Pro-face
by Schneider Electric

Multi-Converter for FANUC CNC

Technical Guide

Revision History

No.	Date	Description
00	May 8, 2017	New
01	Jan 29, 2018	Added update procedure to "8.9 Transfer (Project Transfer)".

Table of Contents

Safety Information

Important Information

Notice

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure. For the product related information such as warning and caution, refer to the product's hardware manual.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric or any of its affiliates or subsidiaries (hereinafter, referred to as Schneider Electric) for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book

Overview

Document Scope;

This book describes the following contents.

- How to connect this product to CNC made by FANUC Corporation
- How to configure settings using every setting tool

Related manual

Download manuals and technical information from our Web site.

http://www.pro-face.com/trans/en/manual/1001.html

1. Overview

This product can collect data from machine tools by communicating with CNC made by FANUC Corporation.

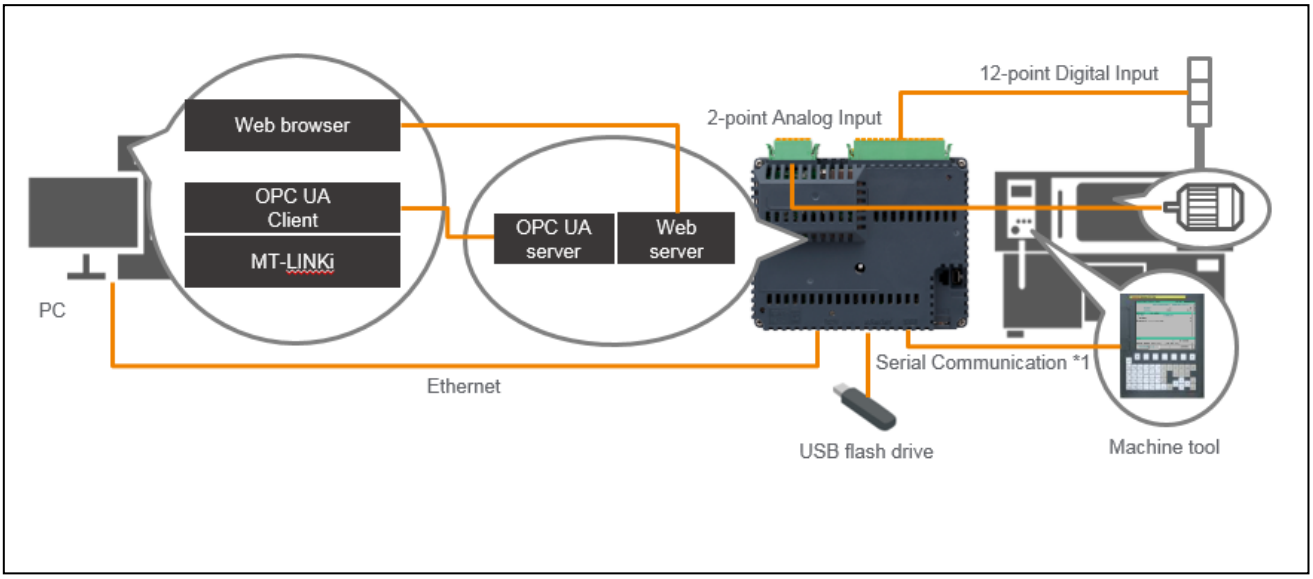
- Able to transfer operating status of machine tools to MT-LINKi.
- Able to configure settings of the main unit using settings on the Web browser without a screen-creation editor.
- Able to support DPRNT function as serial connection.

2. Important Notes

- The contents and descriptions of this book are subject to change without notice.
- This book describes contents dedicated to the product (Multi-Converter for CNC made by FANUC corporation) that is created with customizing a Pro-face product for FANUC Corporation.
- For details of the hardware, refer to [LT-4201TM/4301TM/4000M Hardware Manual] or specifications of 'PFXLM4B01DAK(model)' in the [LT-4201TM/4301TM Installation Guide].
  <Download>
  http://www.pro-face.com/trans/en/manual/1001.html

3. Device Configuration

3.1. System Configuration



*1. When connecting to FANUC CNC, an option cable is separately required.

Product Name	Model	Description
FANUC CNC connecting cable (5M)	PFXZLMCBRJR22	A serial communication cable for connecting this product to FANUC CNC

3.2. Compatible CNC

Yes: Able to connect No: Unable to connect

MT-Linki-compatible devices	Ethernet I/O Converter	
	I/O signal	RS-232C signal (DPRNT)
FANUC Series 0	Yes	No
FANUC Series 15	Yes	Yes
FANUC Series 16/18/20/21	Yes	Yes
FANUC Power Mate -D/F/H	Yes	Yes
FANUC Series 16i/18i/21i	Yes	Yes
FANUC Power Mate i	Yes	Yes
FANUC Series 15i	Yes	Yes
FANUC Series 0i	Yes	Yes
FANUC Series 30i/31i/32i	Yes	Yes
CNC and PLC made by other companies	Yes	No

The contents in the list above are for standard models of FANUC.

The connection methods might not be compatible depending on a configuration of every option model.

Also, a version upgrade of a feature for using DPRNT might be required depending on a configuration.

In this case, the customers are to pay for the version upgrade.

For inquiries about compatible CNC, please contact FANUC Corporation directly.

3.3. Operating Environment

3.3.1. Target Confirmation Tool

Items	Definition	
PC model	PC/AT compatible machine	
Target OS and its version	・Windows 7 32/64 bits (Service Pack 1 or later) ・Windows 8/8.1 32/64 bits ・Windows 10 32/64 bits	
Programs required for operation of the product except OS and their versions (for example, FEP)	Required for PC from the beginning	FEP compatible with OS in every country (Global IME)
	Need installing	.Net Framework 3.0
Other necessary environments	None	
Target language	English only	
Required disk capacity	50MB or more	
Required memory capacity (recommended)	Recommended value: 2GB or more	
With or without a mouse	Necessary	
Other necessary equipment lists	None	
Restrictions and important notes on the operating environment	None	
List of recommended environments	CPU： Core2 Duo 2GHz or more Display： SXGA（800×600） or more 256 or more-color display is required.	

3.3.2. User Management Tool

Items	Definition	
PC model	PC/AT compatible machine	
Target OS and its version	・ Windows 7 32/64 bits (Service Pack 1 or later) ・ Windows 8/8.1 32/64 bits ・ Windows 10 32/64 bits	
Programs required for operation of the product except OS and their versions (for example, FEP)	Required for PC from the beginning	FEP compatible with OS in every country (Global IME)
	Need installing	Microsoft .NET Framework 4.5.2
Other necessary environments	・ None	
Target language	Japanese / English	
Required disk capacity (Max. value, min. value, free space after installation)	・ 50MB or more ・ Free space after installation needs a capacity for binary data.	
Required memory capacity (recommended)	・Recommended value: 2GB or more	
With or without a mouse	・ Necessary	
Other necessary equipment lists	・ None	
Restrictions and important notes on the operating environment	Necessary to install .NET Framework 4.5.2.	
List of recommended environments	・ CPU: Core2 Duo 2GHz or more ・ Display: SXGA (800×600) or more 256 or more-color display is required.	

3.3.3. Compatible Browser

Since the Multi-Converter for FANUC CNC does not have a display, settings cannot be confirmed on the main unit alone. To confirm the settings, access the Multi-Converter for FANUC CNC from the Web browser and see the setting status.

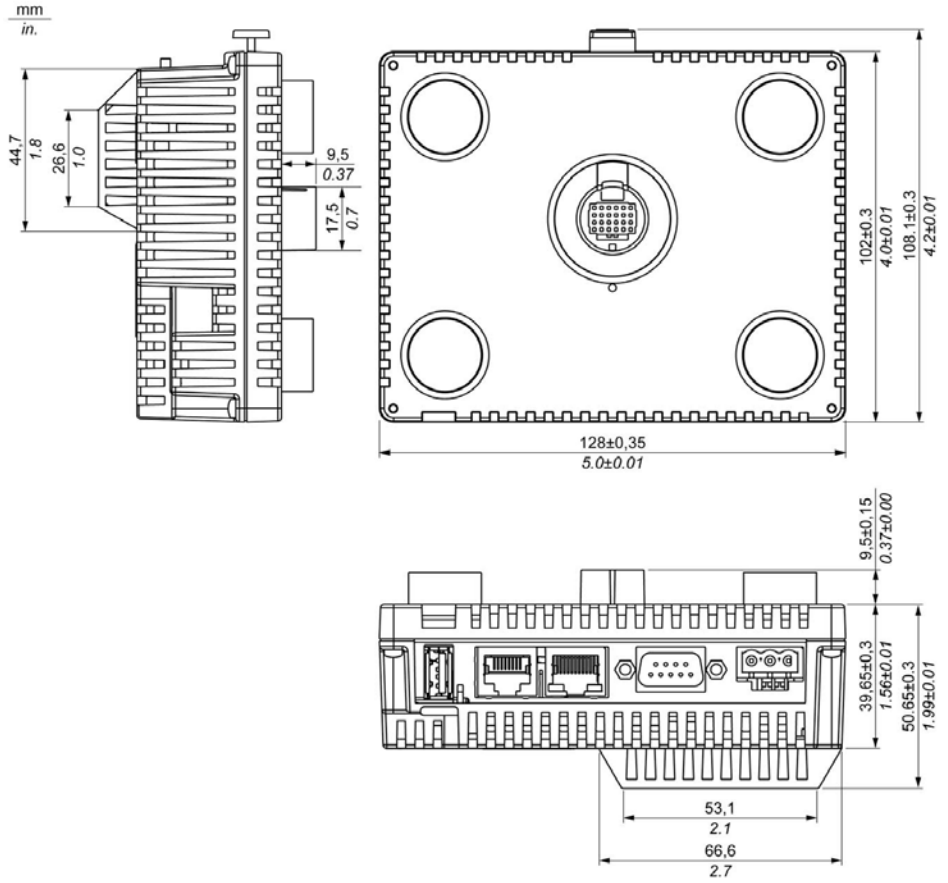
Items	Definition
PC model	PC/AT compatible machine
Target Browsers and their versions	・ Internet Explorer11 (11.0.***) ・ Google Chrome (55.0.*****)
Other necessary environments	・ None

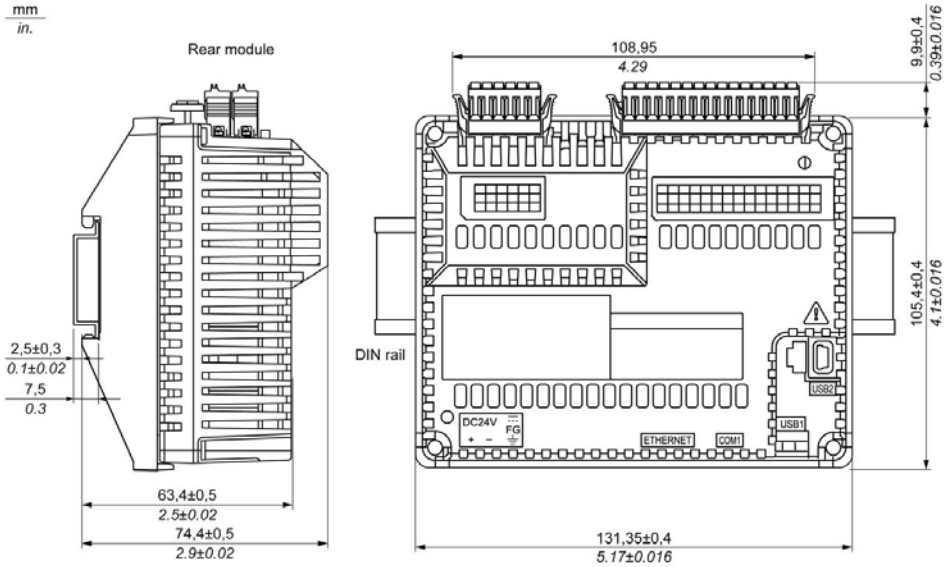
3.4. Package Contents

No.	Contents	Qty	Note
No.1	Din rail adapter (PFXZXMADSA1)	1	Separated
No.2	Rear module (PFXLM4B01DAK)	1	Separated
No.3	USB clamp type A	1	Attached to No.2
No.4	DC power supply connector	1	Attached to No.2
No.5	I/O connector 15-pin	2	Attached to No.2
No.6	I/O connector 6-pin	2	Attached to No.2
No.7	LT-4201TM/4301TM Installation Guide	1	Attached to No.2
No.8	Warning / Caution information	1	Attached to No.2

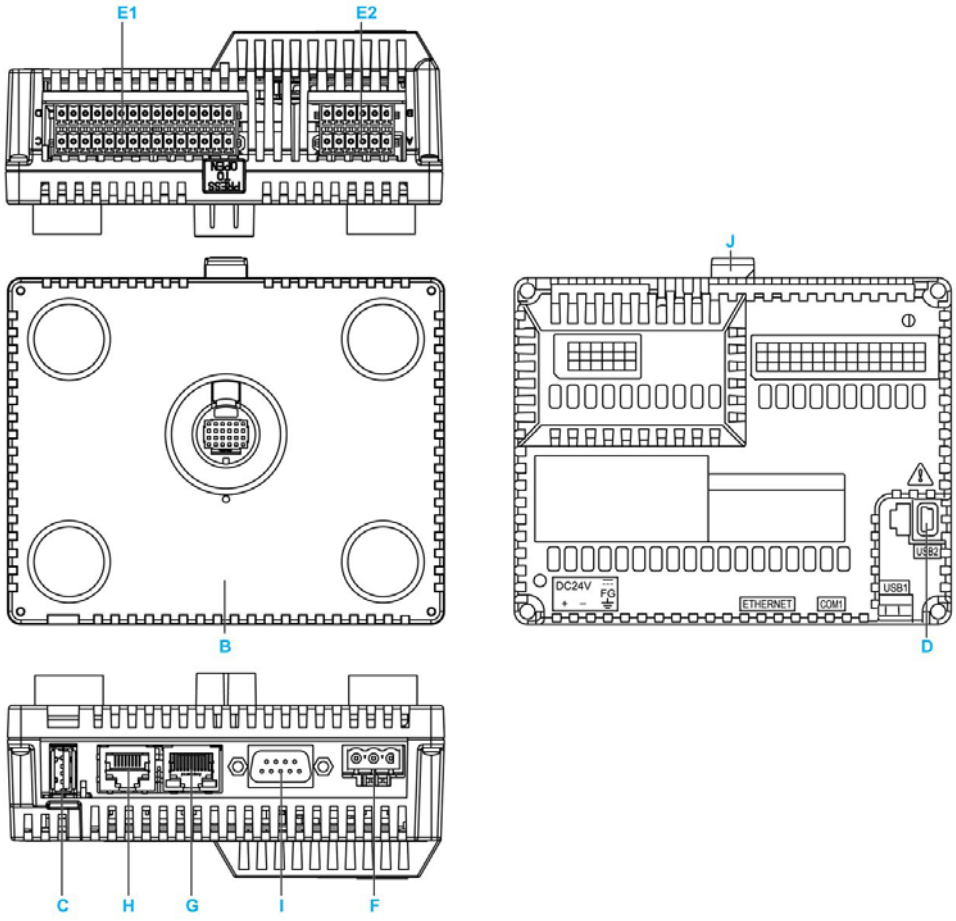
3.5. External Specifications

This shows the external dimensions of the Multi-Converter for FANUC CNC.



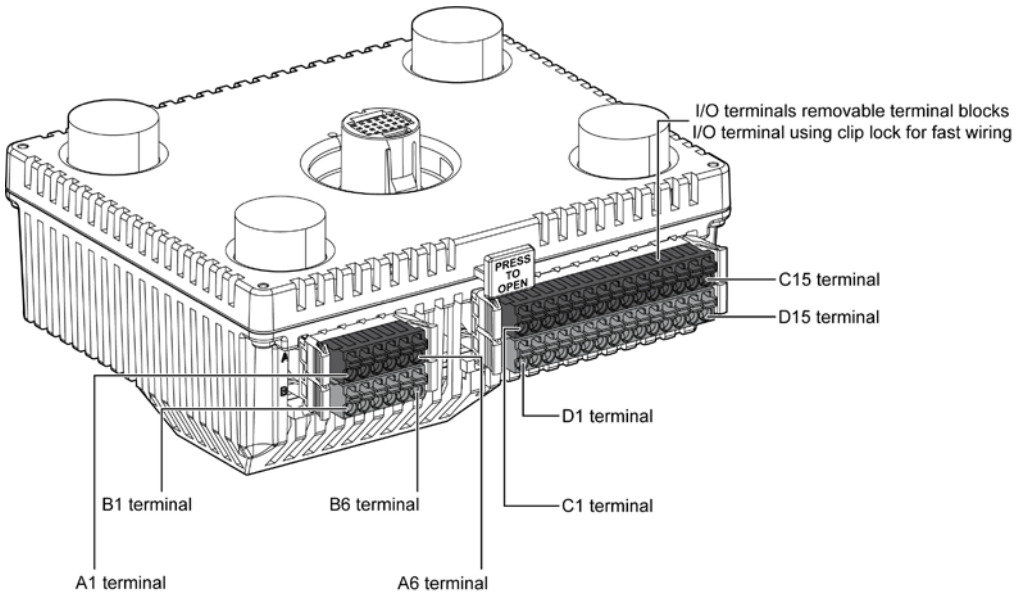


3.6. Interface Specifications

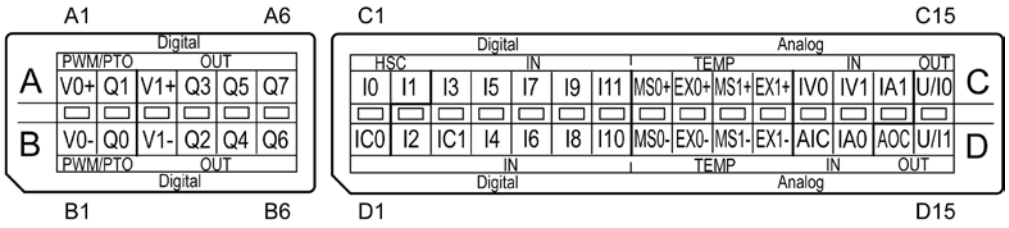


Part	Name	Description
B	Rear module	
C	USB (type A) Interface (USB1)	Used for user management or at the time of data update
D	USB (type mini B) Interface	Target Confirmation Tool (for the IP Address confirming tool)
E1	I/O terminal block 1	
E2	I/O terminal block 2	Unusable
F	DC power supply connecter	
G	Ethernet Interface	
H	Serial Link (RS-232C/485)	
I	CANopen Interface	Unusable
J	Yellow button lock	

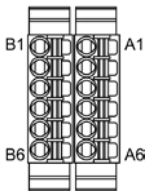
3.6.1. Input Connector Pin Assignment



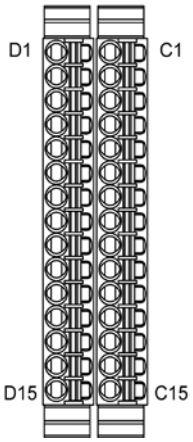
The figure shows the pin assignment of the terminal blocks:



The pins from A1 to A6 and B1 to B6 cannot be used for the Multi-Converter for FANUC CNC.

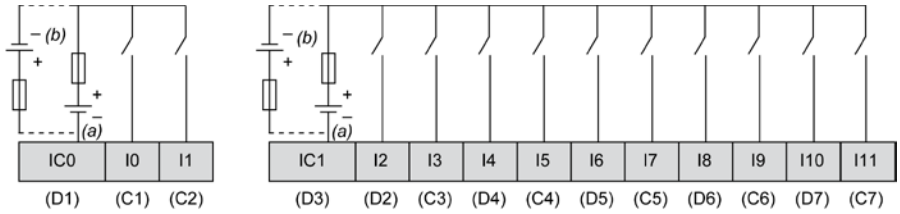
Pin Arrangement	Group	Pin	Signal Name	Group	Pin	Signal Name
	Unusable	A1	V0+	Unusable	B1	V0-
		A2	Q1		B2	Q0
		A3	V1+		B3	V1-
		A4	Q3		B4	Q2
		A5	Q5		B5	Q4
		A6	Q7		B6	Q6

The pins of C8 to C11, D8 to D11, C15, D14, and D15 cannot be used for the Multi-Converter for FANUC CNC.

Pin Arrangement	Group	Pin	Signal Name	Group	Pin	Signal Name
	Standard Input	C1	I0	Standard Input	D1	IC0
		C2	I1		D2	I2
		C3	I3		D3	IC1
		C4	I5		D4	I4
		C5	I7		D5	I6
		C6	I9		D6	I8
		C7	I11		D7	I10
	Unusable	C8	MS0+	Unusable	D8	MS0-
		C9	EX0+		D9	EX0-
		C10	MS1+		D10	MS1-
		C11	EX1+		D11	EX1-
	Analog Input	C12	IV0	Analog Input	D12	AIC
		C13	IV1		D13	IA0
		C14	IA1	Unusable	D14	AOC
	Unusable	C15	U/I0		D15	U/I1

3.6.2. Digital Inputs

There are 12-point digital inputs. It's possible to switch between sink inputs and source inputs for connecting to an external power supply. Refer to the wiring diagram below.



a Sink inputs (positive logic)
b Source inputs (negative logic)

3.6.3. Analog Inputs

There are different terminal connection points for different types of analog input signals.

Since current and voltage requires different adjustment values, you need to set the input signals to desired types:

Analog input signal type

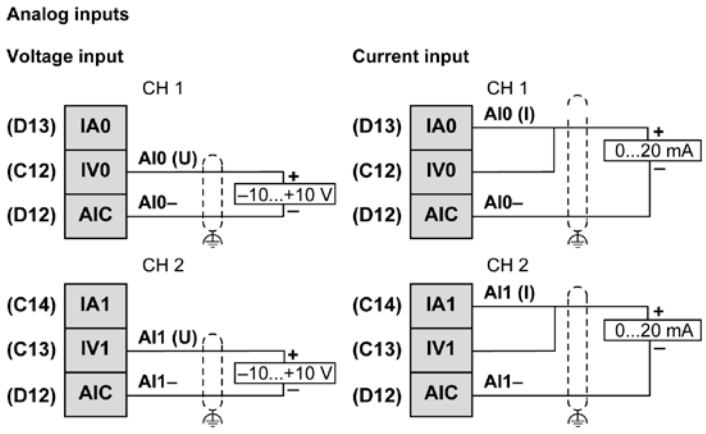
-10...10 Vdc voltage signal (default)

0...10 Vdc voltage signal

0...20 mA current signal

4...20 mA current signal

Channel Number and type	Digital Resolution	Voltage/Current
2 inputs	13 bits	-10...10Vdc (digital value -4096...4095) /0...10Vdc (digital value 0...8191) 0...20mA (digital value 0...8191) /4...20mA (digital value 0...8191)



Connect to pin numbers according to a signal type.

3.6.4. Serial Communication Settings

The table below shows serial communication settings of the Multi-Converter for FANUC CNC.

Items	**Setting contents**	**Default**
Type	fixed with RS-232C	RS-232C
Baud rate	2400, 4800, 9600, 19200, 38400, 57600, 115200	4800
Data length	7,8	8
Parity	NONE,ODD,EVEN	NONE
Stop bit	1,2	2
Flow control	XON/XOFF	XON/XOFF
Timeout	1 to 127	60
Retry	0 to 255	0
Send wait time	0 to 255	0
RI/VCC	RI/VCC　(fixed with RI)	RI

3.7. List of supported features

Supported features	Contents / Initial Settings
12-point Digital Inputs	Able to confirm ON/OFF status of digital inputs. Cycle: 200ms
2-point Analog Inputs	Able to confirm data values of analog inputs. Cycle: 200ms
Compatible Protocol	CNC serial protocol (fixed)
Serial Communication Settings	・Baud rate: 4800 ・Data length: 8 bits ・Parity: None ・Stop bit: 2 bits ・Flow control: XON/XOFF ・Timeout: 60 seconds
Upper Communication Feature	OPC UA server ・Port No.: 48010 (default) ・Protocol: UA TCP, ・Data format: UA Binary ・Security: Not supported ・Certification: Anonymous only ・Access type (Read / Write, subscription)
Main Unit Settings	Web Configuration Page

	Supported browser ・Microsoft Internet Explorer11 Ver 11.0.****(64bit / 32bit) ・Google Google Chrome Ver 55.0.****(64bit / 32bit) ・Firefox Ver 43.0.** (64bit / 32bit) The abovementioned versions or later are recommended. Accessing the Multi-Converter for FANUC CNC via the Web browser allows you to confirm setting information of the Box. Confirming and changing settings depends on a login authorization.
IP Address Settings	When connected via a Web browser, IP Address : 192.168.1.80 Subnet mask : 255.255.255.0 Port Number : 8082
User Management Tool (Security Setting)	Able to register a user name and password. Login authorization: 3 types (Admin, Power, user) No. of users that can be registered: 100 users per level
Target Confirmation Tool (IP Address confirmation tool)	The IP Address specified in the Multi-Converter for FANUC CNC can be confirmed. If you forget the IP Address, confirm the IP Address with this tool.

4. Settings of communication with FANUC CNC

4.1. For FS16/18/21 RS-232C settings

Items	Setting contents	Setup Values
I/O channel separation feature	The data input channel and the data output channel are separated. (recommended setting)	No.110#0=1
I/O channel	Channel 2 for data outputs (recommended setting only when using DPRNT)	No.21=2 (For No.110#0=1) or No.20=2 (For No.110#0=0)
A line feed code of DPRNT	LF(0Fh)+CR(0Dh)	No. 6001#4 = 1
	LF(0Fh)(recommended setting)	No. 6001#4 = 0
Leading zero of DPRNT	Do not output space. (recommended setting)	No. 6001#1 = 1
	Output space.	No. 6001#1 = 0
Output code	ISO code (recommended setting)	No. 000#1 = 1
Stop bit	2	No. 121#0 = 1
Output code	ISO code	No. 121#3 = 0
A line feed code before and after data	None	No. 121#7 = 1
Specifications of connected devices	General RS-232C device unit (DC1 to DC4 code used)	No. 122 = 0
Baud rate	4800bps	No. 123 = 10

4.2. For FS15 RS-232C settings

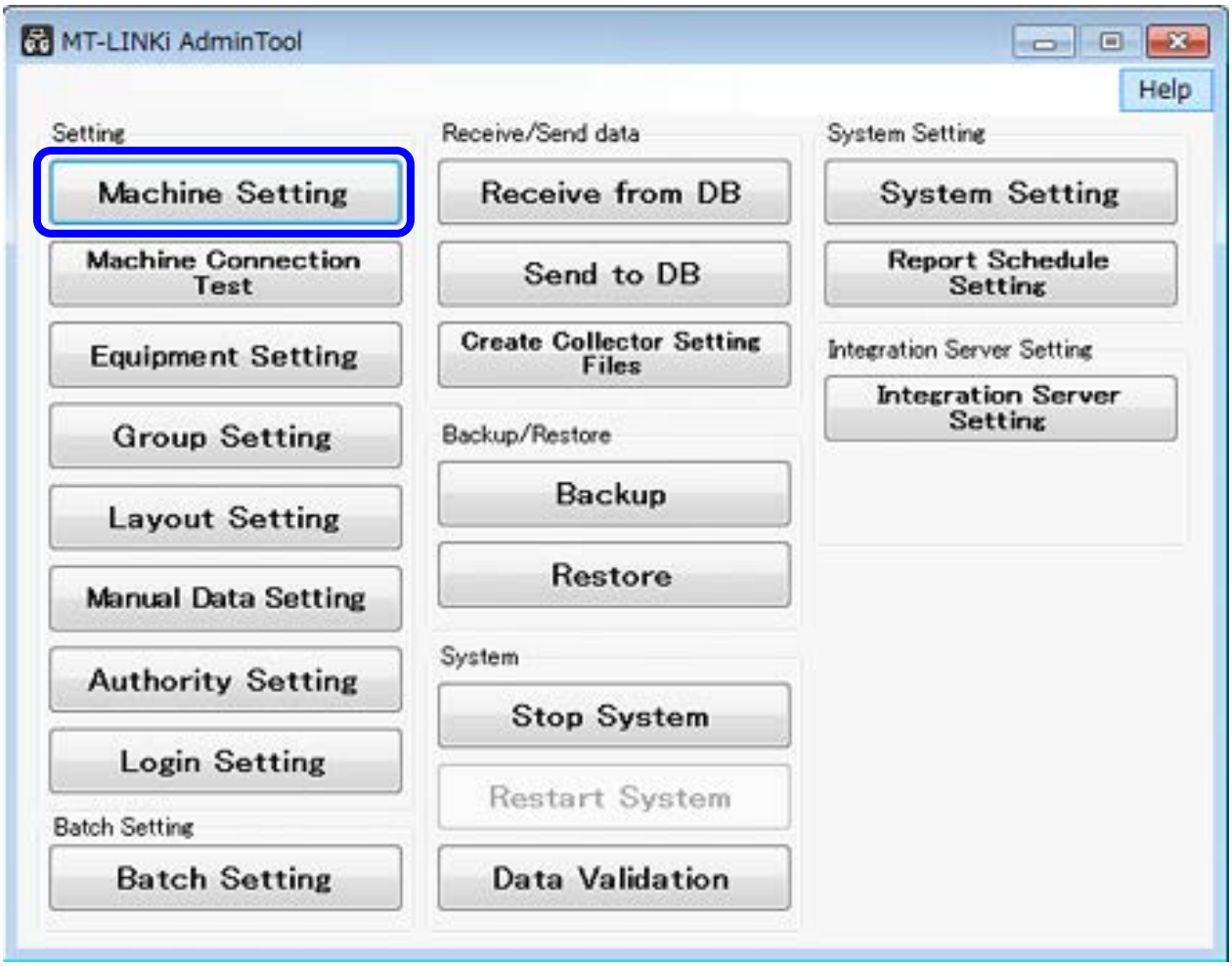
Items	Setting contents	Setup Values
I/O channel	Channel 2 for data outputs (recommended setting only when using DPRNT)	No.21=2
A line feed code of DPRNT	LF(0Fh)+CR(0Dh)+CR(0Dh)	No. 0000#3 = 0
	LF(0Fh)(recommended setting)	No. 0000#3 = 1
Leading zero of DPRNT	Do not output space. (recommended setting)	No. 7000#7 = 1
	Output space.	No. 7000#7 = 0
Output code	ISO code & without parity bit (recommended setting)	No. 0000#2 = 1 No. 0000#4 = 0
Stop bit	2	No. 5161= 2
A line feed code before and after data	None	No setting is required.
Specifications of connected devices	General RS-232C device unit （DC1 to DC4 code used）	No. 5002 = 6 No. 5160 = 3
Baud rate	4800bps	No. 5162 = 10

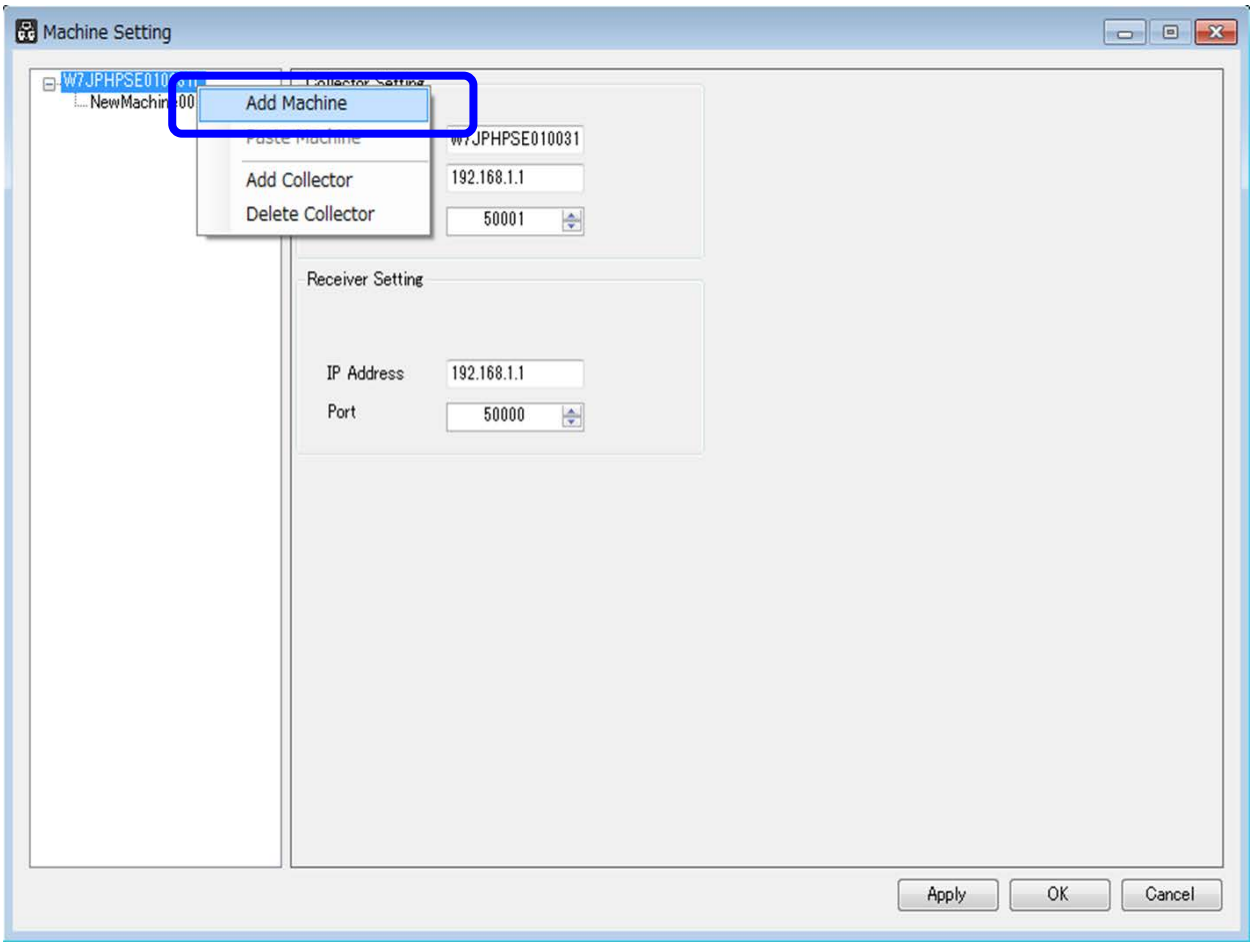
5. MT-LINKi AdminTool

<Outline>
The following info is that how to connect with MT-LINKi and FANUC CNC Multi-Converter.

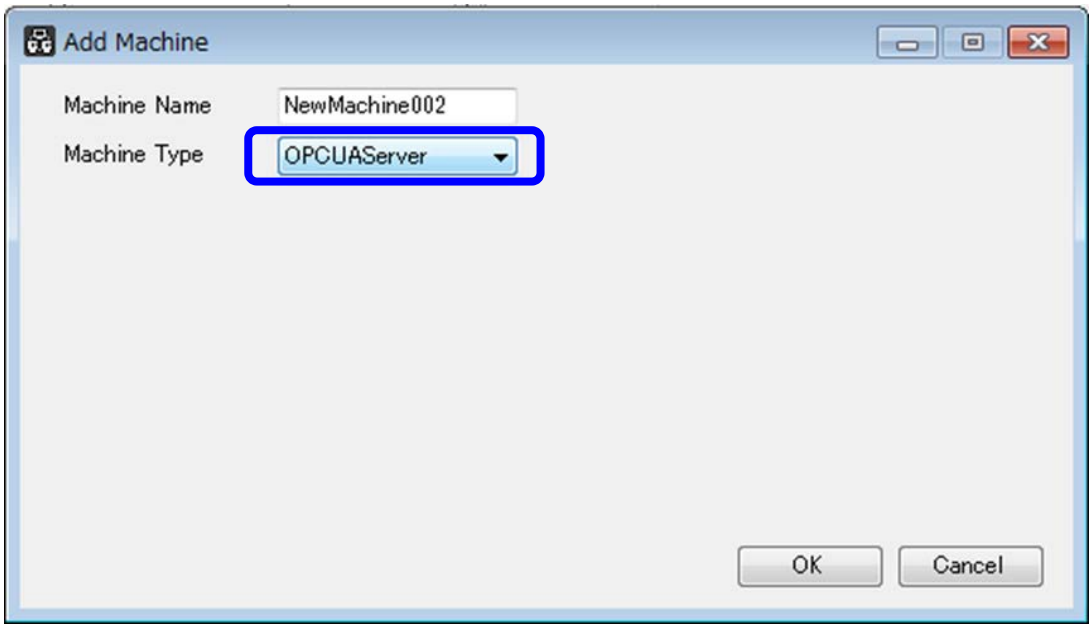
<Setting procedures>

1. Start the Admin Tool and select [Machine Setting] and then [Add Machine].





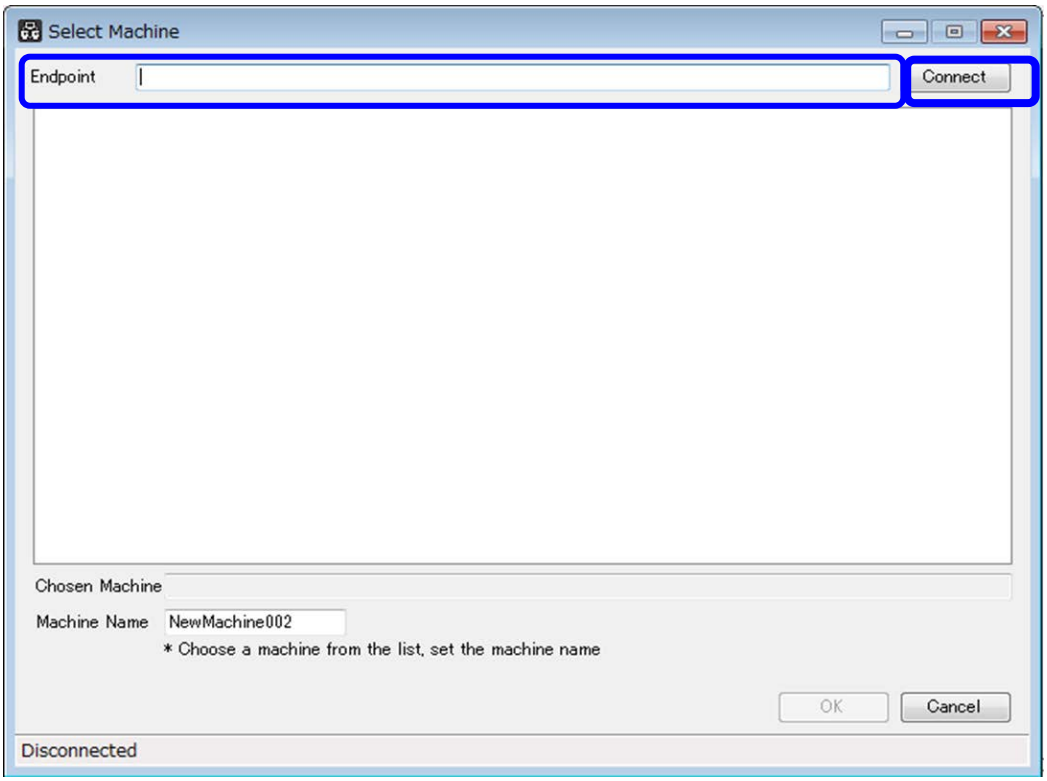
2. Select [OPC UA Server] for [Machine Type]. The [Select Machine] dialog box will appear.



3. Enter an address in the field of [Endpoint] as shown in the example below and click [Connect].

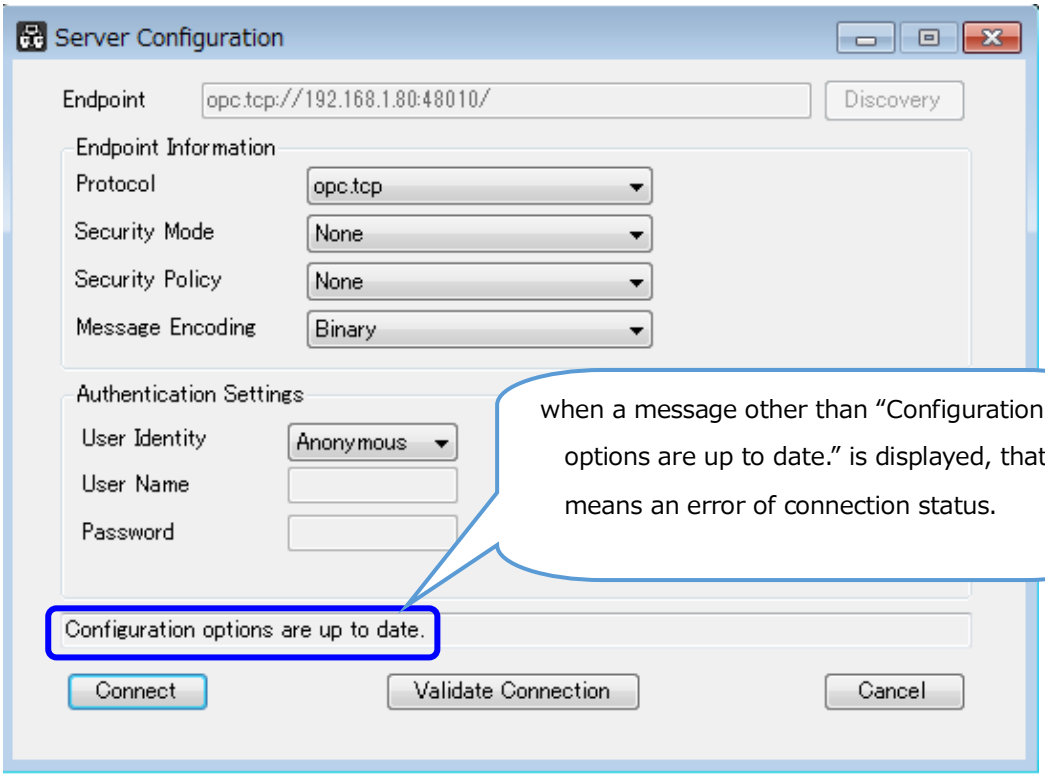
   Example) Enter “opc.tcp://192.168.1.80:48010”.

   This address is the same when using another client.

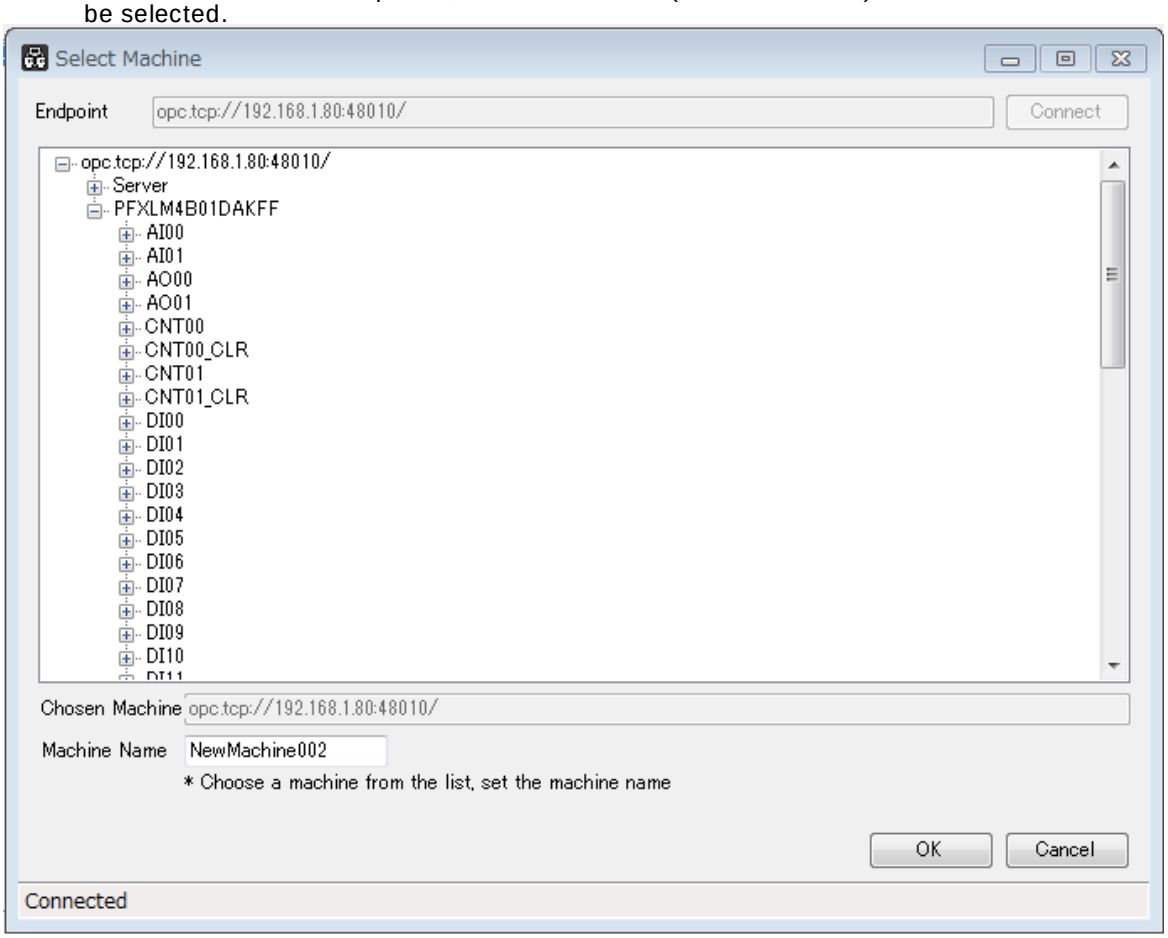


4. The Server Configuration dialog box appears.

   When the OPC UA Server is correctly connected, the [Configuration options are up to date.] message is displayed. If a different message is displayed, click [Connect] for reconnection. When the message is different even after reconnection, the server might not run or the input address might be different.



5. When connection is completed, the node names (variable names) used for the server can be selected.



Connecting to the OPC UA Server is now completed.

6. Registered variables and node names

Digital Inputs

NO,	Node name (variable name)	Data Type	Read / Write
1	DI00	Boolean	Read
2	DI01	Boolean	Read
3	DI02	Boolean	Read
4	DI03	Boolean	Read
5	DI04	Boolean	Read
6	DI05	Boolean	Read
7	DI06	Boolean	Read
8	DI07	Boolean	Read
9	DI08	Boolean	Read
10	DI09	Boolean	Read
11	DI10	Boolean	Read
12	DI11	Boolean	Read

Analog Inputs

NO,	Node name (variable name)	Data Type	Read / Write
1	AI00	Int32	Read
2	AI01	Int32	Read

DPRNT

NO,	Node name (variable name)	Data Type	Read / Write	DPRNT identifier
1	PrintOutput	String	Read / Write	-
2	ProductName	String	Read / Write	PN*
3	ProductResultNumber	Int32	Read / Write	PC*
4	value01	Double	Read / Write	VA01*
5	value02	Double	Read / Write	VA02*
6	value03	Double	Read / Write	VA03*
7	value04	Double	Read / Write	VA04*
8	value05	Double	Read / Write	VA05*
9	value06	Double	Read / Write	VA06*
10	value07	Double	Read / Write	VA07*
11	value08	Double	Read / Write	VA08*
12	value09	Double	Read / Write	VA09*
13	value10	Double	Read / Write	VA10*

14	string01	String	Read / Write	SR01*
15	string02	String	Read / Write	SR02*
16	string03	String	Read / Write	SR03*
17	string04	String	Read / Write	SR04*
18	string05	String	Read / Write	SR05*
19	string06	String	Read / Write	SR06*
20	string07	String	Read / Write	SR07*
21	string08	String	Read / Write	SR08*
22	string09	String	Read / Write	SR09*
23	string10	String	Read / Write	SR10*

7. Tool

7.1. Target Confirmation Tool (IP Address confirmation tool)

<Outline>

This is a tool for confirming an IP Address of the Multi-Converter for FANUC CNC.

<Use>

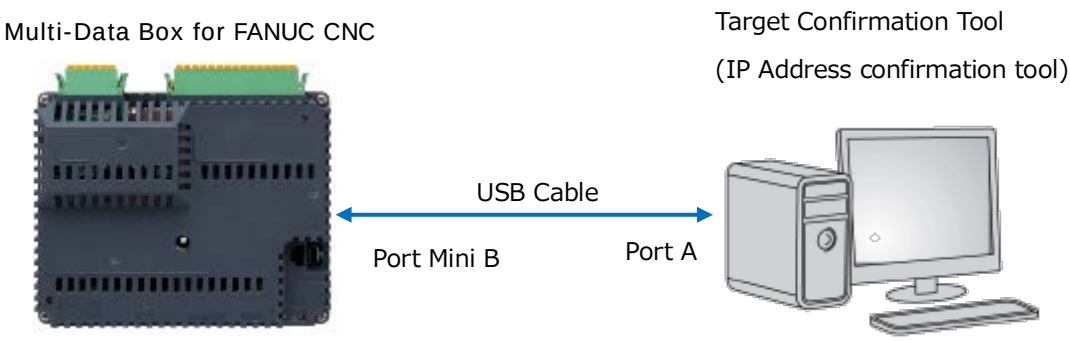
・Confirming an IP Address of Multi-Converter for FANUC CNC

(Note) This tool is only for confirming an IP Address.

The IP Address initial value is [192.168.1.80].

When the IP Address is not changed, enter the IP Address above to display a login screen.

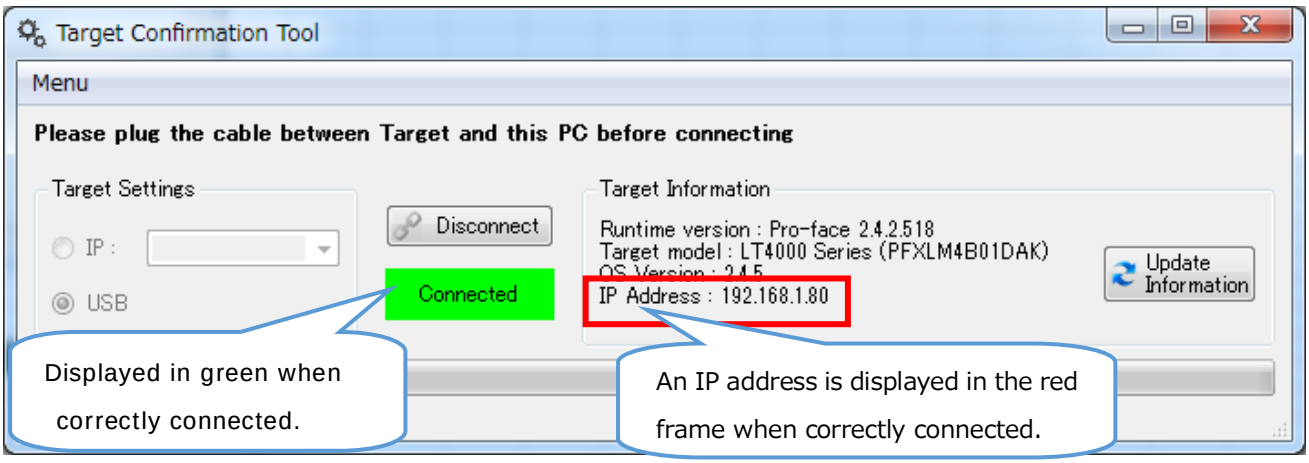
<How to connect>



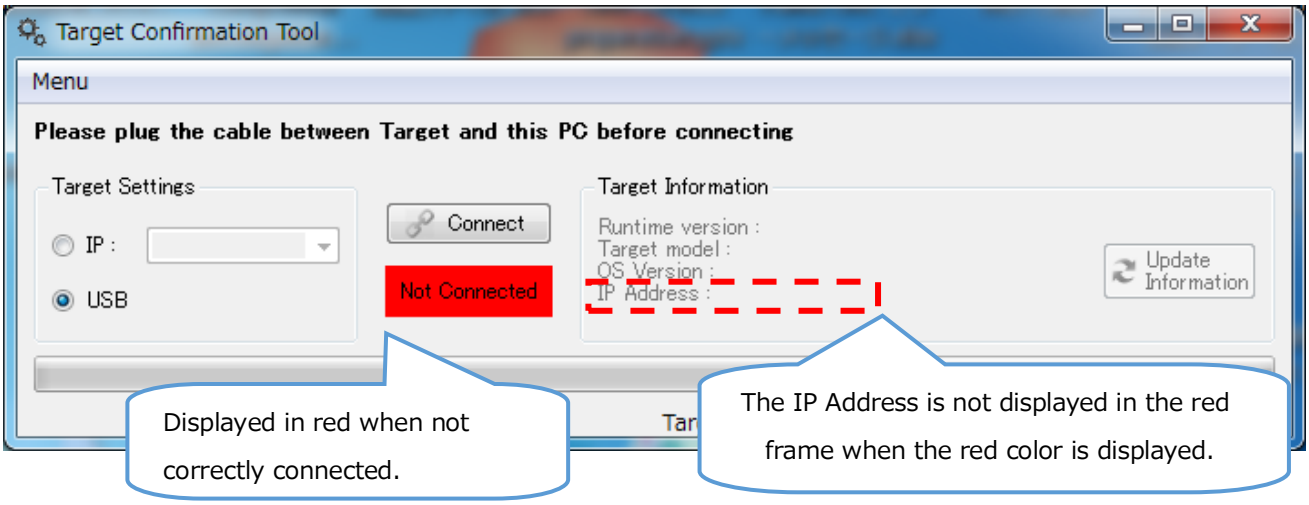
7.1.1. How to confirm the IP Address

1. Start “Target Confirmation Tool (IP Address confirmation tool)”.
2. The USB cable’s connection status is displayed and the IP Address specified in the Multi-Converter for FANUC CNC is displayed in the field of [Target Information].

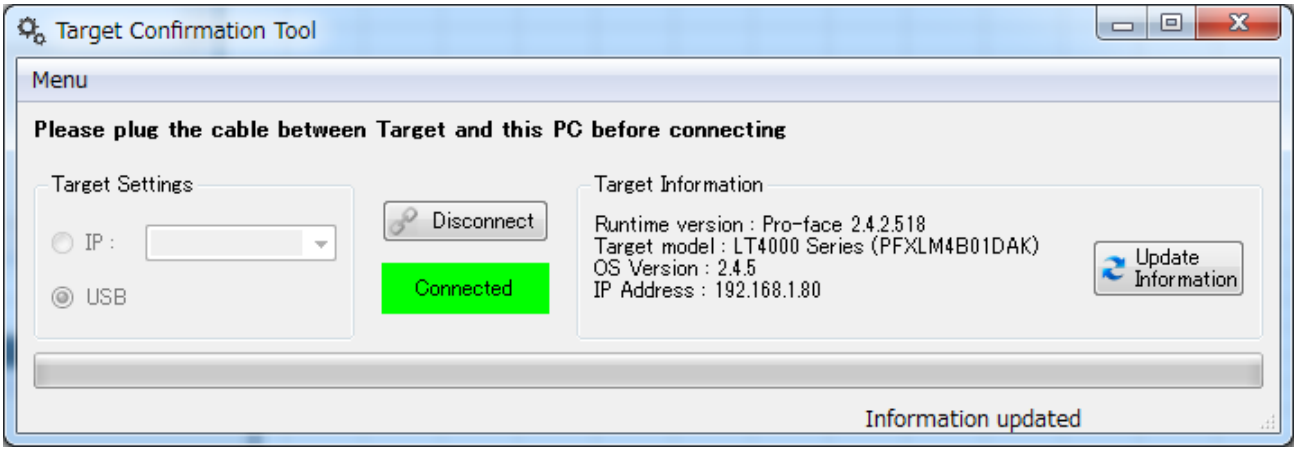
When the USB cable is correctly connected,



When the USB cable is not correctly connected,



<Menu Screen>



Item Name	Description
Target Settings	Select how to connect to the Multi-Converter for FANUC CNC.
Disconnect	Disconnect communication with the Multi-Converter for FANUC CNC.
Connected	Status
Target Information	Display device information of the connected Multi-Converter for FANUC CNC.
Update Information	Update information at the time of reconnection.

7.2. User Management Tool (Security Setting)

<Outline>

This is a tool for registering users who can log in the Multi-Converter for FANUC CNC on a Web browser.

(Note) Microsoft .NET Framework 4.5.2 or later is required for installation.

<Use>

- Changing a user name
- Changing a password
- Changing a security level

<Authorization Feature>

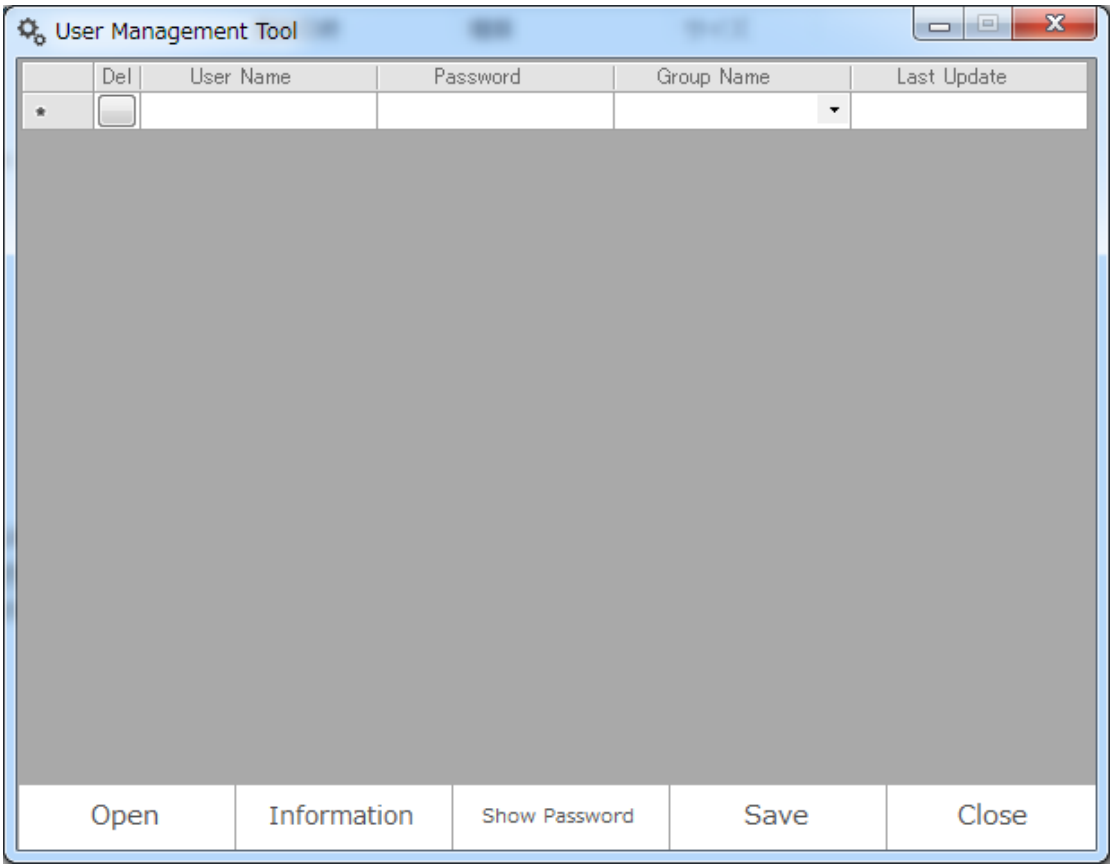
It's possible to configure authorization settings using 3 levels. Things that can be done differ depending on an authorization.

1. Admin (administrators)
   Able to change all the setting items. Able to change setting contents including the user management (security).
   [Default]
   User Name: Admin
   Password: Pro-face20

2. Power (power users)
   Able to change items other than the user management (security).
   [Default] None

3. User (users)
   Unable to change settings. Able to monitor I/O status only.
   [Default] None

Start ‘UserManagementTool.exe’, and the following tool will start.



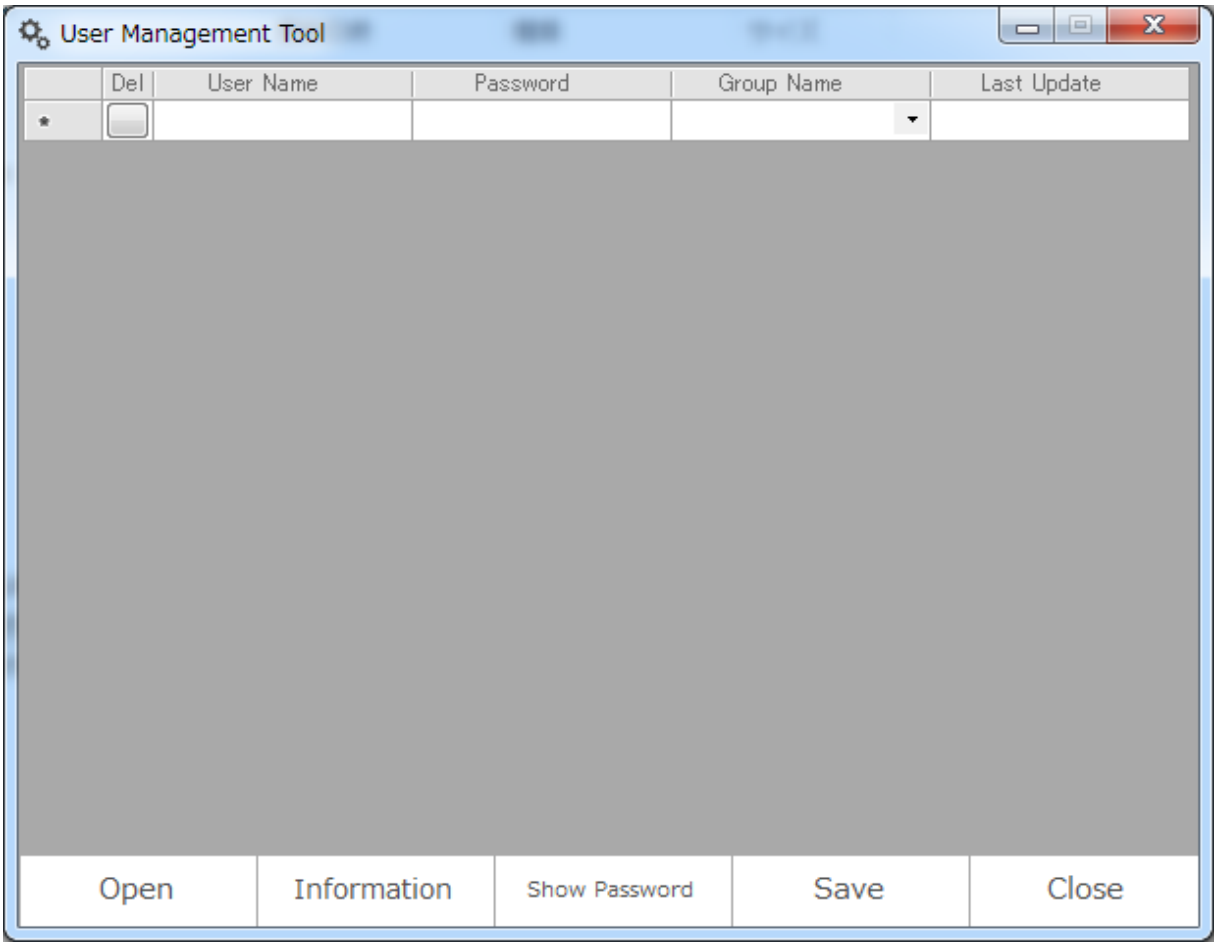
<Setting Procedure>

1. Export the setting contents from the Multi-Converter for FANUC CNC on the Web browser. (8.13. User Management (Security Settings))
2. Start this tool and click [Open]. Select the user management data (security data) that has been exported at the step, 1.
3. The Key input window box appears. If you have configured the Key setting at the time of export on the Web browser, enter the specified Key. (8.13. User Management (Security Settings))
   When no Key has been specified yet, click [OK].
4. The registered users and passwords appear.
5. Register and change [User Name], [Password], and [Group Name].
6. Click [Save].
7. Save the user management data (security data) in a USB storage and insert the USB storage to the USB port of the Multi-Converter for FANUC CNC.
   User management data storage: [USB root]¥UserManagement¥data.bin
8. If you update the user management data (security data) via the WEB browser, you can rewrite it to the specified user management data (security data).

(Note)

If user management data (security data) is exported on a display unit, a file can be created.

When adding a user or changing a password, be sure to export the setting contents from the display unit with using the [User Management] menu on the Web browser and edit them from the exported file using this tool.



Item Name	Description
Del	Delete items.
User Name	Register a user name.
Password	Register a password. No. of characters that can be input: 8 or more characters Characters that can be input: One-byte alphanumerical characters and symbols *Must contain at least one uppercase letter, one lowercase letter, one number, and one symbol. Usable symbols: ～ ! @ # $ % ^ &
Group Name	Choose among security levels, [Admin], [Power], and [user].
Last Update	Display the latest date of import from the display unit.

8. Web Browser

<Outline>

Connecting the Multi-Converter for FANUC CNC to a PC on an Ethernet network, you can confirm or change the settings of the main unit and execute the setting contents on a Web browser.

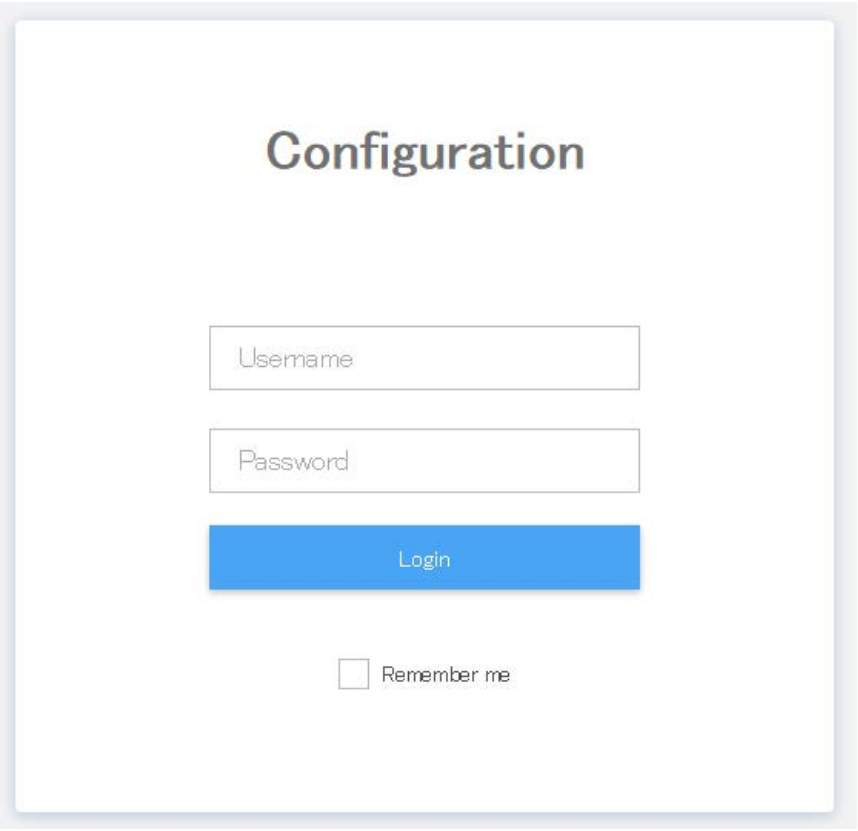
<Use>

- Confirm and change setting information.
- Confirm and change date/time settings.
- Confirm and change time adjustment and summer time adjustment.
- Confirm and change Ethernet settings.
- Confirm and change OPC UA Server settings.
- Confirm and change RS232C communication settings.
- Transfer project files.
- Confirm system error logs.
- Confirm and change analog inputs.
- Confirm and change digital inputs.
- Security settings

<How to open a Web browser>

1. Connect a PC to the Multi-Converter for FANUC CNC on an Ethernet network.
2. Open a Web browser (Internet Explorer or Google Chrome) and enter the specified IP Address and port number.
   Ex. http://192.168.1.80:8082
3. Entering the user name and password registered in the User Management Tool allows you to check status of the main unit settings of the Multi-Converter for FANUC CNC.

8.1. Login Screen



Item Name	Description
Username	Enter a user name. (Default=Admin)
Password	Enter a password. (Default=Pro-face20)
Login	Click for login.
Remember me	Get a user name and a password remembered.

8.1.1. User Management

There are 3 levels available for login level authorization. The number of levels cannot be increased.

1. Admin (administrators)

   Able to change all the settings. Able to change the user management (security).

   The default values for a login user name and a password are as follows;

   Username: Admin

   Password: Pro-face20

   Up to 100 users can be registered for Admin only.

2. Power (power users)

Able to change settings other than the user management (security).

The default values for a login user name and a password have not been registered.

Up to 100 users can be registered for Power only.

3. User (users)

Able to only check status. Unable to change any settings.

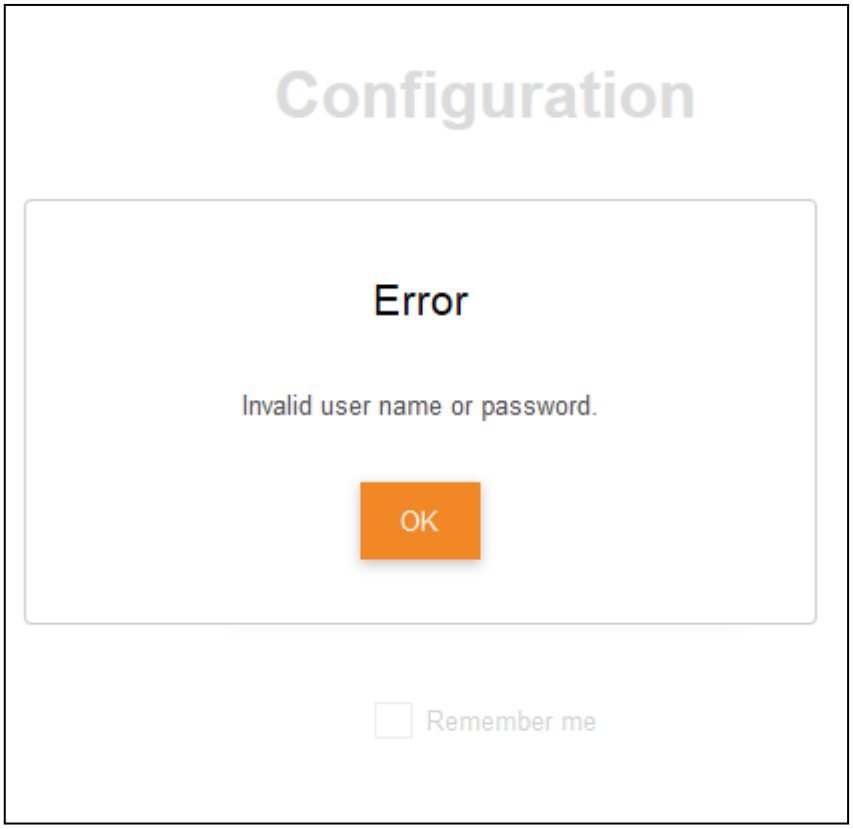
The default values for a login user name and a password have not been registered.

Up to 100 users can be registered for User only.

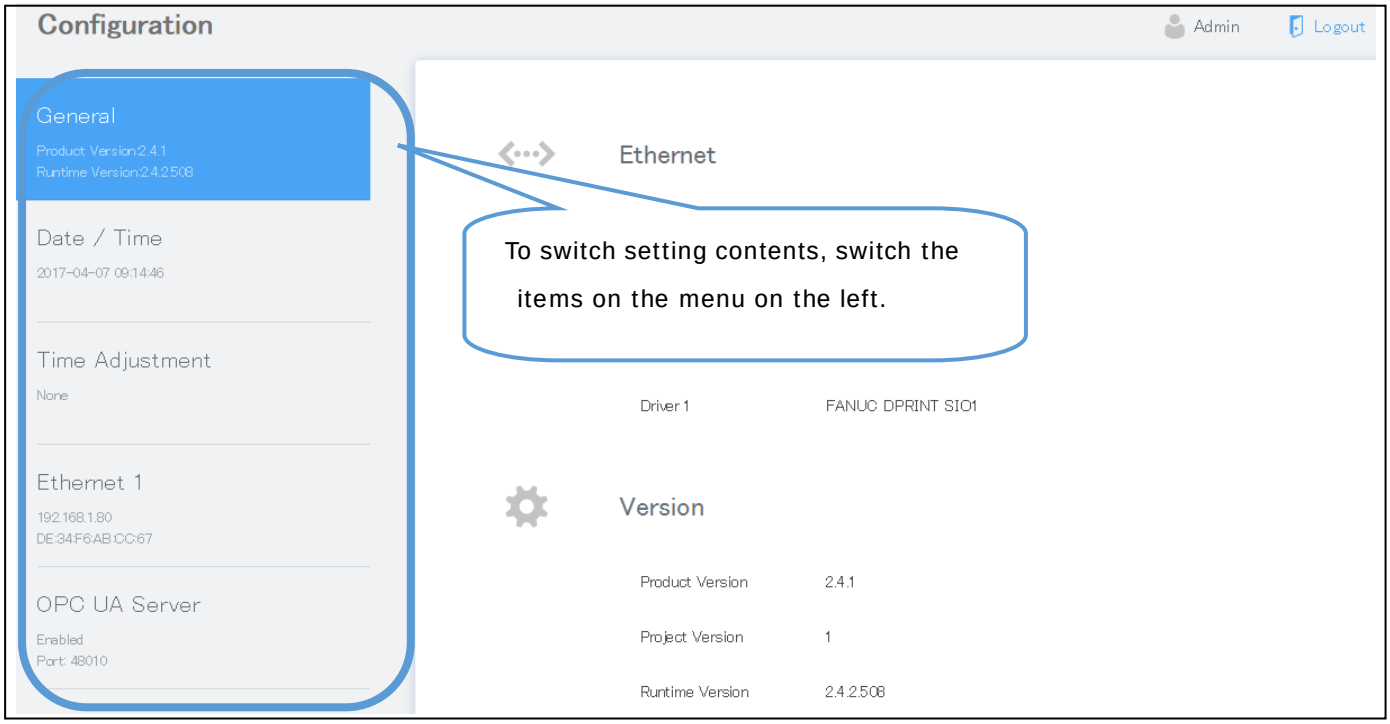
8.1.2. Errors at the time of login

When the username or the password is different, an error occurs and the user cannot login.

In that case, the following error message appears.



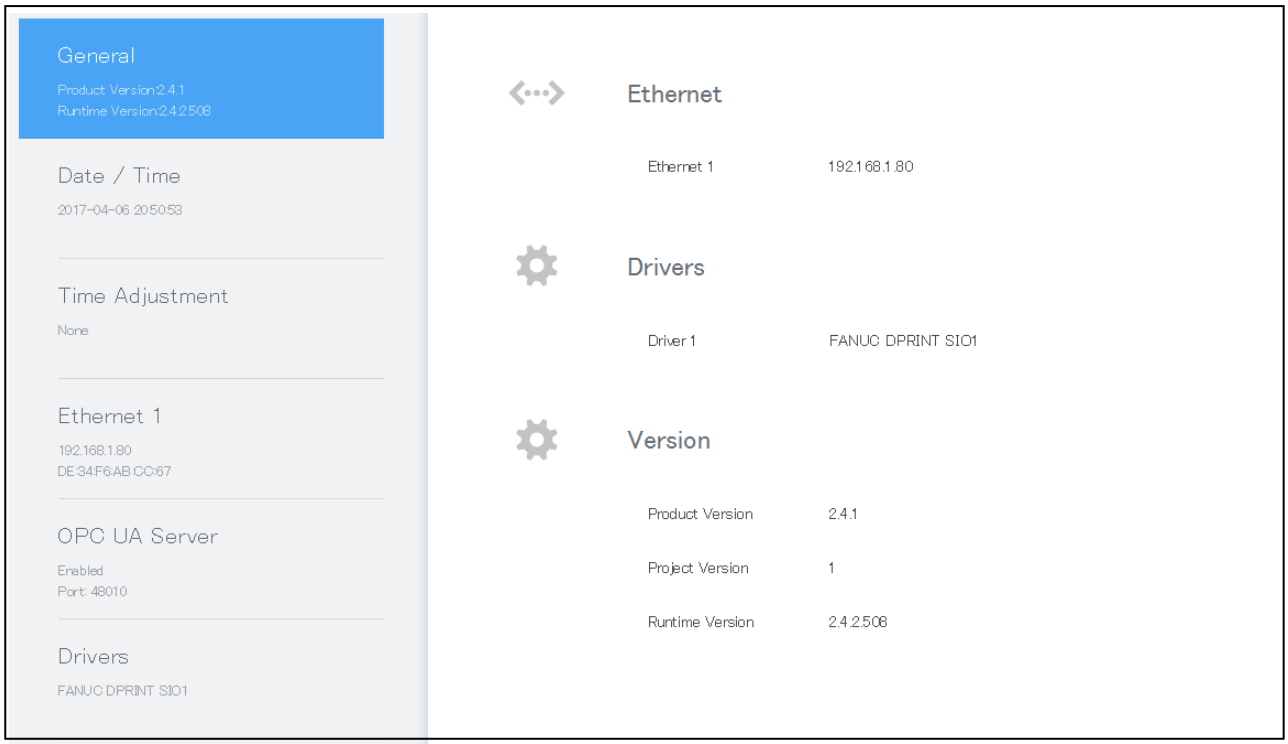
8.2. Initial Screen



8.3. General (Setting information)

<Outline>

The setting contents of the currently specified IP Address or communication driver can be checked.



Authorization at the time of login

- Admin (administrators): Able to browse.
- Power (power users): Able to browse.
- user (users) : Able to browse.

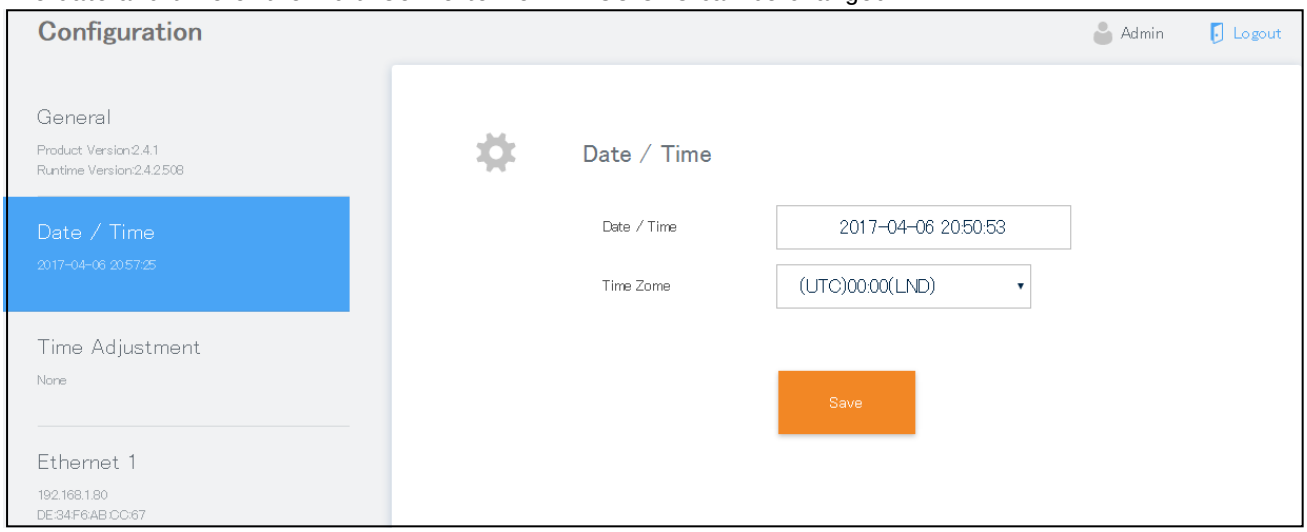
This screen is for monitoring only. There's no place for setting changes.

Item Name	Description
Ethernet	Display the currently specified IP Address.
Drivers	Display the currently specified communication driver name.
Version	Display the version of the product installed in the main unit.

8.4. Date / Time (Date and Time Settings)

<Outline>

The date and time of the Multi-Converter for FANUC CNC can be changed.



Authorization at the time of login

- Admin (administrators): Able to change settings.
- Power (power users): Able to change settings.
- User (users): Unable to change settings. Unable to see settings.

Click the [Save] button to reflect the setting contents. It's not necessary to log in again after settings are changed.

(Note) The correct time is not set at the time of shipping from the factory. Be sure to set a time.

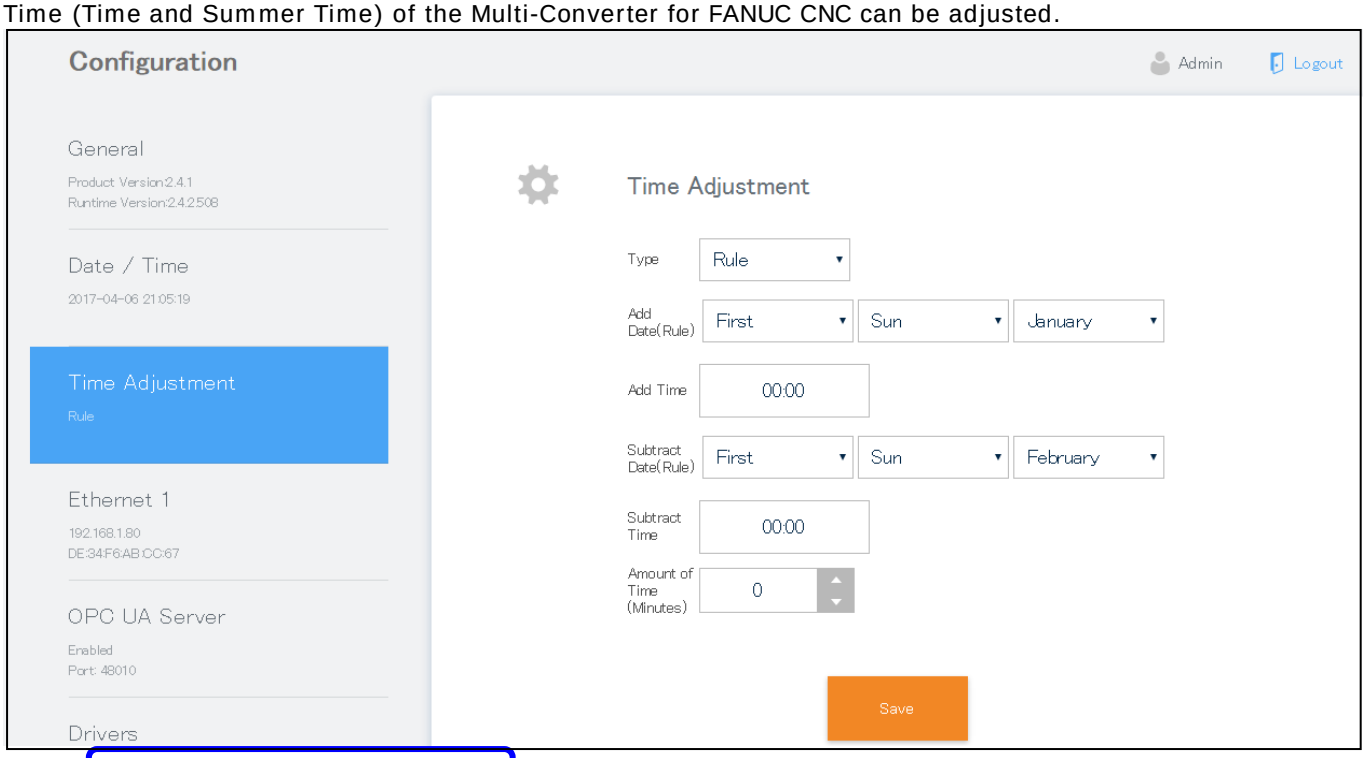
If not, an error log time will not be correctly displayed.

Item Name	Description
Date / Time	Set the current date and time.
Time Zone	Set a time zone. (UTC+09:00 for Japan)

8.5. Time Adjustment (Time and Summer Time)

<Outline>

Time (Time and Summer Time) of the Multi-Converter for FANUC CNC can be adjusted.



Authorization at the time of login

- Admin (administrators): Able to change settings.
- Power (power users): Able to change settings.
- User (users): Unable to change settings. Unable to see settings.

Click the [Save] button to reflect the setting contents. It's not necessary to log in again after settings are changed.

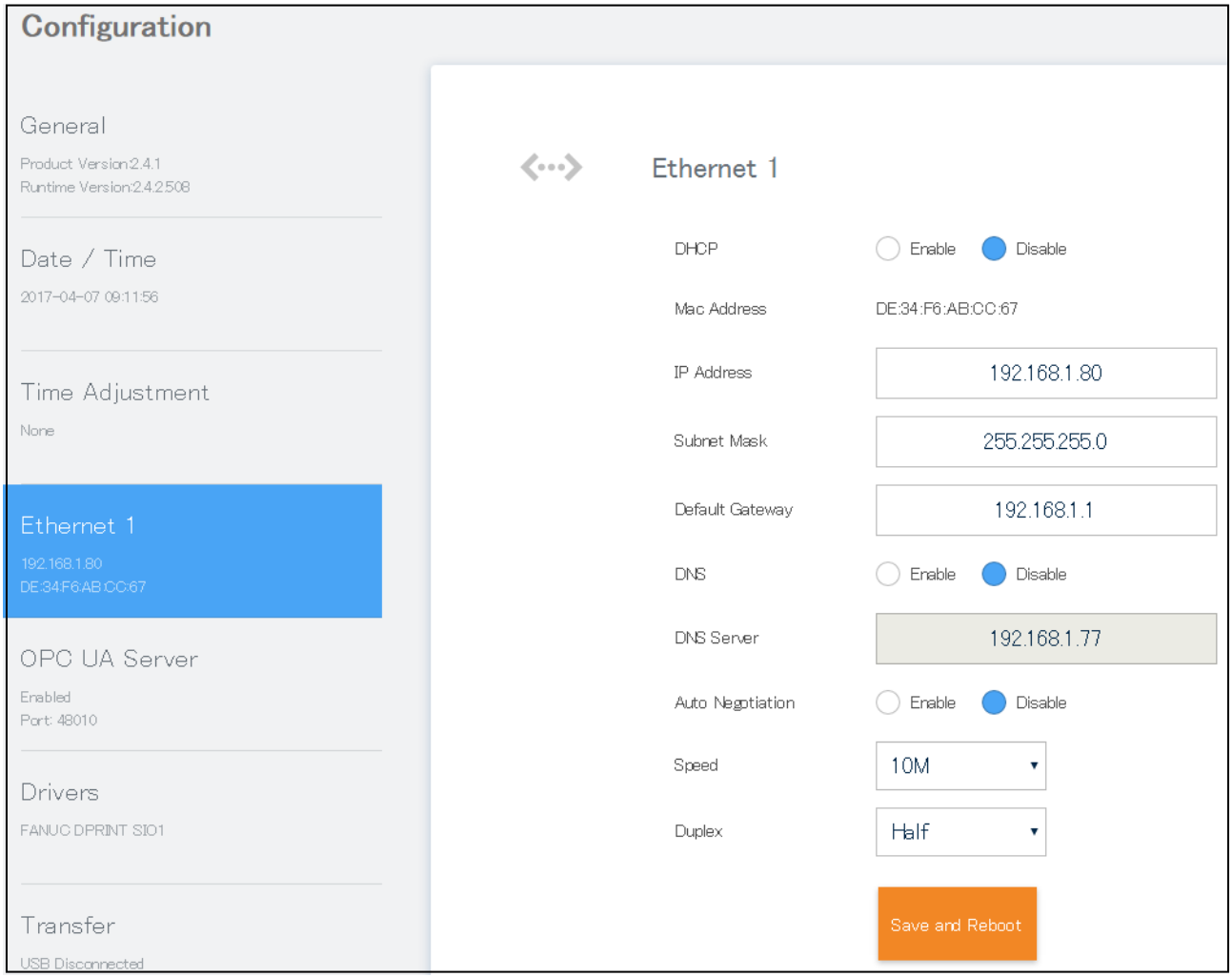
Item Name	Description
Type	Choose among [None], [Rule] and [Date] for a method of configuring a period of the summer time. ・None: Selected when the Time Adjustment feature is not used. ・Rule: Able to adjust the start and end of the summer time choosing among the 1st to the 5th week, a day of the week, and time as you like. ・Date: Able to adjust the start and end of the summer time choosing among a calendar of January to December and time.
Add Date(Rule)	Set a day when adding the adjustment time is executed. (On the start day of the summer time).

Add Time	Set a time when adding the adjustment time is executed. (At the start time of the summer time)
Subtract Date(Rule)	Set a day when subtracting the adjustment time is executed. (On the end day of the summer time)
Subtract Time	Set a time when subtracting the adjustment time is executed. (At the end time of the summer time)
Amount of Time(Minutes)	Time for addition or subtraction to or from the start/end time of the summer time. (-120 to 120 minutes)

8.6. Ethernet Settings

<Outline>

The Ethernet settings of the Multi-Converter for FANUC CNC can be changed.



Authorization at the time of login

- Admin (administrators): Able to change settings.
- Power (power users): Able to change settings.
- User (users): Unable to change settings. Unable to see settings.

Click the [Save and Reboot] button to reflect the setting contents.

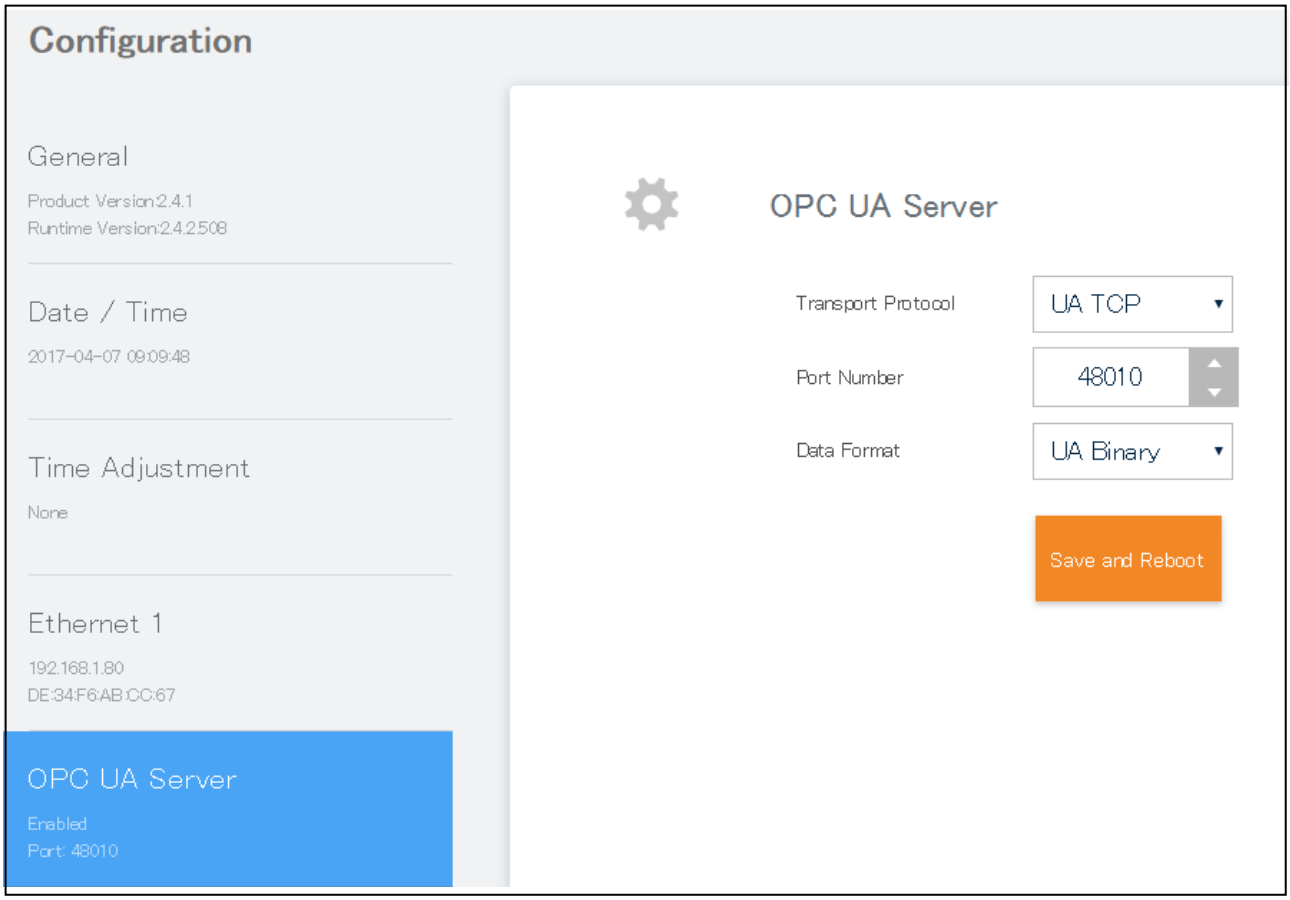
Because of reboot, it's necessary to log in again after settings are changed.

Item Name	Description
DHCP	Select 'Enable' or 'Disable' of automatic acquisition of the IP Address. (The default is 'Disable'.) Enable: DHCP is enabled. Disable: DHCP is disabled. (Note) If DHCP is enabled, the IP Address is never known. In that case, confirm it with the Target Confirmation Tool (IP Address Confirmation Tool).
Mac Address	Mac Address is displayed.
IP Address	Specify an IP address. (Default=192.168.1.80)
Subnet Mask	Specify a subnet mask. (Default=255.255.255.0)
Default Gateway	Specify a default gateway.
DNS	Select 'Enable' or 'Disable' of DNS(Domain Name System).
DNS Server	Specify a DNSIP address.
Auto Negotiation	Select 'Enable' or 'Disable' of the Auto Negotiation feature.
Speed	Select '10M' or '100M' for communication speed of Ethernet.
Duplex	Select 'Half' or 'Full' for a communication type.

8.7. OPC UA Server Settings

<Outline>

The OPC UA Server settings of the Multi-Converter for FANUC CNC can be configured.



Authorization at the time of login

- Admin (administrators): Able to change settings.
- Power (power users): Able to change settings.
- User (users): Unable to change settings. Unable to see settings.

Click the [Save and Reboot] button to reflect the setting contents.

Because of reboot, it's necessary to log in again after settings are changed.

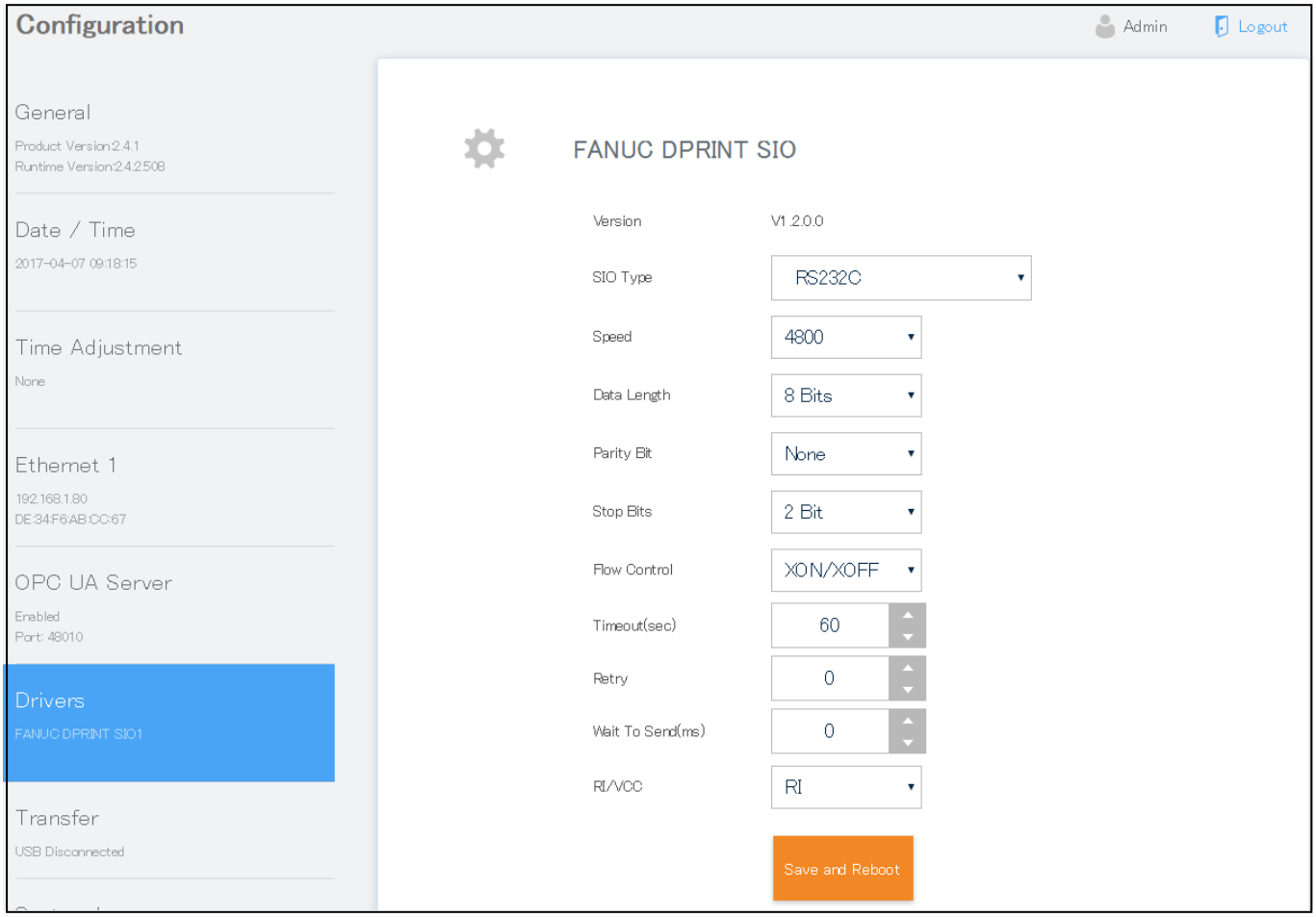
Item Name	Description
Transport Protocol	[UA TCP] only
Port Number	Specify a port number. (Default=48010)
Data Format	[UA Binary] only

8.8. Drivers (RS-232C communication setting)

<Outline>

The serial port settings of the Multi-Converter for FANUC CNC can be configured.

This will become information of FANUC DPRNT SIO communication setting. Configure the same communication setting as that of FANUC CNC for the items below.



Authorization at the time of login

- Admin (administrators): Able to change settings.
- Power (power users): Able to change settings.
- User (users): Unable to change settings. Unable to see settings.

Click the [Save and Reboot] button to reflect the setting contents.

Because of reboot, it's necessary to log in again after settings are changed.

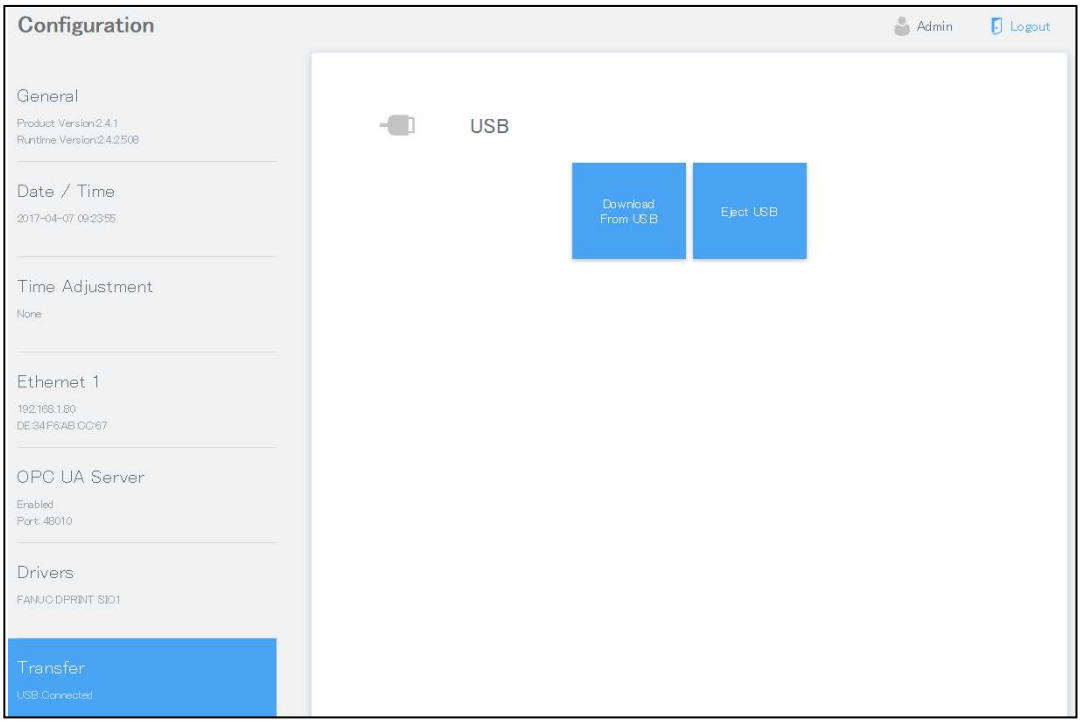
Item Name	Description
Version	The driver version is displayed.
SIO Type	Select [RS232C] for the communication type. (fixed)
Speed	Choose from [2400], [4800], [9600], [19200], [38400], [57600], and [115200] for the communication speed.
Data Length	Choose either [7] or [8] for the data length.
Parity Bit	Choose from [NONE], [ODD], and [EVEN] for the parity bit.
Stop Bits	Choose either [1 bit] or [2 bit] for the stop bit.
Flow Control	Select [XON/XOFF] for Flow Control.
Timeout(sec)	Specify the timeout from 1 to 127.
Retry	Specify the retry count from 0 to 255.
Wait To Send(ms)	Specify the Wait to Send from 0 to 255.
RI/VCC	Select [RI]. (fixed)

8.9. Transfer (Project Transfer)

<Outline>

You can transfer the version upgrade file (project file) to the Multi-Converter for FANUC CNC.

When USB storage is connected, the switches below are displayed.



Item Name	Description
Download From USB	Transfer the version upgrade file in USB storage to the Multi-Converter for FANUC CNC. When transfer starts, log out from Configuration.
Eject USB	Remove USB storage safely.

When a USB storage is not connected, the following message appears.

(Note)

- Save the version upgrade file (package.BML) to the root directory of USB storage.
- When transfering the project, User Management data (Security Settings), OPC UA Server Settings, and Drivers settings are initialized. Back up (Export) the user management data before transferring. (8.13. User Management (Security Settings))

<Update Procedure>

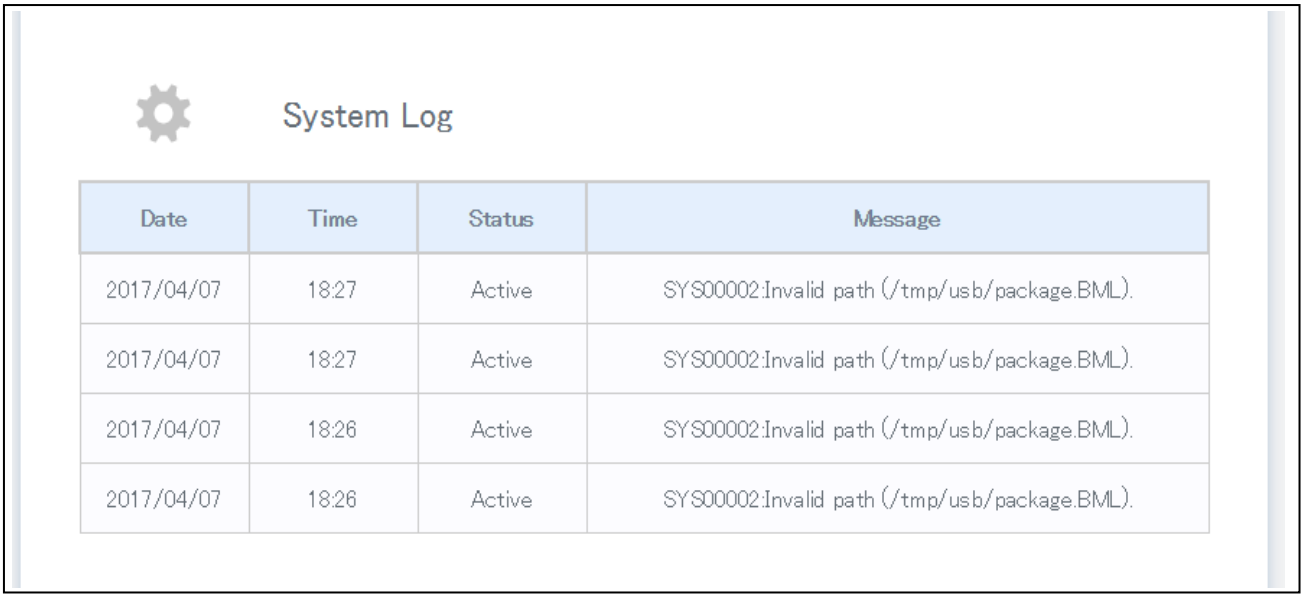
1. Click the Download From USB button.
2. A message is displayed. Confirm the contents and click OK to start transferring.
   Once transfer starts, logout from Configuration is done automatically.
3. After transfer is complete, the Multi-Converter for FANUC CNC restarts.
4. Login from the Web browser with the default value (User Name: Admin, Password: Pro-face20).
5. From General (Setting information), confirm the Version has been updated.
6. Import the backed up user management data. (8.13. User Management (Security Settings))
   If necessary, set up the OPC UA Server settings and Drivers again.

8.10. System Log (System Error Log)

<Outline>

The system logs of the Multi-Converter for FANUC CNC can be confirmed.

This screen is for monitoring only. There's no place for settings. The latest error contents are displayed on top.



Authorization at the time of login

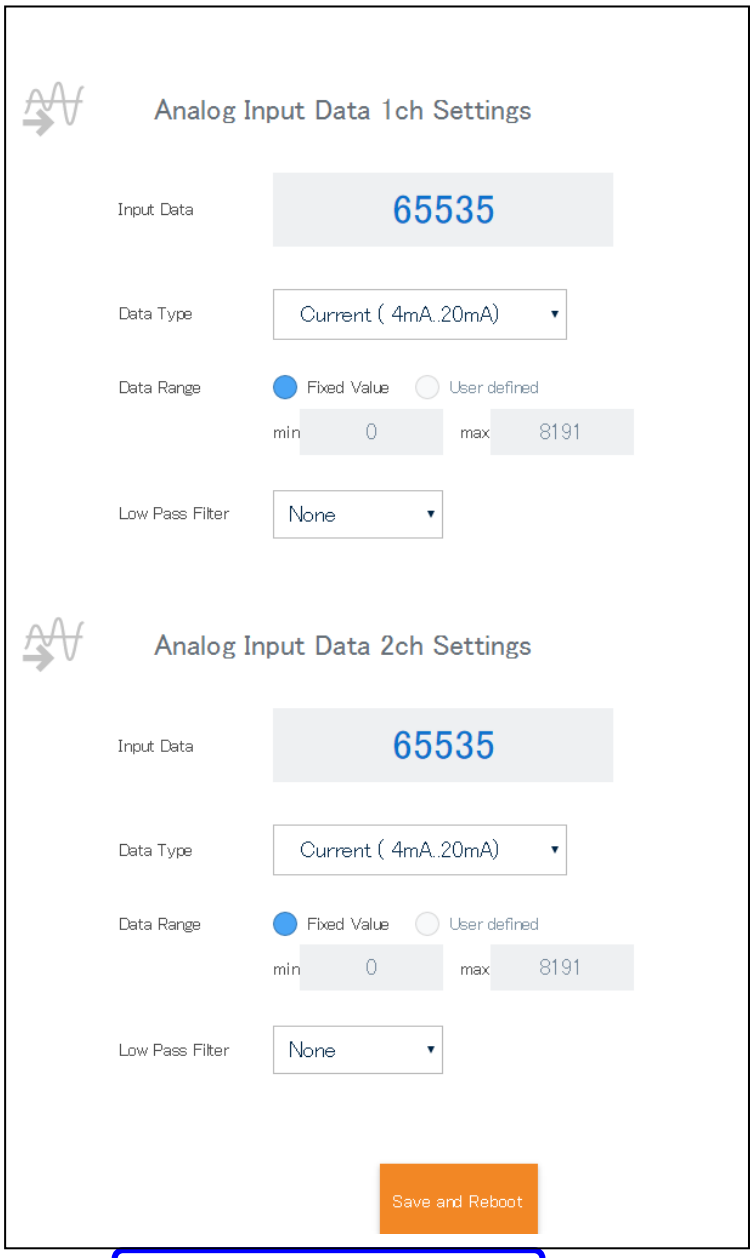
- Admin (administrators) : Able to monitor.
- Power (power users) : Able to monitor.
- User (users) : Unable to monitor.

Item Name	Description
Date	Displays a date of error occurrence.
Time	Displays a time of error occurrence.
Status	Displays status. [Active (alarming)] or [Return (recovered)] is displayed.
Message	A system error, a communication error code, and an error message are displayed.

8.11. Analog Input

<Outline>

This is an analog input screen of the Multi-Converter for FANUC CNC.



Authorization at the time of login

- Admin (administrators) : Able to change settings and monitor.
- Power (power users) : Able to change settings and monitor.
- User (users) : Unable to change settings.
  Able to monitor (Another screen is displayed.)

Click the [Save and Reboot] button to reflect the setting contents.

Because of reboot, it's necessary to log in again after settings are changed.

Item Name	Description
Input Data	Displays numerical values of input data. The numerical values change in the range described below. •0 to 10V: The data values change in the range of 0 to 8191. •-10V to 10V: The data values change in the range of -4096 to 4095. •0 to 20mA: The data values change in the range of 0 to 8191. •4 to 20mA: The data values change in the range of 0 to 8191.
Data Type	Select a data type.
Data Range	Select a data range. Fixed Value: Fixed setting User defined: Unable to specify.
Low Pass Filter	Choose among [None], [Low], [Standard], and [High] for Low Pass Filter.

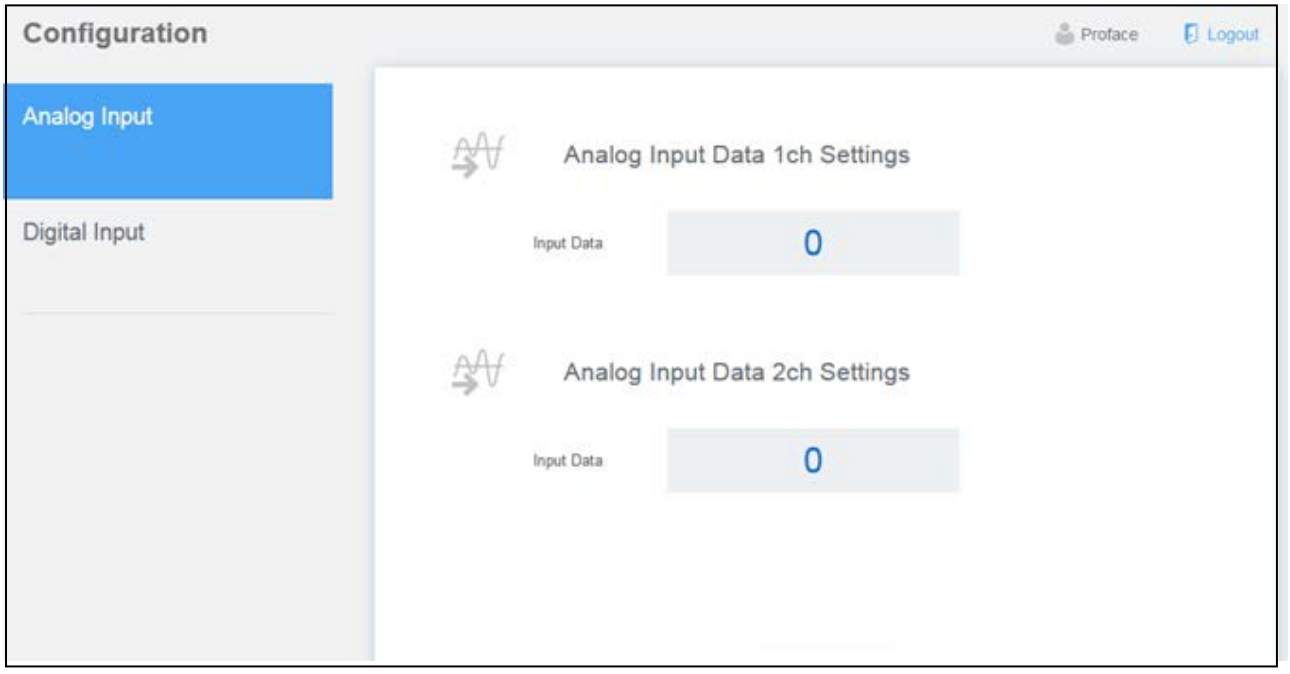
(Supplementary)

Only when '4 to 20mA' is selected, disconnection of input signals can be detected.

When the analog value is 65535, input signals are disconnected.

When you log in with the User authorization, the following screen appears.

No settings related to analog can be changed.

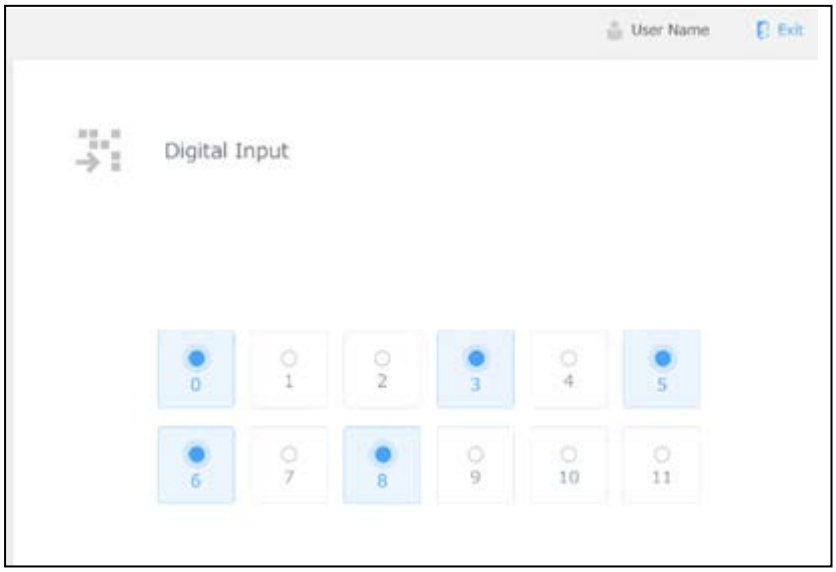


8.12. Digital Input

<Outline>

Digital inputs of the Multi-Converter for FANUC CNC can be monitored.

ON: Blue, OFF: White



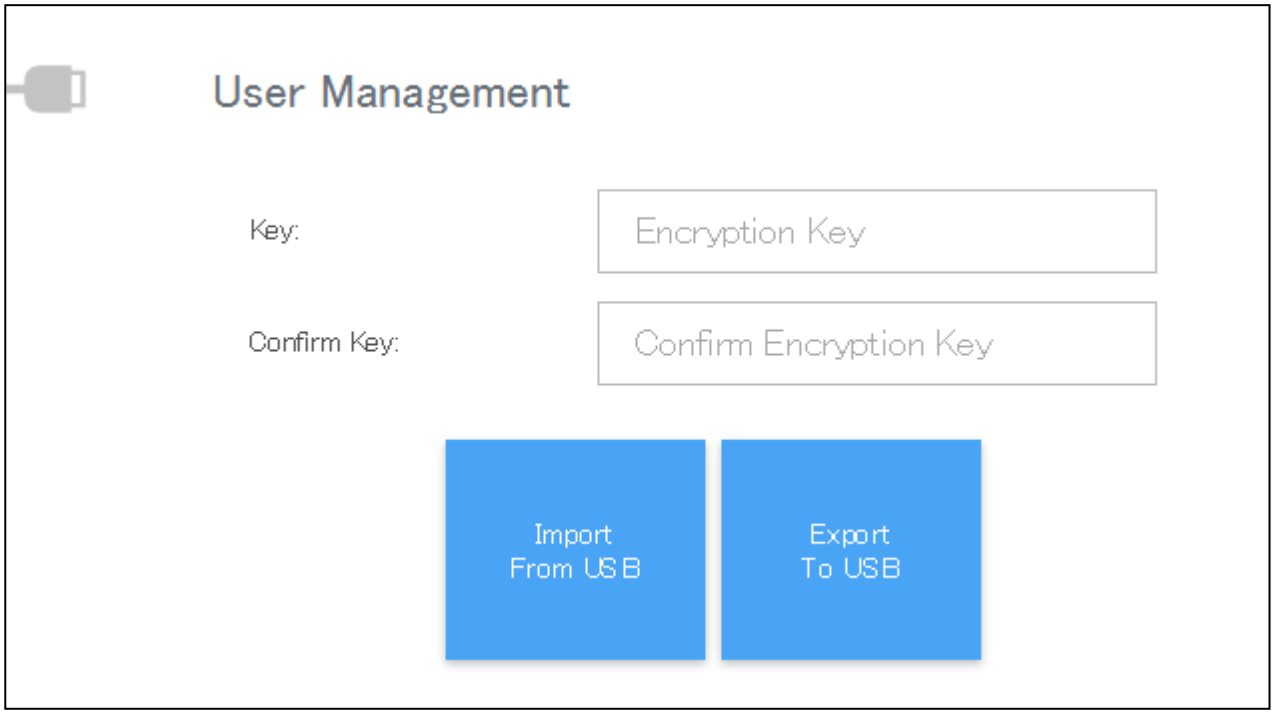
Authorization at the time of login

- Admin (administrators) : Able to monitor.
- Power (power users) : Able to monitor.
- User (users) : Able to monitor.

8.13. User Management (Security Settings)

<Outline>

User management (security) settings of the Multi-Converter for FANUC CNC can be configured.



Authorization at the time of login

- Admin (administrators) : Able to change settings.
- Power (power users) : Unable to change settings. Unable to see settings.
- User (users) : Unable to change settings. Unable to see settings.

(Note) Only the user management data (security data) created on the Multi-Converter for FANUC CNC can be used.

Item Name	Description
Import	Transfer user management data (security data) to the Multi-Converter for FANUC CNC. Enter the key specified at export when transferring the data.
Export	Transfer user management data (security data) from the Multi-Converter for FANUC CNC to a USB storage. When exporting the data from the main unit, the key input window appears. If you have configured the key setting at the time of import, enter the specified key. If not, just click [OK]. If a key has been entered, it will be needed at the time of import and using the User Management Tool. Storage of user management data: [USB root]¥UserManagement¥data.bin

9. Compatibility with the related products

■Version Upgrade File

The file provided at version upgrade is for the Multi-Converter for FANUC CNC only. It cannot be used for other models.

■User Management Tool (Security Setting)

- Because user management data (security data) is for the Multi-Converter for FANUC CNC only, it cannot be used for other models.
- For user management data (security data), only the file exported from the Multi-Converter for FANUC CNC unit can be imported.

■USB Storage (storage device)

- USB1.1 Mass Storage Class compliant
- The compatible file system is FAT32.

10. Restrictions

- The day and time is not set at the time of purchase. Be sure to set it.
- If you transfer data with Transfer (Project Transfer) at the time of version upgrade, the user management data (security data) will be Initialized. Log in with the default value after transfer is completed. (User Name: Admin, Password: Pro-face20).
- Be sure to back up the user management data (security data) before transfer work is done.

11. Error Code List

Error Code	Message	Cause	Solution
APP10507	File open error. Application cannot open the file.	There's no backup file for Restore.	Perform 'Restore' with a backup file kept.
APP10509	Composition error.	The system configuration of the connected device is different from the one at the time of creating the backup file.	The system configuration (CPU, Link I/F, and Communication Type) and the one of the backup file must be the same.
APP10511	The equipment is not connected.	There's no communication made between the display unit and the connected device.	Turn off the power of the display unit and then check the cabling and the connector's wiring.
APP10512	System configuration is different.	The model of the connected device is different from the one at the time of creating the backup file. They must be the same.	Turn off the power of the display unit and then check the cabling and the connector's wiring.
SYS00001	The volume is write protected.	The system of the display unit is in the state of write inhibit.	1.Cancel the SD card's lock switch. 2.When using a model in which Write Filter (write inhibit) can be configured, cancel the Write Filter.
SYS00002	Invalid path (%s).	The project file saved in the external storage cannot be accessed.	Check if the external storage has an error and then transfer the data uploaded to the external storage to the display unit again.
SYS00006	The project designed for the other product %s cannot be deployed on this product %s, during the %s process.	The model specified in the project file is different from the used display unit.	Change that setting in the project file to the display unit you are using.

SYS00008	The system version (%s) is lower than current system version (%s), during the %s process.	The runtime version of the project file in the external storage is lower than the one on the display unit.	Follow either one of the instructions below. 1. Downgrade the runtime version on the display unit to the same version as that of the project file. 2. Download the project file with the same version as the one of the runtime.
SYS00010	Not enough space (%s) on this product, during the %s process. Minimum space required is %s.	The project file's data size is over free space of the display unit.	Decrease the data size.
SYS00011	Restore of %s from the backup file failed during the %s process.	In the process of transferring the project file to the display unit using the external storage, writing the data failed.	Restart the display unit and transfer the data again.
SYS00012	Extraction of %s archive failed during the %s process.	In the process of transferring the project file to the display unit, writing the data failed.	Restart the display unit and transfer the data again.
SYS00014	The upload type (%s) is not supported in this version.	Because the runtime system of the display unit is old, transfer failed.	Transfer the project file again, and the runtime will be updated.
SYS00015	%s archive creation failed during the %s process.	Lack of the free space of the external storage or the hard disk. Or it cannot be accessed.	Confirm that the free space of the external storage and the hard disk is enough, the mode is not 'Read Only' and you have an access right.
SYS00101	The time variable value is invalid or has reached the maximum limit due to the passage of time. The variable value is reset to %s	The clock data of the display unit has been initialized.	Check an impact to the features using the clock data and configure the clock setting of the display unit again.
SYS02001	Charge the backup battery.	The battery will run out in a few weeks.	Recharge the battery completely for a few days.
SYS02002	Replace the backup	The battery will run out in	Do not replace the battery yourself.

	battery.	a few days.	Contact your local Pro-face distributor for replacing the battery before the battery runs out.
SYS02003	The data in the backup memory (SRAM) has been deleted.	The SRAM data has been deleted.	Do not replace the battery yourself. Contact your local Pro-face distributor for replacing the battery before the battery runs out.
SYS02004	Clock data has been initialized.	The clock data has been deleted.	Do not replace the battery yourself. Contact your local Pro-face distributor for replacing the battery before the battery runs out.
COM00006	%s:%s Received data has been parity error	The received data was missed. Noise and loose connection might be a cause.	Confirm the noise solutions and the state of the inserted connector. For memory link communication, confirm the data length and parity bit settings on the display unit side and the host side. The settings on the both sides must be the same.
COM00007	%s:%s Received data has been framing error	The received data was missed. Noise and loose connection might be a cause.	Confirm the noise solutions and the state of the inserted connector. For memory link communication, confirm the data length and parity bit settings on the display unit side and the host side. The settings on the both sides must be the same.
COM00011	%s:Connection was closed	A problem happened in the connecting environment during communication.	Confirm that the network environment is correct. Connect the PC, the display unit and the PLC (connected device) directly and check if the IP address is recognized with the PING command to identify a factor.