Trying to grasp information on the entire production site?

Having trouble collecting traceability data?

Need different engineering tools for each connected device?

Trying to grasp information on the entire production site?

Are you not able to use production information in the factory?

Need preventative maintenance data?

Can’t see the energy consumption rate?

Are mixed networks making data collection difficult?

The essential guide for collecting and sharing production information!

Solution Guide for all your IIoT Automation Network Problems

Leave it to CC-Link IE & SLMP

Configuration
Collecting and utilizing information from factory equipment?

That’s what we’ve been doing, but what else do we need?

Right now

What you need right now is a visible factory and a way to collect essential data so that it can be shared and used more widely.

Collecting and utilizing production data? That’s IIoT!

But

It won’t work unless you think about seamless information communication.

Leave it to CC-Link IE & SLMP

Factories need to collect and utilize data using the IIoT.

Seamless information gathering using gigabit Ethernet based networks is the key to your success!!

CC-Link IE is a gigabit Ethernet-based industrial network promoted by the CC-Link Partner Association (CLPA).

*1: SLMP (Seamless Message Protocol) is a common protocol that realizes system management and operation over multiple physical layer networks.

*2: CSP+ is a profile for using various CC-Link family devices with a single engineering tool.
Factories need to collect and utilize data using the IIoT. Seamless information gathering using gigabit networks is the key to your success!!

**POINT 1**
Seamlessly transfer information from IT systems to production equipment!

- Use a seamless protocol (like SLMP*1) to directly transfer data between networks

**POINT 2**
Easily collect, change and monitor with SLMP*1!

- Efficiently manage your system by changing configurations, monitoring system status, and troubleshooting connected devices
- Avoid problems and increase productivity by collecting information from devices and by issuing commands from the server

**POINT 3**
CSP+*2 allows easy configuration of devices!

- Use the engineering tool to configure devices graphically
- Get better access to production information

For more information (FAQ, specifications) ······ P10

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CC-Link IE is a gigabit Ethernet-based industrial network promoted by the CC-Link Partner Association (CLPA).

*1: SLMP (Seamless Message Protocol) is a common protocol that realizes system management and operation over multiple physical layer networks.

*2: CSP+ is a profile for using various CC-Link family devices with a single engineering tool.
Easily transfer information across different networks with a seamless protocol!

With **CC-Link IE + SLMP**, you can:

Send information seamlessly from IT systems to production equipment!

Are you connecting each level or process with a different network or original communication method?

"Yes! We’ve selected the best method for each place."

But...the configuration and programs for collecting and organizing data from each network take so much time.

Let’s get rid of the processes for each network, and start collecting and using data!

Data from this highly productive factory can be used to improve efficiency at other factories.

The point is to use Ethernet technology and seamless communication commands.

Wow! Our factory’s improvements can be helpful for all our factories!
Easily transfer information across different networks with a seamless protocol!

SLMP (Seamless Message Protocol) is a common protocol for achieving system management and operation without worrying about differences in networks. SLMP directly conveys information between the production site and IT system, making it easy to share information over a wide area.

Cloud

IT level
Information communication
Controller level
Distributed control
Device level
I/O control
Safety control
Motion control
Ethernet
CC-Link IE
Open gigabit Ethernet
General-purpose Ethernet device IO-Link

Advantages for device manufacturers

SLMP is a client-server type protocol. This protocol can be created easily without dedicated hardware. Just install the software in your existing Ethernet-compatible devices.

Advantages for users

By using devices with SLMP, an Ethernet connection can be created between devices without complex settings needed for general-purpose Ethernet communication. Share information from your IT systems to your production equipment using seamless information transmission that easily crosses network boundaries.

Easily transfer information across different networks!!

Using protocols with different communication methods for each network

Bad

Using protocols with different communication methods for each network

Good

Seamless SLMP

SLMP is a protocol that expands Ethernet’s standard frames, and makes seamless transmission across network levels possible. (Protocol frame format → Page 10)

Using Ethernet devices with SLMP, bi-directional data transfer using the server-client function is possible without complex settings needed for general-purpose Ethernet communication.

Seamless SLMP

SLMP: Seamless Message Protocol
With CC-Link IE + SLMP, you can:

Collect, change, and monitor information easily!

- **Visualize production information in real time!**
  - **Plus!** Directly monitor maintenance data and diagnostic information from the data server or host devices.
- **Change states, monitor the status, and diagnose connected devices.**

Management needs to collect and utilize production information in real time to ensure the most efficient operation.

The factory IIoT’s job isn’t just to collect production information.

To increase production efficiency, it’s important to provide preventive maintenance and to monitor the energy consumption rate.

IIoT won’t advance just by visualizing the factory.

The IIoT’s job isn’t just to collect production information.
Here’s what you can do with **CC-Link IE + SLMP**

**Visualize production information in real time!**

**Bad**

- Can’t exchange data directly
- Dispersed information is not visible.
- Information is accumulated in different places, so the real-time situation is not visible.

**Good!**

- Directly read and write data to and from the data server and host devices
- Warnings and instructions are set from the data server or IT device with real-time diagnostic information
- Data is directly read and written.

**Plus!**

- Directly monitor maintenance data and diagnostic information from the data server or host devices.

**Bad**

- Individual tools are required to set parameters, and to monitor or diagnose the system.

**Good!**

- Monitor and diagnose devices such as sensors and actuators
- Automatically detect the connected devices, set the parameters and transfer information!
- Connected devices can monitor and diagnose each other’s status!

**On-demand communication**

- The equipment’s maintenance warnings, etc., are sent directly based on the operation information collected from the production equipment. This lets you avoid equipment problems.
- Warnings, etc., are individually and directly sent based on the information collected from the equipment or building devices, so you can control the entire system.

**Change states, monitor the status, and diagnose connected devices.**

- Change states, monitor the status, and diagnose connected devices.
- Easily access the data server
- Remotely operate (remote RUN, STOP, PAUSE, latch clear, reset) the server (host device) from the client.
- Easily access the data server
- On-demand communication
- Directly access and read/write the information to the server (host device).
- Connected devices can monitor and diagnose each other’s status!
CSP+ allows easy configuration of devices by engineering tools!

- Use various different types of devices with a single engineering tool!
- The CSP+ adoption rate is continuing to grow!
- Plus! Graphical configuration eliminates the need for manuals!

CLPA continues to work with device manufacturers to increase the number of compatible certified devices!

IIoT is delivering further productivity improvements and better uptime!

The CSP+ file is the device profile that allows CC-Link IE and CC-Link compatible products to be configured for the network.

Graphical configuration eliminates the need for manuals!

By installing the CSP+ file, multiple devices can be set with one tool.

• Semiconductor manufacturing systems
• Machine tools
• Robotics, etc.
Here's what you can do with **CC-Link IE + CSP+**

**Use various different types of devices with a single engineering tool!**

**Bad**

Dedicated tools are needed, and the operation methods are all different.

**Good!**

By installing the CSP+ file, multiple devices can be set with one tool.

**Expand the engineering tool functions with CSP+**

Install the CSP+ (device profile) provided by CLPA or the device manufacturer in the engineering tool to increase functionality!

(CSP+: Control & Communication System Profile)

There’s no need for dedicated device setting tools!

Multiple devices can be configured and operated with one engineering tool!

The CSP+ file is the device profile that allows CC-Link IE and CC-Link compatible products to be configured for the network.

**Plus!**

Graphical configuration eliminates the need for manuals!

**Easy-to-use operation screens**

- Configure devices and set parameters just by dragging and dropping!
- Assign devices and configure slaves with a common operating method!
- Automatically detect devices to display the model information and system configuration!

**The CSP+ adoption rate is continuing to grow!**

**CSP+ compatible devices and applications continue to increase**

- CLPA continues to work with device manufacturers to increase the number of compatible certified devices!
- IIoT is delivering further productivity improvements and better uptime!

- Semiconductor manufacturing systems
- Machine tools
- Robotics, etc.

**Plus!**

**Graphical configuration eliminates the need for manuals!**

Drag & drop the device name to the network

View the device assignment list while programming

View the connected devices

**CSP+ compatible engineering tool**

Download

Install

CC-Link IE

Gigabit Ethernet base

LAN (Ethernet base)

SLMP

Cloud

SLMP

CC-Link IE

Gigabit Ethernet base

SLMP is delivering further productivity improvements and better uptime!
SLMP details

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
<th>Command name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal memory</td>
<td>Reads and writes the bit device and word device.</td>
<td>Read/Write/Read Random/Write Random/Entry Monitor Device/Execute Monitor/Read Block/Write Block</td>
</tr>
<tr>
<td>Label</td>
<td>Designates the label, and reads and writes the data.</td>
<td>Label Read/Label Write/Label Read Random/Label Write Random</td>
</tr>
<tr>
<td>Dual port memory</td>
<td>Reads and writes the data for the local station’s dual port memory.</td>
<td>Read/Write</td>
</tr>
<tr>
<td>Expansion module</td>
<td>Reads and writes the data for the expansion module’s dual port memory.</td>
<td>Read/Write</td>
</tr>
<tr>
<td>Remote control</td>
<td>Remotely operates the module at the designated location.</td>
<td>Remote Run/Remote Stop/Remote Pause/Remote Latch Clear/Remote Reset/Read Type Name</td>
</tr>
<tr>
<td>Remote password</td>
<td>Designates the remote password, and controls access of other devices.</td>
<td>Lock/Unlock</td>
</tr>
<tr>
<td>Device connection</td>
<td>Detects the connected external device, and sets the IP address.</td>
<td>Node Search/IP Address Set</td>
</tr>
<tr>
<td>Parameter setting</td>
<td>Reads and writes the parameters for the external device.</td>
<td>Device Info Compare/Parameter Get/Parameter Set/Parameter Set Start/Parameter Set End/Parameter Set Cancel</td>
</tr>
<tr>
<td>Device monitor</td>
<td>Retrieves the operation status and error codes from the external device.</td>
<td>Status Read/Status Read2/Communication Setting Get</td>
</tr>
</tbody>
</table>

[Frame format]

Request command (example: Read)

Response statement (at normal end)
Obtaining the “CSP+” file and installing it into the engineering tool

1. Download the “CSP+” file for the device being used from the CLPA website or device manufacturer’s website.
2. Install the downloaded “CSP+” file into the engineering tool.

Example of CLPA website

Example for MELSOFT GX Works2 (Mitsubishi Electric)

The network settings for the target device and the parameter setting function are added to the engineering tool.

Frequent questions

Q1 What can we actually do with SLMP? A Here’s what you can do:
   (1) Access information held internally
   (2) Control from a remote location (remote operation)
   (3) On-demand communication
   (4) Access device information (parameter setting, monitor, diagnostics)
   (5) Access other open networks

Q2 What’s different from the MC protocol? A Of the Ethernet compatible MC protocols, the 3E frame and 4E frame are SLMP. These are used as expansion functions from the MC protocol to access device information and to access other open networks.

Q3 Are the SLMP commands passed to CC-Link IE? A On CC-Link IE, special commands different from the SLMP commands are used. However, if the product is SLMP compatible, the SLMP commands can be sent and received via the CC-Link IE path.

Q4 How does it compare to MODBUS®/TCP? A With MODBUS/TCP, accessing the information held internally is the main function. SLMP is superior because it is capable of remote control and on-demand communication, and can access device information and other open networks.

Q5 How is the SLMP certification test carried out? A A partner conducts the test based on the SLMP conformance test specifications. Basically, the functions of the supported SLMP command are confirmed and the results are submitted to CLPA. If there are no problems, a certificate will be issued. The test is free of charge and open to anyone.

Q6 What is a “Certified product” and “Compatible product”? A “Certified product” refers to a product from a fee paying CLPA member that has passed the certification test. The product information can be listed in a CLPA product catalog or website, and the SLMP logo can be used. A “compatible product” refers to a product from a third party company that has passed the certification test. The product information is not listed in a CLPA product catalog or website, and the SLMP logo cannot be used.

Q7 How can we identify an SLMP compatible product? A If the product has the SLMP logo, it is a SLMP compatible product. Even when it does not have the SLMP logo, if the product is listed on the list of SLMP compatible products in a CLPA website, it has passed the conformance test. SLMP is being expanded in phases. Even if the product is compatible, there may be some functions that are not supported.

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Global influence of CC-Link IE and CC-Link continues to spread

CC-Link IE and CC-Link are supported globally by CLPA. With offices throughout the world, support for partner companies can be found locally. Each regional CLPA office undertakes various support and promotional activities to further the influence of CC-Link IE & CC-Link in that part of the world. For companies looking to increase their business in their local area, CLPA is well placed to assist these efforts through offices in all major regions.

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