710x-xxxx-000 FL】

▶ Features
1. IDC technology reduces process/cost of wire termination.
2. Crimped using standard pliers to reduce tool costs.
3. Design offers multiple gauges and wire size diameters.

Cable

SWCC SHOWA CABLE SYSTEMS CO., LTD.

+81-3-3597-7117
www.swcc.co.jp

TCN-R1   TCN-F1
TCN-R2   TCN-F2
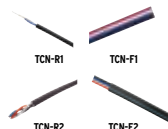
CompoNet Cable

▶ **Features**
TCN-R1   Round Cable 19AWGx2C（CL3,CM,cUL-CM,75℃）
TCN-R2   Round Cable 19AWGx4C（CL3,CM,cUL-CM,75℃）
TCN-F1   Flat Cable   21AWGx2C+19AWGx2C
TCN-F2   Flat Cable   21AWGx2C+19AWGx2C

KURAMO ELECTRIC.CO,,LTD.

+81-778-22-1500
www.kuramo.co.jp

KOMP-FⅠ   KOMP-FⅡ
KOMP-RⅠ   KOMP-RⅡ

CompoNet Flat CableCableⅠ.Ⅱ
CompoNet Round CableⅠ.Ⅱ

①CompoNet Flat Cable KOMP-FⅠ   21AWG x 2, 19AWG x 2
②CompoNet Flat Cable KOMP-FⅡ   21AWG x 2, 19AWG x 2
③CompoNet Round Cable KOMP-RⅠ 19AWG x 2
④CompoNet Round Cable KOMP-RⅡ 19AWG x 4

▶ **Features**
1. CompoNet Flat Cable KOMP-FⅠ
   Heat resistance：90 Flame resistance：FT4
   UL certification：UL13 CL2 CSA certification：CSA C22.2 No.210
2. CompoNet Flat Cable KOMP-FⅡ
   Oil resistance ・Heat resistance：90
   Flame resistance：UL FLAME EXPOSURE UL certification：UL13 PLTC,UL444 CM
   CSA certification：CSA C22.2 No.214
3. CompoNet Round Cable KOMP-FⅠ
   CompoNet Round Cable KOMP-RⅡ
   Oil resistance Heat resistance：90
   Flame resistance：FT4 UL certification：UL13 PLTC,UL444 CMG
   CSA certification：CSA C22.2 No.214

NICHIGOH COMMUNICATION ELECTRIC WIRE CO.,LTD

+81-72-923-5104
www.nichigoh.co.jp

UNICOMPO FCⅠ-T   UNICOMPO FCⅡ-T
UNICOMPO RCⅠ-T   UNICOMPO RCⅡ-T

UNICOMPO series
・CompoNet Flat type cable　(Sheath less)：UNICOMPO FCⅠ -T
・CompoNet Flat type cable　(With Sheath)：UNICOMPO FCⅡ -T
・ CompoNet Round type cable　(2c)：UNICOMPO RCⅠ -T
・ CompoNet Round type cable　(4c)：UNICOMPO RCⅡ -T

▶ **Features**
1. Conformity to UL/cUL standard(CM,CL2)
2. Conformity to NFPA79.NFPA70(NEC)
3. The RC type acquires CE, and is acquiring the FC type

Kanetsu Co.,Ltd

+81-75-662-0996
www.kanetuu.co.jp/
info_kanetsu@kanetuu.co.jp

Overseas sales areas:
Europe, North America, China,
Asia-Pacific, Taiwan, Vietnam

CompoNet Flat Cable I and II
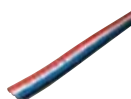
Daiko. E.W.
【KCNF】
▶ **Features**
1. Enables using unique isolation-displacement connectors for CompoNet.
2. Easy one-step IDC connection without insulation stripping.
3. UL AWM, CSA compliant.

Taiyo Electric Wire & Cable Co., Ltd.
【KCNF-J】
▶ **Features**
1. Enables using unique isolation-displacement connectors for CompoNet.
2. PVC jackets with polarity guide line for IP54 system.
3. Easy one-step IDC connection without insulation stripping.
4. UL AWM, CSA compliant

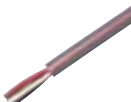### Oil-resistant and Highly Flexible Round Cable II for CompoNet
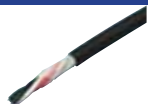
Hanshin Electric Wire & Cable Co., Ltd.
【MRC-4】
▶ **Features**
1. The cable can be used for mobile and oil-resistant wiring.
2. Round cable for low cost installation.
3. UL AWM, CSA compliant.

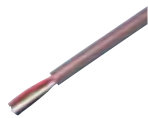### CompoNet Round Cable I and II

Onamba Co., Ltd
【VCTF-2C、VCTF-4C】
▶ **Features**
Round cable for low cost installation.

Kawai Cable, Ltd.
【VCTF-2C、VCTF-4C】
▶ **Features**
Round cable for low cost installation.

Development tool

OMRON Corporation

✉ open_integration@omron.co.jp

MPU for CompoNet Slave, MPU for CompoNet Master

▶ **Features**

Slave: Omron offers the development approach of three types by the function of the slave.

1. Few-Point Slave
   ・I/O Size:Digital I/O in MAX 32 points
   ・Application interface:Via I/O port
2. Multi-Points Slave
   ・I/O size: Outputs: 0 to 256 points (32 bytes)
   　　　　　　 Inputs: 0 to 256 points (32 bytes)
   ・Apllication interface:DPRAM
3. Protocol stack
   No restriction in MPU and OS

Master: Omron offers two kinds of development approaches.

1. DP-RAMI/F MPU
   Development is unnecessary of the communication protocol.
   The communication protocol including RAS is mounted on MPU.
2. Library
   System Call I/F of ITRON

HMS INDUSTRIAL NETWORKS Co.,Ltd

Europe
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North America
Tel: +1-312-829-0601
China
Tel: +86-10-8532-3183

✉ **Europe**
info@hms.se
USA
us-sales@hms-networks.com
CHINA
cn-sales@hms-networks.com

Overseas sales areas:
Europe, North America, Asia-Pacific, China

Anybus CompactCom Componet
【ABCC-CPN】

▶ **Features**

1. Embedded CompoNet interface for device manufacturers
2. Common hardware & software interface between DeviceNet, ControlNet & EtherNet/IP
3. Available with or without plastic housing
4. Development time: 1-3 months, with fast ROI
5. Tested and verified for full network conformance

Hilscher GmbH

Europe
Hilscher GmbH（Germany）
Tel: +49-(0)-6190-9907-0
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Hilscher North America, Inc. (USA)
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Asia-Pacific
Hilscher GmbH（Germany）
Tel: +49-(0)-6190-9907-0
China
Hilscher GmbH (Shanghai Rep. Office)
Tel: +86-(0)-21-6355-5161
India
Tel: +91-(0)-11-4051-5640

✉ info@hilscher.com

Overseas sales areas:
Europe, North America, Asia-Pacific, China, Other

CompoNet Communication Controller
【netX 50／netX 100／netX 500】

▶ **Features**

1. CompoNet, DeviceNet, EtherNet/IP and various Fieldbus / Real Time Ethernet on one chip
2. Control by external CPU via DPM or Application can be implemented on the internal ARM (200MHz)
3. UART／USB／SPI／I2C／GPIO／LCD controller／ADC／PWM／DMA／CCD（depends on chip type）

Entrusted development and Support

NSD Co., Ltd.

☎ +81-3-3342-1380
🌐 www.nsd.co.jp/english/
✉ ia-info@nsd.co.jp

Overseas sales areas:
North America

CompoNet Master Stack Tool Kit (C-MTK)
【CMK-100】

▶ **Features**

1. A developers' tool kit to implement communication function for CompoNet master modules
2. CompoNet master protocol stack firmware example source codes and various kinds of technical items are included
3. Software development and its technical survices can be provided , if a industrial device vendor would like to develop CompoNet devices.

Additional Literature available from omron247.com

W476 SmartSlice CompoNet GRT1-CRT Operation Manual

W456 CompoNet Master Units Operation Manual

W457 CompoNet Slave and Repeater Units Operation Manual

W484 CompoNet CRT1-VAD and CRT1-VDA Operation Manual

W455 SmartSlice I/O Module Operation Manual

P056 CompoNet Datasheet