CONPROSYS

M2M Controller

# CPS-MCS341

# System Setup Guide

CONTEC CO., LTD.

# Before Using the Product

This is the System Setup Guide for the M2M controller, CPS-MCS341.

The CPS-MCS341 is referred to in the guide as “the product”.

Regarding the hardware, see the supplied Hardware Setup Guide for details.

Before using the product, visit our website to check the firmware version and update to the latest one if necessary.

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# Online Help

Please refer to our online help for Creating monitoring screen (CONPROSYS HMI) and Task edit (CONPROSYS VTC) through the links below.

| **CONPROSYS HMI** |
| --- |
| http://data.conprosys.com/help/hmi/V1/en/ |
| **CONPROSYS VTC(Visual Task Control)** |
| http://data.conprosys.com/help/hmi/V1/en/ |

# Customer Support

CONTEC provides the following support services for you to use CONTEC products more efficiently and comfortably.

## Web Site

https://www.contec.com/

Latest product information

CONTEC provides up-to-date information on products.
CONTEC also provides product manuals and various technical documents in the PDF.

Free download

You can download updated driver software and differential files as well as sample programs available in several languages.

For product information

Contact your retailer if you have any technical questions about a CONTEC product or need its price, delivery time, or estimate information.

# Safety Precautions

Understand the following definitions and precautions to use the product safely.

## Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources. Understand the meanings of these labels to operate the equipment safely.

| | |
|---|---|
| ⚠ DANGER | DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. |
| ⚠ WARNING | WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. |
| ⚠ CAUTION | CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage. |

## Handling Precautions

⚠ CAUTION

- CONTEC CO., LTD. makes no commitment to update or keep current the information contained in this document. The information in this document is subject to change without notice.
- Do not modify the software. CONTEC will bear no responsibility for any problems, etc., resulting from modifying the software.
- Regardless of the foregoing statement, CONTEC assumes no responsibility for any errors that may appear in this document or for results obtained by the user as a result of using the software.

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# Security Warning

When connecting to the network, be aware of security-related problems. See the examples of Security measures below and set up the product properly along with the network devices.

[Information security risks]

- Unauthorized access from the outside through a network could cause the system halt, data damage, or exposure to malware *1
- Invaded and used as a stepping stone, a device might attack the others through networks. (a victim becomes an assailant)
- Information might leak without realizing due to the connection to the network.
- Secondary damages such as harmful rumors, liability in damages, social credibility fall, and opportunity loss are expected led by the troubles described above.

*1…Malware (Malicious Software) is software that brings harm to a computer system and performs unintended operations.

[Security measures - e.g.]

- Do not keep using the default password. (Refer to the product manual for the password setting).
- Set a strong password. Combined with upper and lowercase letters, and numbers so that it cannot be easily analogized by others.
- Change the password periodically.
- Disable unnecessary network services and functions.
- Restrict access to the network with network devices. *2
- Restrict ports to be released on the network with network devices.
- Create a closed network connection using such as dedicated network or VPN.*3

*2…Inquire for setting procedure to manufacturers.

*3…VPN (Virtual Private Network): a secured network that wards off unauthorized access by protecting the communication path with authentication and encryption.

Unfortunately, there are no perfect ways to avert unauthorized access or close a security hole that are endlessly found day and night. Please understand that risks are always involved with the Internet connection, and we strongly recommend a user should constantly update information security measures.

# Table of Contents

# 1. System Setup

## Setup procedure

The product must set a unique IP address that is not used by any other devices on your network.

The IP address of factory default setting is“10.1.1.101”, and “255.0.0.0” for subnet mask.

(1) Connect the power supply cable and network cable to the product.
Connect the product and host controller by straight cable.

(2) You can connect the product through a Web browser of the host computer to display input data.

Use Microsoft Internet Explorer 11.x or a later version as a Web browser.

Please refer to Online Help of CPS-MCS341 Series for browser support.

(3) Set the IP address and network mask of the host controller so they belong to the same network as the product.

An example:
IP address of host controller: 10.1.1.2
Network mask of host controller: 255.0.0.0 can be used.
You will not be able to connect via a Web browser if the IP address and network mask settings are improper.

(4) How to display input data through a Web browser is instructed in the “Basic Setup from a Web Browser” section.

# Basic Setup

The product continuously collects the latest data of the I/O signals that are connected to the controller.

You can connect to the product through a browser from the host computer and create and display monitoring screens.

## - Basic Setup through a Web Browser

Operating procedure

(1) Start a Web browser and enter the IP address of the product in the address field.

The factory default setting is “10.1.1.101”for an IP address.

Set the PC on the same network via LAN cable.

Enter “https://10.1.1.101/” or “http://10.1.1.101/” in the address field of the browser to connect.

When connecting with “http”, the screen below does not appear.

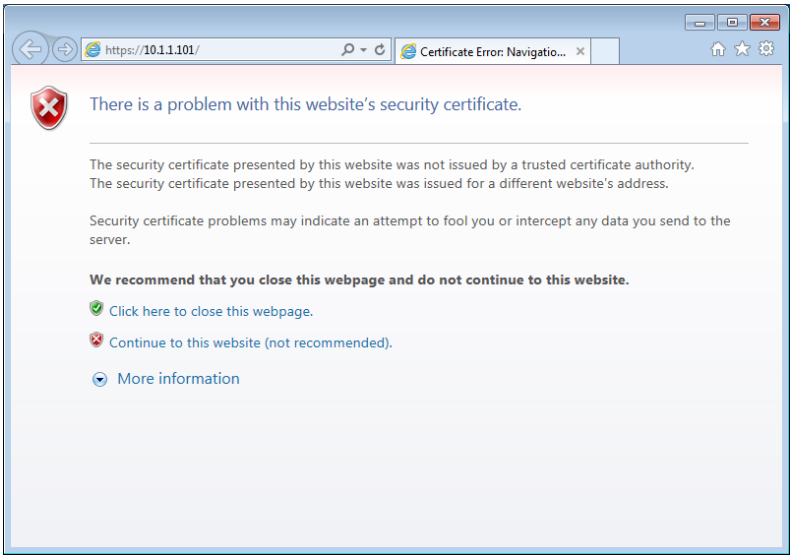



**Figure 1.1. Certificate confirmation screen**

Although the screen above will be displayed, choose “Continue to this website”.

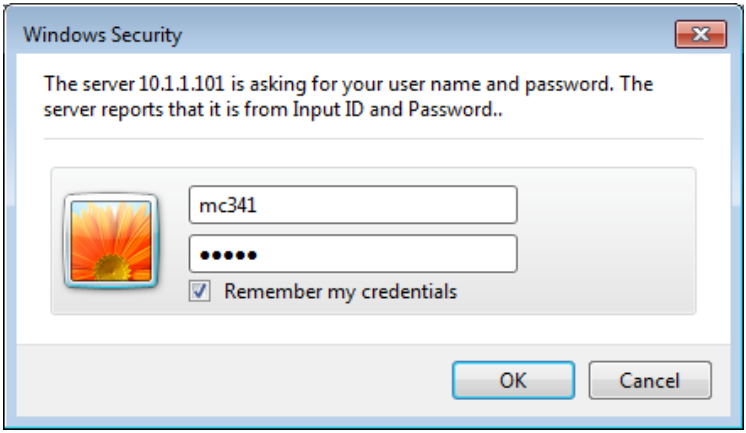



**Figure 1.2. Enter Password**

Enter user name: “mc341” and password: “mc341” in the dialog box.

(2) The Status Menu appears.

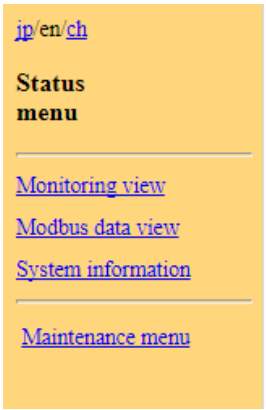
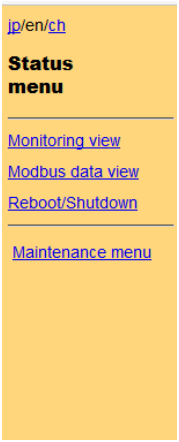



**Figure 1.3. Menu**

# - Web Browser Menu

-Status menu

Link to these pages from the Status menu.




Monitoring view (P.7)

- Display the monitoring screen

Modbus data view (P.7)

- Display each register value of Modbus

System information (P.26)

- Display the system information details of the product.

Maintenance menu

- Switch to the maintenance menu.

**Figure 1.4. Status menu screen**

-Maintenance menu

Link to these pages from the Maintenance menu.


Monitoring edit (P.17)

- Display the monitoring edit screen.

Task edit (P.17)

- Display the task edit screen.

Modbus data view (P.7)

- Display each register value of Modbus.

Save to ROM (P.18)

- Save the settings to ROM.

If you do not save the settings, they will return to the previous ones upon turning off.

Data transfer setting (P.18)

- Set up the destination of the measured data to be transferred.

**Figure 1.5. Maintenance menu - 1**

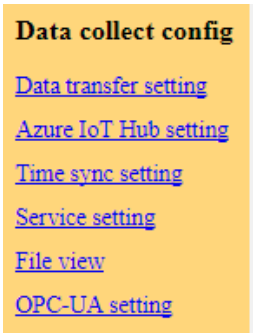



**Figure 1.6. Maintenance menu - 2**

Azure IoT Hub setting (P.38)

- Set up Azure IoT Hub for the device.

Time sync setting (P.19)

- Set up the name of NTP server that obtains the time and date.

Service setting (P.20)

- Enable or disable specified services to be operated in the product.

File view (P.20)

-Display data collection.

OPC UA setting (P.93)

-Download the OPC UA server certificate, and upload the client certificate.

* CPS-MCS341-DS1-131 ,
CPS-MCS341G-DS1-130,
CPS-MCS341Q-DS1-131 only

MTConnect setting (P.39)

-This sets up the MTConnect.

* CPS-MCS341-DS1-131 ,
CPS-MCS341G-DS1-130,
CPS-MCS341Q-DS1-131 only

Network setting (P.21)

-This sets up the network such as “IP address”.

Wireless LAN setting (P.36)

This sets up the wireless LAN setting.

SMTP Server setting (P.37)

- This sets up the SMTP server.

Mail address setting (P.37)

- This sets up the mail address setting.


**Figure 1.7. Maintenance menu – 3**

FTP setting (P.40)

-Set up the FTP server.

Module setting (P.22)

-Set the CPS-MCS341 and its configurable Modules.

User/Password setting (P.25)

- Set the log-in “user name /password” when using a Web browser with the product

System information (P.26)

- Display the system information details of the product.

SIM card setting (P.31)

-Set up the SIM card.

*for 3G support model exclusively.

Config backup (P.32)

- You can create a backup for the monitoring screen, task program, and other settings

Config restore (P.33)

- You can restore a monitoring screen, a task program, or other settings from the backup file.

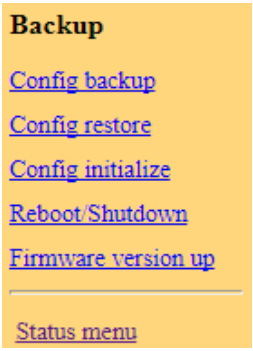



**Figure 1.8. Maintenance menu – 4**

Config initialize (P.33)

- This restores all settings to their factory defaults.

Reboot/Shutdown (P.16)

- This reboots and shut downs the product.

Firmware version up (P.34)

- Updates the firmware with “version up” file.

Status menu

- Switch to status menu.

# - Web Browser Screen Display

Click each category to show the related display on the right side.

(1) Monitoring view

Display of the monitoring screen.

See “Creating and Displaying Monitoring Screens” in Chapter 2 for details.

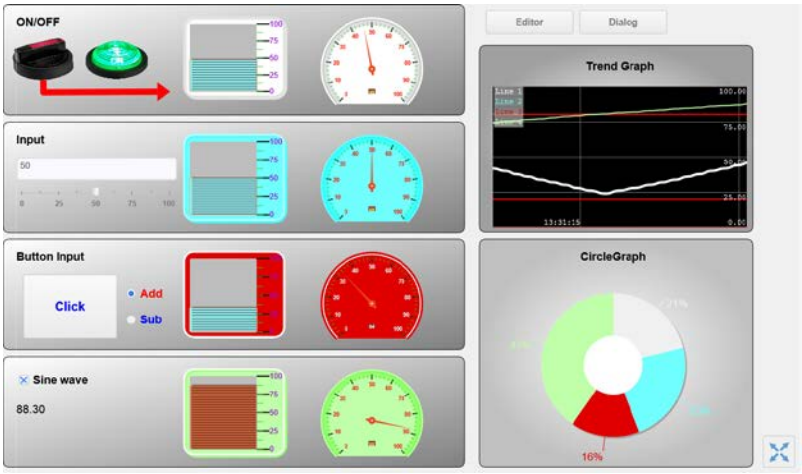
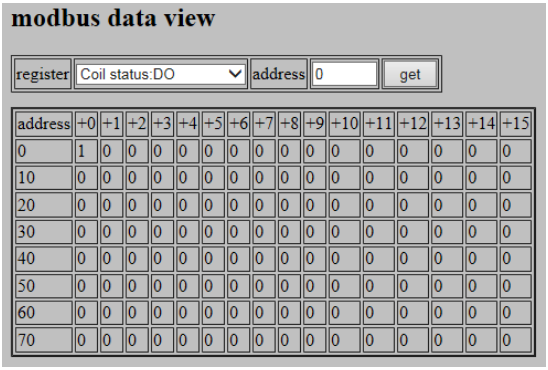



**Figure 1.9. Monitoring Screen**

(2) Modbus data view

Display each register value accessible in Modbus TCP.




| address | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 | +10 | +11 | +12 | +13 | +14 | +15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Figure 1.10. Modbus data view**

Select and display the register from a pull-down menu.

Specify the register in the pull-down menu and click the “get”. Status will be shown.

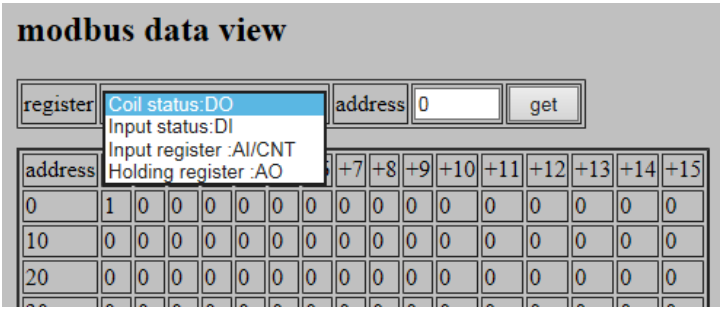



**Figure 1.11. Select a register**

DO from a stacking device is address-registered in Coil. DI is address-registered in Input status.

<e.g.> CPS-DIO-0808L (CPS-DIO-0808BL, CPS-DIO-0808RL)

| Register | Address | CPS-MCS341<br>+<br>DevID0:CPS-DIO-0808L | CPS-MCS341<br>+<br>DevID0:CPS-DIO-0808L<br>+<br>DevID1:CPS-DIO-0808L | Meaning |
|---|---|---|---|---|
| Coil | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 | DevID0: DO-0 | DevID0: DO-0 | |
| | 5 | DevID0: DO-1 | DevID0: DO-1 | |
| | 6 | DevID0: DO-2 | DevID0: DO-2 | |
| | 7 | DevID0: DO-3 | DevID0: DO-3 | |
| | 8 | DevID0: DO-4 | DevID0: DO-4 | |
| | 9 | DevID0: DO-5 | DevID0: DO-5 | |
| | 10 | DevID0: DO-6 | DevID0: DO-6 | |
| | 11 | DevID0: DO-7 | DevID0: DO-7 | |
| | 12 | not in use | DevID1: DO-0 | |
| | 13 | not in use | DevID1: DO-1 | |
| | 14 | not in use | DevID1: DO-2 | |
| | 15 | not in use | DevID1: DO-3 | |
| | 16 | not in use | DevID1: DO-4 | |
| | 17 | not in use | DevID1: DO-5 | |
| | 18 | not in use | DevID1: DO-6 | |

| | | | | |
|---|---|---|---|---|
| | 19 | not in use | DevID1: DO-7 | |
| | 20 and up | not in use | not in use | |
| Input status | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 | DevID0:DI-0 | DevID0:DI-0 | |
| | 5 | DevID0:DI-1 | DevID0:DI-1 | |
| | 6 | DevID0:DI-2 | DevID0:DI-2 | |
| | 7 | DevID0:DI-3 | DevID0:DI-3 | |
| | 8 | DevID0:DI-4 | DevID0:DI-4 | |
| | 9 | DevID0:DI-5 | DevID0:DI-5 | |
| | 10 | DevID0:DI-6 | DevID0:DI-6 | |
| | 11 | DevID0:DI-7 | DevID0:DI-7 | |
| | 12 | not in use | DevID1:DI-0 | |
| | 13 | not in use | DevID1:DI-1 | |
| | 14 | not in use | DevID1:DI-2 | |
| | 15 | not in use | DevID1:DI-3 | |
| | 16 | not in use | DevID1:DI-4 | |
| | 17 | not in use | DevID1:DI-5 | |
| | 18 | not in use | DevID1:DI-6 | |
| | 19 | not in use | DevID1:DI-7 | |
| | 20 and up | not in use | not in use | |
| Input register | 0 – 4FFF | not in use | not in use | not in use |
| | 5000 - | System information<br>* Refer to Appendix 7 Modbus status information | | |
| Holding register | 0 and up | not in use | not in use | not in use |

<e.g.> CPS-AO-1604LI (CPS-AO-1604VLI)

| Register | Address | CPS-MCS341<br>+<br>DevID0: CPS-AO-1604LI | CPS-MCS341<br>+<br>DevID0: CPS-AO-1604LI<br>+<br>DevID1: CPS-SSI-4P | Meaning |
|---|---|---|---|---|
| Coil | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 and up | not in use | not in use | |
| Input status | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 and up | not in use | not in use | |
| Input register | 0 | DevID0:AO-0 | DevID0:AO-0 | 0x0000 - 0xffff |
| | 1 | DevID0:AO-1 | DevID0:AO-1 | 0x0000 - 0xffff |
| | 2 | DevID0:AO-2 | DevID0:AO-2 | 0x0000 - 0xffff |
| | 3 | DevID0:AO-3 | DevID0:AO-3 | 0x0000 - 0xffff |
| | 4 | not in use | DevID1:SSI-0 | MSB 2byte |
| | 5 | not in use | DevID1:SSI-0 | LSB 2byte |
| | 6 | not in use | DevID1:SSI-1 | MSB 2byte |
| | 7 | not in use | DevID1:SSI-2 | MSB 2byte |
| | 8 | not in use | DevID1:SSI-2 | LSB 2byte |
| | 9 | not in use | DevID1:SSI-3 | MSB 2byte |
| | 10 | not in use | DevID1:SSI-3 | LSB 2byte |
| | 11 and up | not in use | not in use | not in use |
| Holding register | 0 and up | not in use | not in use | not in use |

<e.g.>CPS-RRY-4PCC

| Register | Address | CPS-MCS341<br>+<br>DevID0:CPS-RRY-4PCC | CPS-MCS341<br>+<br>DevID0:CPS-RRY-4PCC<br>+<br>DevID1:CPS-RRY-4PCC | Meaning |
|---|---|---|---|---|
| Coil | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 | DevID0:RRY-0 | DevID0:RRY-0 | |
| | 5 | DevID0:RRY-1 | DevID0:RRY-1 | |
| | 6 | DevID0:RRY-2 | DevID0:RRY-2 | |
| | 7 | DevID0:RRY-3 | DevID0:RRY-3 | |
| | 8 | not in use | DevID1:RRY-0 | |
| | 9 | not in use | DevID1:RRY-1 | |
| | 10 | not in use | DevID1:RRY-2 | |
| | 11 | not in use | DevID1:RRY-3 | |
| | 12 and up | not in use | not in use | |
| Input status | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 and up | not in use | not in use | |
| Input register | 0 and up | not in use | not in use | not in use |
| Holding register | 0 and up | not in use | not in use | not in use |

<e.g.>CPS-CNT-3202I

| Register | Address | CPS-MCS341<br>+<br>DevID0: CPS-CNT-3202I | CPS-MCS341<br>+<br>DevID0: CPS-CNT-3202I<br>+<br>DevID1: CPS-CNT-3202I | Meaning |
|---|---|---|---|---|
| Coil | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 and up | not in use | not in use | |
| Input status | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 | DevID0:D1-0 | DevID0:D1-0 | |
| | 5 | DevID0:D2-1 | DevID0:D2-1 | |
| | 6 | not in use | DevID1:D1-0 | |
| | 7 | not in use | DevID1:D2-1 | |
| | 8 and up | not in use | not in use | |
| Input register | 0 | DevID0:CNT-0 | DevID0:CNT-0 | MSB 2byte |
| | 1 | DevID0:CNT-0 | DevID0:CNT-0 | LSB 2byte |
| | 2 | DevID0:CNT-1 | DevID0:CNT-1 | MSB 2byte |
| | 3 | DevID0:CNT-1 | DevID0:CNT-1 | LSB 2byte |
| | 4 | not in use | DevID1:CNT-0 | MSB 2byte |
| | 5 | not in use | DevID1:CNT-0 | LSB 2byte |
| | 6 | not in use | DevID1:CNT-1 | MSB 2byte |
| | 7 | not in use | DevID1:CNT-1 | LSB 2byte |
| | 8 | not in use | not in use | not in use |
| Holding register | 0 and up | not in use | not in use | not in use |

CPS-SSI-4P Data format

| | Start address | | | | | | | | Start address+1 | | | | | | | | Start address+2 | | | | | | | | Start address+3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bit | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| | Status | | | | | | | | S | MSB | | | | | | | | | | | | | | | | | | | | | | LSB |
| | A | Reserved | | | | | | V | | 4096℃ ↓ | | | | | | | | | | | 1℃ ↓ | | | | | | | | | | | 1/1024℃ ↓ |
| 1℃ | 0 | * | * | * | * | * | * | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| -1℃ | 0 | * | * | * | * | * | * | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| -1/1024℃ | 0 | * | * | * | * | * | * | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| -999℃(Disconnection) | 1 | * | * | * | * | * | * | * | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | * | * | * | * | * | * | * | * | * | * |

S :Sign
A :Sensor abnormality
V :Valid data
* : Undefined

<e.g.>CPS-DI-16L (CPS-DI-16RL)

| Register | Address | CPS-MCS341<br>+<br>DevID0:CPS-DI-16L | CPS-MCS341<br>+<br>DevID0: CPS-DI-16L<br>+<br>DevID1: CPS-DI-16L | Meaning |
|---|---|---|---|---|
| Coil | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 and up | not in use | not in use | |
| Input status | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 | DevID0:DI-0 | DevID0:DI-0 | |
| | 5 | DevID0:DI-1 | DevID0:DI-1 | |
| | 6 | DevID0:DI-2 | DevID0:DI-2 | |
| | 7 | DevID0:DI-3 | DevID0:DI-3 | |
| | 8 | DevID0:DI-4 | DevID0:DI-4 | |
| | 9 | DevID0:DI-5 | DevID0:DI-5 | |
| | 10 | DevID0:DI-6 | DevID0:DI-6 | |
| | 11 | DevID0:DI-7 | DevID0:DI-7 | |
| | 12 | DevID0:DI-8 | DevID0:DI-8 | |
| | 13 | DevID0:DI-9 | DevID0:DI-9 | |
| | 14 | DevID0:DI-10 | DevID0:DI-10 | |

| | | | | |
|---|---|---|---|---|
| | 15 | DevID0:DI-11 | DevID0:DI-11 | |
| | 16 | DevID0:DI-12 | DevID0:DI-12 | |
| | 17 | DevID0:DI-13 | DevID0:DI-13 | |
| | 18 | DevID0:DI-14 | DevID0:DI-14 | |
| | 19 | DevID0:DI-15 | DevID0:DI-15 | |
| | 20 | not in use | DevID1:DI-0 | |
| | 21 | not in use | DevID1:DI-1 | |
| | 22 | not in use | DevID1:DI-2 | |
| | 23 | not in use | DevID1:DI-3 | |
| | 24 | not in use | DevID1:DI-4 | |
| | 25 | not in use | DevID1:DI-5 | |
| | 26 | not in use | DevID1:DI-6 | |
| | 27 | not in use | DevID1:DI-7 | |
| | 28 | not in use | DevID1:DI-8 | |
| | 29 | not in use | DevID1:DI-9 | |
| | 30 | not in use | DevID1:DI-10 | |
| | 31 | not in use | DevID1:DI-11 | |
| | 32 | not in use | DevID1:DI-12 | |
| | 33 | not in use | DevID1:DI-13 | |
| | 34 | not in use | DevID1:DI-14 | |
| | 35 | not in use | DevID1:DI-15 | |
| | 36 and up | not in use | not in use | |
| Input register | 0 and up | not in use | not in use | not in use |
| Holding register | 0 and up | not in use | not in use | not in use |

<e.g.>CPS-DO-16L (CPS-DO-16RL)

| Register | Address | CPS-MCS341<br>+<br>DevID0:CPS-DO16L | CPS-MCS341<br>+<br>DevID0: CPS-DO16L<br>+<br>DevID1: CPS-DO16L | Meaning |
|---|---|---|---|---|
| Coil | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 | DevID0:DO-0 | DevID0:DO-0 | |
| | 5 | DevID0:DO-1 | DevID0:DO-1 | |
| | 6 | DevID0:DO-2 | DevID0:DO-2 | |
| | 7 | DevID0:DO-3 | DevID0:DO-3 | |
| | 8 | DevID0:DO-4 | DevID0:DO-4 | |
| | 9 | DevID0:DO-5 | DevID0:DO-5 | |
| | 10 | DevID0:DO-6 | DevID0:DO-6 | |
| | 11 | DevID0:DO-7 | DevID0:DO-7 | |
| | 12 | DevID0:DO-8 | DevID0:DO-8 | |
| | 13 | DevID0:DO-9 | DevID0:DO-9 | |
| | 14 | DevID0:DO-10 | DevID0:DO-10 | |
| | 15 | DevID0:DO-11 | DevID0:DO-11 | |
| | 16 | DevID0:DO-12 | DevID0:DO-12 | |
| | 17 | DevID0:DO-13 | DevID0:DO-13 | |
| | 18 | DevID0:DO-14 | DevID0:DO-14 | |
| | 19 | DevID0:DO-15 | DevID0:DO-15 | |
| | 20 | not in use | DevID1:DO-0 | |
| | 21 | not in use | DevID1:DO-1 | |
| | 22 | not in use | DevID1:DO-2 | |
| | 23 | not in use | DevID1:DO-3 | |
| | 24 | not in use | DevID1:DO-4 | |
| | 25 | not in use | DevID1:DO-5 | |
| | 26 | not in use | DevID1:DO-6 | |
| | 27 | not in use | DevID1:DO-7 | |
| | 28 | not in use | DevID1:DO-8 | |
| | 29 | not in use | DevID1:DO-9 | |
| | 30 | not in use | DevID1:DO-10 | |
| | 31 | not in use | DevID1:DO-11 | |

| | | | | |
|---|---|---|---|---|
| | 32 | not in use | DevID1:DO-12 | |
| | 33 | not in use | DevID1:DO-13 | |
| | 34 | not in use | DevID1:DO-14 | |
| | 35 | not in use | DevID1:DO-15 | |
| | 36 and up | not in use | not in use | |
| Input status | 0 | CPU:DIO0 *1 | CPU:DIO0 *1 | 0: OFF<br>1: ON |
| | 1 | CPU:DIO1 | CPU:DIO1 | |
| | 2 | CPU:DIO2 | CPU:DIO2 | |
| | 3 | CPU:DIO3 | CPU:DIO3 | |
| | 4 and up | not in use | not in use | |
| Input register | 0 and up | not in use | not in use | not in use |
| Holding register | 0 and up | not in use | not in use | not in use |

*1 Four bits of address in Coil and the Input status are reserved for the CPU module.

(3) Reboot/Shutdown

Select “reboot” or “shutdown” and then click the “start”.

LED flashing indicates rebooting or shutting down in process.


**Figure 1.12. Reboot**

(4) Monitoring edit

Display of the Monitoring edit screen.

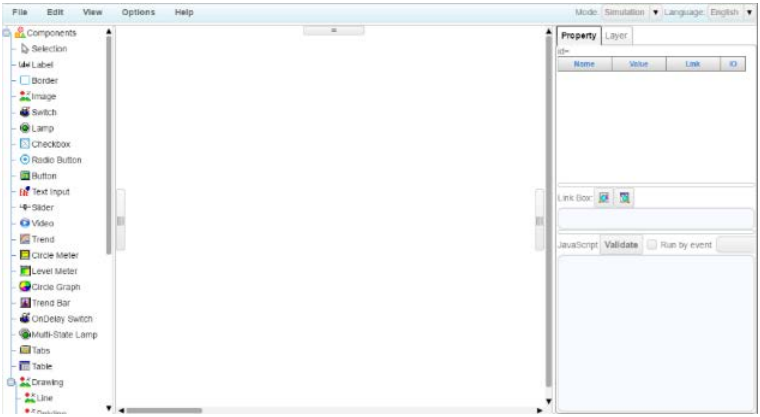



**Figure 1.13. Monitoring edit**

Please see “Creating and Displaying Monitoring Screens” in Chapter 2 for details.

(5) Task edit

Display of the Task edit screen

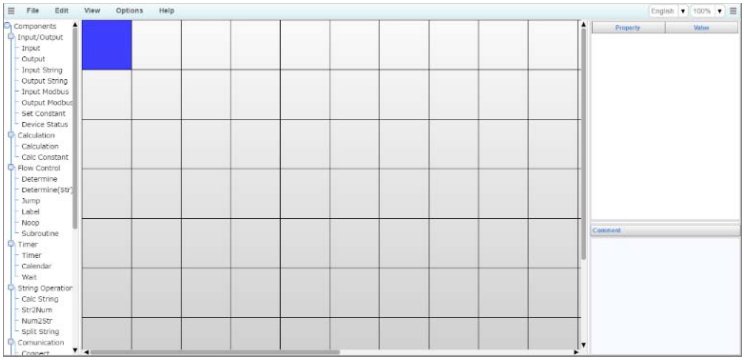



**Figure 1.14. Task edit screen**

Please see “Creating and Displaying a Processing Task” in Chapter 3 for details.

(6) Save to ROM

Save the contents that has been set to ROM.

Click the “save to ROM” and PWR LED starts flashing.
Do not turn off the power until flashing has stopped. (approx.: five seconds)
Without saving, the contents return to those before setting at rebooting or shutting down.


**Figure 1.15. Save to ROM**

(7) Data transfer setting

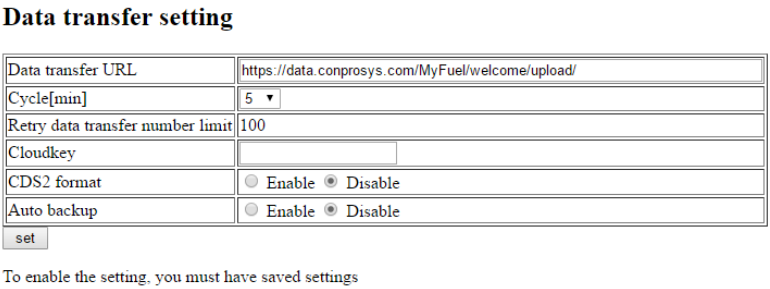



**Figure 1.16. Data transfer setting**

Set up a definition of measuring data and a sever setting of the measured data to be transferred.
Specify the “Data transfer URL” and the “Cycle (min),” and then click the “set”.

The choice of transfer cycles (min.) is listed below.

*The measuring cycle is 1 minute regardless of your choice of transfer cycle.
1 datum will be transferred when you choose 1 minute. 60 data will be transferred when you choose 60 minutes.

- 1 min.
- 5 min.
- 10 min.
- 15 min.
- 20 min.
- 30 min.
- 60 min.

Cloudkey is the cord for CDS2 to identify the required data. When CDS2 is used for destination, select CDS2 format “Enable”. The CDS2 is the service for Japan domestic only.

*Regarding the format of the Data transfer, please see “Appendix 1 Data Transfer Format”.

The file sent to the server will be backed up by selecting “Enable” Auto backup and clicking “set” button.

The backup files will be set to the SD card within the product.

(8) Time sync setting

Set up the name of NTP server that obtains the date and time.
Specify the address of the “Synchronization server”, and then click the “set”. This saves the settings into RAM (Random access memory). Connecting to a server is carried out at the timing of “Synchronization time” or clicking the “now” button immediately starts synchronization with the specified settings.

“reload” updates the current time. “write” saves the current time to ROM.
The time can be set manually into RAM in Change date and time setting.
For synchronization with PC time, click the “get pc time” button to get the time of the PC that is showing the WEB monitor and save it to RAM.
Run “Save to ROM” to save the setting time and server that are configured in RAM to ROM.

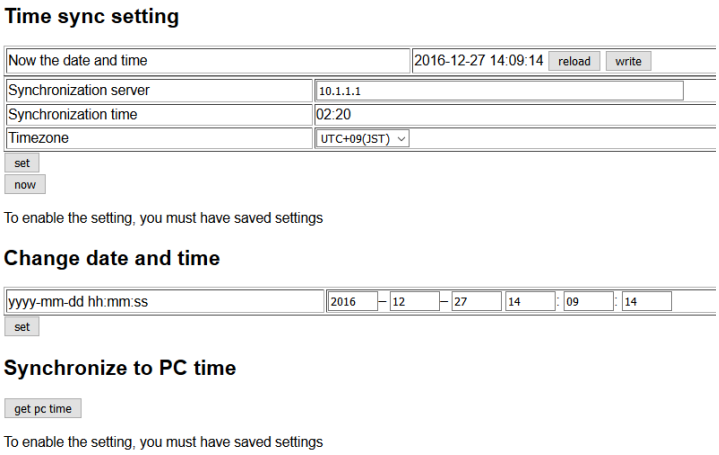



**Figure 1.17. Time sync setting**

“Time sync setting” operates upon booting and at 02:20 each day.

Turning off the product resets the information of the setting time.

Upon booting, the measured data are not transferred to the server until the time sync setting has completed.

(9) Service setting

This setting enables or disables to operate the specified services in the unit.

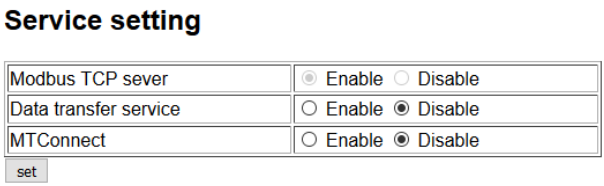



**Figure 1.18. Service setting**

To stop the “Modbus TCP service”, select “Disable” and then click the “set”.

To stop the “Data transfer service” (transfer the measured data to the server), select “Disable” and then click the “set”.

*Do not use it with task data transmission. It may not work properly.

To stop the MTConnect, select “Disable” and then click the “set”.

(10) File view

This displays and deletes created cvs files.

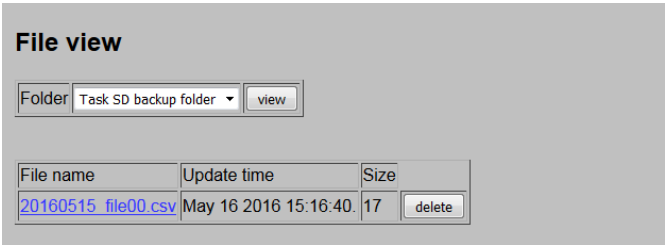



**Figure 1.19. File view**

| | |
|---|---|
| Send folder ( Data transfer service) | -This stores files to be sent to a server by data transfer service. |
| Send folder (task) | -This stores files to be sent to a server by task. |
| Send folder (Mail) | -This folder stores mails to be sent by task. |
| Send folder (Azure) | -This stores files to be sent to Azure IoT Hub by task. |
| Resend folder (transfer service) | -This stores files that were failed to be sent to a server by transfer service. |
| Resend folder (task) | -This stores files that were failed to be sent to a server by task |
| Resend folder (Mail) | -This folder stores mails that were failed to be sent by task. |

| | |
|---|---|
| Resend folder (Azure) | -This stores files that were failed to be sent to Azure IoT Hub. (stored in converted json format) |
| Task SD card folder | -This stores data collection files set in SD area of task. |
| Task RAM folder | -This stores data collection files set in RAM area of task. |
| Task SD backup folder | -This stores backup files created from task. |
| Auto backup folder | -This stores bakup files set by enabling Auto backup in Data transfer setting. |
| Send file(FTP) | -This folder stores files to be sent to FTP server by task. |
| Resend file(FTP) | -This stores files that were failed to be sent to FTP server by task. |

(11) Network setting

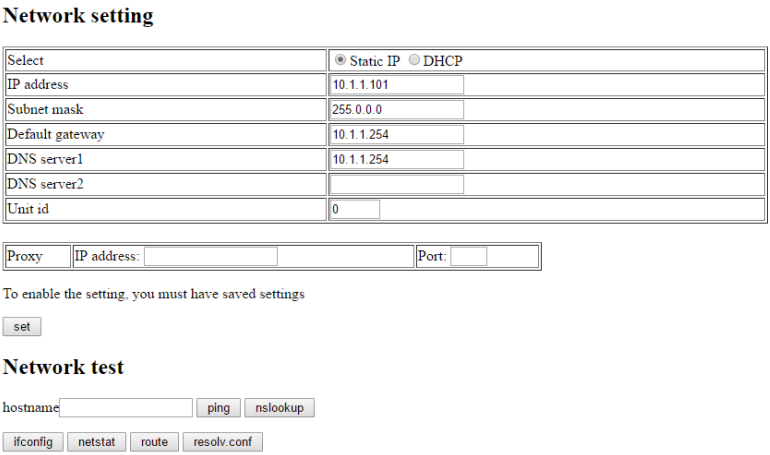



**Figure 1.20. Network setting**

This sets up the network such as “IP address of the product”.

Unit id is fixed as 0.

When transferring data via proxy, enter a proxy IP address and a port. Data will be sent with HTTP or HTTPS depending on the destination.

Network test can be performed as follows;

| | |
|---|---|
| Ping | -This displays a result of reachability check to input hostname. |
| nslookup | -This displays a result of DNS look up for input hostname. |
| ifconfig | -This displays a confirmation result of the network environment. |
| netstat | -This displays a list of network connection. |

Route -This displays routing table.
resolv.conf -This displays DNS information.

(12) Module setting

Set the CPS-MCS341 and its configurable modules.

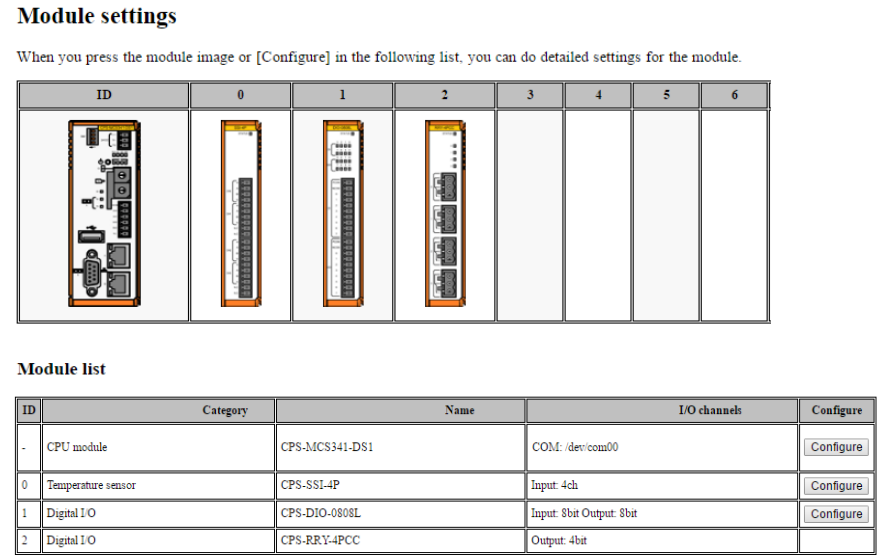



**Figure 1.21. Module setting**

On the upper left of the screen, the image of the CPS-MCS341 will be displayed below the ID. When other modules are stacked with the product, each ID image will be sequentially added from 0.

The list of the CPS product and each module will be shown under the images. Click the corresponded image or “Configure” button in the list to set the details of each module.

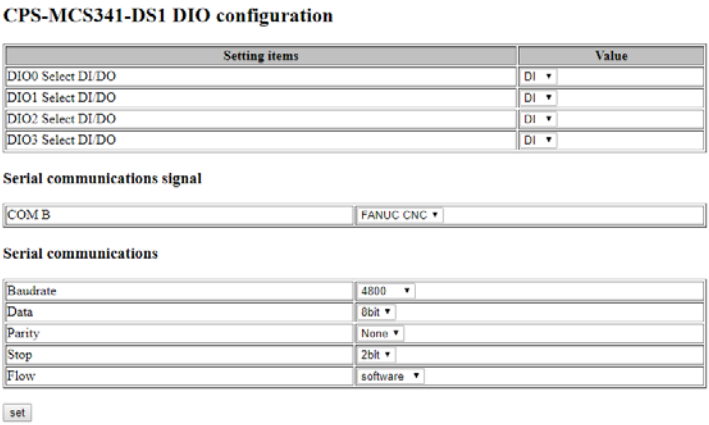



**Figure 1.22. CPU module setting**

Set four digital input/output channels of the CPU module. The followings show the setting images of the modules. Please refer to the hardware manual for details.

Serial communication signal

With The CPS-MCS341-DS1–131, COM A can be used for a task script or FANUC CNC.
To use it for FANUC CNC, the serial communication setting should be set in accordance with CNC setting. To use it for a task script, set the serial communication in the task edit screen.

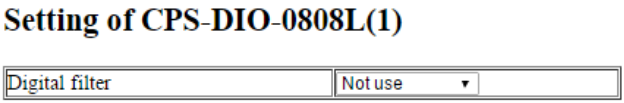



**Figure 1.23. CPS-DIO-0808L (CPS-DIO-0808BL, CPS-DIO-0808RL) module setting**

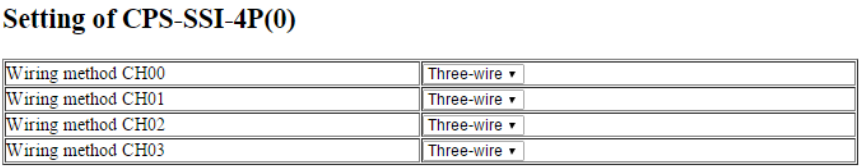



**Figure 1.24. CPS-SSI-4P module setting**

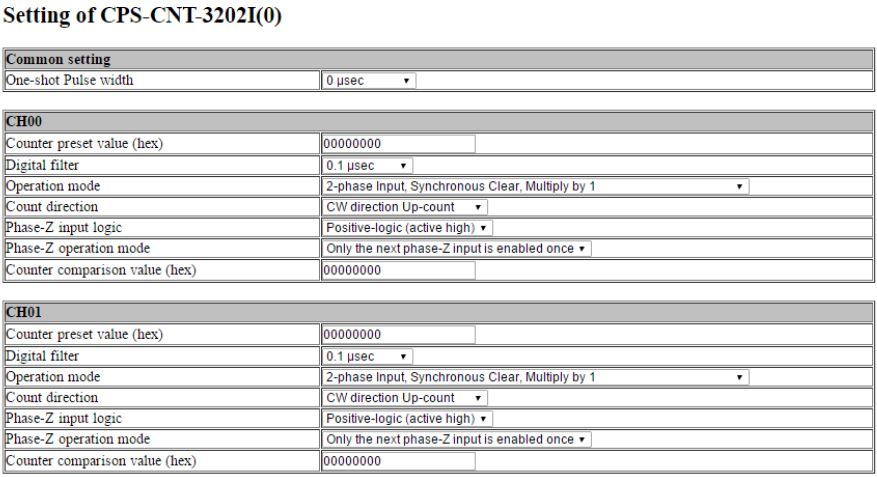



**Figure 1.25. CPS-CNT-3201 module setting**

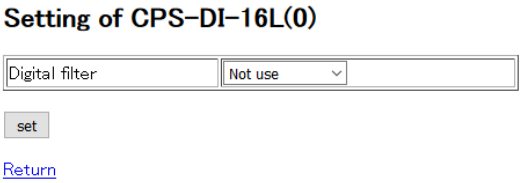



**Figure 1.26. CPS-DI-16L (CPS-DI-16RL) module setting**

(13) User/Password setting

Set the log-in “User name /Password” when using a Web browser.

After login, change a password from the default setting and make your own password.

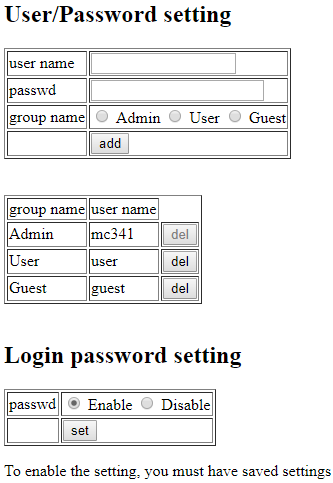



**Figure 1.27. Password setting.**

- When adding a new user, enter a user name in the “user name” field, a password in the “passwd” field, as a group, choose root (administrator) or other (general user), then click the “add”.

Accessible menus for each group are listed below.

| | Admin | User | Guest |
|---|---|---|---|
| Status menu | Yes | Yes | Yes |
| User menu | Yes | Yes | No |
| Maintenance menu | Yes | No | No |

- To delete a previously registered user, click the “del” button located next to the user name.
- For login password setting, user can set whether User name/Password is Enable or Disable.

  Enable: the user can access Web page by entering the User name and Password.

  Disable: the user can access Web page without User name and Password.

The default is set as Enable.

* User name and Password are always required to access the Maintenance menu.

(14) System information

Display the details of the system information of the unit.

**System infomation**

| | |
|---|---|
| Version | 2.6.0 |
| Serial number | [redacted] |
| ID | [redacted] |
| MAC address | [redacted] |
| Data tranfer service status | RUN |
| Server comm log | Log not found |
| Detail | View |
| license | View |
| TELEC | R 006-000275 |

**Figure 1.28. System information**

Server communication log shows the communication logs listed below.

| | |
|---|---|
| Web server communication log | This shows the latest communication log from the server designated as the data transfer URL. |
| Azure log | This shows the latest sending data log to Azure IoT Hub. |
| NTP server communication log | This shows the latest communication log from the designated NTP server. |
| Mail Send log | This shows the latest communication log from the designated SMTP server. |
| FTP communication log | This shows the latest communication log from the FTP server that is set in FTP setting. |

**Web server comm log**

```
*   Trying 10.1.1.1...
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed

  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0* connect to 10.1.1.1 port 80 failed: No route to host
* Failed to connect to 10.1.1.1 port 80: No route to host
* Closing connection 0
curl: (7) Failed to connect to 10.1.1.1 port 80: No route to host
```

**Azure log**

```
Log not found
```

**NTP server comm log**

```
 3 Jul 10:33:23 ntpdate[1376]: step time server 133.243.238.163 offset -2588356.802507 sec
```

**Mail Send log**

```
Log not found
```

**Figure 1.29. Web server comm log**

- Details

Followings are the system information.

**uptime**

```
 23:43:49 up 27 min,  0 users,  load average: 4.36, 4.27, 3.44
```

**free**

```
             total         used         free       shared      buffers
Mem:        513504       128316       385188            0          244
-/+ buffers:             128072       385432
Swap:            0            0            0
```

**df**

```
Filesystem           1K-blocks      Used Available Use% Mounted on
/dev/root                31729     28133      1958  93% /
none                    256752         0    256752   0% /var
none                    256752        56    256696   0% /tmp
none                    256752         0    256752   0% /dev
/dev/mtdblock5           18688     16496      2192  88% /mnt/mtd
tmpfs                   256752     37500    219252  15% /home
tmpfs                    32768       688     32080   2% /home/CF
tmpfs                    16384        12     16372   0% /home/Ram
```

**ps aux**

```
PID   USER     TIME   COMMAND
    1 root       0:02 init
    2 root       0:00 [kthreadd]
    3 root       0:00 [ksoftirqd/0]
    5 root       0:14 [kworker/u:0]
    6 root       0:00 [khelper]
    7 root       0:00 [netns]
    8 root       0:00 [sync_supers]
    9 root       0:00 [bdi-default]
   10 root       0:00 [kblockd]
```

**Figure 1.30. Details**

- 3G Network *for 3G support model exclusively.

Display the Status of 3G network connection and 3G module.

**Status**

```
at!gstatus?

!GSTATUS:
Current Time:  3465             Temperature: 51
Bootup Time:   0                Mode:        ONLINE
System mode:   WCDMA            PS state:    Attached
WCDMA band:    WCDMA 2100       GSM band:    Unknown
WCDMA channel: 10736            GSM channel: 65535
GMM (PS) state:REGISTERED       NORMAL SERVICE
MM (CS) state: IDLE             NORMAL SERVICE
WCDMA L1 State:L1M_PCH_SLEEP    RRC State:   DISCONNECTED
RX level (dBm):-71


OK
```

Display the current status.

“RX level (dBm)” indicates the radio wave intensity of 3G network.

Each value indicates as follows:

| Value (approx.) | Radio wave intensity |
|---|---|
| -71 and larger | Strong |
| -72 to -85 | Medium |
| -86 to -95 | Mild |
| -95 and smaller | Weak |

**Base station**

```
at+cced=0,3

+CCED: 2,440,10,1839,0a70008b,-80,-9,347,10736,0,0,0,0,0,000,000,0000,,0,0,0


OK
```

**Figure 1.31. 3G Base station**

Display the information of the Base station currently connected.

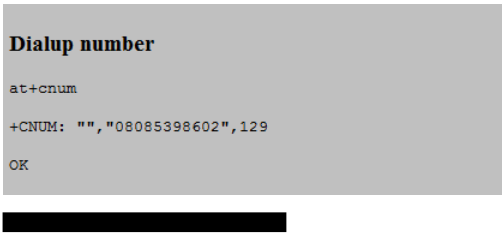



**Figure 1.32. 3G Dialup number**

Display the Dialup number obtained by the specified setting or automatically.

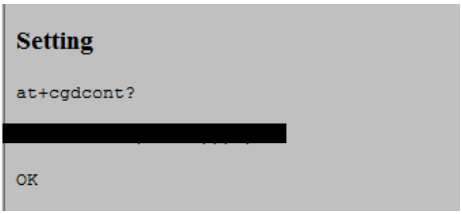



**Figure 1.33. 3G Setting**

Display the present setting

When “Error” shown at the left-bottom, it indicates the setting is improper.

- License

This is the license information of the software.  See details below.

**GPL2(linux,busybox,glibc)**

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

**curl**

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---
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---

**openssl**

License

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NTP
**Copyright Notice**

"Clone me," says Dolly sheepishly.

Last update: 17-Jan-2015 00:16 UTC

**Figure 1.34. License**

-TELEC

* CPS-MCS341G-DS1-130 exclusively

Display TELEC number

(15) SIM card setting

*for 3G support model exclusively.

Setting up the SIM card.

With your SIM card, enter the necessary information and click “set”.
Regarding the radio wave intensity and connection status, refer to the guidance of “3G Network” in the [system information] section.

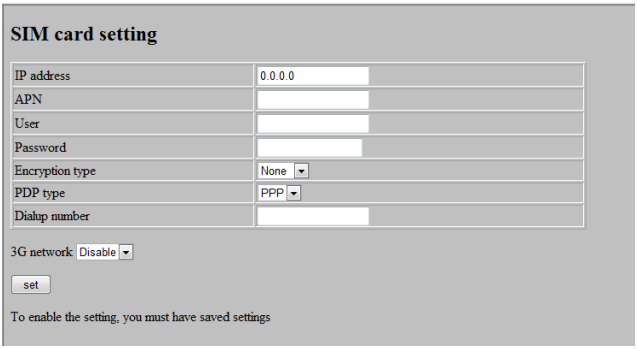



**Figure 1.35. SIM card setting**

(16) Config backup

You can create a backup for the monitoring screen, task program, and other settings.


**Figure 1.36. Config backup**

Click the “download” to start.
Default file name is “config dat”. Save the file with a new name.

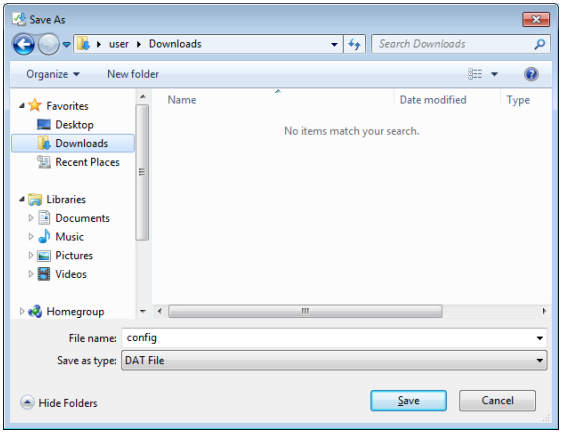



**Figure 1.37. Save As**

(17) Config restore

You can restore a monitoring screen, a task program, or other settings from the backup file.

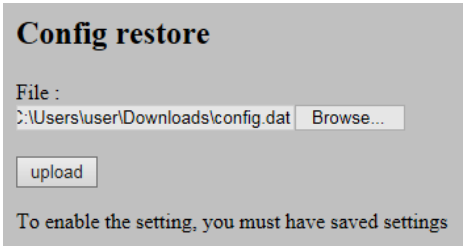



**Figure 1.38. Config restore screen**

Click the “Browse” to start [Explorer].

Choose the backup file you created in the backup config, and then click the “upload”

Although you can check the reading results on the setting screen respectively, it is required to perform the “Save the settings” and the “Reboot” to enable the settings.

(18) Config initialize

This restores all settings to their factory defaults

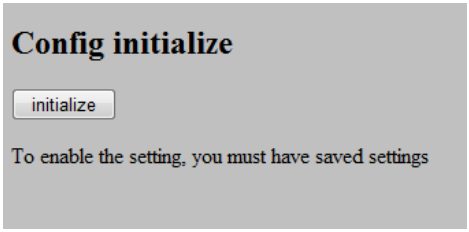



**Figure 1.39. Config initialize screen**

By clicking the “initialize”, you can initialize the settings.

Perform the “Save the settings to ROM” and the “Reboot” to enable the initialized settings.

(19) Firmware version up

Updates the firmware with “version up” file.


**Figure 1.40. Firmware version up screen**

“version up” module is provided for bug fixing as well as function upgrading.

Click the “Browse” to start [Explorer].

Select the “firmware version up” file that was downloaded through the CONTEC website, then click “upload”.
(The file is compressed by ZIP format. Decompress it and use the bin file extension.)

ST1 and ST2 LEDs continue to flash while upgrading.
Rebooting will start automatically upon the completion of upgrading. Check whether the version has been promoted in the [system information] menu.

(20) OPC UAsetting

OPC UA server certificate can be downloaded and OPC UA client can be uploaded.

Please see “Chapter 5. Using the product as the OPC UA server” for details.

TCP port can be set by 1 ~ 65535 or empty value.

The port setting of OPC UA server can be done from TCP port.

The port number can be set with between 1 and 65535 or empty value.

When the port number is unspecified, the default port 4840 is used.

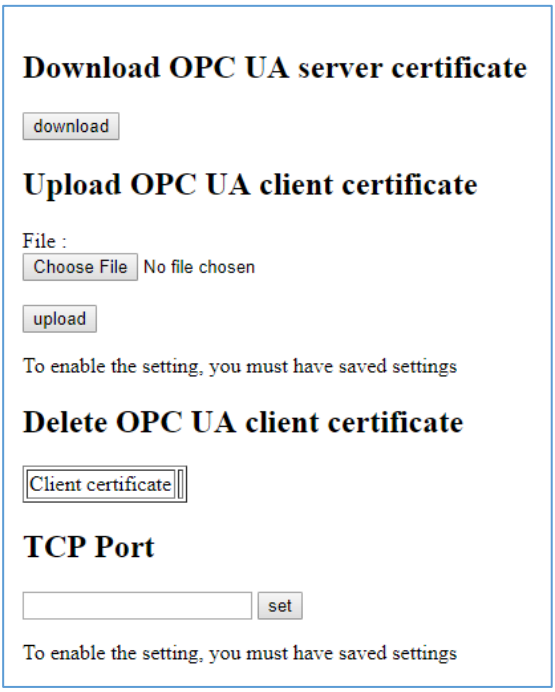



**Figure 1.41. OPC UA setting**

(21) Wireless LAN setting

Set up the wireless LAN setting. Connect a compatible USB for wireless LAN to CONPROSYS.

Please refer to Chapter 4 Wireless LAN setting regarding a compatible USB.

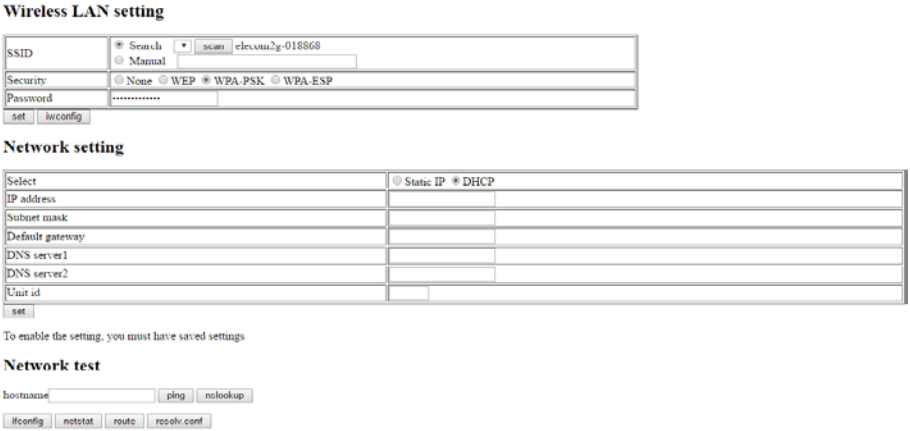



**Figure 1.42. Wireless LAN setting**

The settings of wireless LAN are as follows;

| | |
|---|---|
| SSID | ---Search or manually enter SSID to specify. |
| Security | ---Choose the authentication type |
| Password | ---Enter password to connect |

Please refer to [[Network setting] in Chapter 1] for the network setting and the network test.

(22) SMTP server setting

Set up the SMTP server setting. Refer to Chapter 6 SMTP Server setting and specify the server to connect.

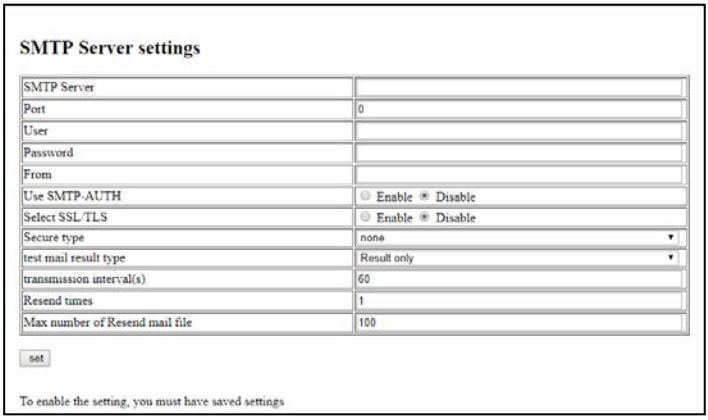



**Figure 1.43. SMTP Server setting**

(23) Mail address setting

Set up the mail destinations. Up to 10 destinations can be set.

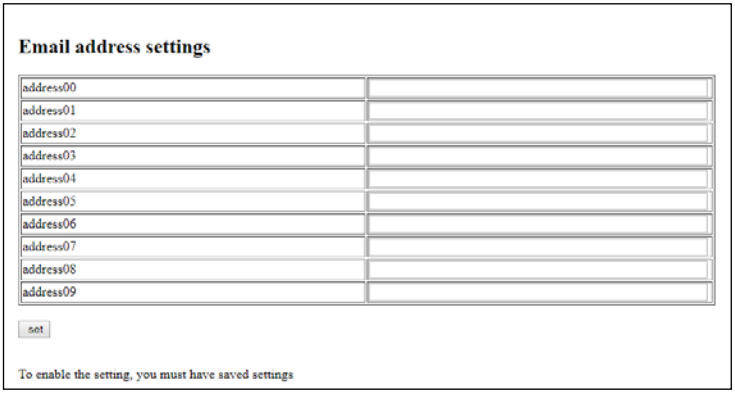



**Figure 1.44. Mail address setting**

(24) Azure IoT Hub setting

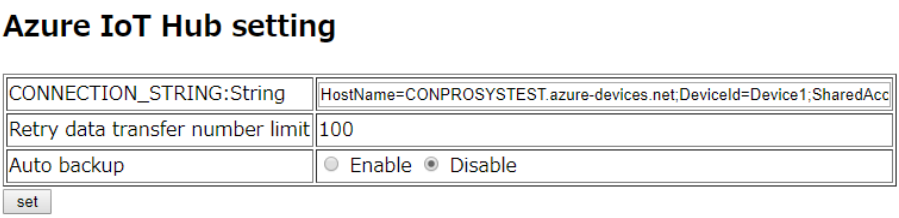



**Figure 1.45. Azure IoT Hub setting**

Enter a device connection string of the device ID that was registered in Azure IoT Hub to the "CONNECTION_STRING: String". Then click "set".

(25) MTConnect setting

* This function only available with CPS-MCS341-DS1-131, CPS-MCS341G-DS1-130 and CPS-MCS341Q-DS1-131.


**Figure 1.46. MTConnect setting**

The device definition files used by the Agent can be uploaded. (Up to 5 files)

The uploaded definition files are displayed in the list from which the Agent can select.

"sample.xml" is a sample definition file that is included in the product. You can download the sample.xml, however, it cannot be deleted. In the Adapter setting and Agent setting, each TCP port can be specified.

(26) FTP Server setting

Set up FTP server. The CONPROSYS, as a FTP client, can connect to FTP Server. Files can be sent or received between the client and the server by task. For sending or receiving files by task, refer to Chapter 3 Sample 10.

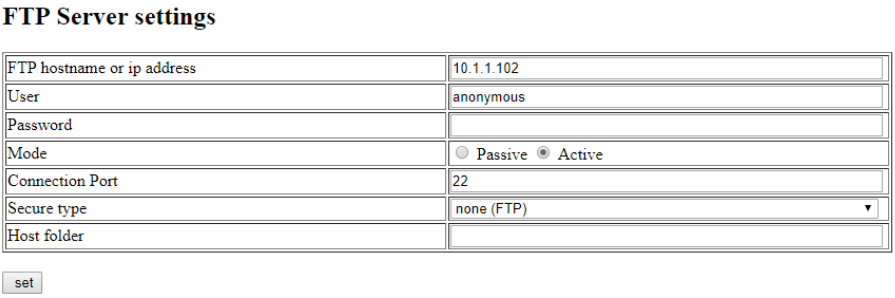



**Figure 1.47. FTP Server setting**

FTPsetting items are listed below.

| | |
|---|---|
| FTP host name (address) | …Enter FTP host name (address) |
| User | …Enter FTP server user name |
| Password | …Enter FTP server password |
| Mode | …Choose passive or active mode |
| Connection Port | …Enter connection port number |
| Secure type | …Choose one from none, FTPS(Explicit) or FTPS(Implicit). |
| Host folder | …Enter a name that is opened by server. If this remains blank, a folder opened by a server is used. |

# 2. Creating and Displaying Monitoring Screens

You can create and display a monitoring screen by connecting to the product from the host computer through a browser

When the dialog box below appears, click the “Continue”

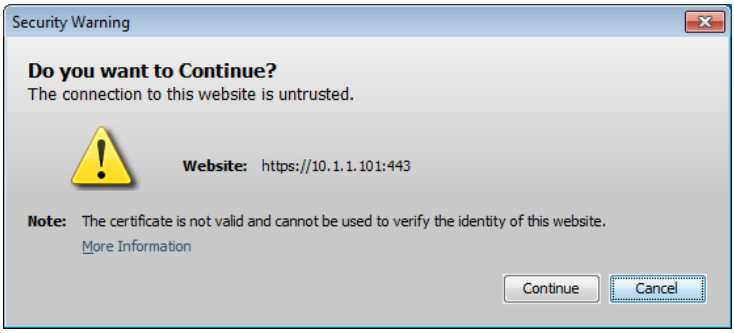



**Figure 2.27. Security Warning Message**

From the WEB menu, click the “Monitoring edit” in the “Maintenance menu”.
The screen below appears.

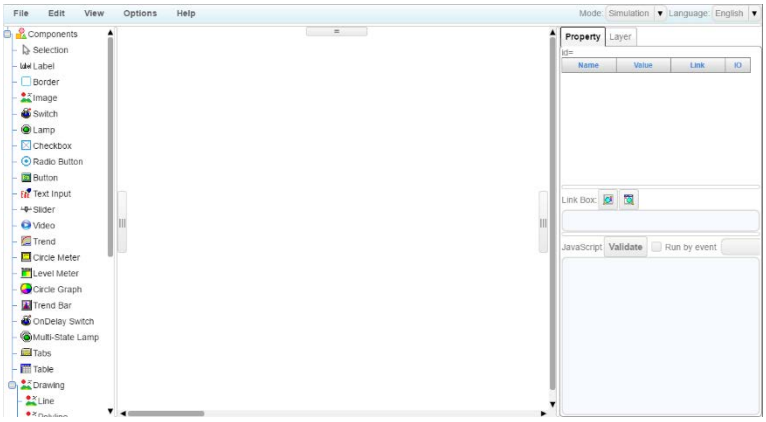



**Figure 2.28. Monitoring editing**

You can create the monitoring screen via a browser.
**Please refer to online help for specified functions. (http://data.conprosys.com/help/hmi/V1/en/)**

# Basic Procedure for Creating a Monitoring Screen

(1) To place control

Drag a control from the “Components” tree displayed on the left and drop it on the work area.

An example) Place “Switch” control.

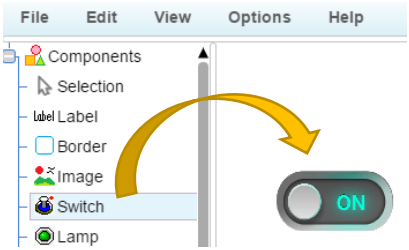



**Figure 2.29. Layout Controls**

(2) To configure the properties of controls.

Click the placed control and the property of the control will be shown in the “Property” on the right side of the screen.

The Properties area allows you to change the values, set the data to link with I/O devices or other controls.

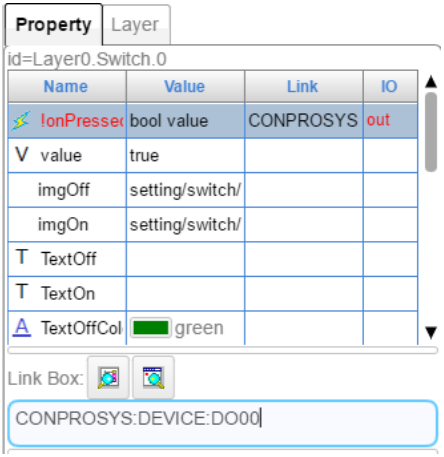



**Figure 2.30. Property**

In the device tree of the link setup, the hardware information and TAG of processing task can be specified. For items displayed in the device tree, refer to "Device tree allocation” (P.57).

(3) To align the position or adjust the size of controls.

Click the placed control to activate and drag the border to change the position or adjust the size.

Controls can be selected together and changed or adjusted simultaneously.

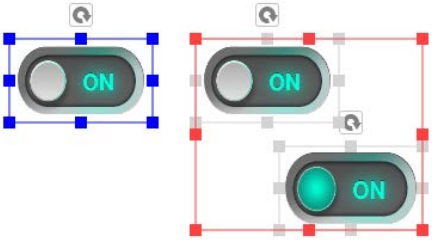



**Figure 2.31. Select controls**

Also, right-click the activated control to show the editing menu. In this menu, such as coping or deleting controls can be performed.


**Figure 2.32. Edit**

(4) To configure the layer.

Select “Layer” tab at the upper right on the screen and click “Settings”

The setting dialog box appears.

This allows you to set a size of monitoring screen or the background.

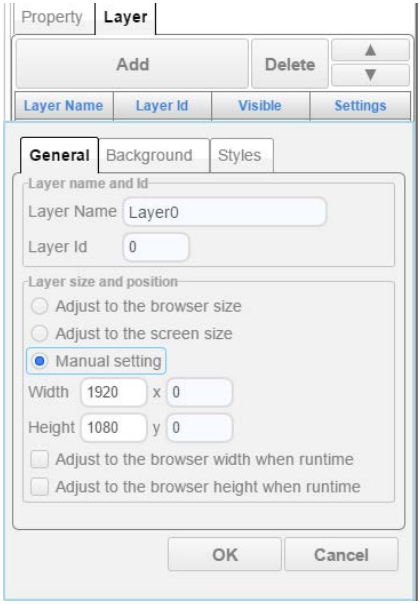



**Figure 2.33. Layer setting**

(5) You can enter code using Javascript as necessary.

If a particular control logic is needed to run the system, code the behaviors of the system using JavaScript in “JavaScript” area displayed on the lower right on the screen.

Please refer to online help for usable Javascript functions for each control.

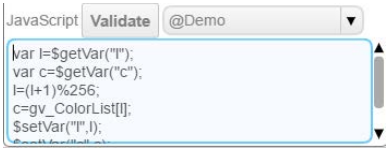



**Figure 2.34. Javascript**

(6) Save the settings to ROM.

After creating the monitoring screen, save the file with a new name.

After the saving, please perform “Save to ROM” before shutting down the power.

If you do not save the settings to ROM, the contents return to those before setting upon rebooting or shutting down.

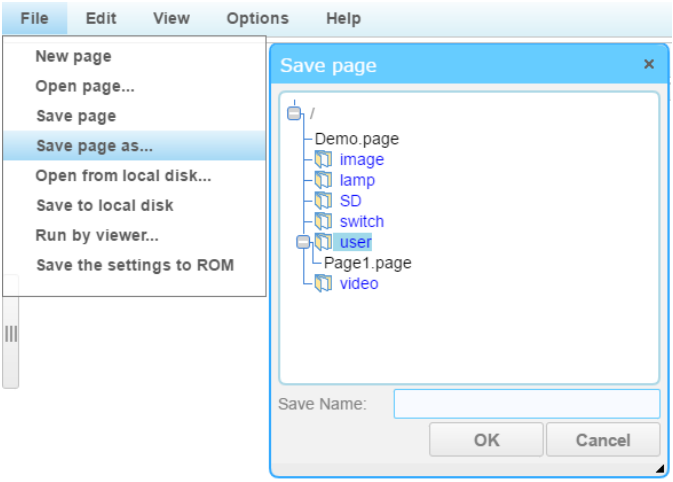



**Figure 2.35. Save the setting**

(7) To display the created pages

From WEB menu, click “Monitoring view” in “Status menu” and the monitoring screen will be displayed. You’ll see the page that is saved in “user/Page1.page” on the monitor.

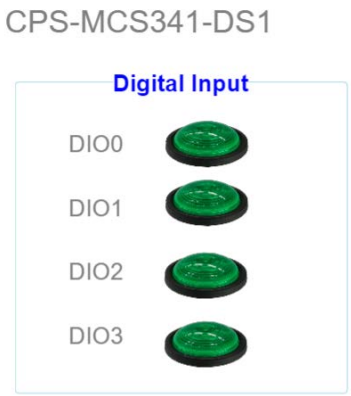



**Figure 2.36. An example of creating the monitoring screen**

When viewing the screen with a specific name, specify the URL listed below through a browser.

http://<IP address>:<port number>/viewer/view.htm?PagePath=<page file path>&lang=<language>

<page file path>: Specify a name of the page. An example: /user/Page1.page

<language>: Specify the language to view. An example: jp indicates Japanese. Specifying the language can be omitted.

# Summary of Available Items

CONPROSYS provides the following controls.

**Table 2.1. Controls list**

| Name | Description |
|---|---|
| Label | This control displays a string. |
| Border | This control is a border with a title. |
| Image | This control displays an image. |
| Switch | This control is a switch that can output an ON/OFF status. |
| Lamp | This control is a lamp that can display an ON/OFF status. |
| Checkbox | This control is a checkbox that can output an ON/OFF status and display a string. |
| Radio Button | This control is a radio button that allows a single condition to be selected from multiple conditions. |
| Button | This control is a clickable button that displays a text string. |
| Text Input | This control is used to input and display text. |
| Slider | This control is used to output data with a slider. |
| Video | This control is used to play videos. |
| Trend | This control is used to display chronological data as a graph. |
| Circle Meter | This control is used to display data as a circle meter. |
| Level Meter | This control is used to display data as a level meter. |
| Circle Graph | This control is used to display data as a circle graph. |
| Trend Bar | This control is used to display data as trend lines or bars. |
| OnDelay Switch | This control is a switch that can output an ON/OFF status after being pressed in specified seconds. |
| Multi-State Lamp | This control is a lamp that can display multiple values of differing statuses. |
| Tabs | This control is used to create multiple tabs that can be displayed by switching. |
| Table | This control is used to display data in table format. |
| Line | This control is used to draw a line on the page. |
| Polyline | This control is used to draw a polyline on the page. |
| Bezier Curve | This control is used to draw a Bezier curve on the page. |
| Rectangle | This control is used to draw a rectangle on the page. |
| Round Rectangle | This control is used to draw a rounded rectangle on the page. |
| Polygon | This control is used to draw a polygon on the page. |
| Ellipse | This control is used to draw a circle or ellipse on the page. |
| Pipe | This control is used to draw a pipe-style continuous line on the page. |

# Input/Output sample

As an example, we create a monitoring screen to view digital input status, and display and control digital output status.

(1) From the tree of “Components”, drag and drop the switch and the lamp onto the work area.

(2) To digital output, link the switch with device “DO0000”.
Click the switch to activate and then select the line of “!onPressed”from the property.
Click the left button of “Link” to show the “Device Tree” window.
The list of usable devices will be displayed. Just select the device in the list to link data.
Choose “DO0000” from the Device Tree and click the “OK” button.

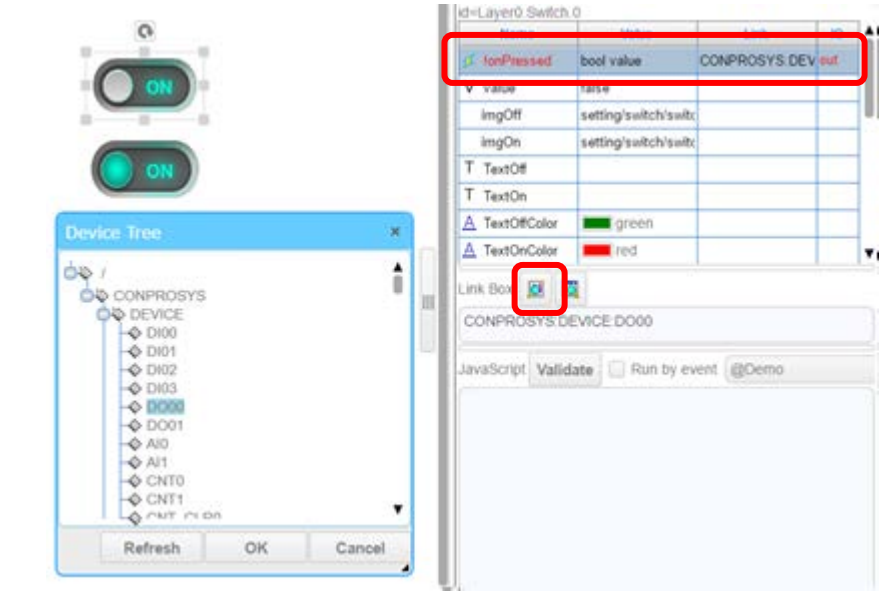



**Figure 2.11. Link control to DO0000**

If you select “Run” in the “Mode :” at the right side of the Menu, input/output with the device and linking with the processing task will begin.

With the “Simulation” remained selected, input/output with the device or link with proceeding task will not be applied. This only links the controls.

Above completes the setting. Output condition of DO0000 will be switched in accordance with the “value” of the switch by clicking the switch.

(3) To digital input, link the lamp with device “DIO0000” by following the procedure described above.
Click the lamp to activate and then select the line of “value” from the property.
Click the left button at “Link” to show the “Device Tree” window.
Choose “DI0000” from the Device Tree and click the “OK” button.

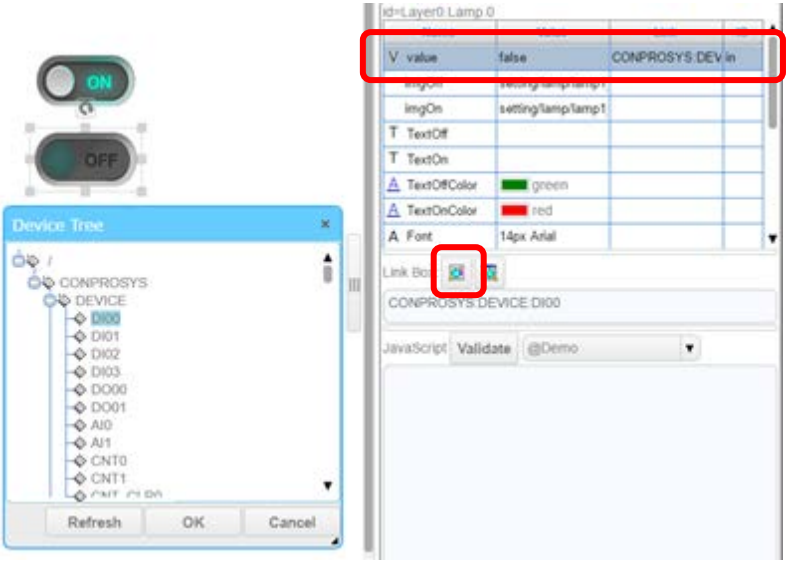



**Figure 2.37. Link control to DI0000**

Above completes the setting. Input condition of DI0000 will be displayed to the lamp.
This condition will be updated regularly. You can change the updating cycle in “Options” menu.

# 3. Creating and Displaying Processing Tasks

You can connect to the product from a host computer via a Web browser to create and display execution tasks.

When the dialog box below appears, click the “Continue”

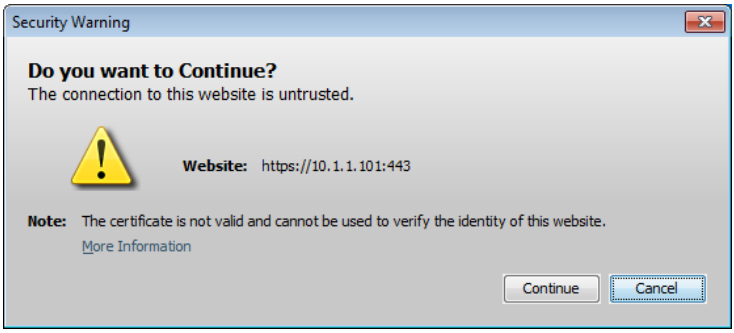



**Figure 3.38. Security Warning Message**

Click the “Task edit” in the Maintenance menu, and the following screen appears.

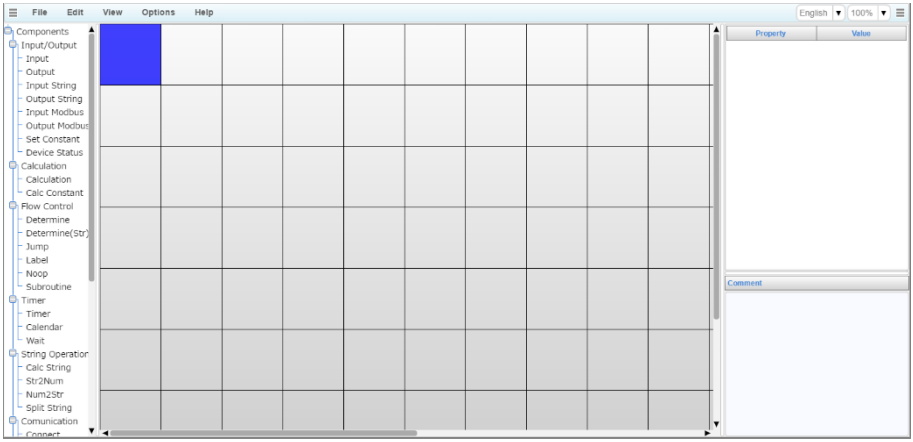



**Figure 3.39. Task edit**

You can combine icons such as calculation, conditional branch, data outputting to create processing tasks and other operations like drawing the images in the flowchart. All operations can be achieved through the Web browser.

Once CPS-MCS341 starts up, the created task processing will be repeatedly performed automatically.

This helps you easily make the system such as transmitting data collection to cloud server.

**Please refer to online help for specified functions. (http://data.conprosys.com/help/hmi/V1/en/)**

# Basic Procedure for Creating a Processing Task

(1) To place controls

Drag a control from “Components” tree that is displayed on the left and drop it to the work area.

An example) Place “Input”.

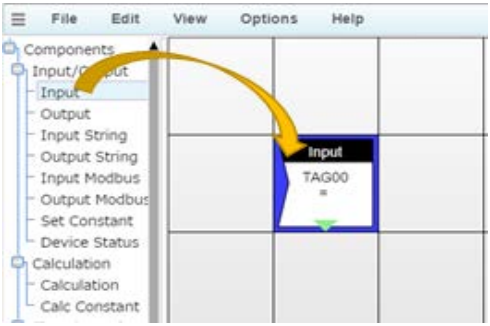



**Figure 3.40. Layout Controls**

(2) The placed controls will be shown in the “Property” area on the right side of the screen.
Each control contains the parameter that represents a specific function and decides the direction (Next step) to execute the next task.

Tasks will be executed from the upper left cell on a grid (X: 0, Y: 0). The next step to execute is determined by the direction set in the control.

If the next step is located outside of the border, the first task (0, 0) will be proceeded


**Figure 3.41. Procedure flow**

In this example, the processing is given to the following control after reading the data that is obtained from a device to TAG00.

(3) Right-click the placed control to show the editing menu. In this menu, such as coping controls or deleting can be performed. Also, click and hold the left mouse button and move the mouse. The control follows the mouse movement. Release the mouse at the position where you wish to place the control.

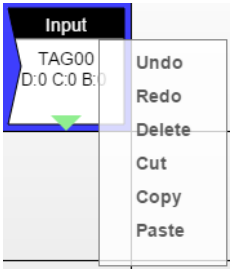



**Figure 3.42. Edit menu**

(4) Create the tasks by using the procedure described above to place items on the screen.

From Menu command, you can save the task processing you have defined by selecting the “File” – “Save task”. This opens a dialog to specify the task number and the task processing can be saved with the specified number. You can open a saved task by selecting the number in the dialog.
From Menu, go to “View” – “Status” and “Run”. This applies the changes and task will start.
You can apply your changes and run the task by using the “Task Status” menu command.
“Run” to execute tasks.

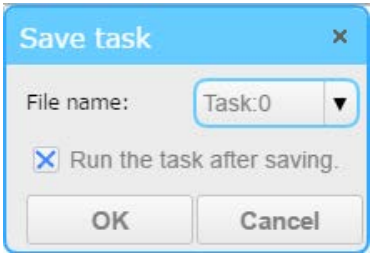
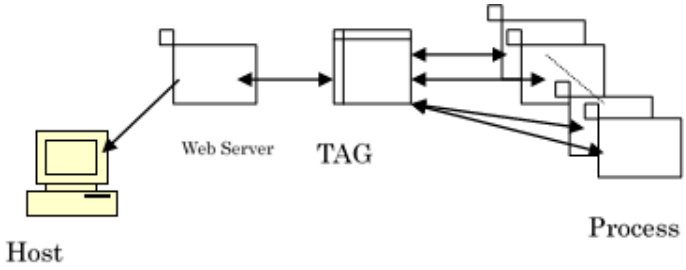



**Figure 3.43. Save Task**

You can create executing tasks up to ten that work simultaneously.
Similarly, you can create up to ten subroutines which can be called from the tasks.

< Remarks >




- The monitoring screens, task processing, and other operations can use TAGs that store numeric values and STAGs that store character strings.
- The TAGs used by task processing are the same as the TAGs used in the monitoring screens.
- TAG values updated from the monitoring screen can be referenced in task processing.
- Task processing can use LTAGs (Local TAGs) in addition to standard TAGs.
- LTAGs are TAGs that can be used locally within individual tasks.
- Use LTAGs to prevent interference between TAG variables used in different tasks.

# Summary of Available Items

See the controls below for task editing.

**Table 3.1. Table of components**

| Name | Description |
|---|---|
| Input | Input the value from the device to the specified TAG. |
| Output | Output the value to device from the specified TAG. |
| Input String | Input the string from the specified LINK to the specified STAG. |
| Output String | Output the string from the specified STAG to the specified LINK. |
| Set Constant | Set constant value to the specified TAG. |
| Device Status | Read the device status to specified TAG. |
| System Info | Store the system information to the specified TAG or STAG. |
| Calculation | Calculate two TAG values. |
| Calc Constant | Calculates the fixed value and TAG value. |
| Determine | Conditional branch. |
| Determine (String) | Performs a comparison on the specified STAG. |
| Jump | Jump order to the specified label or return from sub-routine. |
| Label | Create a label. |
| Noop | No processing. |
| Subroutine | Call a subroutine. |
| Timer | Branch execution at the specified time. |
| Calendar | Branch execution at the specified date or day of the week. |
| Wait | Delay execution for the specified time or proceeding. |
| Calc String | Store the result of an operation on a character string in the specified STAG. |
| Add Fixed Str | Add fixed strings such as carriage return and time in the specified STAG. |
| Str2Num | Convert the character string in the specified STAG to a numeric value. |
| Num2Str | Convert the specified TAG to a character string. |
| Split String | Split a character string at separator positions. |
| Connect | Communication link open / close. |
| FIT Protocol | Send or receive data using the F&eIT protocol. |
| Cloud | Transmit files to Web server. |
| Send Azure IoT | Transmit files to Azure IoT Hub. |
| Send Mail | Send mail. |
| Logging | Store collected data in the file. |
| Logging (String) | Save string in file. |
| FTP (Get) | With the specified name, send a file to the server. |
| FTP (Put) | Receive a file with a specified name from the server. |
| File read | Obtain data from file. |
| File operation | Log File Action. |

Device tree allocation

For some controls, the data input source and the output destination can be selected from the device tree.

Also the hardware information and TAG can be specified from the device tree.

Selectable items differ depending on each control.


Display items in the device tree are indicated by the following naming convention.

| Type | Naming convention |
|---|---|
| TAG | TAG00 - TAG99 |
| LTAG | LTAG00 - LTAG99 |
| STAG | STAG00 - STAG99 |
| LSTAG | LSTAG00 - LSTAG99 |
| Digital input (CPU) | CPU_DI[channel][bit] |
| Digital output (CPU) | CPU_DO[channel][bit] |
| Digital input (module) | DI[device ID][channel][bit] |
| Digital output (module) | DO[device ID][channel][bit] |
| Digital input (counter general input) | DI[device ID][fixed value 2][channel] |
| Counter input | CNT[device ID][channel] |
| Counter clear | CNT_CLR [device ID][channel] |
| Analog input | AI[device ID][channel] |
| Analog output | AO[device ID][channel] |
| Measured temperature | SSI[device ID][channel] |
| Relay | RRY[device ID][channel][bit] |

- Device ID

  Device IDs are allocated in order from 0 for each module in accordance with its stacking order.

  They are displayed in hexadecimal, 2 digit.

- Channel

  Channel number of the module is displayed in decimal number, one digit.

- Bit
  It is displayed in hexadecimal, 1 digit for each channel of module.

e.g. When the CPS-CNT-3202I is set first.

# Input/Output module allocation

Some of the products need to be specified directly with the hardware details such as Device IDs.

Device IDs are allocated in order from 0 as they stack.

e.g. When the CPS-DIO-0808L (CPS-DIO-0808BL, CPS-DIO-0808RL) is set first.

| Input module | Device ID | Channel | Bit |
|---|---|---|---|
| DI-0 | 0 | 0 | 0 |
| DI-1 | 0 | 0 | 1 |
| DI-2 | 0 | 0 | 2 |
| DI-3 | 0 | 0 | 3 |
| DI-4 | 0 | 0 | 4 |
| DI-5 | 0 | 0 | 5 |
| DI-6 | 0 | 0 | 6 |
| DI-7 | 0 | 0 | 7 |

| Output module | Device ID | Channel | Bit |
|---|---|---|---|
| DO-0 | 0 | 0 | 0 |
| DO-1 | 0 | 0 | 1 |
| DO-2 | 0 | 0 | 2 |
| DO-3 | 0 | 0 | 3 |
| DO-4 | 0 | 0 | 4 |
| DO-5 | 0 | 0 | 5 |
| DO-6 | 0 | 0 | 6 |
| DO-7 | 0 | 0 | 7 |

e.g. When the CPS-AI-1608LI (CPS-AI-1608ALI) is set first.

| Input module | Device ID | Channel | Bit |
|---|---|---|---|
| AI-0 | 0 | 0 | All |
| AI-1 | 0 | 1 | All |
| AI-2 | 0 | 2 | All |
| AI-3 | 0 | 3 | All |
| AI-4 | 0 | 4 | All |
| AI-5 | 0 | 5 | All |
| AI-6 | 0 | 6 | All |
| AI-7 | 0 | 7 | All |

e.g. When the CPS-AO-1604LI (CPS-AO-1604VLI) is set first.

| Output module | Device ID | Channel | Bit |
|---|---|---|---|
| AO-0 | 0 | 0 | All |
| AO-1 | 0 | 1 | All |
| AO-2 | 0 | 2 | All |
| AO-3 | 0 | 3 | All |

e.g. When the CPS-RRY-4PCC is set first.

| Input module | Device ID | Channel | Bit |
|---|---|---|---|
| RRY-0 | 0 | 0 | 1 |
| RRY-1 | 0 | 0 | 2 |
| RRY-2 | 0 | 0 | 3 |
| RRY-3 | 0 | 0 | 4 |

e.g. When the CPS-SSI-4P is set first.

| Input module | Device ID | Channel | Bit |
|---|---|---|---|
| SSI-0 | 0 | 0 | All |
| SSI-1 | 0 | 1 | All |
| SSI-2 | 0 | 2 | All |
| SSI-3 | 0 | 3 | All |

e.g. When the CPS-CNT-3202I is set first.

| Input module | Device ID | Channel | Bit |
|---|---|---|---|
| CNT-1 | 0 | 0 | All |
| CNT-2 | 0 | 1 | All |
| DI-0 | 0 | 2 | 0 |
| DI-1 | 0 | 2 | 1 |

e.g. When the CPS-DI-16L (CPS-DI-16RL) is set first.

| Input module | Device ID | Channel | Bit |
|---|---|---|---|
| DI-0 | 0 | 0 | 0 |
| DI-1 | 0 | 0 | 1 |
| DI-2 | 0 | 0 | 2 |
| DI-3 | 0 | 0 | 3 |
| DI-4 | 0 | 0 | 4 |
| DI-5 | 0 | 0 | 5 |
| DI-6 | 0 | 0 | 6 |
| DI-7 | 0 | 0 | 7 |
| DI-8 | 0 | 1 | 0 |
| DI-9 | 0 | 1 | 1 |
| DI-10 | 0 | 1 | 2 |
| DI-11 | 0 | 1 | 3 |
| DI-12 | 0 | 1 | 4 |
| DI-13 | 0 | 1 | 5 |
| DI-14 | 0 | 1 | 6 |
| DI-15 | 0 | 1 | 7 |

e.g. When the CPS-DO-16L (CPS-DO-16RL) is set first.

| Output module | Device ID | Channel | Bit |
|---|---|---|---|
| DO-0 | 0 | 0 | 0 |
| DO-1 | 0 | 0 | 1 |
| DO-2 | 0 | 0 | 2 |
| DO-3 | 0 | 0 | 3 |
| DO-4 | 0 | 0 | 4 |
| DO-5 | 0 | 0 | 5 |
| DO-6 | 0 | 0 | 6 |
| DO-7 | 0 | 0 | 7 |
| DO-8 | 0 | 1 | 0 |
| DO-9 | 0 | 1 | 1 |
| DO-10 | 0 | 1 | 2 |
| DO-11 | 0 | 1 | 3 |
| DO-12 | 0 | 1 | 4 |
| DO-13 | 0 | 1 | 5 |
| DO-14 | 0 | 1 | 6 |
| DO-15 | 0 | 1 | 7 |

# Sample

(1) Sample1

If the value of the input data is non-zero, output the value to a different channel.

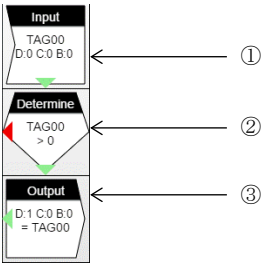



**Figure 3.44. Sample 1**

(1) Read the data to TAG number 00.

| Property | Value |
|---|---|
| Tag ID | TAG00 |
| Device type | Input |
| Device ID | 0 |
| Channel | 0 |
| Bit | 0 |
| Select device from tree | No |
| Next step | Down |
| → X | 0 |
| ↓ Y | 0 |

**Figure 3.45. Input**

(2) Go to the below step if the value of TAG number 00 is greater than zero. Otherwise, go to the step on the left. If control goes outside the page, execution starts again from the initial instruction (0, 0).

| Property | Value |
|---|---|
| UsrValue | TAG00 |
| Condition | > |
| Limit | Fixed Value |
| Fixed Value | 0 |
| True | Down |
| False | Left |
| → X | 0 |
| ↓ Y | 1 |

**Figure 3.46. Determine**

(3) Output the value in TAG number 00 to device 1, channel 0.

| Property | Value |
|---|---|
| Tag ID | TAG00 |
| Device type | Output |
| Device ID | 1 |
| Channel | 0 |
| Bit | 0 |
| Select device from tree | No |
| Next step | Left |
| → X | 0 |
| ↓ Y | 2 |

**Figure 3.47. Output**

(2) Sample2

If the value of the input data is non-zero, increment the value and output to a different channel.

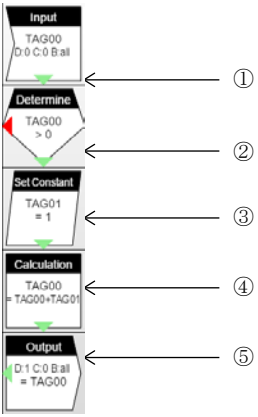



**Figure 3.48. Sample2**

(1) Read the data to TAG number 00.

| Property | Value |
|---|---|
| Tag ID | TAG00 |
| Device type | Input |
| Device ID | 0 |
| Channel | 0 |
| Bit | all |
| Select device from tree | No |
| Next step | Down |
| X | 0 |
| Y | 0 |

**Figure 3.49. Input**

(2) Go to the below step if the value of TAG number 00 is greater than zero. Otherwise, go to the step on the left. If control goes outside the page, execution starts again from the initial instruction (0, 0).

| Property | Value |
|---|---|
| UsrValue | TAG00 |
| Condition | > |
| Limit | Fixed Value |
| Fixed Value | 0 |
| True | Down |
| False | Left |
| X | 0 |
| Y | 1 |

**Figure 3.50. Determine**

(3) Assign 1 to the TAG number 01 variables.

| Property | Value |
|---|---|
| Tag ID | TAG01 |
| Value | 1 |
| Next step | Down |
| X | 0 |
| Y | 2 |

**Figure 3.51. Set Constant**

(4) The value of TAG number 00 is added to that of TAG number 01 and it is as 00.

| Property | Value |
|---|---|
| TargetValue = | TAG00 |
| Value1 | TAG00 |
| (+-*/%) | + |
| Value2 | TAG01 |
| Next step | Down |
| X | 0 |
| Y | 3 |

**Figure 3.15. Calculation**

(5) Output the value in TAG number 00 to device 1, channel 0.

| Property | Value |
|---|---|
| Tag ID | TAG00 |
| Device type | Output |
| Device ID | 1 |
| Channel | 0 |
| Bit | all |
| Select device from tree | No |
| Next step | Left |
| → X | 0 |
| ↓ Y | 4 |

**Figure 3.16. Output**

(3) Sample3
Send a data request (“REQ00”) via serial communication and receive the reply data.

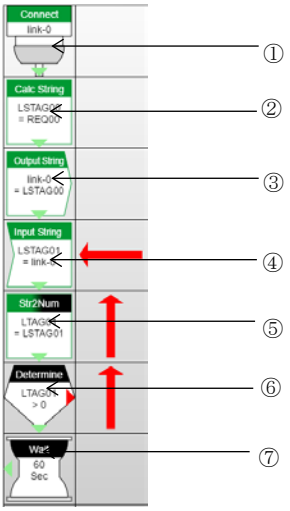



**Figure 3.17. Sample3**

(1) Open the link.
This example opens Link No “Link-0”.
Execution proceeds to the next step after “Open” completes.

| Property | Value |
|---|---|
| Link No | link-0 |
| Connect | Connect |
| Action | Wait |
| Next step | Down |
| X | 0 |
| Y | 0 |

**Figure 3.18. Connect**

(2) Set character string “REQ00” in LSTAG00.

| Property | Value |
|---|---|
| TargetValue = | LSTAG00 |
| Action | = |
| Str | Fixed Value |
| Fixed value (str) | REQ00 |
| Next step | Down |
| X | 0 |
| Y | 1 |

**Figure 3.19. Calc String**

(3) Write (transmit) data to link.
Write data in LSTAG00 to Link-0.

| Property | Value |
|---|---|
| Link No | link-0 |
| Tag ID | LSTAG00 |
| Next step | Down |
| X | 0 |
| Y | 2 |

**Figure 3.20. Output String**

(4) Read (receive) data from link.
Receive data from link-0 and save in LSTAG01.

| Property | Value |
|---|---|
| Link No | link-0 |
| Tag ID | LSTAG01 |
| Next step | Down |
| X | 0 |
| Y | 3 |

**Figure 3.52. Input String**

(5) Get the size of the received data.
Set the data length of LSTAG01 in LTAG01.

| Property | Value |
|---|---|
| TargetValue = | LTAG01 |
| Action | Get length |
| Str | LSTAG01 |
| Next step | Down |
| X | 0 |
| Y | 4 |

**Figure 3.22. Str2Num**

(6) Check the data length.
If the received data length is greater than zero, go to the step below. Otherwise, branch to the right.

| Property | Value |
|---|---|
| UsrValue | LTAG01 |
| Condition | > |
| Limit | Fixed Value |
| Fixed Value | 0 |
| True | Down |
| False | Right |
| X | 0 |
| Y | 5 |

**Figure 3.23. Determine**

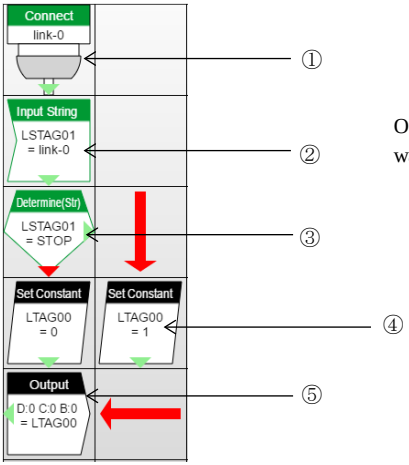
(7) Wait for 60 seconds.

| Property | Value |
|---|---|
| Wait time | Fixed Value |
| Fixed Value | 60 |
| Scale | Sec |
| Next step | Left |
| X | 0 |
| Y | 6 |

**Figure 3.24. Wait**

(4) Sample4

Perform a check on the data received via serial communications.




Output “1” from a DO if the received character string was “STOP”.

**Figure 3.25. Sample4**

(1) Open the link.
This example opens Link No “Link-0”. Execution proceeds to the next step after “Open” completes.

| Property | Value |
|---|---|
| Link No | link-0 |
| Connect | Connect |
| Action | Wait |
| Next step | Down |
| → X | 0 |
| ↓ Y | 0 |

**Figure 3.26. Connect**

(2) Read (receive) data from link.
Receive data from link-0 and save in LSTAG01.

| Property | Value |
|---|---|
| Link No | link-0 |
| Tag ID | LSTAG01 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 1 |

**Figure 3.27. Input String**

(3) Check whether the character string is correct.
Check whether the LSTAG01 character string = “STOP”. If so, go to the step on the right. If not, go to the step below.

| Property | Value |
|---|---|
| UsrValue | LSTAG01 |
| Condition | = |
| Limit | Fixed Value |
| Fixed Value | STOP |
| True | Right |
| False | Down |
| → X | 0 |
| ↓ Y | 2 |

**Figure 3.28. Determine (String)**

(4) Set value in TAG.
Set LTAG00 to 1.

| Property | Value |
|---|---|
| Tag ID | LTAG00 |
| Value | 1 |
| Next step | Down |
| → X | 1 |
| ↓ Y | 3 |

**Figure 3.29. Set Constant**

(5) Output to device.

| Property | Value |
|---|---|
| Tag ID | LTAG00 |
| Device type | Output |
| Device ID | 0 |
| Channel | 0 |
| Bit | 0 |
| Select device from tree | No |
| Next step | Left |
| → X | 0 |
| ↓ Y | 4 |

**Figure 3.30. Output**

(5) Sample5

Get bytes 5 to 10 of the data received via serial communications.

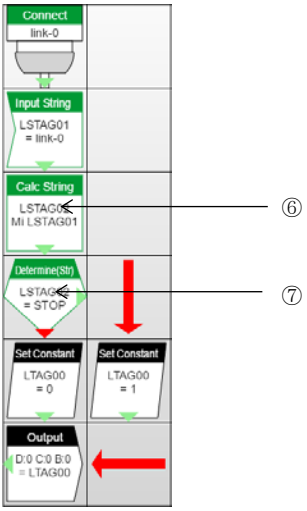



**Figure 3.31. Sample5**

Modify steps [6] and [7] from sample 4.

(6) Extract bytes 5 to 10 from the received data. From 5 bytes of data stored in LSTAG01, 10 bytes data is assigned to LSTAG02.

| Property | Value |
|---|---|
| TargetValue = | LSTAG02 |
| Action | Mid |
| Str | LSTAG01 |
| Size | Fixed Value |
| Fixed value (size) | 10 |
| Offset | Fixed Value |
| Fixed value (offset) | 5 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 2 |

**Figure 3.32. Calc String**

(7) Check whether the character string is correct.
Check whether the LSTAG02 character string = “STOP”. If so, go to the step on the right. If not, go to the step below.

| Property | Value |
|---|---|
| UsrValue | LSTAG02 |
| Condition | = |
| Limit | Fixed Value |
| Fixed Value | STOP |
| True | Right |
| False | Down |
| → X | 0 |
| ↓ Y | 3 |

**Figure 3.33. Determine (String)**

(6) Sample6

Increment the counter for the data received via serial communications by one.

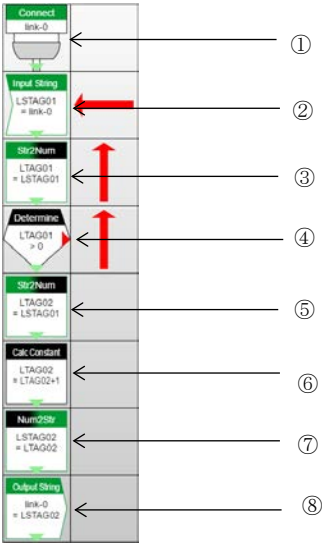



**Figure 3.34. Sample6**

(1) Open the link.
This example opens Link No “Link-0”.
Execution proceeds to the next step after “Open” completes.

| Property | Value |
|---|---|
| Link No | link-0 |
| Connect | Connect |
| Action | Wait |
| Next step | Down |
| X | 0 |
| Y | 0 |

**Figure 3.35. Connect**

(2) Read (receive) data from link.
Receive data from link-0 and save in LSTAG01.

| Property | Value |
|---|---|
| Link No | link-0 |
| Tag ID | LSTAG01 |
| Next step | Down |
| X | 0 |
| Y | 1 |

**Figure 3.36. Input String**

(3) Get the size of the received data.
Set the data length of LSTAG01 in LTAG01.

| Property | Value |
|---|---|
| TargetValue = | LTAG01 |
| Action | Get length |
| Str | LSTAG01 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 2 |

**Figure 3.37. Str2Num**

(4) Check the data length.
If the received data length is greater than zero, go to the step below. Otherwise, branch to the right.

| Property | Value |
|---|---|
| UsrValue | LTAG01 |
| Condition | > |
| Limit | Fixed Value |
| Fixed Value | 0 |
| True | Down |
| False | Right |
| → X | 0 |
| ↓ Y | 3 |

**Figure 3.38. Determine**

(5) Convert the received data from ASCII characters to a numeric value.
Convert the ASCII character data in LSTAG01, starting from byte 0, to a numeric value and save in LTAG02.

| Property | Value |
|---|---|
| TargetValue = | LTAG02 |
| Action | Ascii Str >> Number |
| Str | LSTAG01 |
| Offset | Fixed Value |
| Fixed value (offset) | 0 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 4 |

**Figure 3.39. Str2Num**

(6) Increment the numeric value by one.
Add one to the LTAG02 value and save the result in LTAG02.

| Property | Value |
|---|---|
| TargetValue = | LTAG02 |
| Value | LTAG02 |
| (+-*/%) | + |
| Constant | 1 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 5 |

**Figure 3.40. Calc Constant**

(7) Convert the numeric value to a character string. Convert the LTAG02 value to a character string and save the result in LSTAG02.

| Property | Value |
|---|---|
| TargetValue = | LSTAG02 |
| Action | Number >> Ascii Str |
| Value | LTAG02 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 6 |

**Figure 3.41. Num2Str**

(8) Write (transmit) data to link.
Write data in LSTAG02 to Link-0.

| Property | Value |
|---|---|
| Link No | link-0 |
| Tag ID | LSTAG02 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 7 |

**Figure 3.42. Output String**

(7) Sample7

Generate a packet based on the data received via serial communications (add a header) and send to a different host via socket communications.

Send the data received from Link-0 via the Link-2 Ethernet connection.

This example establishes a socket connection to port 8080 on host 10.1.1.2 and then sends the data.

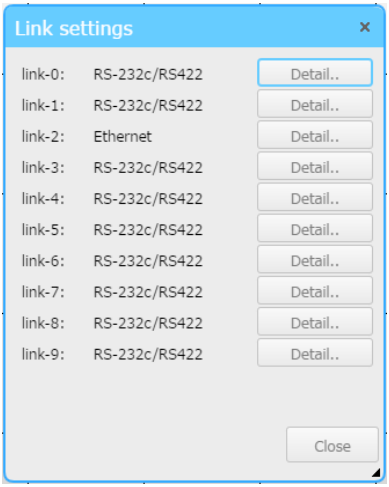



**Figure 3.43. Link Setup**

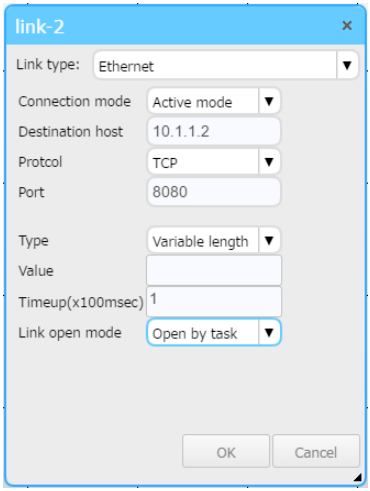



**Figure 3.44. Link Detail Setup**

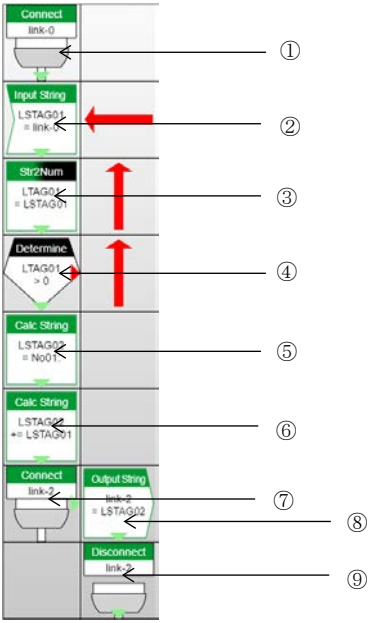



**Figure 3.45. Sample7**

(1) Open the link.
This example opens Link No “Link-0”. Execution proceeds to the next step after “Open” completes.

| Property | Value |
|---|---|
| Link No | link-0 |
| Connect | Connect |
| Action | Wait |
| Next step | Down |
| X | 0 |
| Y | 0 |

**Figure 3.46. Connect**

(2) Read (receive) data from link.
Receive data from link-0 and save in LSTAG01.

| Property | Value |
|---|---|
| Link No | link-0 |
| Tag ID | LSTAG01 |
| Next step | Down |
| X | 0 |
| Y | 1 |

**Figure 3.47. Input String**

(3) Get the size of the received data.
Set the data length of LSTAG01 in LTAG01.

| Property | Value |
|---|---|
| TargetValue = | LTAG01 |
| Action | Get length |
| Str | LSTAG01 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 2 |

**Figure 3.48. Str2Num**

(4) Check the data length.
If the received data length is greater than zero, go to the step below. Otherwise, branch to the right.

| Property | Value |
|---|---|
| UsrValue | LTAG01 |
| Condition | > |
| Limit | Fixed Value |
| Fixed Value | 0 |
| True | Down |
| False | Right |
| → X | 0 |
| ↓ Y | 3 |

**Figure 3.49. Determine**

(5) Create the header.
Insert the header “No01:” in LSTAG02.

| Property | Value |
|---|---|
| TargetValue = | LSTAG02 |
| Action | = |
| Str | Fixed Value |
| Fixed value (str) | No01: |
| Next step | Down |
| → X | 0 |
| ↓ Y | 4 |

**Figure 3.50. Calc String**

(6) Append the received data to the header.
Append LSTAG01 (the received data) to LSTAG02.

| Property | Value |
|---|---|
| TargetValue = | LSTAG02 |
| Action | += |
| Str | LSTAG01 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 5 |

**Figure 3.51. Calc String**

(7) Connect to (Open) the link.
This example connects to (opens) Link No "Link-2".
Execution proceeds to the next step after "Open" completes.

| Property | Value |
|---|---|
| Link No | link-2 |
| Connect | Connect |
| Action | Wait |
| Next step | Right |
| → X | 0 |
| ↓ Y | 6 |

**Figure 3.52. Connect**

(8) Write (send) the data to the link.
Write the data in LSTAG02 to Link-2.

| Property | Value |
|---|---|
| Link No | link-2 |
| Tag ID | LSTAG02 |
| Next step | Down |
| → X | 1 |
| ↓ Y | 6 |

**Figure 3.53. Output String**

(9) Close the link.
This example closes Link No "Link-2".
Execution proceeds to the next step after "Close" completes.

| Property | Value |
|---|---|
| Link No | link-2 |
| Connect | Disconnect |
| Action | Wait |
| Next step | Down |
| → X | 1 |
| ↓ Y | 7 |

**Figure 3.54. Disconnect**

(8) Sample8

The example is when the value of CNT-0 is saved in a file per minute in RAM and the file is transferred to Web server, then clear to 0

Data will be saved in a file in RAM.

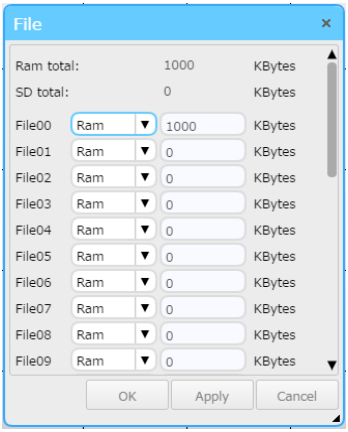



**Figure 3.55. File Setup**

The example shows data transfer to Web server.

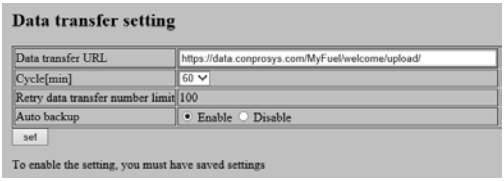



**Figure 3.56. Data transfer setting**

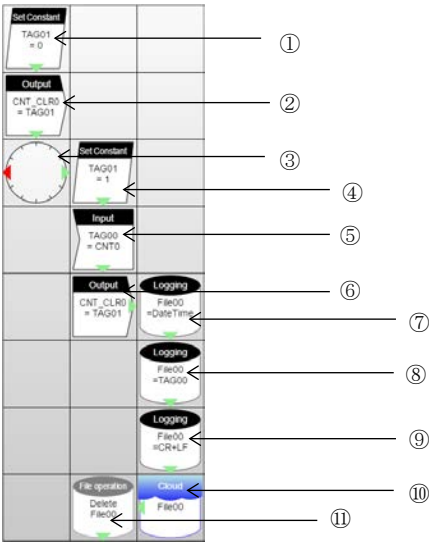



**Figure 3.57. Sample8**

(1) Set value that resets clear-register of CNT-0 to TAG1

| Property | Value |
|---|---|
| Tag ID | TAG01 |
| Value | 0 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 0 |

**Figure 3.58. Set Constant**

(2) Reset clear-register of CNT-0.

| Property | Value |
|---|---|
| Tag ID | TAG01 |
| Device | CNT_CLR0 |
| Select device from tree | Yes |
| Next step | Down |
| → X | 0 |
| ↓ Y | 1 |

**Figure 3.59. Output**

(3) One action per minute.
In the example below, the following actions will be conducted at 00 second per minute.

| Property | Value |
|---|---|
| Hour | * |
| Min | * |
| Sec | 00 |
| Action | one time |
| True | Right |
| False | Left |
| → X | 0 |
| ↓ Y | 2 |

**Figure 3.60. Timer**

(4) The value that will be set in TAG1 will be set upon CNT-0 clearing.

| Property | Value |
|---|---|
| Tag ID | TAG01 |
| Value | 1 |
| Next step | Down |
| → X | 1 |
| ↓ Y | 2 |

**Figure 3.61. Set Constant**

(5) CNT-0 value will be read into TAG00.

| Property | Value |
|---|---|
| Tag ID | TAG00 |
| Device | CNT0 |
| Select device from tree | Yes |
| Next step | Down |
| → X | 1 |
| ↓ Y | 3 |

**Figure 3.62. Input**

(6) CNT-0 value will be reset to 0.

| Property | Value |
|---|---|
| Tag ID | TAG01 |
| Device | CNT_CLR0 |
| Select device from tree | Yes |
| Next step | Right |
| → X | 1 |
| ↓ Y | 4 |

**Figure 3.63. Output**

(7) Date and Time data will be added in File00.

| Property | Value |
|---|---|
| Target file | File00 |
| Value | DateTime |
| Next step | Down |
| X | 2 |
| Y | 4 |

**Figure 3.64. Log**

(8) CNT-0 data will be added in File00.

| Property | Value |
|---|---|
| Target file | File00 |
| Value | TAG00 |
| Next step | Down |
| X | 2 |
| Y | 5 |

**Figure 3.65. Log**

(9) Add carriage return to File00.

| Property | Value |
|---|---|
| Target file | File00 |
| Value | CR+LF |
| Next step | Down |
| X | 2 |
| Y | 6 |

**Figure 3.66. Log**

(10) Send File00 to Web server.

| Property | Value |
|---|---|
| Target file | File00 |
| Next step | Left |
| X | 2 |
| Y | 7 |

**Figure 3.67. Cloud**

(11) Delete File00.

| Property | Value |
|---|---|
| Operation | Delete |
| From | File00 |
| Next step | Down |
| X | 1 |
| Y | 7 |

**Figure 3.68. File**

(9) Sample9

Send a mail according to the input when DI00 value has been changed.

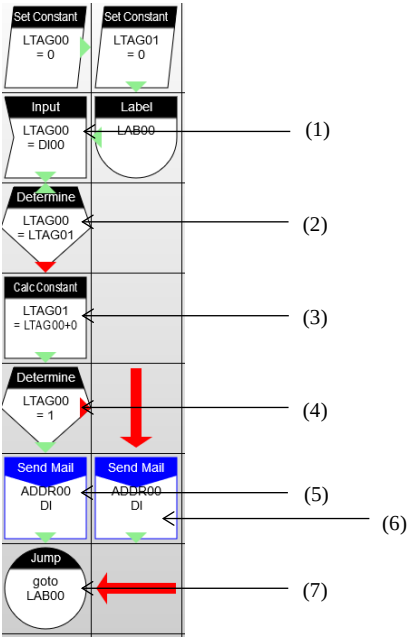



**Figure 3.68. Sample 9**

(1) Enter DI00 value into LTAG00.

| Property | Value |
|---|---|
| Tag ID | LTAG00 |
| Device | DI00 |
| Offset | NONE |
| Select device from tree | Yes |
| Next step | Down |
| X | 0 |
| Y | 1 |

**Figure 3.69. Input**

(2) Compare LTAG00(current DI value) and LTAG01(previously changed DIvalue). If the current value is changed, go to the step below. If it is the same, go up and get the DI value again.

| Property | Value |
|---|---|
| UsrValue | LTAG00 |
| Condition | = |
| Limit | LTAG01 |
| True | Up |
| False | Down |
| X | 0 |
| Y | 2 |

**Figure 3.70. Determine**

(3) Update the LTAG01(previously changed DIvalue)

| Property | Value |
|---|---|
| UsrValue | LTAG00 |
| Condition | = |
| Limit | Fixed Value |
| Fixed Value | 1 |
| True | Down |
| False | Right |
| X | 0 |
| Y | 4 |

**Figure 3.71. Constant and Calculation**

(4) Determine the changed DI value. Change the mail contents according to the result.

| Property | Value |
|---|---|
| UsrValue | LTAG00 |
| Condition | = |
| Limit | Fixed Value |
| Fixed Value | 1 |
| True | Down |
| False | Right |
| X | 0 |
| Y | 4 |

**Figure 3.72. Determine**

(5) Send mail when DI00 is 1.

| Property | Value |
|---|---|
| To | ADDR00 |
| CC | NONE |
| BCC | NONE |
| Subject | Fixed Value |
| Fix value (Subject) | DI |
| Body | Fixed Value |
| Fix value (Body) | Change to 1 |
| Attached | NONE |
| Next step | Down |
| X | 0 |
| Y | 5 |

**Figure 3.73. Send Mail**

(6) Send mail when DI00 is 0.

| Property | Value |
|---|---|
| To | ADDR00 |
| CC | NONE |
| BCC | NONE |
| Subject | Fixed Value |
| Fix value (Subject) | DI |
| Body | Fixed Value |
| Fix value (Body) | Change to 0 |
| Attached | NONE |
| Next step | Down |
| X | 1 |
| Y | 5 |

**Figure 3.74. Send Mail**

(10) Sample10

Receive a file from and send to FTP server.

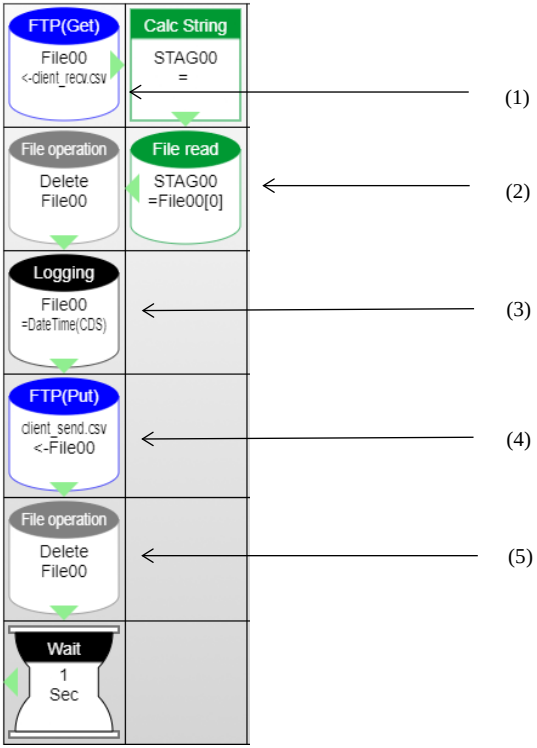



**Figure 3.75. Sample 10**

(1) Get client_recv.csv from the server and set it into File00.

| Property | Value |
|---|---|
| Destination file | File00 |
| Target file name | Fixed Value |
| Fixed Value | client_recv.csv |
| Next step | Right |
| → X | 0 |
| ↓ Y | 0 |

**Figure 3.76. FTP(Get)**

(2) Set the File00 [0] into STAG00.

| Property | Value |
|---|---|
| Target file | File00 |
| Row number | Fixed Value |
| Fixed Value | 0 |
| Read buffer | STAG00 |
| Next step | Left |
| → X | 1 |
| ↓ Y | 1 |

**Figure 3.77. Read File**

(3) Write DateTime (CDS) into File00

| Property | Value |
|---|---|
| Target file | File00 |
| Value | DateTime(CDS) |
| Append char | CR+LF |
| Next step | Down |
| → X | 0 |
| ↓ Y | 2 |

**Figure 3.78. Log**

(5) Delete the File00.

| Property | Value |
|---|---|
| Operation | Delete |
| From | File00 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 4 |

**Figure 3.80. Delete File**

(4) Send the File00 as client_send.csv to the server.

| Property | Value |
|---|---|
| Destination file name | Fixed Value |
| Fixed Value | client_send.csv |
| Target file | File00 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 3 |

**Figure 3.79. FTP (Put)**

# 4. Transferring Measured Data

Following settings are necessary to transfer the measured data to Web server from the product.

- Data transfer setting
- Service setting
- Network setting
- Wireless setting
- SIM card setting (*for 3G support model exclusively)

*After setting those above, save them to ROM from the “Save to ROM” in the Maintenance menu.

Please read through the details for each setting below.

# Data transfer setting

Set up the destination of the measured data to be transferred.

Click “Data transfer setting” in the “Maintenance menu”, and the setting monitor appears.

If you are sending data to CONTEC cloud service, enter URL listed below in the “Data transfer URL”, select CDS2 format “Enable”, and click the “set”.

CDS…https://data.conprosys.com/MyFuel/welcome/upload/

CDS2…https://cds2.conprosys.com/CDS/welcome/upload/

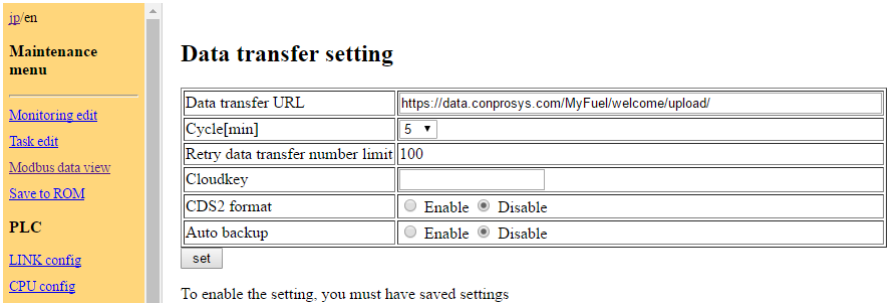



**Figure 4.53. Data transfer setting**

# Service setting

Click “Service setting” in the “Maintenance menu”, and the setting monitor appears.

Click [Enable] in the “Data transfer service”, then click the “set”.


**Figure 4.54. Service setting**

# Network setting

Click “Network setting” in the “Maintenance menu”, and the setting monitor appears.

Setting is unnecessary for the following case.

-Using 3G network with 3G support model.

-Using Wireless LAN adapter.

Enter each setting from No. 1 to 8, then click the “set”.

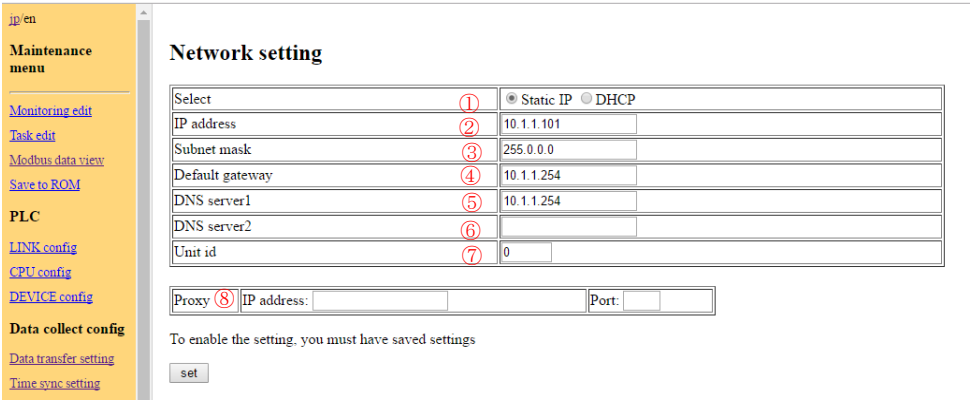



**Figure 4.55. Network setting**

Follow your network environment and enter the appropriate settings for No. 1 - 8.

Enter 0 in No.7 for “Unit id” and do not change it in operation.

# Wireless LAN setting

Click [Wireless LAN setting] in the [Maintenance menu] to open the setting page.

The display of the opened page differs depending on the CONPROSYS condition.

-When a USB is not connected to CONPROSYS.


**Figure 4.56 Wireless LAN setting**

-When a non-compatible USB is connected to CONPROSYS

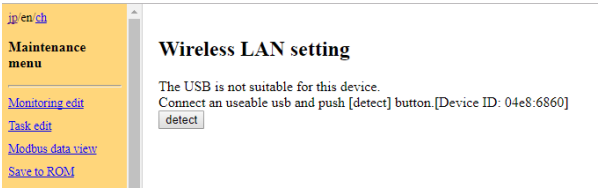



**Figure 4.57 Wireless LAN setting**

- When a compatible USB is connected to CONPROSYS.


**Figure 4.58 Wireless LAN setting**

Enter or choose appropriate setting for No. 1 – 3 to connect, and click “set” button.

When searching the access point, click “Scan” button while “Search” is selected.

SSIDs from searched access point are displayed in the list box. Choose one from the list.

When selecting Manual, enter SSID in the text box.

[Compatible USB list]

| Vendor | Product |
|---|---|
| D-Link | DWA-125 REV D1 |
| D-Link | DWA-123 REV D1 |
| D-Link | GO-USB-N150 REV B1 |
| Elecom | WDC-150SU2M |
| TP-LINK | TL-WN725N v2 |
| TP-LINK | TL-WN723N v3 |
| TP-LINK | TL-WN727N v4 |
| Sitecom | N150 v2 |

# SIM card setting

Set up the setting when transferring data via 3G network.

Click [Maintenance menu] - [SIM card setting] to display the setting screen.

Enter the necessary information in No.1-8 and click the “set”.

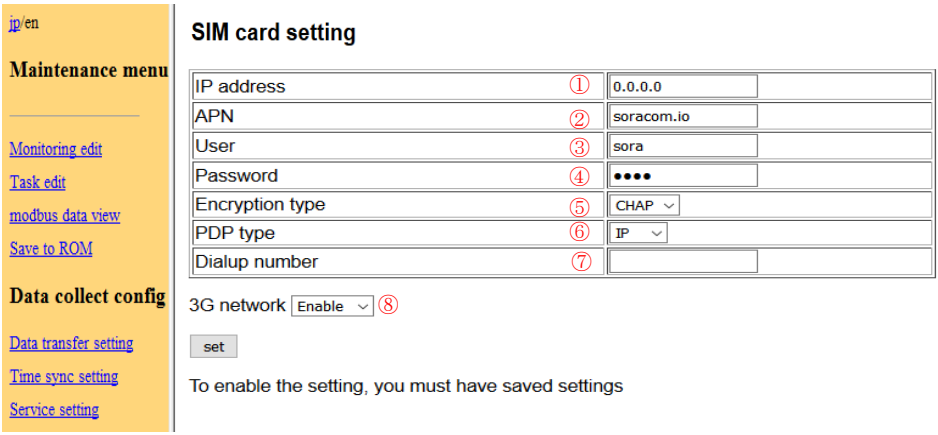



**Figure 4.59. SIM card setting**

An example with SIM by SORACOM

| | | |
|---|---|---|
| 1. | IP address | 0.0.0.0 (default) |
| 2. | APN | soracom.io |
| 3. | User name | sora |
| 4. | Password | sora |
| 5. | Endorse type | CHAP |
| 6. | PDP type | IP |
| 7. | Dial number | Blank (default) |
| 8. | 3G network | Enable |

# 5. Using the product as the OPC UA server

Our particular CPS-MCS341 products contain the OPC UA server function.

With these products, you can easily perform remote monitoring and controlling through the SCADA/HMI software that supports the OPC UA client.

The list of products with OPC UA server

- CPS-MCS341-DS1-131
- CPS-MCS341G-DS1-130
- CPS-MCS341Q-DS1-131

## Communication with the OPC UA Client

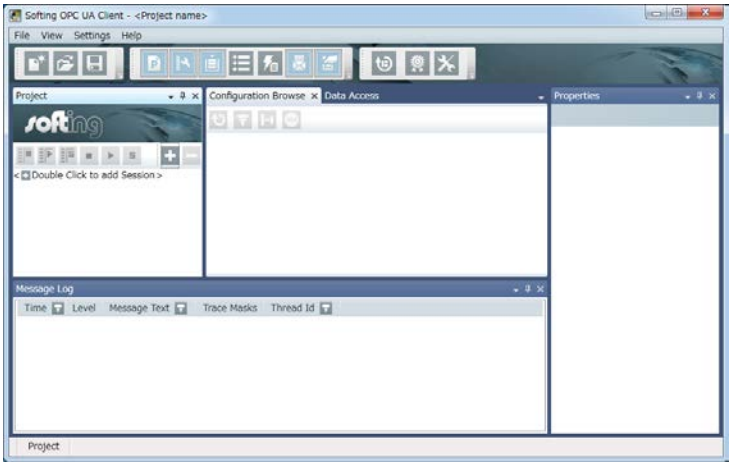
In this section, we use the OPC UA Client Package supplied by Softing as the OPC UA client software.

Please access to the following URL and download the free package.

http://industrial.softing.com/en/products/software/opc-development-toolkits/opc-ua-c-development-toolkits-platform-independent/opc-ua-c-server-client-toolkit-for-windows.html

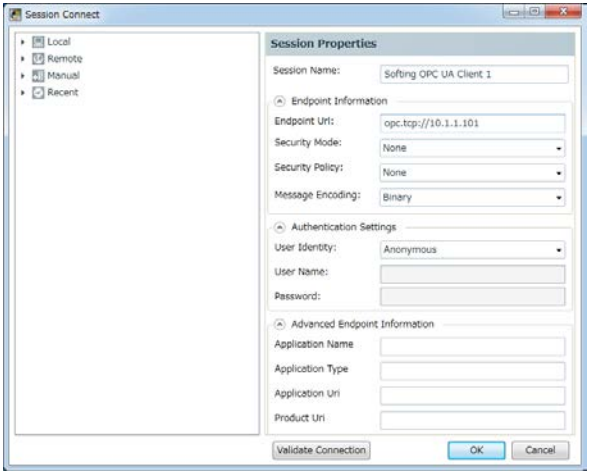
(1) Start up the OPC UA Client Package.

Double-click the “Double Click to add Session” in the Project window.



(2) Enter a session name in the “Session Name” and "opc.tcp://10.1.1.101" in the “Endpoint Url”. (As for the 10.1.1.101 part, enter the same IP address that is set in the product.)

If TCP port is set on OPC UA setting page, enter “opc.tcp://[IP address]:[TCP port] in the “Engdpoint Url”




(3) Click “Validate Connection” button.

(4) The “Certificate Validation” dialog box appears.

From the “Certificate Approval”, select the “Add Certificate to Trusted Store” or the “Temporarily Accept the Certificate” and click OK button.

(5) Confirm that the green icon of check mark is shown next to the “Validate Connection” button.

Click OK button.

(6) On the Configuration Browse window, the list of OPC UA server nodes of the product will be displayed.

The I/O nodes of the product are listed under the Objects/CONTEC/CPS-MCS341- ADSC1/.

(7) When an I/O node is selected, data value (Value), status (StatusCode), and timestamp (SourceTimestamp/ServerTimestamp) will be displayed on the property window. To change the value of output, change the value in the Value and click Write button.

# Download the OPC UA server certificate

To establish a session, an OPC UA client might require the application certificate of the server.

If the installation of the certificate to the specified folder of the client software is requested, please download the OPC UA server certificate from the maintenance menu of the CPS-MCS341.

(1) Connect to the maintenance menu through the browser and click the “OPC UA setting”.

(2) Click “download” in the OPC UA server certificate to download the certificate.

# Upload the OPC UA client certificate

When establishing the session of the OPC UA client, and authentication of the user ID or certificates is carried out, uploading the application certificate of the client is required beforehand.

Please upload the OPC UA client certificate from the maintenance menu of the CPS-MCS341.

(1) Connect to the maintenance menu through the browser and click the OPC UA setting.

(2) From the “Choose file” in the OPC UA client certificate, select a certificate and Click “upload”.

(3) The certificate is temporarily saved so that it will be discarded upon the power shutting.

If you wish to save it even after turning off the power, save it to ROM. Go to the “Save to ROM” in the menu and perform the procedure.

(4) To delete the uploaded certificate, click “del” in the OPC UA client certificate.

# Client authentication by user ID

When you select the OPC UA client authentication by user ID, user name and password are required to establish the session. For this, please use the same name and password which you need to access to the WEB maintenance menu of CPS-MCS341.

The factory default setting for user name as well as password is “pc341”.

# Communication with CNC by FANUC

CPS-MCS341-DS1-131 contains the function to get the output information from FANUC CNC by serial communication and send it to the upper client with the OPC UA protocol.

It receives a DPRNT content prescribed in the CNC program as serial communication data, then convert an identifier and data within the DPRNT into the OPC UA node to send.

Initial settings need to be set to communicate with the CNC. From WEB browser, set the COM B for “FANUC CNC” in the Device setting of the Maintenance menu, and also set the serial communication parameter such as baud rate in accordance with CNC side (Please refer to "Device setting" in Chapter 1).

The list of CNC models that can be supported

-FANUC Series 15

-FANUC Series 16/18/20/21

-FANUC Power Mate -D/F/H

-FANUC Series 16i/18i/21i

-FANUC Power Mate i

-FANUC Series 15i

-FANUC Series 0i

-FANUC Series 30i/31i/32i

DPRNT identifier list

| Item | DPRNT identifier | UA node name | Data type | Meaning |
|---|---|---|---|---|
| Character Output | None | PrintOutput | String | Store several string data of the DPRNT contents with commas (,). |
| Product Name | PN | ProductName | String | Store the information regarding the name of the parts processed by machine. |
| The total number of processed parts | PC | ProductResultNumber | Int32 | Store the total number of parts processed by machine. |
| Value data in any type 1-10 | VA01-VA10 | value01-value10 | Double | These nodes can store value data in any type. (10) |
| String data in any type 1-10 | SR01-SR10 | string01-string10 | String | These nodes can store string data in any type. (10) |

# OPC UA server overall certification

| Item | Specification |
|---|---|
| Endpoint URL<br>Server URL | opc.tcp://[IP Address] |
| Access type | Data Access (synchronization I/O) |
| Profile | Embedded UA Server Profile |
| Communication protocol | UA TCP Binary |
| Security policy | None<br>Basic128Rsa15<br>Basic256<br>Basic256Sha256 |
| Security mode | Anonymous<br>Username/Password<br>Certificate/Private Key |
| Node tree structure | CONTEC<br>\|____CPS-MCS341-DS<br>\|____SubFolder<br>\|____Node1<br>\|____Node2 |
| Node editing | Not available (fixed) |

# OPC UA server address space specification

Address space differs depending on the module setting composition.

For the same subfolder name, node names are assigned in the order in which they were stacked.

CPS-MCS341G-DS1-130

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Digital input<br>Bit0<br>Bit1<br>Bit2<br>Bit3 | CPU_Digital_Input | <br>CPU.DI00<br>CPU.DI01<br>CPU.DI02<br>CPU.DI03 | Boolean | Read | 0, 1 |
| Digital output<br>Bit0<br>Bit1<br>Bit2<br>Bit3 | CPU_Digital_Output | <br>CPU.DO00<br>CPU.DO01<br>CPU.DO02<br>CPU.DO03 | Boolean | Read / Write | 0, 1 |
| Other<br>Battery level | System | Battery | Boolean | Read | 0 (none)<br>1 (remain) |
| Status information Channel0 - 0999 | Modbus | EX0000 – EX0999 | UInt32 | Read / Write | 0 to 65535 |
| Integer tag | TAG | TAG00 - TAG99 | UInt32 | Read/Write | 0 to 65535 |
| String tag | STAG | STAG00 - STAG99 | String | Read / Write | - |
| Decimal place tag | DTAG | DTAG00 - DTAG99 | Double | Read / Write | - |

*The number of bits of digital input and digital output vary depending on the module setup.

CPS-DIO-0808L (CPS-DIO-0808BL, CPS-DIO-0808RL)

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Digital input<br>Bit0<br>Bit1<br>Bit2<br>Bit3<br>Bit4<br>Bit5<br>Bit6<br>Bit7 | Digital_Input | <br>X.DI00<br>X.DI01<br>X.DI02<br>X.DI03<br>X.DI04<br>X.DI05<br>X.DI06<br>X.DI07 | Boolean | Read | 0, 1 |
| Digital output<br>Bit0<br>Bit1<br>Bit2<br>Bit3 | Digital_Output | <br>X.DO00<br>X.DO01<br>X.DO02<br>X.DO03 | Boolean | Read / Write | 0, 1 |

| | | | | | |
|---|---|---|---|---|---|
| Bit4 | | X.DO04 | | | |
| Bit5 | | X.DO05 | | | |
| Bit6 | | X.DO06 | | | |
| Bit7 | | X.DO07 | | | |

*For X in Node name, the module ID (00-15) will be set.

CPS-AI-1608LI (CPS-AI-1608ALI)

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Analog input | | | | | |
| Channel0 | Analog_Input | X.AI00 | UInt32 | Read | 0-65535 |
| Channel1 | | X.AI01 | | | |

*For X in Node name, the module ID (00-15) will be set.

CPS-AO-1604LI (CPS-AO-1604VLI)

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Analog input | | | | | |
| Channel0 | Analog_Output | X.AO00 | UInt32 | Read / Write | 0-65535 |
| Channel1 | | X.AO01 | | | |

*For X in Node name, the module ID (00-15) will be set.

CPS-RRY-4PCC

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Relay output | | | | | |
| Bit0 | | X.RRY00 | | | |
| Bit1 | Relay_Output | X.RRY01 | Boolean | Read / Write | 0, 1 |
| Bit2 | | X.RRY02 | | | |
| Bit3 | | X.RRY03 | | | |

*For X in Node name, the module ID (00-15) will be set.

CPS-CNT-3202I

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Digital input | | | | | |
| Channel0 | Digital_Input | X.DI00 | Boolean | Read | 0, 1 |
| Channel1 | | X.DI01 | | | |
| Counter input | | | | | |
| Channel0 | Counter | X.CNT00 | UInt32 | Read | 0-4294967295 |
| Channel1 | | X.CNT01 | | | |
| Counter input clear | | | | | |
| Channel0 | Counter_Clear | X.CNT00_CLR | Boolean | Read / Write | 0, 1 |
| Channel1 | | X.CNT01_CLR | | | |

*For X in Node name, the module ID (00-15) will be set.

CPS-SSI-4P

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Sensor input<br>Channel0<br>Channel1<br>Channel2<br>Channel3 | Sensor_Input | X.SSI00<br>X.SSI01<br>X.SSI02<br>X.SSI03 | Float | Read | (-200.0 to 800.0, when a sensor is disconnected -999.0) |

*For X in Node name, the module ID (00-15) will be set.

CPS-DI-16L (CPS-DI-16RL)

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Digital input | | | | | |
| Channel0 - Bit0 | | X.DI00 | | | |
| Channel0 - Bit1 | | X.DI01 | | | |
| Channel0 - Bit2 | | X.DI02 | | | |
| Channel0 - Bit3 | | X.DI03 | | | |
| Channel0 - Bit4 | | X.DI04 | | | |
| Channel0 - Bit5 | | X.DI05 | | | |
| Channel0 - Bit6 | | X.DI06 | | | |
| Channel0 - Bit7 | Digital_Input | X.DI07 | Boolean | Read | 0, 1 |
| Channel1 - Bit0 | | X.DI08 | | | |
| Channel1 - Bit1 | | X.DI09 | | | |
| Channel1 - Bit2 | | X.DI10 | | | |
| Channel1 - Bit3 | | X.DI11 | | | |
| Channel1 - Bit4 | | X.DI12 | | | |
| Channel1 - Bit5 | | X.DI13 | | | |
| Channel1 - Bit6 | | X.DI14 | | | |
| Channel1 - Bit7 | | X.DI15 | | | |

*For X in Node name, the module ID (00-15) will be set.

CPS-DO-16L (CPS-DO-16RL)

| OPC UA node | Subfolder | Node name | Data type | Access | Data range |
|---|---|---|---|---|---|
| Digital output | | | | | |
| Channel0 - Bit0 | | X.DO00 | | | |
| Channel0 - Bit1 | | X.DO01 | | | |
| Channel0 - Bit2 | | X.DO02 | | | |
| Channel0 - Bit3 | | X.DO03 | | | |
| Channel0 - Bit4 | | X.DO04 | | | |
| Channel0 - Bit5 | | X.DO05 | | | |
| Channel0 - Bit6 | | X.DO06 | | | |
| Channel0 - Bit7 | Digital_Output | X.DO07 | Boolean | Read / Write | 0, 1 |
| Channel1 - Bit0 | | X.DO08 | | | |
| Channel1 - Bit1 | | X.DO09 | | | |
| Channel1 - Bit2 | | X.DO10 | | | |
| Channel1 - Bit3 | | X.DO11 | | | |
| Channel1 - Bit4 | | X.DO12 | | | |
| Channel1 - Bit5 | | X.DO13 | | | |
| Channel1 - Bit6 | | X.DO14 | | | |
| Channel1 - Bit7 | | X.DO15 | | | |

*For X in Node name, the module ID (00-15) will be set.

# 6. Email sending

The settings below are necessary to send emails from the device.

- SMTP Server setting

- Mail address setting

*After the settings are completed, save them to ROM from “save to ROM”.

See the followings for each setting.

# SMTP Server setting

Set up the destination address of measuring data.

Click [SMTP server setting] in the [Maintenance menu] to open the setting page.

Enter the information listed below, then click “set” button.

- Regarding the setting contents, check the specification of the connecting SMTP server.
- “test mail result type” displays the communication details between SMTP server and CONPROSYS upon sending a test mail.
- “transmission interval(s)” specifies the interval to resend a mail when sending fails
- “Resend times” specifies how many times to resend mails. If sending fails at the specified number of times, mails are discarded.
- “Max number of Resend mail file” specifies the maximum number of resending mails. When resending mails exceed the maximum, resending is canceled and the mails are discarded.

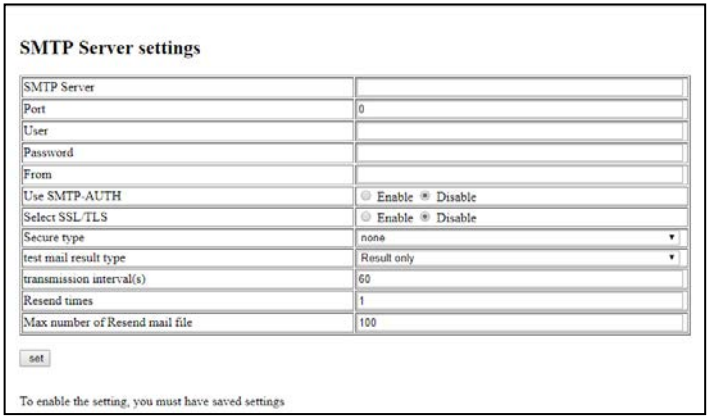



**Figure 6.60.** SMTP server setting

When the setting is completed, send a test mail to confirm.

Enter an address in “email address:”, and click “send test email” button. Confirm “Send OK” is viewed on the page.

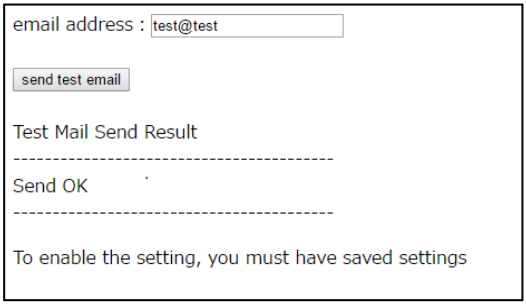



**Figure 6.61. Test Mail Send Result (SMTP server setting page)**

# Mail address setting

Click [Mail address setting] in the [Maintenance menu] to open the setting page. This setting is used in the Task edit.

Enter an address and click “set” button.

Several destinations can be set with “,” (comma).

Up to 10 destinations can be set per address.

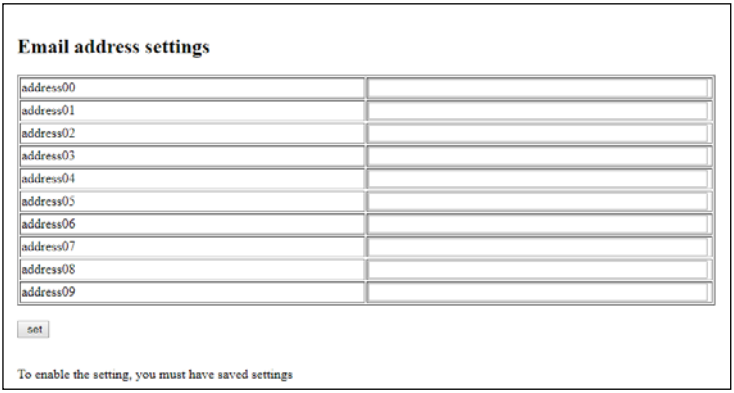



**Figure 6.62. Mail address setting**

Click “set” button, and send a test mail to confirm after the setting is completed.

Select the address to send a test mail and click “send test email” button.

Confirm “Send OK” is viewed on the page.

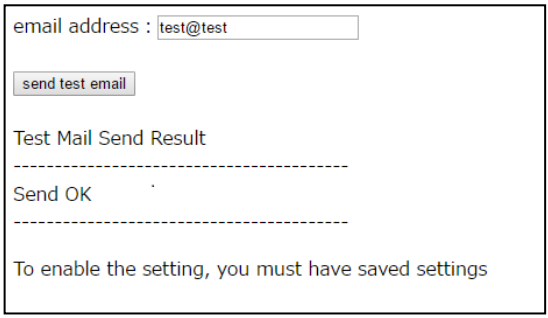



**Figure 6.63. Test Mail Send Result (Mail address setting page)**

# Send Mail program

Click [Task edit] in the [Maintenance menu] to open the task edit page. Please see the sample (9) in Chapter 3 for the task program sample of Email sending.


**Figure 6.64. Send Mail task**

| Property | | Value |
|---|---|---|
| To | (1) | ADDR00 |
| CC | (2) | ADDR01 |
| BCC | (3) | ADDR02 |
| Subject | | Fixed Value |
| Fix value (Subject) | (4) | test mail |
| Body | | Fixed Value |
| Fix value (Body) | (5) | test send |
| Attached | | NONE |
| Next step | (6) | Down |
| → X | | 0 |
| ↓ Y | | 0 |

**Figure 6.65. Send Mail task property**

(1) Set the address that is set in the Mail address setting into To.

(2) Set the address that is set in the Mail address setting into CC.

(3) Set the address that is set in the Mail address setting into BCC.

(4) Choose to specify Fix value (Subject) from Fixed Str, STAG, or LSTAG.

(5) Choose to specify Fix value (Body) from Fixed Str, STAG, LSTAG, or File.

When specified from the file, the strings in the file are treated as Body.

(6) Files can be attached.

*Mails are sent upon executing Send Mail task. Be aware that SMTP server might misjudge the sending mails as spam mails if the task of Send Mail are executed consecutively.

# 7. Azure IoT Hub communication function

This product features functions to transfer data to and receive data from Azure IoT Hub cloud service which is offered by Microsoft.

# Azure IoT Hub communication functions

**Table 7.1. Specification**

| Item | Specification |
|---|---|
| The number of Azure IoT Hubs to be connected | 1 (cannot be connected with several Azure IoT Hubs from one device) |
| Communication protocol | HTTPS (AMQP and MQTT are unsupported) |
| Azure IoT Hub security | Approval by security token |
| Sending method | Upon executing the task “Send Azure IoT” |
| Sending interval | Any (Upon executing the task “Send Azure IoT”) |
| Sending data format | JSON format (Convert the specified files into JSON format to send) |
| Sending timeout | 30 seconds |
| Receiving method | Automatically execute reception data processing upon sending |
| Receiving interval | Synchronize with the sending interval |
| Receiving data process | Set in the specified TAG or STAG of processing task. |
| Receiving data format | JSON format (Specify TAG as well as STA and set a value) |
| Receiving data specification available TAG | [TAG00] – [TAG99] and [STAG00] – [STAG99] |

# Cloud service preparation

The followings are required in advance for communicating with Azure IoT Hub.

- Create a Microsoft Azure account

- Create an Azure IoT Hub

- Obtain a device connection string

# Create a Microsoft Azure account

First, create a Microsoft Azure account. Though the cloud service can be accessed once a user has created the account, additional fees are required to use the services including Azure IoT Hub.

Creating a pay-per-use account from the link below lets users pay for the service by credit card.

There are other options such as prepay the contract fee as Enterprise Agreement, or purchase the services from Microsoft resellers or partners. (the link below may differ due to Microsoft site change)

https://azure.microsoft.com/ja-jp/free/?WT.srch=1&wt.mc_id=AID529441_SEM_9tDVpCNa

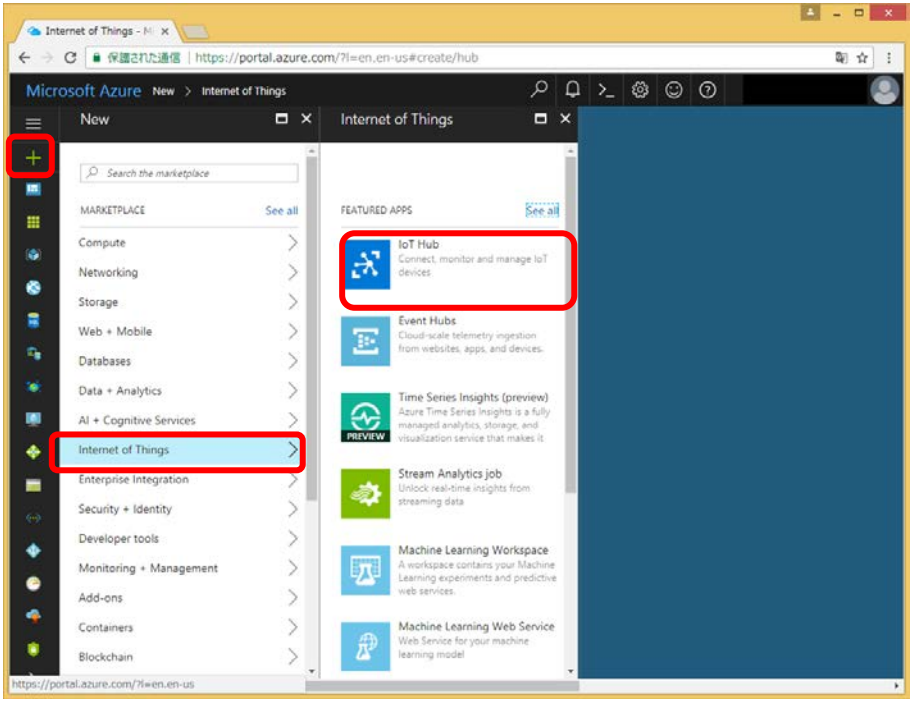
# Create an Azure IoT Hub

After creating a Microsoft Azure account, a user can sign in to Microsoft Azure portal through the links below. (Microsoft Azure portal link may change due to version upgrading)

https://azure.microsoft.com/ja-jp/features/azure-portal/

Described below are samples of creating an Azure IoT Hub and “Connection string - primary key” procedure. (Items on Microsoft Azure portal page may differ due to Microsoft Azure service change)

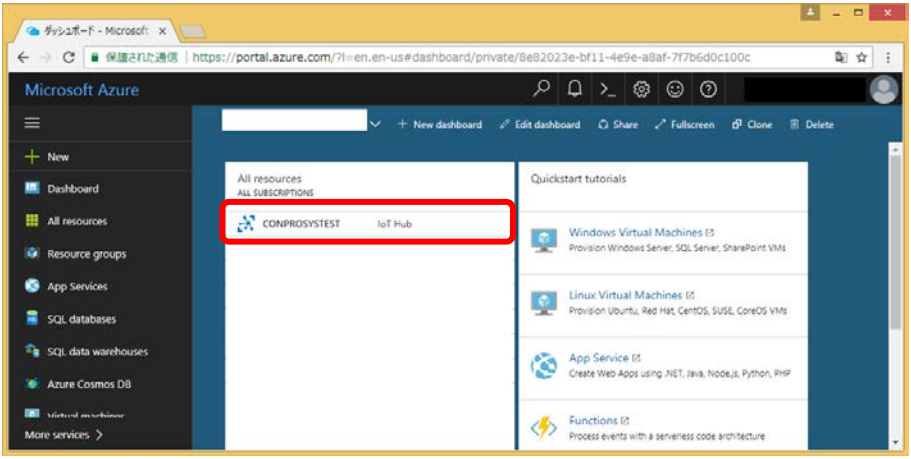
(1) Click “+” on the left - “Internet of Things” - “IoT Hub” in order and select Azure IoT Hub.



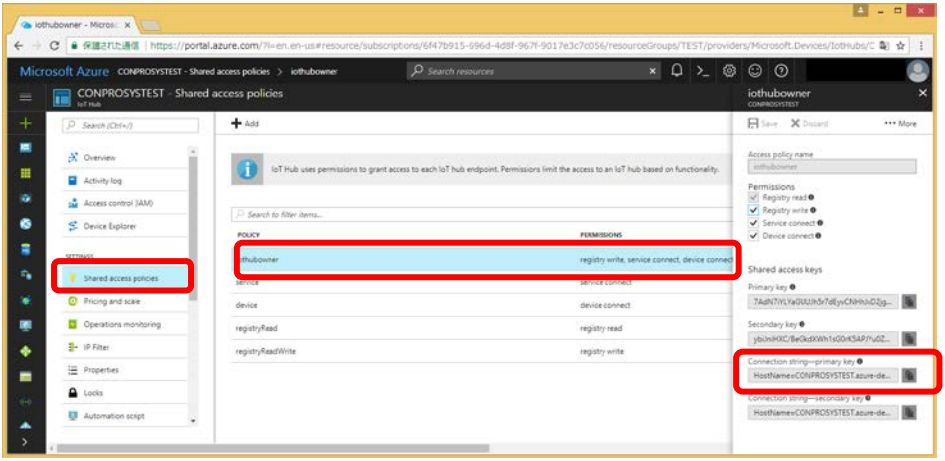

(2) Enter an arbitrary name in the Name, and choose Pricing and scale tier as desired, use Location to specify a geographic location, then select either Creating new or Use existing for Resource group.

(3) Click “Create”. (It can take a few minutes to create an Azure IoT hub)

(4) The created Azure IoT Hub appears on Dashboard. Click it on the Dashboard.




(5) Click the “Shared access policies”- “iothubowner” in order, then copy the string displayed in “Connection string - primary key”. (It can be copied to the clipboard by clicking the icon on the right) The “Connection string - primary key” is used in the following section Obtain a device connection string.



# Obtain a device connection string

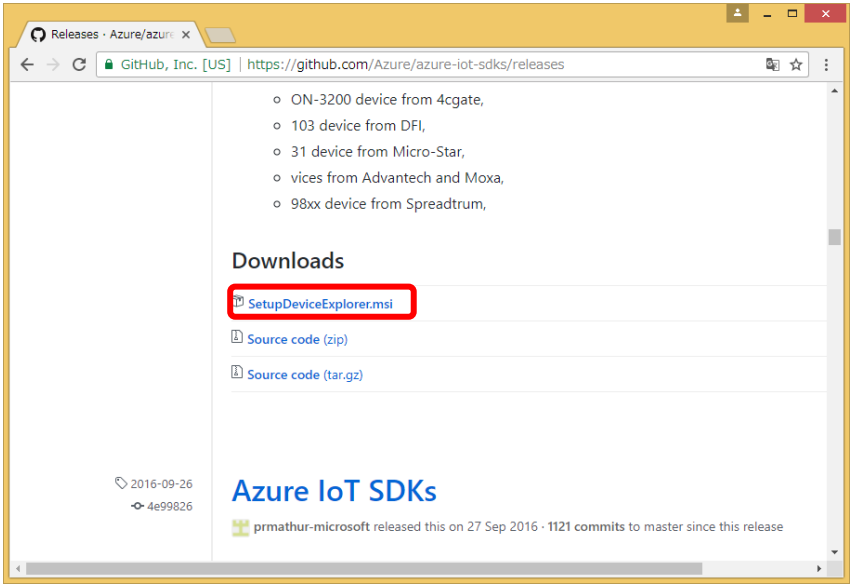
This describes how to use the “Device Explorer” tool for creating device string. The “Device Explorer” tool is a tool that runs on Windows PC.

To use the "Device Explorer" tool, it is necessary to set the device not to use the proxy server in a network environment that avoids the proxy server.

Windows proxy server setting is applied for “Device Explorer” tool. The proxy server setting can be checked in “LAN setting” of “Connection” tab from the “Internet option”. Be certain the proxy server is off or unchecked.

(1) From the link below, download “SetupDeviceExproler.msi” into Windows PC.
(The link may change due to Azure IoT SDKs version upgrading)

https://github.com/Azure/azure-iot-sdks/releases

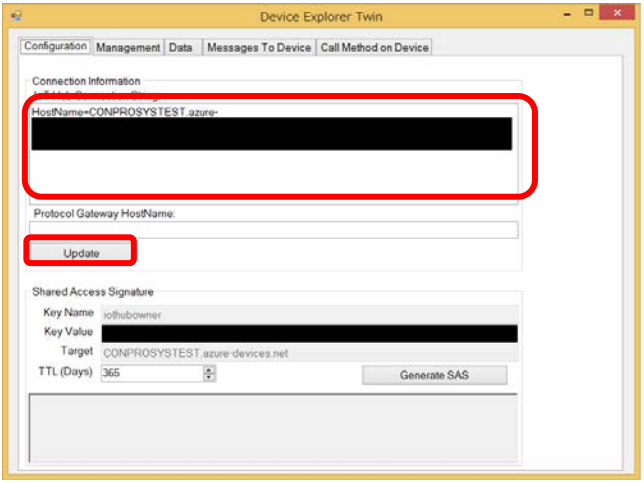



(2) Execute the downloaded “SetupDeviceExproler.msi”. “Device Explorer” is installed into Windows PC.

(3) Start up the installed “Device Explorer”.

(4) Register the connection information of Azure IoT Hub.

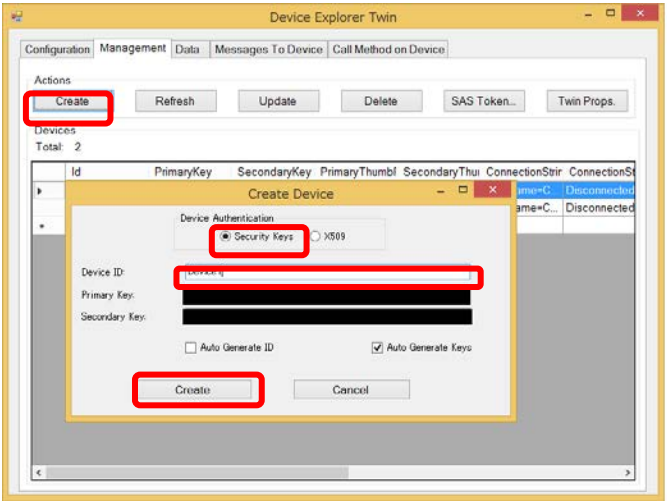
In "IoT Hub Connection String" of the "Configuration" tab, paste the "Connection string - primary key" that was obtained when creating Azure IoT Hub. Then click “Update”.




(5) Register the device.

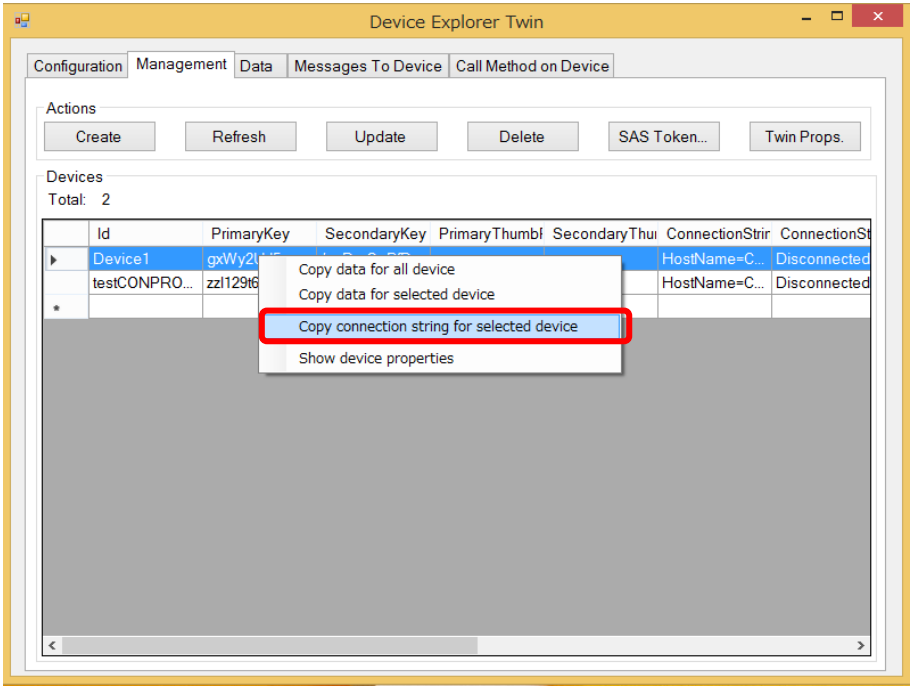
Click “Create” in the “Management” tab.

In the “Create Device” dialog box, enter an arbitrary device ID in “Device ID:” and select “Security Keys” from “Device Authentication”. Then click “Create”.



(6) Obtain a connection string to set in the device.

(7) The registered devices are listed in the “Management” tab. Right-click on the device you wish to set a connection string and select “Copy connection string for selected device”. The device connection string is then copied to the clipboard.




(8) Device connection string is obtained per device. To connect a new device, start from (5) Register the device.

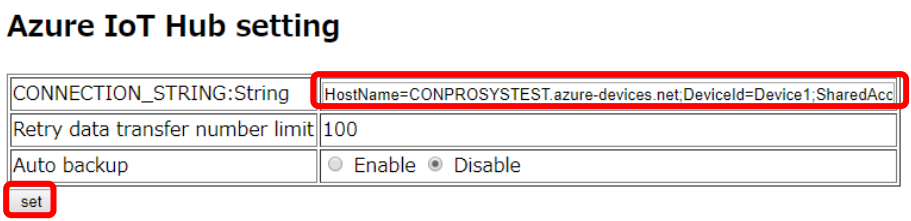
# Azure IoT Hub setting

Once the cloud service is ready, the following settings are required for the device.

- Network setting
- Azure IoT_Hub setting

From [Maintenance] menu, click [Azure IoT Hub setting] to open the Azure IoT Hub setting page.

Enter the device connection string that was copied in “Obtain the device connection string” to the “CONNECTION_STRING: String”. Then click “set”.




*After completing the setting, save it to ROM from “Maintenance” menu.

# Send Azure IoT task

Click [Task edit] from [Maintenance] to open the task edit page.

Place the Send Azure IoT processing task icon. Upon executing the task, this converts the csv file specified in the target file of the property into JSON format and send it to Azure IoT Hub.

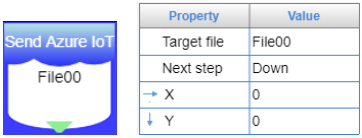



**Figure 7.1. Send Azure IoT processing task**

**Table 7.2. Sending format**

For the target file (csv file), describe Key in the first line and values in the following lines.

The target files are converted into JSON format data when they are sent. If several values are described, the data are divided and sent several times.

| Item | Format | Data example (Data part only) |
|---|---|---|
| Target file<br>(csv file) | Key_Line<br>Value_Line1<br>Value_Line2<br>Value_Line3<br>and continue | DateTime,TAG00,TAG01,<br>201611281551,0,0,<br>201611281552,0,0,<br>201611281553,0,0,<br>and continue |
| Send data<br>(JSON format) | {Record_Data1}<br>{Record_Data2}<br>{Record_Data3}<br>and continue | {"DateTime":"201611281551","TAG00":"0","TAG01":"0"}<br>{"DateTime":"201611281552","TAG00":"0","TAG01":"0"}<br>{"DateTime":"201611281553","TAG00":"0","TAG01":"0"}<br>and continue |

Sending target files are created with “Logging” and “Logging (Str)” controls.

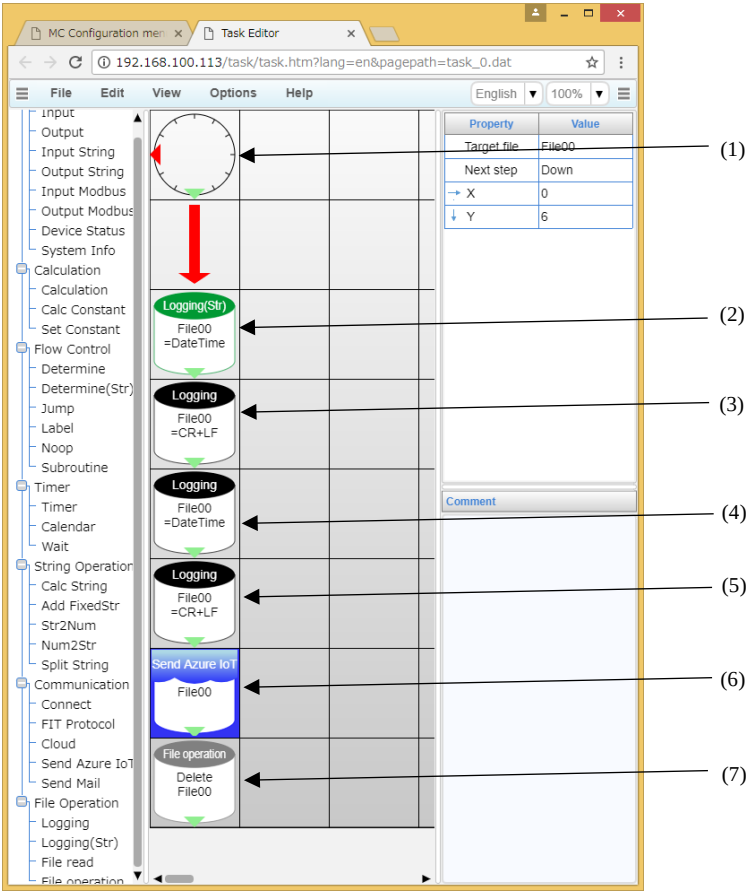



**Figure 7.2. AzureIoT sending sample**

(1) One action per minute.*
In the example below, the following actions will be conducted at 00 second per minute.

| Property | Value |
|---|---|
| Hour | * |
| Min | * |
| Sec | 00 |
| Action | one time |
| True | Down |
| False | Left |
| → X | 0 |
| ↓ Y | 0 |

(2) Write a key string “DateTime” into File00 (csv file).

| Property | Value |
|---|---|
| Target file | File00 |
| Str | Fixed Value |
| Fixed value (str) | DateTime |
| Next step | Down |
| → X | 0 |
| ↓ Y | 2 |

(3) Add CR+LF (carriage return) into File00.

| Property | Value |
|---|---|
| Target file | File00 |
| Value | CR+LF |
| Next step | Down |
| → X | 0 |
| ↓ Y | 3 |

(4) Date and Time data are added into File00

| Property | Value |
|---|---|
| Target file | File00 |
| Value | DateTime |
| Next step | Down |
| → X | 0 |
| ↓ Y | 4 |

(5) Add CR+LF (carriage return) into File00.

| Property | Value |
|---|---|
| Target file | File00 |
| Value | CR+LF |
| Next step | Down |
| → X | 0 |
| ↓ Y | 5 |

(6) The contents of File00 are converted in JSON format to send to Azure IoT Hub.

| Property | Value |
|---|---|
| Target file | File00 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 6 |

(7) Delete File00 (csv file)

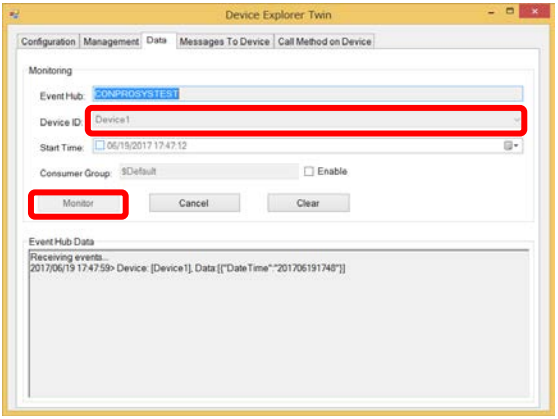
| Property | Value |
|---|---|
| Operation | Delete |
| From | File00 |
| Next step | Down |
| → X | 0 |
| ↓ Y | 7 |

*It is recommended to use Timer or Wait for executions. (If conducted without it, data will be sent continuously)

- Check sending

Data sent from the device can be checked in “Device Explorer” tool.

Open the “Data” tab in “Device Explorer” tool. Select the device from “Device ID:” and click “Monitor”. This enables users to confirm that the data are being sent to Azure IoT Hub from the device.




– Check log upon sending

From [Maintenance] menu, click [System information] - [web server comm log].

In “Azure log”, the sending data log to Azure IoT Hub at the latest time can be checked.

“!SENDACK:OK” can be viewed when data has been sent successfully.

**Azure log**

```
!SENDCSV:/home/contec/data/min_azure/20170619175900_azurefile00.csv
Log: Confirmation[0] received for message tracking id = 0 with result = IOTHUB_CLIENT_CONFIRMATION_OK
!SENDACK:OK
```

- Resending file check

When sending data is failed, go to [Maintenance] menu, click [File view] and select [Resend folder (Azure)]. This enables users to check the resend files. Data are converted in JSON format and stored in the resend file.

**Table 7.3. Receiving format**

| Item | Format | Data example | Reception operation with the data example |
|---|---|---|---|
| Receive data (JSON format) | {TAG_Data1,<br>TAG_Data2,<br>and continues<br><br>} | {"TAG00":"1","STAG99":"TEST"} | -Set value 1 into TAG00.<br><br>-Set letters TEST into STAG99 |

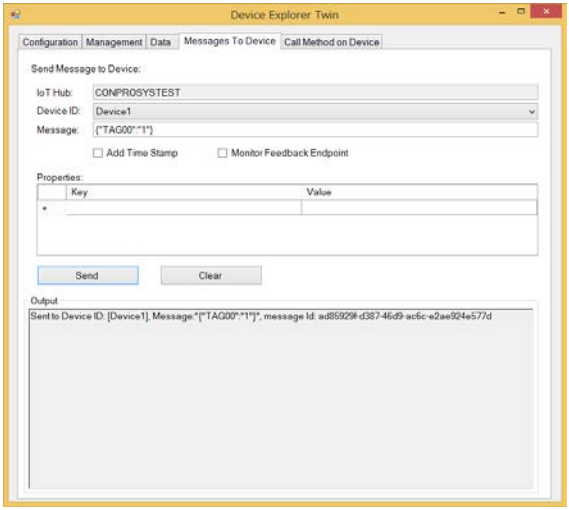
- Check receiving

Data can be sent to the device by “Device Explorer” tool.

Open the “Message To Device” tab in “Device Explorer” tool. Select the device from “Device ID:” and describe data in “Message:”. Click “Send” to send data to the device.

When the data below is described in "Message:", 1 is set into TAG00 value.

{"TAG00":"1"}



# 8. MTConnect

The MTConnect function is available with CPS-MCS341-DS1-131, CPS-MCS341G-DS1-130 and CPS-MCS341Q-DS1-131.

The controllers with MTConnect function contain MTConnect Adapter and Agent.

Monitoring machine tools can be monitored by the supportive software or through browser,.

The controllers with MTConnect function are

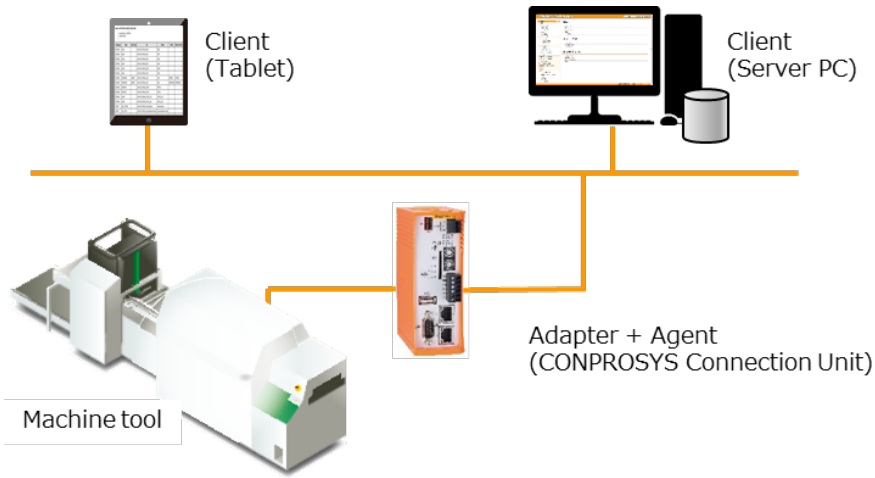
-CPS-MCS341-DS1-131

-CPS-MCS341G-DS1-130

-CPS-MCS341Q-DS1-131.

# MTConnect outline

- MTConnect is a communication protocol for machine tools, which is standardized by MTConnect Institution.
- For MTConnect, open communication interface with HTTP and XML is used.
- CONPROSYS that contains MTConnect Adapter and Agent can be used by MTConnect supportive client software.



# MTConnect overall specification

| Item | | Specification |
|---|---|---|
| MTConnect version | | V1.3 |
| Adapter specification | TCP Port | 7878 (can be changed from WEB menu) |
| | Communication Protocol | SHDR Ver1.2.0 |
| | Device Identification ID | <Device id="Device serial number"> |
| | Cycle time | 100 msec |
| Agent specification | TCP Port | 5000 (can be changed from WEB menu) |
| | AllowPut | True |
| | ReconnectInterval | 10000 msec |
| | BufferSize | 131072 |
| | SchemaVersion | 1.3 |

# MTConnect Data Item specification

| Category | Name attribute | id attribute*1 | Data type | Data range |
|---|---|---|---|---|
| Digital input<br>Bit0<br>Bit1<br>Bit2<br>Bit3 | DI00<br>DI01]<br>DI02<br>DI03 | XXX_DI00<br>XXX_DI01<br>XXX_DI02<br>XXX_DI03 | Boolean | 0, 1 |
| Digital output<br>Bit0<br>Bit1<br>Bit2<br>Bit3 | CPU.DO00<br>CPU.DO01<br>CPU.DO02<br>CPU.DO03 | XXX_DO00<br>XXX_DO01<br>XXX_DO02<br>XXX_DO03 | Boolean | 0, 1 |
| Other<br>Battery level indication | Battery | XXX_Battery | Boolean | 0, 1 |
| Fanuc CNC<br>-Output log<br>-Name<br>-The number of units<br>-General string 01-10<br>-General numerical value 01-10 | PrintOutput<br>ProductName<br>ProductResultNumber<br>value01- value10<br>string01 -string10 | XXX_PrintOutput<br>XXX_ProductName<br>XXX_ProductResultNumber<br>XXX_value01 -value10<br>XXX_string01 -string10 | String<br>String<br>Int32<br>Double<br>String | Rely on CNC DPRNT description |

*1: XXX in ID attribute indicates the serial number. The serial number is the 12-digit number listed on the serial number label that comes in the package.

(ex.) XXX_CNT00 ⇒ LRKV31170804_CNT00

# An example of MTConnect client display

This is an example of Agent used through Chrome browser w the definition file of default (samplel.xml).

- probe command (http://IP address:5000/probe)

**Device: CPS-MC341-ADSC; UUID: 000**

- manufacturer: CONTEC
- serialNumber:
-

| Category | Type | Sub Type | Id | Name | Units | Native Units |
|---|---|---|---|---|---|---|
| SAMPLE | LEVEL | | LRKV331170804_DI00 | DI00 | | |
| SAMPLE | LEVEL | | LRKV331170804_DI01 | DI01 | | |
| SAMPLE | LEVEL | | LRKV331170804_DI02 | DI02 | | |
| SAMPLE | LEVEL | | LRKV331170804_DI03 | DI03 | | |
| SAMPLE | LEVEL | | LRKV331170804_DO00 | DO00 | | |
| SAMPLE | LEVEL | | LRKV331170804_DO01 | DO01 | | |
| SAMPLE | AMPERAGE | DIRECT | LRKV331170804_AI00 | AI00 | AMPERE | AMPERE |
| SAMPLE | AMPERAGE | DIRECT | LRKV331170804_AI01 | AI01 | AMPERAGE | AMPERAGE |
| SAMPLE | POSITION | | LRKV331170804_CNT00 | CNT00 | | |
| SAMPLE | POSITION | | LRKV331170804_CNT01 | CNT01 | | |
| SAMPLE | CLEAR | | LRKV331170804_CNT00_CLR | CNT00_CLR | | |
| SAMPLE | CLEAR | | LRKV331170804_CNT01_CLR | CNT01_CLR | | |
| EVENT | CNC_STRING | | LRKV331170804_ProductName | ProductName | | |
| EVENT | CNC_INT32 | | LRKV331170804_ProductResultNumber | ProductResultNumber | | |

- sample command (http://IP address:5000/sample?from=24000&count=10)

**Device: CPS-MC341-ADSC; UUID: 000**

**Device : CPS-MC341-ADSC**

Samples

| Timestamp | Type | Sub Type | Name | Id | Sequence | Value |
|---|---|---|---|---|---|---|
| 2017-08-30T04:59:38.094564Z | Amperage | DIRECT | AI00 | LRKV331170804_AI00 | 24001 | 385 |
| 2017-08-30T04:59:39.044707Z | Amperage | DIRECT | AI00 | LRKV331170804_AI00 | 24002 | 386 |
| 2017-08-30T04:59:39.495983Z | Amperage | DIRECT | AI00 | LRKV331170804_AI00 | 24004 | 385 |
| 2017-08-30T04:59:40.533438Z | Amperage | DIRECT | AI00 | LRKV331170804_AI00 | 24007 | 386 |
| 2017-08-30T04:59:41.553099Z | Amperage | DIRECT | AI00 | LRKV331170804_AI00 | 24009 | 385 |
| 2017-08-30T04:59:37.059484Z | Amperage | DIRECT | AI01 | LRKV331170804_AI01 | 24000 | 387 |
| 2017-08-30T04:59:39.044707Z | Amperage | DIRECT | AI01 | LRKV331170804_AI01 | 24003 | 388 |
| 2017-08-30T04:59:39.495983Z | Amperage | DIRECT | AI01 | LRKV331170804_AI01 | 24005 | 387 |
| 2017-08-30T04:59:40.013811Z | Amperage | DIRECT | AI01 | LRKV331170804_AI01 | 24006 | 388 |

- current command (http://IP address:5000/current)

**Device: CPS-MC341-ADSC; UUID: 000**

**Device : CPS-MC341-ADSC**

Samples

| Timestamp | Type | Sub Type | Name | Id | Sequence | Value |
|---|---|---|---|---|---|---|
| 2017-08-30T04:48:02.473328Z | Amperage | DIRECT | AI00 | LRKV331170804_AI00 | 22590 | 386 |
| 2017-08-30T04:48:02.987969Z | Amperage | DIRECT | AI01 | LRKV331170804_AI01 | 22591 | 388 |
| 2017-08-30T04:47:33.424413Z | Position | | CNT00 | LRKV331170804_CNT00 | 22532 | 7 |
| 2017-08-30T01:41:23.666616Z | Clear | | CNT00_CLR | LRKV331170804_CNT00_CLR | 718 | 0 |
| 2017-08-30T04:47:34.023618Z | Position | | CNT01 | LRKV331170804_CNT01 | 22538 | 7 |
| 2017-08-30T01:41:23.666616Z | Clear | | CNT01_CLR | LRKV331170804_CNT01_CLR | 719 | 0 |
| 2017-08-30T04:47:33.424413Z | Level | | DI00 | LRKV331170804_DI00 | 22528 | 1 |
| 2017-08-30T04:47:34.023618Z | Level | | DI01 | LRKV331170804_DI01 | 22533 | 1 |

# 9. FTP communication function

This product can perform FTP communication with the setting required below.

- FTP Server setting

* After the settings, run “save to ROM” in [Save page] to save the contents.

The following describes each setting.

# FTP Server settings

Set FTP server.

Click [FTP setting] in the [Maintenance menu] to open the setting page.

(See the chapter 1. System - Web Browser Screen Display - (26) FTP Server setting)

Enter FTP server information, and click the “set” button.

*By setting the server, the CONPROSYS, as a client, can communicate with FTP.

After the setting completion, click FTP connection test button to check the communication.

IF the connection is successful, the message “Connection OK” is displayed. Also, the host folder file and directory information can be viewed.

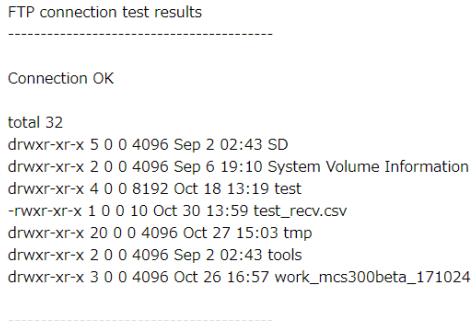



**Figure 9.1. FTP connection test**

# File sending/receiving program

Click [Task edit] in the [Maintenance menu] to open the setting page.

See the sample 10 in the chapter 3 for sending and receiving files by task.

*Task program is required to send/receive files in FTP communication.


**Figure 9.2. FTP Get task**

| Property | | Value |
|---|---|---|
| Destination file | (1) | File00 |
| Target file name | (2) | Fixed Value |
| Fixed Value | (3) | test_recv.csv |
| Next step | | Down |
| X | | 0 |
| Y | | 0 |

**Figure 9.3. FTP Get task property**

(1) Choose File.

(2) Target file name can be selected from Fixed Value, or STAG/LSTAG.

(3) Specify the target file name if you select the fixed value.

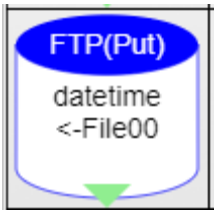



**Figure 9.4. FTP Put task**

| Property | | Value |
|---|---|---|
| Destination file name | (1) | Fixed Value |
| Fixed Value | (2) | datetime |
| Target file | (3) | File00 |
| Next step | | Down |
| X | | 0 |
| Y | | 2 |

**Figure 9.5. FTP Put task property**

(1) Destination file name can be selected from Fixed Value, or STAG/LSTAG.

(2) Specify the destination file name if you select the fixed value.

(3) Choose File

*When using file (File00 - File19) by task, get Ram or SD area before you set up Task edit - Setting - File setting.

# 10.Setup Troubleshooting

# Setup Troubleshooting

Please perform the following checks if you encounter a problem in the use of this product.

(1) Check the LEDs on the front panel
- Check that PWR LED is on.
- Check that ST1 LED is flashing.

(2) Check the network port LEDs.
Check the LEDs on the UTP connector at the front of the unit.
The Link/Act LED lights up if the network cable is correctly connected to a hub.
If no, refer to the “Hardware Setup Guide” and check the connection.

The Link/Act LED will be on when communication is in progress via the network port

(3) Use the ping command from a host computer and confirm that the server unit responds.
Ping the IP address of the server unit.
The server unit should respond if it is operating.

Example: The following response should be received when the server unit is set to IP address 10.1.1.101:

```
ping 10.1.1.101<Enter> :
Reply from 10.1.1.101: bytes=32 time<10ms TTL=255
Reply from 10.1.1.101: bytes=32 time<10ms TTL=255
Reply from 10.1.1.101: bytes=32 time<10ms TTL=255
```

If you are unsure of the IP address of the server unit, you can restore the default factory settings (IP address 10.1.1.101) by turning on the power to the unit with SW1-2 switch on (left).

(Username and password also start with the default factory settings)

⚠ CAUTION

If you turn off (right) SW1-2 switch, the unit starts with the previously saved to ROM settings.

You can restore the default factory settings by turning on the power to the unit with SW1-2 and SW1-3switches on (left).

⚠ CAUTION

This also initializes all other settings.

(4) If your user name and password are not recognized when you connect from a browser on a host computer:

Both the user name and password are case sensitive (upper and lower case letters are treated as different). Make sure that the Caps Lock key is off and try again.

If you have forgotten your user name or/and password, you can restore the default factory settings by turning on the power to the unit with SW1-2 and SW1-3switches on (left).

(Username and password also start with the default factory settings)

⚠ CAUTION

If you turn off (right) SW1-2 switch, the unit starts with the previously saved to ROM setting.

You can restore the default factory settings by turning on the power to the unit with SW1-2 and SW1-3switches on (left).

⚠ CAUTION

This also initializes all other settings.

(5) If the ping command receives a response but a “page not found” message appears when you try to connect from a browser.

Setup your browser as follows:

Proxy server setting

Set “do not use proxy server”.

Dialup setting

Set “do not dial”.

(6) Unit does not function correctly

Contact CONTEC to have the product examined.

Data transfer to the server problems

When the data cannot be transferred, check the following:

(1) NTP server setting

Data will not be transferred if you fail to set up “Time sync setting” with NTP server at a time of booting.

Check whether the address of the “Synchronization server” is correct.

Check the result of “sync time” in the web server communication log in the system information.

(2) Service setting
If “Disable” is selected in the “Data transfer service”, data cannot be transferred.

Check whether “Enable” is selected in the “Data transfer service” of the service setting.

Check the status of “Data transfer service” in the system information on the screen.

(3) Data transfer URL setting
When you fail in transferring data to URL, LED “ST2” on the front panel illuminates.
Check whether the Data transfer URL is correct.
Check the result of “data transfer” in the web server communication log in the system information.

Monitoring screen creation and display problems

(1) Monitoring screen does not display

Monitoring screens use Java applets.

Confirm that your browser settings permit Java applets to run.

Since Microsoft does not include a Java VM (Java virtual machine) in Windows Vista/XP, you need to download and install the Java VM by the “Oracle”.

Processing task creation and display problems

(1) Cannot open monitoring or task edit screen

The monitoring and task edit screens use Java applets.

Confirm that your browser settings permit Java applets to run.

Since Microsoft does not include a Java VM (Java virtual machine) in Windows Vista/XP, you need to download and install the Java VM by the “Oracle”.
Please refer to Chapter 1 System setup.

# 11.Appendix

# Appendix 1 Data Transfer Format

Data is transferred to the server via “http” or “https”.

Data is posted to the specified URL by the following parameters.

[Transfer parameter list]

| Transfer content | parameter1 | parameter2 |
|---|---|---|
| Measured data file | file=data | filename=YYYYMMDDhhmm.csv |

Response from a Web server

| Response | Meaning | Operation |
|---|---|---|
| Code: 200<br>X-AggregateInfo-Result: OK | Normal | Delete the files already sent. |
| Code: 400 | Invalid ID, Authentication code error, Format error | Delete the files failed to send. |
| Others | Other errors | Keep the failed files to resend. |

Telegram, e.g.

| http request |
|---|
| POST /XXXXX HTTP/1.1<CR_LF><br>User-Agent: XXXXX<CR_LF><br>Host: 192.168.1.110<CR_LF><br>Accept: */*<CR_LF><br>Content-Length: 40602<CR_LF><br>Expect: 100-continue<CR_LF><br>Content-Type: multipart/form-data; boundary=----------43ac9283b67c39f1<CR_LF> |

| http response (Normal) |
|---|
| HTTP/1.1 200 OK<CR_LF><br>Server: Apache-Coyote/1.1<CR_LF><br>Content-Type: text/plain;charset=UTF-8<CR_LF><br>Content-Length: XXXX<CR_LF><br>Date: Wed, 01 Jan 2014 10:00:01 GMT<CR_LF><br>X-AggregateInfo-Result: OK<CR_LF> |

Content-Disposition: form-data; name="data"; filename="201401011000.csv"<CR_LF>

Content-Type: text/plain;charset=UTF-8<CR_LF>

<CR_LF>

[Measured data]

----------43ac9283b67c39f1<CR_LF>

Content-Disposition: form-data; name="err"; filename="201401011000_e.csv "<CR_LF>

Content-Type: text/plain;charset=UTF-8<CR_LF>

<CR_LF>

| | |
|---|---|
| Connection timeout | 20 seconds |
| Web server response timeout | 60 seconds |

-Data transfer Web server
Use the URL you specified in “Data transfer setting” -“Data transfer URL”.

Transmission interval
Send data to Web server accordance with the “transmission intervals (min.)” you specified in Data transfer setting.

The choice of transmission intervals (min.) are listed below.

- 1 min.
- 5 min.
- 10 min.
- 15 min.
- 20 min.
- 30 min.
- 60 min.

*The measuring interval is 1 minute regardless of your choice of transmission interval.
1 datum will be transferred when you choose 1 minute. 60 data will be transferred when you choose 60 minutes.

*When transferring data from the processing task that has been created, there is no limitation for interval.

Measuring interval

Measure data per minute. (Fixed)

*When transferring data from the processing task that has been created, there is no limitation for interval.

- Measured data file

| Group | Article | Format | Meaning |
|---|---|---|---|
| Header | Terminal ID | X (7) 9 (6) | Serial number is listed |
| | Reservation | | Not in use |
| Data1 | | | Measured data per minute<br>Items are listed with "," (comma). |
| … | | | |
| Data n | | | |
| Footer | Reservation | | Not in use |
| | Transfer type | 9 (1) | 0: Normal transfer 1: Resent |

*Even when transferring data from the processing task that has been created, Header and Footer are attached to sending files.

- Measured data

Formats differ depending on the compositions of the products. When CDS2 format is set as "Enable", Cloudkey, Data, Time, and Millisecond are added at the beginning of the column.

*When transferring data from the processing task that has been created, there is no format limitation.

CDS2 format is set as "Enable"

DevID0 : CPS-DIO-0808L

| Column | Indication | Meaning |
|---|---|---|
| 1 | Cloudkey | Cloudkey that is set in the Data transfer setting |
| 2 | Date | Date of the data measured (YYYYMMDD) |
| 3 | Time | Time of the data measured (hhmmss) |
| 4 | Millisecond | Millisecond of the data measured (0-999) |
| 5 | DevID0:DI-0 | The value of digital input channel 0 – bit 0 (0 or 1) |
| 6 | DevID0:DI-1 | The value of digital input channel 0 – bit 1 (0 or 1) |
| 7 | DevID0:DI-2 | The value of digital input channel 0 – bit 2 (0 or 1) |

| | | |
|---|---|---|
| 8 | DevID0:DI-3 | The value of digital input channel 0 – bit 3 (0 or 1) |
| 9 | DevID0:DI-4 | The value of digital input channel 0 – bit 4 (0 or 1) |
| 10 | DevID0:DI-5 | The value of digital input channel 0 – bit 5 (0 or 1) |
| 11 | DevID0:DI-6 | The value of digital input channel 0 – bit 6 (0 or 1) |
| 12 | DevID0:DI-7 | The value of digital input channel 0 – bit 7 (0 or 1) |
| 13 | DevID0:DO-0 | The value of digital output channel 0 – bit 0 (0 or 1) |
| 14 | DevID0:DO-1 | The value of digital output channel 0 – bit 1 (0 or 1) |
| 15 | DevID0:DO-2 | The value of digital output channel 0 – bit 2 (0 or 1) |
| 16 | DevID0:DO-3 | The value of digital output channel 0 – bit 3 (0 or 1) |
| 17 | DevID0:DO-4 | The value of digital output channel 0 – bit 4 (0 or 1) |
| 18 | DevID0:DO-5 | The value of digital output channel 0 – bit 5 (0 or 1) |
| 19 | DevID0:DO-6 | The value of digital output channel 0 – bit 6 (0 or 1) |
| 20 | DevID0:DO-7 | The value of digital output channel 0 – bit 7 (0 or 1) |

DevID0 : CPS-DIO-0808L + DevID1:CPS-DIO-0808L

| Column | Indication | Meaning |
|---|---|---|
| 1 | Cloudkey | Cloudkey that is set in the Data transfer setting |
| 2 | Date | Date of the data measured (YYYYMMDD) |
| 3 | Time | Time of the data measured (hhmmss) |
| 4 | Millisecond | Millisecond of the data measured (0-999) |
| 5 | DevID0:DI-0 | The value of digital input channel 0 – bit 0 (0 or 1) |
| 6 | DevID0:DI-1 | The value of digital input channel 0 – bit 1 (0 or 1) |
| 7 | DevID0:DI-2 | The value of digital input channel 0 – bit 2 (0 or 1) |
| 8 | DevID0:DI-3 | The value of digital input channel 0 – bit 3 (0 or 1) |
| 9 | DevID0:DI-4 | The value of digital input channel 0 – bit 4 (0 or 1) |
| 10 | DevID0:DI-5 | The value of digital input channel 0 – bit 5 (0 or 1) |
| 11 | DevID0:DI-6 | The value of digital input channel 0 – bit 6 (0 or 1) |
| 12 | DevID0:DI-7 | The value of digital input channel 0 – bit 7 (0 or 1) |
| 13 | DevID0:DO-0 | The value of digital output channel 0 – bit 0 (0 or 1) |
| 14 | DevID0:DO-1 | The value of digital output channel 0 – bit 1 (0 or 1) |

| | | |
|---|---|---|
| 15 | DevID0:DO-2 | The value of digital output channel 0 – bit 2 (0 or 1) |
| 16 | DevID0:DO-3 | The value of digital output channel 0 – bit 3 (0 or 1) |
| 17 | DevID0:DO-4 | The value of digital output channel 0 - bit4 (0 or 1) |
| 18 | DevID0:DO-5 | The value of digital output channel 0 – bit 5 (0 or 1) |
| 19 | DevID0:DO-6 | The value of digital output channel 0 – bit 6 (0 or 1) |
| 20 | DevID0:DO-7 | The value of digital output channel 0 – bit 7 (0 or 1) |
| 21 | DevID1:DI-0 | The value of digital input channel 0 – bit 0 (0 or 1) |
| 22 | DevID1:DI-1 | The value of digital input channel 0 – bit 1 (0 or 1) |
| 23 | DevID1:DI-2 | The value of digital input channel 0 – bit 2 (0 or 1) |
| 24 | DevID1:DI-3 | The value of digital input channel 0 – bit 3 (0 or 1) |
| 25 | DevID1:DI-4 | The value of digital input channel 0 – bit 4 (0 or 1) |
| 26 | DevID1:DI-5 | The value of digital input channel 0 – bit 5 (0 or 1) |
| 27 | DevID1:DI-6 | The value of digital input channel 0 – bit 6 (0 or 1) |
| 28 | DevID1:DI-7 | The value of digital input channel 0 – bit 7 (0 or 1) |
| 29 | DevID1:DO-0 | The value of digital output channel 0 – bit 0 (0 or 1) |
| 30 | DevID1:DO-1 | The value of digital output channel 0 – bit 1 (0 or 1) |
| 31 | DevID1:DO-2 | The value of digital output channel 0 – bit 2 (0 or 1) |
| 32 | DevID1:DO-3 | The value of digital output channel 0 – bit 3 (0 or 1) |
| 33 | DevID1:DO-4 | The value of digital output channel 0 – bit 4 (0 or 1) |
| 34 | DevID1:DO-5 | The value of digital output channel 0 – bit 5 (0 or 1) |
| 35 | DevID1:DO-6 | The value of digital output channel 0 – bit 6 (0 or 1) |
| 36 | DevID1:DO-7 | The value of digital output channel 0 – bit 7 (0 or 1) |

DevID0 : CPS-AI-1608LI (CPS-AI-1608ALI)

| Column | Indication | Meaning |
|---|---|---|
| 1 | Cloudkey | Cloudkey that is set in the Data transfer setting |
| 2 | Date | Date of the data measured (YYYYMMDD) |
| 3 | Time | Time of the data measured (hhmmss) |
| 4 | Millisecond | Millisecond of the data measured (0-999) |
| 5 | DevID0:AI-0 | The value of analog input channel 0 (LSB) (0 - 65535) |
| 6 | DevID0:AI-1 | The value of analog input channel 1 (LSB) (0 - 65535) |

| | | |
|---|---|---|
| 7 | DevID0:AI-2 | The value of analog input channel 2 (LSB) (0 - 65535) |
| 8 | DevID0:AI-3 | The value of analog input channel 3 (LSB) (0 - 65535) |
| 9 | DevID0:AI-4 | The value of analog input channel 4 (LSB) (0 - 65535) |
| 10 | DevID0:AI-5 | The value of analog input channel 5 (LSB) (0 - 65535) |
| 11 | DevID0:AI-6 | The value of analog input channel 6 (LSB) (0 - 65535) |
| 12 | DevID0:AI-7 | The value of analog input channel 7 (LSB) (0 - 65535) |

DevID0 : CPS-AO-1604LI (CPS-AO-1604VLI)

| Column | Indication | Meaning |
|---|---|---|
| 1 | Cloudkey | Cloudkey that is set in the Data transfer setting |
| 2 | Date | Date of the data measured (YYYYMMDD) |
| 3 | Time | Time of the data measured (hhmmss) |
| 4 | Millisecond | Millisecond of the data measured (0-999) |
| 5 | DevID0:AO-0 | The value of analog output channel 0 (LSB) (0 - 65535) |
| 6 | DevID0:AO-1 | The value of analog output channel 1 (LSB) (0 - 65535) |
| 7 | DevID0:AO-2 | The value of analog output channel 2 (LSB) (0 - 65535) |
| 8 | DevID0:AO-3 | The value of analog output channel 3 (LSB) (0 - 65535) |

DevID0 : CPS-RRY-4PCC

| Column | Indication | Meaning |
|---|---|---|
| 1 | Cloudkey | Cloudkey that is set in the Data transfer setting |
| 2 | Date | Date of the data measured (YYYYMMDD) |
| 3 | Time | Time of the data measured (hhmmss) |
| 4 | Millisecond | Millisecond of the data measured (0-999) |
| 5 | DevID0:SSI-0 | Measured temperature of channel 0 [°C]<br>(-200 to 800, when a sensor is disconnected -999) |
| 6 | DevID0:SSI-1 | Measured temperature of channel 1 [°C]<br>(-200 to 800, when a sensor is disconnected -999) |
| 7 | DevID0:SSI-2 | Measured temperature of channel 2 [°C]<br>(-200 to 800, when a sensor is disconnected -999) |
| 8 | DevID0:SSI-3 | Measured temperature of channel 0 [°C]<br>(-200 to 800, when a sensor is disconnected -999) |

DevID0 : CPS-CNT-3202I

| Column | Indication | Meaning |
|---|---|---|
| 1 | Cloudkey | Cloudkey that is set in the Data transfer setting |
| 2 | Date | Date of the data measured (YYYYMMDD) |
| 3 | Time | Time of the data measured (hhmmss) |
| 4 | Millisecond | Millisecond of the data measured (0-999) |
| 5 | DevID0:CNT-0 | The value of counter input channel 0 (0 - 4294967295) |
| 6 | DevID0:CNT-1 | The value of counter input channel 1 (0 - 4294967295) |
| 7 | DevID0:DI-0 | The value of digital input channel 0 - bit0 (0 or 1) |
| 8 | DevID0:DI-1 | The value of digital input channel 1 - bit0 (0 or 1) |

DevID0 : CPS-SSI-4P

| Column | Indication | Meaning |
|---|---|---|
| 1 | Cloudkey | Cloudkey that is set in the Data transfer setting |
| 2 | Date | Date of the data measured (YYYYMMDD) |
| 3 | Time | Time of the data measured (hhmmss) |
| 4 | Millisecond | Millisecond of the data measured (0-999) |
| 2 | DevID0:SSI-0 | Measured temperature of channel 0 [℃]<br>(-200 to 800, when a sensor is disconnected -999) |
| 3 | DevID0:SSI-1 | Measured temperature of channel 1 [℃]<br>(-200 to 800, when a sensor is disconnected -999) |
| 4 | DevID0:SSI-2 | Measured temperature of channel 2 [℃]<br>(-200 to 800, when a sensor is disconnected -999) |
| 5 | DevID0:SSI-3 | Measured temperature of channel 3 [℃]<br>(-200 to 800, when a sensor is disconnected -999) |

DevID0 : CPS-DI-16L (CPS-DI-16RL)

| Column | Indication | Meaning |
|---|---|---|
| 1 | Cloudkey | Cloudkey that is set in the Data transfer setting |
| 2 | Date | Date of the data measured (YYYYMMDD) |
| 3 | Time | Time of the data measured (hhmmss) |
| 4 | Millisecond | Millisecond of the data measured (0-999) |
| 5 | DevID0:DI-0 | The value of digital input channel 0 – bit 0 (0 or 1) |
| 6 | DevID0:DI-1 | The value of digital input channel 0 – bit 1 (0 or 1) |
| 7 | DevID0:DI-2 | The value of digital input channel 0 – bit 2 (0 or 1) |
| 8 | DevID0:DI-3 | The value of digital input channel 0 – bit 3 (0 or 1) |
| 9 | DevID0:DI-4 | The value of digital input channel 0 – bit 4 (0 or 1) |
| 10 | DevID0:DI-5 | The value of digital input channel 0 – bit 5 (0 or 1) |
| 11 | DevID0:DI-6 | The value of digital input channel 0 – bit 6 (0 or 1) |
| 12 | DevID0:DI-7 | The value of digital input channel 0 – bit 7 (0 or 1) |
| 13 | DevID0:DI-8 | The value of digital input channel 1 – bit 0 (0 or 1) |
| 14 | DevID0:DI-9 | The value of digital input channel 1 – bit 1 (0 or 1) |
| 15 | DevID0:DI-10 | The value of digital input channel 1 – bit 2 (0 or 1) |
| 16 | DevID0:DI-11 | The value of digital input channel 1 – bit 3 (0 or 1) |
| 17 | DevID0:DI-12 | The value of digital input channel 1 – bit 4 (0 or 1) |
| 18 | DevID0:DI-13 | The value of digital input channel 1 – bit 5 (0 or 1) |
| 19 | DevID0:DI-14 | The value of digital input channel 1 – bit 6 (0 or 1) |
| 20 | DevID0:DI-15 | The value of digital input channel 1 – bit 7 (0 or 1) |

CDS2 format is set as “Disable”

DevID0 : CPS-DIO-0808L

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:DI-0 | The value of digital input channel 0 – bit 0 (0 or 1) |
| 3 | DevID0:DI-1 | The value of digital input channel 0 – bit 1 (0 or 1) |
| 4 | DevID0:DI-2 | The value of digital input channel 0 – bit 2 (0 or 1) |
| 5 | DevID0:DI-3 | The value of digital input channel 0 – bit 3 (0 or 1) |
| 6 | DevID0:DI-4 | The value of digital input channel 0 – bit 4 (0 or 1) |
| 7 | DevID0:DI-5 | The value of digital input channel 0 – bit 5 (0 or 1) |
| 8 | DevID0:DI-6 | The value of digital input channel 0 – bit 6 (0 or 1) |
| 9 | DevID0:DI-7 | The value of digital input channel 0 – bit 7 (0 or 1) |
| 10 | DevID0:DO-0 | The value of digital output channel 0 – bit 0 (0 or 1) |
| 11 | DevID0:DO-1 | The value of digital output channel 0 – bit 1 (0 or 1) |
| 12 | DevID0:DO-2 | The value of digital output channel 0 – bit 2 (0 or 1) |
| 13 | DevID0:DO-3 | The value of digital output channel 0 – bit 3 (0 or 1) |
| 14 | DevID0:DO-4 | The value of digital output channel 0 – bit 4 (0 or 1) |
| 15 | DevID0:DO-5 | The value of digital output channel 0 – bit 5 (0 or 1) |
| 16 | DevID0:DO-6 | The value of digital output channel 0 – bit 6 (0 or 1) |
| 17 | DevID0:DO-7 | The value of digital output channel 0 – bit 7 (0 or 1) |

DevID0 : CPS-DIO-0808L + DevID1:CPS-DIO-0808L

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:DI-0 | The value of digital input channel 0 – bit 0 (0 or 1) |
| 3 | DevID0:DI-1 | The value of digital input channel 0 – bit 1 (0 or 1) |
| 4 | DevID0:DI-2 | The value of digital input channel 0 – bit 2 (0 or 1) |
| 5 | DevID0:DI-3 | The value of digital input channel 0 – bit 3 (0 or 1) |
| 6 | DevID0:DI-4 | The value of digital input channel 0 – bit 4 (0 or 1) |
| 7 | DevID0:DI-5 | The value of digital input channel 0 – bit 5 (0 or 1) |

| | | |
|---|---|---|
| 8 | DevID0:DI-6 | The value of digital input channel 0 – bit 6 (0 or 1) |
| 9 | DevID0:DI-7 | The value of digital input channel 0 – bit 7 (0 or 1) |
| 10 | DevID0:DO-0 | The value of digital output channel 0 – bit 0 (0 or 1) |
| 11 | DevID0:DO-1 | The value of digital output channel 0 – bit 1 (0 or 1) |
| 12 | DevID0:DO-2 | The value of digital output channel 0 – bit 2 (0 or 1) |
| 13 | DevID0:DO-3 | The value of digital output channel 0 – bit 3 (0 or 1) |
| 14 | DevID0:DO-4 | The value of digital output channel 0 - bit4 (0 or 1) |
| 15 | DevID0:DO-5 | The value of digital output channel 0 – bit 5 (0 or 1) |
| 16 | DevID0:DO-6 | The value of digital output channel 0 – bit 6 (0 or 1) |
| 17 | DevID0:DO-7 | The value of digital output channel 0 – bit 7 (0 or 1) |
| 18 | DevID1:DI-0 | The value of digital input channel 0 – bit 0 (0 or 1) |
| 19 | DevID1:DI-1 | The value of digital input channel 0 – bit 1 (0 or 1) |
| 20 | DevID1:DI-2 | The value of digital input channel 0 – bit 2 (0 or 1) |
| 21 | DevID1:DI-3 | The value of digital input channel 0 – bit 3 (0 or 1) |
| 22 | DevID1:DI-4 | The value of digital input channel 0 – bit 4 (0 or 1) |
| 23 | DevID1:DI-5 | The value of digital input channel 0 – bit 5 (0 or 1) |
| 24 | DevID1:DI-6 | The value of digital input channel 0 – bit 6 (0 or 1) |
| 25 | DevID1:DI-7 | The value of digital input channel 0 – bit 7 (0 or 1) |
| 26 | DevID1:DO-0 | The value of digital output channel 0 – bit 0 (0 or 1) |
| 27 | DevID1:DO-1 | The value of digital output channel 0 – bit 1 (0 or 1) |
| 28 | DevID1:DO-2 | The value of digital output channel 0 – bit 2 (0 or 1) |
| 29 | DevID1:DO-3 | The value of digital output channel 0 – bit 3 (0 or 1) |
| 30 | DevID1:DO-4 | The value of digital output channel 0 – bit 4 (0 or 1) |
| 31 | DevID1:DO-5 | The value of digital output channel 0 – bit 5 (0 or 1) |
| 32 | DevID1:DO-6 | The value of digital output channel 0 – bit 6 (0 or 1) |
| 33 | DevID1:DO-7 | The value of digital output channel 0 – bit 7 (0 or 1) |

DevID0 : CPS-AI-1608LI (CPS-AI-1608ALI)

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:AI-0 | The value of analog input channel 0 (LSB) (0 - 65535) |
| 3 | DevID0:AI-1 | The value of analog input channel 1 (LSB) (0 - 65535) |
| 4 | DevID0:AI-2 | The value of analog input channel 2 (LSB) (0 - 65535) |
| 5 | DevID0:AI-3 | The value of analog input channel 3 (LSB) (0 - 65535) |
| 6 | DevID0:AI-4 | The value of analog input channel 4 (LSB) (0 - 65535) |
| 7 | DevID0:AI-5 | The value of analog input channel 5 (LSB) (0 - 65535) |
| 8 | DevID0:AI-6 | The value of analog input channel 6 (LSB) (0 - 65535) |
| 9 | DevID0:AI-7 | The value of analog input channel 7 (LSB) (0 - 65535) |

DevID0 : CPS-AO-1604LI (CPS-AO-1604VLI)

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:AO-0 | The value of analog output channel 0 (LSB) (0 - 65535) |
| 3 | DevID0:AO-1 | The value of analog output channel 1 (LSB) (0 - 65535) |
| 4 | DevID0:AO-2 | The value of analog output channel 2 (LSB) (0 - 65535) |
| 5 | DevID0:AO-3 | The value of analog output channel 3 (LSB) (0 - 65535) |

DevID0 : CPS-RRY-4PCC

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:SSI-0 | Measured temperature of channel 0 [℃]<br>(-200 to 800, when a sensor is disconnected -999) |
| 3 | DevID0:SSI-1 | Measured temperature of channel 1 [℃]<br>(-200 to 800, when a sensor is disconnected -999) |
| 4 | DevID0:SSI-2 | Measured temperature of channel 2 [℃]<br>(-200 to 800, when a sensor is disconnected -999) |
| 5 | DevID0:SSI-3 | Measured temperature of channel 0 [℃]<br>(-200 to 800, when a sensor is disconnected -999) |

DevID0 : CPS-CNT-3202I

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:CNT-0 | The value of counter input channel 0 (0 - 4294967295) |
| 3 | DevID0:CNT-1 | The value of counter input channel 1 (0 - 4294967295) |
| 4 | DevID0:DI-0 | The value of digital input channel 0 - bit0 (0 or 1) |
| 5 | DevID0:DI-1 | The value of digital input channel 1 - bit0 (0 or 1) |

DevID0 : CPS-SSI-4P

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:SSI-0 | Measured temperature of channel 0 [°C]<br>(-200 to 800, when a sensor is disconnected -999) |
| 3 | DevID0:SSI-1 | Measured temperature of channel 1 [°C]<br>(-200 to 800, when a sensor is disconnected -999) |
| 4 | DevID0:SSI-2 | Measured temperature of channel 2 [°C]<br>(-200 to 800, when a sensor is disconnected -999) |
| 5 | DevID0:SSI-3 | Measured temperature of channel 3 [°C]<br>(-200 to 800, when a sensor is disconnected -999) |

DevID0 : CPS-DI-16L (CPS-DI-16RL)

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:DI-0 | The value of digital input channel 0 – bit 0 (0 or 1) |
| 3 | DevID0:DI-1 | The value of digital input channel 0 – bit 1 (0 or 1) |
| 4 | DevID0:DI-2 | The value of digital input channel 0 – bit 2 (0 or 1) |
| 5 | DevID0:DI-3 | The value of digital input channel 0 – bit 3 (0 or 1) |
| 6 | DevID0:DI-4 | The value of digital input channel 0 – bit 4 (0 or 1) |
| 7 | DevID0:DI-5 | The value of digital input channel 0 – bit 5 (0 or 1) |
| 8 | DevID0:DI-6 | The value of digital input channel 0 – bit 6 (0 or 1) |
| 9 | DevID0:DI-7 | The value of digital input channel 0 – bit 7 (0 or 1) |
| 10 | DevID0:DI-8 | The value of digital input channel 1 – bit 0 (0 or 1) |
| 11 | DevID0:DI-9 | The value of digital input channel 1 – bit 1 (0 or 1) |
| 12 | DevID0:DI-10 | The value of digital input channel 1 – bit 2 (0 or 1) |
| 13 | DevID0:DI-11 | The value of digital input channel 1 – bit 3 (0 or 1) |
| 14 | DevID0:DI-12 | The value of digital input channel 1 – bit 4 (0 or 1) |
| 15 | DevID0:DI-13 | The value of digital input channel 1 – bit 5 (0 or 1) |
| 16 | DevID0:DI-14 | The value of digital input channel 1 – bit 6 (0 or 1) |
| 17 | DevID0:DI-15 | The value of digital input channel 1 – bit 7 (0 or 1) |

DevID0 : CPS-DO-16L (CPS-DO-16RL)

| Column | Indication | Meaning |
|---|---|---|
| 1 | Date and Time | Date and time of the data measured (YYYYMMDDhhmm) |
| 2 | DevID0:DO-0 | The value of digital output channel 0 – bit 0 (0 or 1) |
| 3 | DevID0:DO-1 | The value of digital output channel 0 – bit 1 (0 or 1) |
| 4 | DevID0:DO-2 | The value of digital output channel 0 – bit 2 (0 or 1) |
| 5 | DevID0:DO-3 | The value of digital output channel 0 – bit 3 (0 or 1) |
| 6 | DevID0:DO-4 | The value of digital output channel 0 – bit 4 (0 or 1) |
| 7 | DevID0:DO-5 | The value of digital output channel 0 – bit 5 (0 or 1) |
| 8 | DevID0:DO-6 | The value of digital output channel 0 – bit 6 (0 or 1) |
| 9 | DevID0:DO-7 | The value of digital output channel 0 – bit 7 (0 or 1) |
| 10 | DevID0:DO-8 | The value of digital output channel 1 – bit 0 (0 or 1) |
| 11 | DevID0:DO-9 | The value of digital output channel 1 – bit 1 (0 or 1) |
| 12 | DevID0:DO-10 | The value of digital output channel 1 – bit 2 (0 or 1) |
| 13 | DevID0:DO-11 | The value of digital output channel 1 – bit 3 (0 or 1) |
| 14 | DevID0:DO-12 | The value of digital output channel 1 – bit 4 (0 or 1) |
| 15 | DevID0:DO-13 | The value of digital output channel 1 – bit 5 (0 or 1) |
| 16 | DevID0:DO-14 | The value of digital output channel 1 – bit 6 (0 or 1) |
| 17 | DevID0:DO-15 | The value of digital output channel 1 – bit 7 (0 or 1) |

# Appendix 2 F&eIT Protocol Specifications

The proliferation of Internet connections has created numerous Ethernet-based LAN installations, which have enabled a large number of devices to access networks, resulting in the deployment of increasing numbers of FA and SOHO devices using this infrastructure. These devices, however, are mostly used as stand-alone units, which do not fully exploit the greatest advantage of networks: interconnectivity.

In view of the situation, CONTEC, drawing upon its network technology and I/O device expertise and their integration, is pleased to propose a communications server concept that organically links a wide range of devices, from WAN-based machines to remote I/O devices. In the following set of specifications, we define a common protocol that can be used in such a communications server.

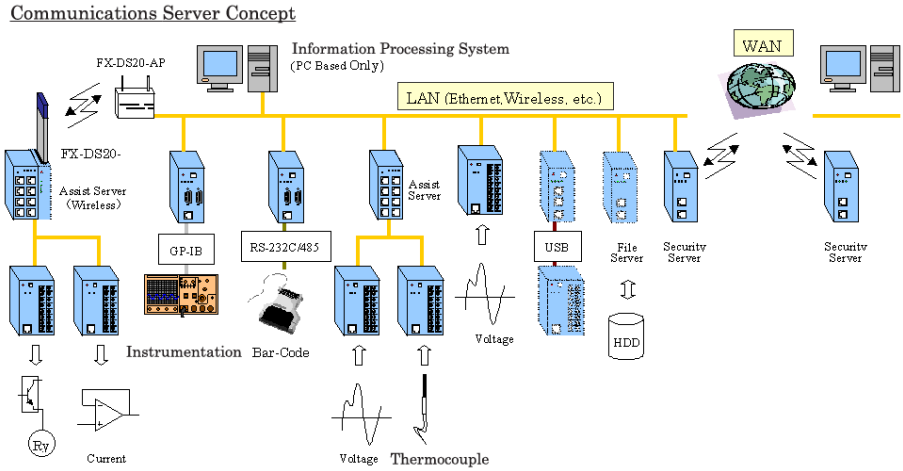



**Figure 11.1. Communications Server Concept-Overall Diagram**

The following defines the common protocol layers that will be provided in all products based upon the communications server concept.
Such products, complying with the communications server specifications, will be able to access device information using the same protocol.

The role of the F&eIT Protocol

The F&eIT Protocol defines the following protocol layers.

**Table 11.1. Table of Protocol Levels**

| | |
|---|---|
| Application layer | ACX, DLL, etc. |
| Device-dependent control layer | |
| F&eIT protocol layer | F&eIT protocol specifications |
| Transport layer | UDP, ICMP |
| Network layer | IP, ARP |
| Data link layer | Ethernet (IEEE802.3), etc. |
| Physical layer | |

# - Basic Specifications

Concepts

The F&eIT Protocol assigns all device resources (including resource, information) to virtual space so that any access to a device will be performed by specifying a virtual address. The virtual space is divided into information common to devices, device-specific information, I/O space, and memory space. The specific location in the virtual space where information is stored and the method by which information is stored is completely transparent with respect to where or how information is stored in actual physical resources.

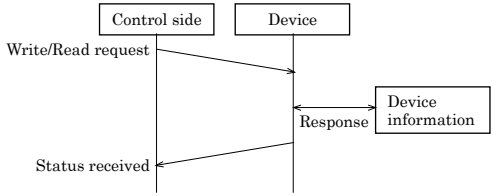
**Table 11.2. Overview of Virtual Space**

| | |
|---|---|
| 00000000h - 000FFFFFh | Information common to devices (1MB) |
| 00300000h - 003FFFFFh | I/O space (1MB) |

Data Communications Protocol

The F&eIT Protocol has two access procedures on the connectionless UDP/IP: response-type access and trap-type access.

**(Response-type)**




**(Trap-type)**

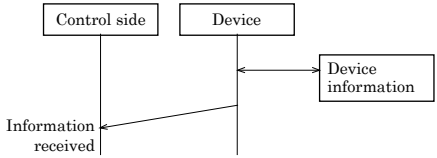



**Figure 11.2. Communications Protocol**

Frame format

Using the UDP/IP port address 5007h, the F&eIT Protocol is installed in the data section.
The frame structure takes the format described below. Due to the header byte order conventions, the Ethernet, IP, and UDP are treated as Big Endians; all other entities are treated as Little Endians, for which controls exerted by an x86 CPU hold priority.

**Table 11.3. Frame Structure**

| Header name | | Size (byte) | Remarks |
|---|---|---|---|
| Ethernet section | Destination Address | 6 | Remote MAC address |
| | Source Address | 6 | Local MAC address |
| | Type Field | 2 | Ethernet II |
| IP section | IP Ver4 Header | 20 | Fragment disabled |
| UDP section | UDP Header | 8 | Port Address 5007h<br>Check Sum disabled |
| Communication server section | Identifier | 2 | "SV" |
| | Version | 1 | Version of the header structure |
| | Command | 1 | Command and the ACK flag |
| | Sequence number | 2 | Frame ID |
| | Response ID | 2 | Identifies the sender. |
| | Virtual address | 4 | Specifies a virtual address space. |
| | Access size | 2 | 1436 bytes maximum |
| | Status | 2 | Result of command execution |
| | Access ID | 8 | Identifies the Read/Write privilege |
| | Remote MAC address | 6 | Specifies a remote MAC address when using IP multicasting. |
| | Reserved | 6 | Reserved for future use |
| | Data section | 1436 | Data area |

[Description of communications server headers]

(1) Identifier --- Identifies the frame as a F&eIT Protocol frame.

(2) Version --- Indicates the frame version.

(3) Command --- The virtual address access command.

(4) Sequence no. --- A counter that prevents the occurrence of duplicate frames, wherein the sequence number is incremented each time a packet is transmitted.

(5) Response ID --- When a response-type command is transmitted, the contents of the response ID are copied to the response ID for the response frame.

(6) Virtual address --- Specifies the virtual address being accessed, e.g., device information can be read by specifying the address 0000h.

(7) Access size --- Specifies the size of the data to be accessed, from 1 to a maximum of 1436 bytes.

(8) Status --- Stores status information after the command is executed.

(9) Access ID --- This is an ID for virtual address access control.

(10) Remote MAC address --- When data is read/written using IP Multicast, the MAC address of the remote device is set in this header. When data is to be sent to all

devices on the network, the value ALL [F] is set in this header.
(For Unicast: "ALL [0]")

Commands in detail

The following command is set in the command section (Offset = 4 in the F&eIT Protocol header section.):

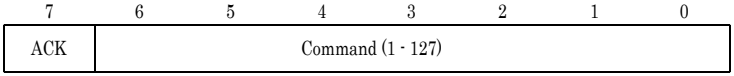



**Figure 11.3. Command Structure**

Bits 0 - 6 represent the command; the MSB indicates a response frame (ACK).

7Bit = 0: command request

1: command response

**Table 11.4. Commands in Detail**

| Command number | Command description | Type | Remarks |
|---|---|---|---|
| 1 | Reads from a virtual address. | Response | Reads device information by specifying a virtual address. |
| 2 | Writes to a virtual address. | Response | Updates device information by specifying a virtual address. |
| 3 | Transmits messages. | Response | Exchanges messages between devices. |
| 4 | Trap | Trap | Transmits trap information from a device, based on various events. |
| 5 | Reset | Response | Resets a device after returning a response frame. |
| 7 to 127 | Reserved | Undefined | Undefined |

Command-issuing procedures

- Read a virtual address (command = 1)
  A virtual address and its size are specified, and the frame is transmitted to the target device. The result is received as a response frame with data.
  (Example: reading a vendor name)

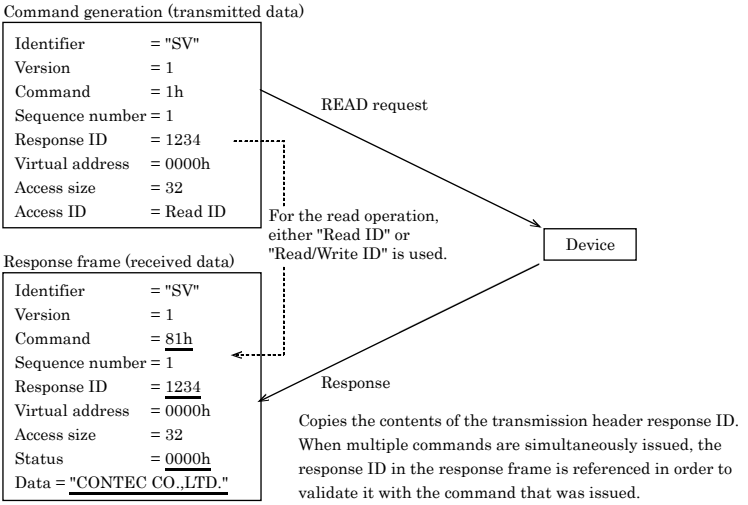



**Figure 11.4. Reading Procedures**

- Writing to a virtual address (command = 2)

  A virtual address, its size and data are specified, and the frame is transmitted to the target device. The result is received as a response frame status.
  (Example: setting an IP address)

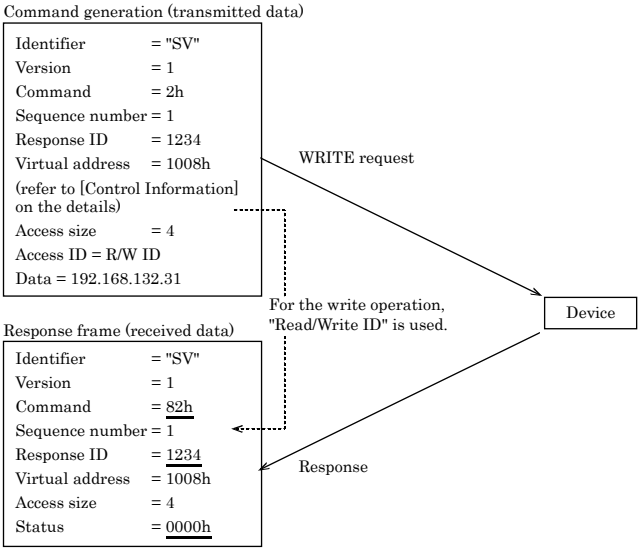



**Figure 11.5. Write Procedures**

- Message transmission (command = 3)
  Writes the message to be transmitted into the data section. The result is received as a response frame status. The maximum data size that can be transmitted per command is 1452 bytes.
  (Example: data transmission)

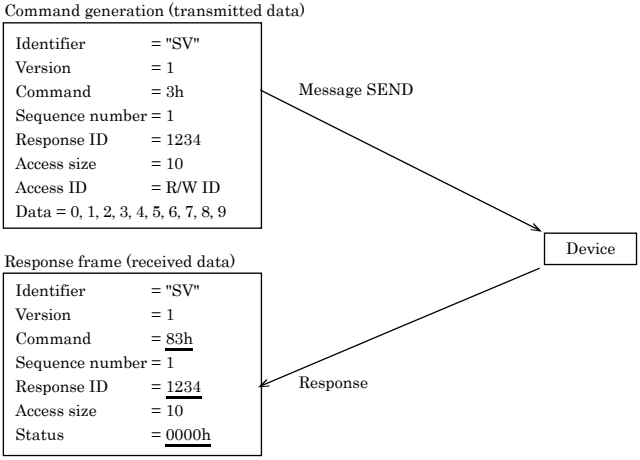



**Figure 11.6. Message Transmission**

Response status
Following is a table of status information that is returned by response-type commands:

**Table 11.5. Table of Status Information**

| Code | Description | Remarks |
|---|---|---|
| 0000h | Normal termination | |
| 0001h | Access violation | An attempt was made to write to a Read-only area. |
| 0002h | Area error | Access was made to an area not defined on the device. |
| 0003h | Access size error | An access request greater than 1436 bytes was made. |
| 0004h | Parameter error | Invalid parameter contents, such as receipt of a non-supported command. |
| 0005h | Length error | Invalid transmission length, such as an inconsistent data size with the number of data items calculated from the UDP/IP. |
| 0006h | Insufficient resources | Too many tasks are waiting for ACK data, causing a resource shortfall. The resources can be released by a timeout. |

# -Control Information

The F&eIT Protocol assigns all resources that are disclosed outside the devices to 32-bit virtual space. Following is a table of correspondence between virtual addresses and device information. Bytes order is Little Endian.

Information common to devices
The following types of information are provided in all F&eIT Protocol-compliant devices:

**Table 11.6. Information Common to Devices (Example) < *1 / 2* >**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| From 0000h - 0FFFh | 32 | R | Vendor name | "CONTEC CO.,LTD." |
| | 32 | R | Model | "SVR-MMF2(FIT)" |
| | 2 | R | Equipment version | 1.0 |
| | 2 | R | Firmware version | 1.0 |
| | 6 | R | MAC address | 00804C****** |
| | 2 | R | Installation function | Bit 0: I/O space<br>Bit 1: Memory space<br>Bit 2: Trap function<br>Bit 3: Message send<br>Bit 4: Reset function<br>Bits 5 and higher: reserved |
| | 4 | R | IP address | |
| | 2 | R | Product type | |
| | 4 | R | Reserved | |
| | 2 | R | F&eIT protocol version | |
| | | | Reserved | |

**Table 11.6. Information Common to Devices (Example) < *2 / 2* >**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| From 2000h | 4 | R | Elapsed time after the system is started | Seconds |
| | 4 | R | Total number of transmitted frames | Counter |
| | 4 | R | Total number of transmitted bytes | Counter |
| | 4 | R | Total number of received frames | Counter |
| | 4 | R | Total number of received bytes | Counter |
| | 4 | R | Total number of transmission errors | Counter |
| | 4 | R | Total number of reception errors | Counter |

*1 These resources are not used for the SVR-MMF (FIT) as it has no SNMP agent installed.

I/O space

**Table 11.7. I/O information of CPS-MCS341-DS1-111 (Example)**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h | 16 | RW | Slot1 | The first set module. |
| | 16 | RW | Slot2 | The second set module. |
| | 16 | RW | Slot3 | The third set module. |
| | 16 | RW | Slot4 | The fourth set module. |
| | 16 | RW | Slot5 | The fifth set module. |
| | 16 | RW | Slot6 | The sixth set module. |
| | 16 | RW | Slot7 | The seventh set module. |
| | 16 | RW | Slot8 | The eighth set module |
| | 16 | RW | Slot9 | The ninth set module. |
| | 16 | RW | Slot10 | The tenth set module. |
| | 16 | RW | Slot11 | The eleventh set module. |
| | 16 | RW | Slot12 | The twelfth set module. |
| | 16 | RW | Slot13 | The thirteenth set module. |
| | 16 | RW | Slot14 | The fourteenth set module. |
| | 16 | RW | Slot15 | The fifteenth set module. |
| | 16 | RW | Slot16 | The sixteenth set module |

Details of Slot 1 to 16 differ depending on each module.

The followings are I/O details of each.

**Table 11.8. I/O information when CPS-DIO-0808L (CPS-DIO-0808BL, CPS-DIO-0808RL), is set first. (Example)**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h | 1 | R | DI-0ch | bit 0-7 |
| | 1 | RW | DO-0ch | bit 0-7 |

**Table 11.9. I/O information when CPS-SSI-4P is set first. (Example)**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h - | 4 | R | SSI-0ch | Refer to data format. |
| | 4 | R | SSI-1ch | |
| | 4 | R | SSI-2ch | |
| | 4 | R | SSI-3ch | |

I/O information of CPS-SSI-4P Data format.

| | Start address | | | | | | | | Start address+1 | | | | | | | | Start address+2 | | | | | | | | Start address+3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bit | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| | Status | | | | | | | | S | MSB | | | | | | | | | | | | | | | | | | | | | | LSB |
| | A | Reserved | | | | | | V | | 4096℃ ↓ | | | | | | | | | | | 1℃ ↓ | | | | | | | | | | | 1/1024℃ ↓ | |
| 1℃ | 0 | * | * | * | * | * | * | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| -1℃ | 0 | * | * | * | * | * | * | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| -1/1024℃ | 0 | * | * | * | * | * | * | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| -999℃(Disconnection) | 1 | * | * | * | * | * | * | * | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | * | * | * | * | * | * | * | * | * | * |

S :Sign
A :Sensor abnormality
V :Valid data
* : Undefined

**Table 11.10. I/O information when CPS-AI-1608LI (CPS-AI-1608ALI) is set first. (Example)**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h - | 2 | R | AI-0ch | LSB(0-65535) |
| | 2 | R | AI-1ch | |
| | 2 | R | AI-2ch | |
| | 2 | R | AI-3ch | |
| | 2 | R | AI-4ch | |
| | 2 | R | AI-5ch | |
| | 2 | R | AI-6ch | |
| | 2 | R | AI-7ch | |

**Table 11.11. I/O information when CPS-AO-1604LI (CPS-AO-1604VLI) is set first. (Example)**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h - | 2 | RW | AO-0ch | LSB(0-65535) |
| | 2 | RW | AO-1ch | |
| | 2 | RW | AO-2ch | |
| | 2 | RW | AO-3ch | |
| | 8 | R | Dummy | |

**Table 11.12. I/O information when CPS-RRY-4PCC is set first. (Example)**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h - | 1 | RW | RRY-0ch | bit 0-3 |

**Table 11.13. I/O information when CPS-CNT-3202I is set first. (Example)**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h - | 4 | RW | CNT-0ch | LSB(0-4294967295) |
| | 4 | RW | CNT-1ch | |
| | 1 | R | DI-0ch | bit 0-1 |

**Table 11.14. I/O information when CPS-DI-16L (CPS-DI-16RL) is set first. (Example)**

| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h | 1 | R | DI-0ch | bit 0-7 |
| - | 1 | R | DI-1ch | bit 0-7 |

**Table 11.15. I/O information when CPS-DO-16L (CPS-DO-16RL) is set first. (Example)**

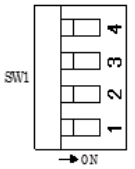
| Address | Size | | Description | Remarks |
|---|---|---|---|---|
| 3A2900h | 1 | RW | DO-0ch | bit 0-7 |
| - | 1 | RW | DO-1ch | bit 0-7 |

# Appendix 3 SD card

Measured data can be stored in the following folders by inserting SD card in the product.

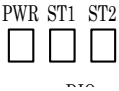
| | | |
|---|---|---|
| Task SD card folder | - | This folder stores data collection files set in SD area of task.<br>Folder path : SD/ |
| Task SD backup folder | - | This folder stores backup files created from task.<br>Folder path : SD/backup/ |
| Auto backup folder | - | This folder stores a bakup created by enabling Auto backup in Data transfer setting.<br>Backup files are compressed at 3:59 am once a day. (excludes from 0:00 to 3:59)<br>Folder path : SD/cloudbackup/ |

# Appendix 4 DIP switch




| SW | SW No. | Meaning |
|---|---|---|
| SW1 | 4 | System Reservation: Always OFF |
| | 3 | 2: OFF, 3:OFF<br>It is set in the default setting. |
| | 2 | 2: ON, 3: OFF<br>IP address setting will start up with default setting upon turning on, while user/password and group settings will start up with a user's settings.<br>The current IP address, user/password and group settings can be checked on the Web monitor.<br>Even SW1 No. 2 is on, USB wireless LAN operates by user setting.<br><br>2: ON, 3: ON<br>Each setting will be initialized upon turning on.<br>LED PWR and ST1 will flash upon the completion. Confirm the flashing and turn off switch 2, 3, then reboot. |
| | 1 | System Reservation: Always OFF |

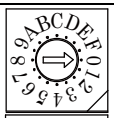
# Appendix 5 LED




| LED | Operation | Meaning |
|---|---|---|
| PWR(Green) | ON | Power has been supplied. |
| | OFF | Power has not been supplied. |
| | Flashing | It indicates one of the followings.<br>- Setting is being written in ROM.<br>- Completion of initialized setting. |
| ST1(Green) | ON | Not assigned |
| | OFF | Not assigned |
| | Flashing<br>(Slow ) | Software has been operating. |
| | Flashing<br>(Fast) | It indicates one of the followings.<br>- Task is being operated via Web monitor.<br>- Completion of initialized setting. |
| ST2(Red) | ON | Data transfer was failed. |
| | OFF | It indicates the system runs normally. |
| | Flashing<br>(Fast) | It indicates one of the followings.<br>- Task is being operated via Web monitor. |
| Other | Please refer to the hardware manual. | |

# Appendix 6 Rotary switch

H




L


| ID | Meaning |
|---|---|
| H | System Reservation: Always 0. |
| L | System Reservation: Always 0. |

# Appendix 7 Modbus status information

With the Modbus slave function, status information can be obtained from CONPROSYS. For status information, use address 0x5000 or later of the input register (function code 0x03).

For VTC, the same data can be obtained with the "system information" control.

System information

| Modbus Address | Item | Data Type | The number of word | Meaning |
|---|---|---|---|---|
| 0x5000 | NTP Result | unsigned short | 1 | The final synchronization result with NTP server<br>0: synchronization fail<br>1: synchronization succeed |
| 0x5001 | NTP Date | char | 8 | The final synchronization date with NTP server<br>YYYYMMDDhhmmss+\0\0 |
| 0x5009 | Uptime | unsigned long | 2 | OS up-time[sec] |
| 0x500B | TransferResult | unsigned short | 1 | The final data transfer result<br>0: Transfer fail<br>1: Transfer succeed |
| 0x500C | TramsferErrTime | char | 8 | The final data transfer time<br>YYYYMMDDhhmmss+\0\0 |
| 0x5014 | TransferErrorInfo | char | 7 | The final data transfer error information |
| 0x501B | MailErrorTime | char | 8 | The final mail transfer time<br>YYYYMMDDhhmmss+\0\0 |
| 0x5023 | BuiltInPowerState | unsigned short | 1 | Digital input power setting<br>0: External power supply<br>1: Built-in power supply |
| 0x5024 | SD Recognition | unsigned short | 1 | SD card recognition state<br>0: without SD card<br>1: with SD card |
| 0x5025 | SD Free | unsigned long | 2 | SD card free space[kbyte] |
| 0x5027 | FTP Transfer Result | unsigned short | 1 | The final data transfer result<br>0: Transfer fail<br>1: Transfer succeed |
| 0x5028 | FTP Transfer Time | char | 8 | The final data transfer time<br>YYYYMMDDhhmmss+\0\0 |

| | | | | |
|---|---|---|---|---|
| 0x5030 | FTP Transfer Error Information | char | 7 | The final FTP transfer information |
| 0x5037 - 0x50FF | Reserved | - | 217 | Reserved |

Service information

| Modbus address | Item | Data Type | The number of word | Meaning |
|---|---|---|---|---|
| 0x5100 | DataTransfer | unsigned short | 1 | Data transfer service state<br>0:OFF<br>1:ON |
| 0x5101 | ModbusTCP | unsigned short | 1 | Modbus TCP Server state<br>0:OFF<br>1:ON |
| 0x5102 | ModbusSessions | unsigned short | 1 | The number of Modbus TCP Server sessions |
| 0x5103 | OPC UA Server | unsigned short | 1 | OPC UA Server state<br>0:OFF<br>1:ON |
| 0x5104 | Task0State | unsigned short | 1 | Task0 start state<br>0:Run<br>1:Step Run Start<br>2:Step Run Wait<br>3:Stop |
| 0x5105 | Task0Scantime | unsigned long | 2 | Interval [msec] at which task 0 executes the commands of coordinates (0, 0) |
| 0x5107- 0x511E | Task1-8State | - | 24 | Task1-8 start state and scan time<br>* The start state is the same format as address 0x5104<br>*The scan time is the same format as address 0x5105 |
| 0x511F | Task9State | unsigned short | 1 | Task9 start state<br>0:Run<br>1:Step Run Start |

| | | | | |
|---|---|---|---|---|
| | | | | 2:Step Run Wait<br>3:Stop |
| 0x5120 | Task9Scantime | unsigned long | 2 | Interval [msec] at which task 9 executes the commands of coordinates (0, 0) |
| 0x5122-<br>0x51FF | Reserved | - | 222 | Reserved |

Controller information

| Modbus Address | Item | Data Type | The number of word | Meaning |
|---|---|---|---|---|
| 0x5200 | Datetime | char | 8 | Current system date and time<br>YYYYMMDDhhmmss+\0\0 |
| 0x5208-<br>0x5210 | Reserved | - | 9 | Reserved |
| 0x5211 | MemoryFree | unsigned long | 2 | MemoryFree [kbyte] |
| 0x5213 | File0Location | unsigned short | 1 | File 0 saving location setting<br>0:Ram<br>1:SD card |
| 0x5214 | File0MaxSize | unsigned long | 2 | File 0 size setting [kbyte] |
| 0x5216 | File0CurSize | unsigned long | 2 | File 0 current size [kbyte] |
| 0x5218 | File1Location | unsigned short | 1 | File 1 saving location setting<br>0:Ram<br>1:SD card |
| 0x5219 | File1MaxSize | unsigned long | 2 | File 1 size setting [kbyte] |
| 0x521B | File1CurSize | unsigned long | 2 | File 1 current size [kbyte] |
| 0x521D-<br>0x5276 | File2-<br>18 information | - | 85 | Files 2-18 saving location setting, size setting, and current size<br>*The saving location setting is the same format as address 0x5213.<br>*The size setting is the same format as 0x5214. |

| | | | | |
|---|---|---|---|---|
| | | | | *The current size is the same format as 0x5216. |
| 0x5272 | File19Location | unsigned short | 1 | File 19 saving location setting |
| 0x5273 | File19MaxSize | unsigned long | 2 | File 19 size setting [kbyte] |
| 0x5275 | File19CurSize | unsigned long | 2 | File 19 current size [kbyte] |
| 0x5277 | WaitFiles(st) | unsigned short | 1 | The number of files in the folder (Send service) waiting to be sent |
| 0x5278 | WaitFiles(task) | unsigned short | 1 | The number of files in the folder (task) waiting to be sent |
| 0x527A-<br>0x527B | Reserved | - | 2 | Reserved |
| 0x527C | WaitMails | unsigned short | 1 | The number of files in the folder with mails to be sent |
| 0x527D | ResentFiles(st) | unsigned short | 1 | The number of files in the folder (Send service) waiting to be resent |
| 0x527E | ResentFiles(task) | unsigned short | 1 | The number of files in the folder (Task) waiting to be resent |
| 0x5280-<br>0x5281 | Reserved | - | 2 | Reserved |
| 0x5282 | ResentMails | unsigned short | 1 | The number of files in the folder with mails to be resent |
| 0x5283 | SW1-2 | unsigned short | 1 | The state of 2 in DIP-SW 1<br>0:OFF<br>1:ON |
| 0x5284 | SW1-3 | unsigned short | 1 | The state of 3 in DIP-SW 1<br>0:OFF<br>1:ON |
| 0x5285 | SW1-4 | unsigned short | 1 | The state of 4 in DIP-SW 1<br>0:OFF<br>1:ON |
| 0x5286-<br>0x55FF | Reserved | - | 890 | Reserved |

Special functions

| Modbus Address | Item | Data Type | The number of word | Meaning |
|---|---|---|---|---|
| 0x5700 | Timer (100ms) | unsigned short | 1 | Repeat 0 and 1 at 100 ms interval |
| 0x5701 | Timer (1s) | unsigned short | 1 | Repeat 0 and 1 at 1sec interval |
| 0x5702 | Timer (10s) | unsigned short | 1 | Repeat 0 and 1 at 10sec interval |
| 0x5703-<br>0x57FF | Reserved | - | 253 | Reserved |

FANUC CNC

| Modbus Address | Item | Data Type | The number of words | Meaning |
|---|---|---|---|---|
| 0x6000 | ProductName | String | 50 | Rely on CNC DPRNT description |
| 0x6032 | ProductResultNumber | Int32 | 2 | |
| 0x6034 | Value01-10 | Double | 40 | |
| 0x605C | String01-10 | String | 500 | |
| 0x6250 | PrintOutput | String | 100 | |

# Appendix 8 COM setting

The names of COM port displayed on Web monitor and the corresponding names of the devices are described below.

| Web monitor | Device |
|---|---|
| COM00 | COM A |

## Revision History

| MONTH YEAR | Summary of Changes |
|---|---|
| November 2015 | The First Edition |
| May 2016 | - Support firmware ver1.0.2<br>- Data display on Web monitor, Auto backup function, Modbus allocation, a model of transfer data format, File action, and data transfer function were added.<br>- Chapter 4 Transferring Measured Data, Appendix 3, 4, and 5 were added. |
| January 2017 | - Support firmware ver2.0.0.<br>- Module setting function was added. |
| February 2017 | - Support firmware ver2.2.0<br>- Monitoring, Task device tree allocation, Modbus allocation and models of transfer data format were added.<br>- Chapter 5 Using the product as the OPC UA server and Appendix 6 were added |
| March 2017 | - Support firmware ver2.3.0 |
| May 2017 | - Support firmware Ver2.4.0<br>- Setting functions of data transfer and network were added. |
| July 2017 | - Support firmware Ver2.6.0<br>- Setting functions of Azure, wireless LAN, Email, Administrator, and CNC communication were added (OPC UA).<br>- Appendix 3 SD card, 4 DIP switch, 7 Modbus status, 8 COM setting were added. |
| August 2017 | - Support firmware Ver2.3.2<br>- OPC UA setting function was added<br>- Appendix 4 DIP switch information was modified. |
| October 2017 | - Support firmware Ver2.4.0<br>- Chapter 5 OPC UA tree was changed.<br>- MTConnect function and Appendix 6 Modbus status information were added. |
| November 2017 | - CDS2 URL was changed. |
| November 2017 | - Support firmware Ver2.8.0 - FTP setting was added.<br>- The page for User/Password setting was added. |

# CPS-MCS341

## System Setup Guide

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