MITSUBISHI ELECTRIC

Changes for the Better

Numerical Control (CNC)

User's Manual

Remote Service iQ Care Remote4U

IB-1501552(ENG)-K

Introduction

The remote service gateway unit is connected to Mitsubishi Electric CNC for use. This manual explains installation, connection, setting up and how to handle the unit.
The supported models for the remote service are as follows:

Supported models	Abbreviations in this manual
M800VW Series	M850VW, M830VW
M800VS Series	M850VS, M830VS
M80VW Series	M80VW
M80V Series	M80V TypeA, M80V TypeB

Supported models	Abbreviations in this manual
M800W Series	M850W, M830W
M800S Series	M850S, M830S
M80W Series	M80W
M80 Series	M80 TypeA, M80 TypeB
E80 Series	E80 TypeA, E80 TypeB
C80 Series	C80

Supported models	Abbreviations in this manual
M700VW Series	M750VW, M730VW, M720VW
M700VS Series	M750VS, M730VS, M720VS
M70V Series	M70V TypeA, M70V TypeB
M700 Series	M750, M730, M720
M70 Series	M70 TypeA, M70 TypeB
E70 Series	E70

For supported models other than the above, refer to the text of this manual.

Abbreviations in this manual are as follows:

Abbreviations	Supported models
M800V, M800V Series	M800VW Series/M800VS Series
M80V, M80V Series	M80VW Series/M80V Series
M800V/M80V, M800V/M80V Series	M800VW Series/M800VS Series/M80VW Series/M80V Series
M8V, M8V Series	M800VW Series/M800VS Series/M80VW Series/M80V Series

Abbreviations	Supported models
M800, M800 Series	M800W Series/M800S Series
M80, M80 Series	M80 Series/M80W Series
M800/M80, M800/M80 Series	M800W Series/M800S Series/M80W Series/M80 Series
M8, M8 Series	M800W Series/M800S Series/M80W Series/M80 Series/E80 Series

Abbreviations	Supported models
M700V, M700V Series	M700VW Series/M700VS Series
M700V/M70V, M700V/M70V Series	M700VW Series/M700VS Series/M70V Series
M700/M70, M700/M70 Series	M700 Series/M70 Series
M7, M7 Series	M700VW Series/M700VS Series/M70V Series/M700 Series/M70 Series/E70 Series

Read this manual thoroughly and understand the product's functions and performance before starting to use.
This manual is written on the assumption that all optional functions are added, but the actually delivered device may not have all functions.
The unit names, cable names and various specifications are subject to change without notice. Please confirm these before placing an order.
Be sure to keep this manual always at hand.

This product is commercially available encryption device and commercially available encryption program.

Notes on Reading This Manual

(1) This manual is intended to contain as much descriptions as possible even about special operations.
The operations to which no reference is made in this manual should be considered "impossible".
(2) This manual is for the machine tool builders who set up the NC system.
(3) Do not connect to the pin described as "NC" on the pin assignment table of the connector.
(4) The characteristic values and numerical values without tolerances mentioned in this manual are representative values.

⚠ CAUTION

⚠ **If the descriptions relating to the "restrictions" and "allowable conditions" conflict between this manual and the machine tool builder's instruction manual, the latter has priority over the former.**

⚠ **Items that are not described in this manual must be interpreted as "not possible".**

⚠ **This manual is written on the assumption that all the applicable functions are included. Some of them, however, may not be available for your NC system. Refer to the specifications issued by the machine tool builder before use.**

⚠ **For information about each machine tool, refer to manuals issued from the machine tool builder.**

⚠ **Some screens and functions may differ depending on each NC system (or version), and some functions may not be possible. Please confirm the specifications before starting to use.**

⚠ **To protect the availability, integrity and confidentiality of the NC system against cyber-attacks including unauthorized access, denial-of-service (Dos) (*1) attack, and computer virus from external sources via a network, take security measures such as firewall, VPN, and anti-virus software.**
(*1) Denial-of-service (Dos): refers to a type of cyber-attack that disrupts services by overloading the system or by exploiting a vulnerability of the system.

⚠ **Mitsubishi Electric assumes no responsibility for any problems caused to the NC system by any type of cyber-attacks including DoS attack, unauthorized access and computer virus.**

The numerical control unit is configured of the control unit, display unit, personal computer unit, operation board (operation panel I/O unit), servo drive unit, spindle drive unit, power supply unit + driver, servomotor, spindle motor, etc.

In this manual, the following items are generically called "controller".
- Control unit
- Display unit
- Personal computer unit
- Operation board (operation panel I/O unit)
- Numerical control unit peripheral devices (input/output unit, safety unit)

In this manual, the following items are generically called "drive unit".
- Servo drive unit
- Spindle drive unit
- Power supply unit + driver

In this manual, the following items are generically called "motor".
- Servo motor
- Spindle motor

Also refer to the manuals on "Manual List" as necessary.

Manual List (M800/M80/E80/C80 Series)

Manuals related to M800/M80/E80/C80 Series are listed as follows.
These manuals are written on the assumption that all optional functions are added to the targeted model.
Some functions or screens may not be available depending on the machine or specifications set by MTB. (Confirm the specifications before use.)
The manuals issued by MTB take precedence over these manuals.

Manual	IB No.	Purpose and Contents
M800/M80/E80 Series Instruction Manual	IB-1501274	• Operation guide for NC • Explanation for screen operation, etc.
C80 Series Instruction Manual	IB-1501453	• Operation guide for NC • Explanation for screen operation, etc.
M800/M80/E80/C80 Series Programming Manual (Lathe System) (1/2)	IB-1501275	• G code programming for lathe system • Basic functions, etc.
M800/M80/E80/C80 Series Programming Manual (Lathe System) (2/2)	IB-1501276	• G code programming for lathe system • Functions for multi-part system, high-accuracy function, etc.
M800/M80/E80/C80 Series Programming Manual (Machining Center System) (1/2)	IB-1501277	• G code programming for machining center system • Basic functions, etc.
M800/M80/E80/C80 Series Programming Manual (Machining Center System) (2/2)	IB-1501278	• G code programming for machining center system • Functions for multi-part system, high-accuracy function, etc.
M800/M80/E80 Series Alarm/Parameter Manual	IB-1501279	• Alarms • Parameters
C80 Series Alarm/Parameter Manual	IB-1501560	• Alarms • Parameters

Manuals for MTBs (NC)

Manual	IB No.	Purpose and Contents
M800/M80/E80/C80 Series Specifications Manual (Function)	IB-1501505	• Model selection • Outline of various functions
M800/M80/E80/C80 Series Specifications Manual (Hardware)	IB-1501506	• Model selection • Specifications of hardware unit
M800W/M80W Series Connection and Setup Manual	IB-1501268	• Detailed specifications of hardware unit • Installation, connection, wiring, setup (startup/adjustment)
M800S/M80/E80 Series Connection and Setup Manual	IB-1501269	• Detailed specifications of hardware unit • Installation, connection, wiring, setup (startup/adjustment)
C80 Series Connection and Setup Manual	IB-1501452	• Detailed specifications of hardware unit • Installation, connection, wiring, setup (startup/adjustment)
M800/M80/E80 Series PLC Development Manual	IB-1501270	• Electrical design • I/O relation (assignment, setting, connection), field network • Development environment (PLC on-board, peripheral development environment), etc.
M800/M80/E80 Series PLC Programming Manual	IB-1501271	• Electrical design • Sequence programming • PLC support functions, etc.
M800/M80/E80/C80 Series PLC Interface Manual	IB-1501272	• Electrical design • Interface signals between NC and PLC
M800/M80/E80 Series Maintenance Manual	IB-1501273	• Cleaning and replacement for each unit • Other items related to maintenance
C80 Series Maintenance Manual	IB-1501454	• Cleaning and replacement for each unit • Other items related to maintenance

Manuals for MTBs (drive section)

Manual	IB No.	Contents
MDS-E/EH Series Specifications Manual	IB-1501226	• Specifications for power supply regeneration type
MDS-E/EH Series Instruction Manual	IB-1501229	• Instruction for power supply regeneration type
MDS-EJ/EJH Series Specifications Manual	IB-1501232	• Specifications for regenerative resistor type
MDS-EJ/EJH Series Instruction Manual	IB-1501235	• Instruction for regenerative resistor type
MDS-EM/EMH Series Specifications Manual	IB-1501238	• Specifications for multi-hybrid, power supply regeneration type
MDS-EM/EMH Series Instruction Manual	IB-1501241	• Instruction for multi-hybrid, power supply regeneration type
DATA BOOK	IB-1501252	• Specifications of servo drive unit, spindle drive unit, motor, etc.

Manuals for MTBs (Others)

Manual	No.	Purpose and Contents
GOT2000 Series User's Manual (Hardware)	SH-081194ENG	• Outline of hardware such as part names, external dimensions, installation, wiring, maintenance, etc. of GOTs
GOT2000 Series User's Manual (Utility)	SH-081195ENG	• Outline of utilities such as screen display setting, operation method, etc. of GOTs
GOT2000 Series User's Manual (Monitor)	SH-081196ENG	• Outline of each monitor function of GOTs
GOT2000 Series Connection Manual (Mitsubishi Electric Products)	SH-081197ENG	• Outline of connection types and connection method between GOT and Mitsubishi Electric connection devices
GT Designer3 (GOT2000) Screen Design Manual	SH-081220ENG	• Outline of screen design method using screen creation software GT Designer3

■ For M800/M80/E80 Series

Manual	No.	Purpose and Contents
GOT2000/GOT1000 Series CC-Link Communication Unit User's Manual	IB-0800351	• Explanation for handling CC-Link communication unit (for GOT2000 series/GOT1000 series)
GX Developer Version 8 Operating Manual (Startup)	SH-080372E	• Explanation for system configuration, installation, etc. of PLC development tool GX Developer
GX Developer Version 8 Operating Manual	SH-080373E	• Explanation for operations using PLC development tool GX Developer
GX Converter Version 1 Operating Manual	IB-0800004	• Explanation for operations using data conversion tool GX Converter
GX Works2 Installation Instructions	BCN-P5999-0944	• Explanation for the operating environment and installation method of GX Works2
GX Works2 Version 1 Operating Manual (Common)	SH-080779ENG	• Explanation for the system configuration of GX Works2 and the functions common to Simple project and Structured project such as parameter setting, operation method for the online function
GX Works2 Version 1 Operating Manual (Simple Project)	SH-080780ENG	• Explanation for methods for such as creating and monitoring programs in Simple project of GX Works2
GX Works2 Version 1 Operating Manual (Simple Project, Function Block)	SH-080984ENG	• Explanation for methods for such as creating function blocks, pasting function blocks to sequence programs, and operating FB library in Simple project of GX Works2
GX Works2 Version 1 Operating Manual (Structured Project)	SH-080781ENG	• Explanation for methods for such as creating and monitoring programs in Structured project of GX Works2
GX Works3 Installation Instructions	BCN-P5999-0391	• Explanation for the operating environment and installation method of GX Works3
MELSEC-Q CC-Link System Master/ Local Module User's Manual	SH-080394E	• Explanation for system configuration, installation, wiring, etc. of master/local modules for CC-Link system
GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 1)	SH-081198ENG	• Explanation for connection types and connection method between GOT and other company's devices
GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 2)	SH-081199ENG	
GOT2000 Series Connection Manual (Microcomputers, MODBUS/ Fieldbus Products, Peripherals)	SH-081200ENG	• Explanation for connection types and connection method between GOT and microcomputers, MODBUS/fieldbus products, peripherals
GT SoftGOT2000 Version1 Operating Manual	SH-081201ENG	• Explanation for system configuration, screen configuration and operation method of monitoring software GT SoftGOT2000

■ For C80 Series

Manual	No.	Purpose and Contents
MELSEC iQ-R Module Configuration Manual	SH-081262	• Outline of system configuration, specifications, installation, wiring, maintenance, etc.
MELSEC iQ-R CPU Module User's Manual (Startup)	SH-081263	• Outline of specifications, procedures before operation, troubleshooting, etc. for CPU module
MELSEC iQ-R CPU Module User's Manual (Application)	SH-081264	• Outline of memory, functions, devices, parameters, etc. for CPU module
MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)	SH-081259	• Explanation for functions, parameter settings, programming, troubleshooting, etc. of the CC-Link IE Field Network function
QCPU User's Manual (Hardware Design, Maintenance and Inspection)	SH-080483	• Outline of specifications, necessary knowledge to configure the system and maintenance-related descriptions for Q series CPU module, etc.
GX Works3 Operating Manual	SH-081215	• Outline of functions, programming, etc.

Reference Manual for MTBs

Manual	No.	Purpose and Contents
M800/M80 Series Smart safety observation Specification manual	BNP-C3072-022	• Explanation for smart safety observation function
C80 Series Smart safety observation Specification manual	BNP-C3077-022	
M800/M80 Series CC-Link (Master/ Local) Specification manual	BNP-C3072-089	• Explanation for CC-Link
M800/M80 Series PROFIBUS-DP Specification manual	BNP-C3072-118	• Explanation for PROFIBUS-DP communication function
M800/M80 Series Interactive cycle insertion (Customization) Specification manual	BNP-C3072-121-0003	• Explanation for interactive cycle insertion
M800/M80 Series EtherNet/IP Specifications manual	BNP-C3072-263	• Explanation for EtherNet/IP
M800/M80 Series CC-Link IE Field (Master/local) Specifications manual	BNP-C3072-283	• Explanation for CC-Link IE Field
M800/M80 Series GOT Connection Specifications manual	BNP-C3072-314	• Explanation for GOT connection
M800/M80 Series CC-Link IE Field Basic Specifications manual	BNP-C3072-337	• Explanation for CC-Link IE Field Basic
M800/M80 Series FL-net Specifications manual	BNP-C3072-368	• Explanation for FL-net
M800/M80 Series Synchronous Control Specifications manual	BNP-C3072-074	• Explanation for synchronous control
M800/M80 Series Multiple-Axis Synchronization Control Specifications manual	BNP-C3072-339	• Explanation for multiple-axis synchronization control

Manual List (M800V/M80V Series)

Manuals related to M800V/M80V Series are listed as follows.
These manuals are written on the assumption that all optional functions are added to the targeted model.
Some functions or screens may not be available depending on the machine or specifications set by MTB. (Confirm the specifications before use.)
The manuals issued by MTB take precedence over these manuals.

Manual	IB No.	Purpose and Contents
M800V/M80V Series Instruction Manual	IB-1501618	• Operation guide for NC • Explanation for screen operation, etc.
M800V/M80V Series Programming Manual (Lathe System) (1/2)	IB-1501619	• G code programming for lathe system • Basic functions, etc.
M800V/M80V Series Programming Manual (Lathe System) (2/2)	IB-1501620	• G code programming for lathe system • Functions for multi-part system, high-accuracy function, etc.
M800V/M80V Series Programming Manual (Machining Center System) (1/2)	IB-1501621	• G code programming for machining center system • Basic functions, etc.
M800V/M80V Series Programming Manual (Machining Center System) (2/2)	IB-1501622	• G code programming for machining center system • Functions for multi-part system, high-accuracy function, etc.
M800V/M80V Series Alarm/Parameter Manual	IB-1501623	• Alarms • Parameters

Manuals for MTBs (NC)

Manual	IB No.	Purpose and Contents
M800V/M80V Series Specifications Manual (Function)	IB-1501610	• Model selection • Outline of various functions
M800V/M80V Series Specifications Manual (Hardware)	IB-1501611	• Model selection • Specifications of hardware unit
M800VW/M80VW Series Connection and Setup Manual	IB-1501612	• Detailed specifications of hardware unit • Installation, connection, wiring, setup (startup/adjustment)
M800VS/M80V Series Connection and Setup Manual	IB-1501613	• Detailed specifications of hardware unit • Installation, connection, wiring, setup (startup/adjustment)
M800V/M80V Series PLC Development Manual	IB-1501614	• Electrical design • I/O relation (assignment, setting, connection), field network • Development environment (PLC on-board, peripheral development environment), etc.
M800V/M80V Series PLC Programming Manual (1/2)	IB-1501667	• Electrical design • Sequence programming • Explanation for instructions, functions, and parameters
M800V/M80V Series PLC Programming Manual (2/2)	IB-1501668	• Electrical design • Sequence programming • Usage examples of instructions
M800V/M80V Series PLC Interface Manual	IB-1501616	• Electrical design • Interface signals between NC and PLC
M800V/M80V Series Maintenance Manual	IB-1501617	• Cleaning and replacement for each unit • Other items related to maintenance

Manuals for MTBs (drive section)

Manual	IB No.	Contents
MDS-E/EH Series Specifications Manual	IB-1501226	• Specifications for power supply regeneration type
MDS-E/EH Series Instruction Manual	IB-1501229	• Instruction for power supply regeneration type
MDS-EJ/EJH Series Specifications Manual	IB-1501232	• Specifications for regenerative resistor type
MDS-EJ/EJH Series Instruction Manual	IB-1501235	• Instruction for regenerative resistor type
MDS-EM/EMH Series Specifications Manual	IB-1501238	• Specifications for multi-hybrid, power supply regeneration type
MDS-EM/EMH Series Instruction Manual	IB-1501241	• Instruction for multi-hybrid, power supply regeneration type
DATA BOOK	IB-1501252	• Specifications of servo drive unit, spindle drive unit, motor, etc.
MDS-EX-CVP Series Specifications and Instruction Manual	IB-1501587	• Specifications and instruction for the power supply unit with large capacity

Manuals for MTBs (Others)

Manual	No.	Purpose and Contents
GOT2000 Series User's Manual (Hardware)	SH-081194ENG	• Outline of hardware such as part names, external dimensions, installation, wiring, maintenance, etc. of GOTs
GOT2000 Series User's Manual (Utility)	SH-081195ENG	• Outline of utilities such as screen display setting, operation method, etc. of GOTs
GOT2000 Series User's Manual (Monitor)	SH-081196ENG	• Outline of each monitor function of GOTs
GOT2000 Series Connection Manual (Mitsubishi Electric Products)	SH-081197ENG	• Outline of connection types and connection method between GOT and Mitsubishi Electric connection devices
GT Designer3 (GOT2000) Screen Design Manual	SH-081220ENG	• Outline of screen design method using screen creation software GT Designer3
GOT2000/GOT1000 Series CC-Link Communication Unit User's Manual	IB-0800351	• Explanation for handling CC-Link communication unit (for GOT2000 series/GOT1000 series)
GX Developer Version 8 Operating Manual (Startup)	SH-080372E	• Explanation for system configuration, installation, etc. of PLC development tool GX Developer
GX Developer Version 8 Operating Manual	SH-080373E	• Explanation for operations using PLC development tool GX Developer
GX Converter Version 1 Operating Manual	IB-0800004	• Explanation for operations using data conversion tool GX Converter
GX Works2 Installation Instructions	BCN-P5999-0944	• Explanation for the operating environment and installation method of GX Works2
GX Works2 Version 1 Operating Manual (Common)	SH-080779ENG	• Explanation for the system configuration of GX Works2 and the functions common to Simple project and Structured project such as parameter setting, operation method for the online function
GX Works2 Version 1 Operating Manual (Simple Project)	SH-080780ENG	• Explanation for methods for such as creating and monitoring programs in Simple project of GX Works2
MELSEC-Q/L/F Structured Programming Manual (Fundamentals)	SH-080782ENG	• Explanation for programming methods, types of programming languages, etc. required to create structured programs
MELSEC-Q/L Structured Programming Manual (Application Functions)	SH-080784ENG	• Explanation for specifications and functions related to application functions which can be used in structured programs
GX Works2 Version 1 Operating Manual (Simple Project, Function Block)	SH-080984ENG	• Explanation for methods for such as creating function blocks, pasting function blocks to sequence programs, and operating FB library in Simple project of GX Works2
GX Works2 Version 1 Operating Manual (Structured Project)	SH-080781ENG	• Explanation for methods for such as creating and monitoring programs in Structured project of GX Works2
GX Works3 Installation Instructions	BCN-P5999-0391	• Explanation for the operating environment and installation method of GX Works3
MELSEC-Q CC-Link System Master/ Local Module User's Manual	SH-080394E	• Explanation for system configuration, installation, wiring, etc. of master/local modules for CC-Link system
GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 1)	SH-081198ENG	• Explanation for connection types and connection method between GOT and other company's devices
GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 2)	SH-081199ENG	
GOT2000 Series Connection Manual (Microcomputers, MODBUS/Fieldbus Products, Peripherals)	SH-081200ENG	• Explanation for connection types and connection method between GOT and microcomputers, MODBUS/fieldbus products, peripherals
GT SoftGOT2000 Version1 Operating Manual	SH-081201ENG	• Explanation for system configuration, screen configuration and operation method of monitoring software GT SoftGOT2000
MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)	SH-081266ENG	• Explanation for instructions, general-purpose functions, and general-purpose function blocks required for programming the sequencer MELSEC iQ-R series

Reference Manual for MTBs

Manual	No.	Purpose and Contents
M800/M80 Series Smart safety observation Specification manual	BNP-C3072-022	♦ Explanation for smart safety observation function
M800/M80 Series CC-Link (Master/ Local) Specification manual	BNP-C3072-089	♦ Explanation for CC-Link
M800/M80 Series PROFIBUS-DP Specification manual	BNP-C3072-118	♦ Explanation for PROFIBUS-DP communication function
M800/M80 Series Interactive cycle insertion (Customization) Specification manual	BNP-C3072-121-0003	♦ Explanation for interactive cycle insertion
M800/M80 Series EtherNet/IP Specifications manual	BNP-C3072-263	♦ Explanation for EtherNet/IP
M800/M80 Series CC-Link IE Field (Master/local) Specifications manual	BNP-C3072-283	♦ Explanation for CC-Link IE Field
M800/M80 Series GOT Connection Specifications manual	BNP-C3072-314	♦ Explanation for GOT connection
M800/M80 Series CC-Link IE Field Basic Specifications manual	BNP-C3072-337	♦ Explanation for CC-Link IE Field Basic
M800/M80 Series FL-net Specifications manual	BNP-C3072-368	♦ Explanation for FL-net
M800/M80 Series Synchronous Control Specifications manual	BNP-C3072-074	♦ Explanation for synchronous control
M800/M80 Series Multiple-Axis Synchronization Control Specifications manual	BNP-C3072-339	♦ Explanation for multiple-axis synchronization control

Precautions for Safety

Always read the specifications issued by the machine tool builder, this manual, related manuals and attached documents before installation, operation, programming, maintenance or inspection to ensure correct use.
Understand this numerical controller, safety items and cautions before using the unit.
This manual ranks the safety precautions into "DANGER", "WARNING" and "CAUTION".

⚠ **DANGER** **When the user may be subject to imminent fatalities or major injuries if handling is mistaken.**
⚠ **WARNING** **When the user may be subject to fatalities or major injuries if handling is mistaken.**
⚠ **CAUTION** **When the user may be subject to medium or minor injuries or when property damage may occur, if handling is mistaken.**

Note that even items ranked as " ⚠CAUTION", may lead to major results depending on the situation. In any case, important information that must always be observed is described.

The following signs indicate prohibition and compulsory.

⃠	**This sign indicates prohibited behavior (must not do).** **For example, "Keep fire away" is indicated by .**
●	**This sign indicates a thing that is critical (must do).** **For example, "it must be grounded" is indicated by .**

The meaning of each pictorial sign is as follows.

CAUTION	**CAUTION rotate object**	**CAUTION HOT**	**Danger Electric shock risk**	**Danger explosive**
Prohibited	**Disassembly is prohibited**	**KEEP FIRE AWAY**	**General instruction**	**Earth ground**

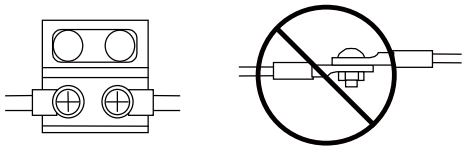
For Safe Use

Mitsubishi Electric CNC is designed and manufactured solely for applications to machine tools to be used for industrial purposes.
Do not use this product in any applications other than those specified above, especially those which are substantially influential on the public interest or which are expected to have significant influence on human lives or properties.

1. Items related to prevention of electric shocks

⚠ WARNING

- **Do not open or remove the front cover while the power is ON or during operation. The high voltage terminals and charged sections will be exposed, and this could result in electric shocks.**
- **Do not remove the front cover even when the power is OFF, except for the wiring works or periodic inspections. The inside of the controller and drive unit are charged, and this could result in electric shocks.**
- **Always wait at least 15 minutes after turning the power OFF. Then, check the voltage with a tester, etc., before wiring works, inspections or connecting with peripheral devices. Failure to observe this could result in electric shocks.**
- **Earth ground the controller, drive unit and motor according to the local laws. (In Japan, ground the 200V Series input products with Class C or higher protective grounding and the 400V Series input with Class D or higher protective grounding.)**
- **All wiring works, maintenance and inspections must be carried out by a qualified technician. Failure to observe this could result in electric shocks. Contact your nearby Service Center for replacing parts and servicing.**
- **Wire the controller, drive unit and motor after installation. Failure to observe this could result in electric shocks.**
- **Do not operate the switches with wet hands. Failure to observe this could result in electric shocks.**
- **Do not damage, apply excessive stress, place heavy things on or sandwich the cables. Failure to observe this could result in electric shocks.**
- **Insulate the power lead using a fixed terminal block. Failure to observe this could result in electric shocks.**



- **Completely turn off the all lines of the power supply externally before wiring. Not completely turning off all power could result in electric shock or damage to the product.**
- **When turning on the power supply or operating the module after wiring, be sure that the module's terminal covers are correctly attached. Not attaching the terminal cover could result in electric shock.**

2. Items related to prevention of fire

⚠ CAUTION

- **Install the controller, drive unit, motor and regenerative resistor on non-combustible material Installation directly on or near combustible materials could result in fires.**
- **If any malfunction in the unit is observed, shut off the power at the unit's power supply side. Continuous flow of large current could result in fires.**
- **Install an appropriate no fuse breaker (NFB) and contactor (MC) on the power input section of the drive unit and configure the sequence that shuts the power off upon drive unit's emergency stop or alarm.**
- **When a breaker is shared for multiple power supply units, the breaker may not function upon short-circuit failure in a small capacity unit. Do not share a breaker for multiple units as this is dangerous**
- **Incorrect wiring and connections could cause the devices to damage or burn.**

3. Items related to prevention of bodily injury or property damage

⚠ DANGER

⚠ **When transporting or installing a built-in IPM spindle or linear servomotor, be careful so that your hand or property will not be trapped in the motors or other metal objects. Also keep the devices with low magnetic tolerance away from the product.**

⚠ CAUTION

⚠ **Do not apply voltages to the connectors or terminals other than voltages indicated in the connection and setup manual for the controller or specifications manual for the drive unit. Failure to observe this could cause bursting, damage, etc.**

⚠ **Incorrect connections could cause the devices to rupture or damage, etc Always connect the cables to the indicated connectors or terminals.**

⚠ **Incorrect polarity (+ -) could cause the devices to rupture or damage, etc.**

⃠ **Persons wearing medical devices, such as pacemakers, must stay away from this unit.**

⚠ **The electromagnetic waves could adversely affect the medical devices. Fins on the rear of the unit, regenerative resistor and motor, etc., will be hot during operation and for a while after the power has been turned OFF. Failure to observe this could result in burns.**

⚠ **Do not enter the machine's movable range during automatic operation. Keep your hands, feet or face away from the spindle during rotation.**

4. General precautions

Always follow the precautions below. Incorrect handling could result in faults, injuries or electric shocks, etc.

(1) Items related to product and manual

⚠ CAUTION

⚠ **If the descriptions relating to the "restrictions" and "allowable conditions" conflict between this manual and the machine tool builder's instruction manual, the latter has priority over the former.**

⚠ **Items that are not described in this manual must be interpreted as "not possible".**

⚠ **This manual is written on the assumption that all the applicable functions are included. Some of them, however, may not be available for your NC system. Refer to the specifications issued by the machine tool builder before use.**

⚠ **For information about each machine tool, refer to manuals issued from the machine tool builder.**

⚠ **Some screens and functions may differ depending on each NC system (or version), and some functions may not be possible. Please confirm the specifications before starting to use.**

⚠ **Refer to "Smart safety observation" (BNP-C3072-022) for details about the connection with safety observing I/O device.**

⚠ **To protect the availability, integrity and confidentiality of the NC system against cyber-attacks including unauthorized access, denial-of-service (Dos) (*1) attack, and computer virus from external sources via a network, take security measures such as firewall, VPN, and anti-virus software.**
(*1) Denial-of-service (Dos): refers to a type of cyber-attack that disrupts services by overloading the system or by exploiting a vulnerability of the system.

⚠ **Mitsubishi Electric assumes no responsibility for any problems caused to the NC system by any type of cyber-attacks including DoS attack, unauthorized access and computer virus.**

(2) Transportation and installation

⚠ CAUTION

⚠ **Correctly transport the products according to the mass.**

⊘ **Use motor's suspension bolts to transport the motor itself. Do not use it to transport the motor after installation onto the machine.**

⚠ **Do not stack the products exceeding the indicated limit.**

⚠ **Do not hold the cables, shaft or encoder when transporting the motor.**

⚠ **Do not transport the controller or drive unit by suspending or holding the connected wires or cables.**

⚠ **Do not hold the front cover when transporting the unit, or the front cover could come off, causing the unit to drop.**

⚠ **Install on a non-combustible place where the unit's or motor's mass can be withstood according to the instruction manual.**

⚠ **The motor does not have a complete water-proof (oil-proof) structure. Do not allow oil or water to contact or enter the motor. Prevent the cutting chips from being accumulated on the motor as they easily soak up oil.**

⚠ **When installing the motor facing upwards, take measures on the machine side so that gear oil, etc., will not enter the motor shaft.**

⚠ **Do not remove the encoder from the motor. (The encoder installation screw is treated with sealing.)**

⚠ **Do not allow foreign matters, especially, conductive foreign matters such as screws or metal chips, or combustible foreign matters such as oil, to enter the controller, drive unit or motor. Failure to observe this could result in rupture or damage.**

⚠ **Do not get on the product or place heavy objects on it.**

⚠ **Provide prescribed distance between the controller/drive unit and inner surface of the control panel/other devices.**

⚠ **Do not install or operate the controller, drive unit or motor that is damaged or has missing parts.**

⚠ **Take care not to cut hands, etc. with the heat radiating fins or metal edges.**

⚠ CAUTION

⚠ **Do not block the intake/outtake ports of the motor with the cooling fan.**

⚠ **Install the controller's display section and operation board section on the spot where cutting oil will not reach.**

⚠ **The controller, drive unit and motor are precision devices, so do not drop or apply thumping vibration and strong impacts on them.**

⚠ **The controller and drive unit are precision devices, so do not drop or apply strong impacts on them.**

⚠ **Store and use the units according to the environment conditions indicated in each specifications manual.**

⚠ **When disinfectants or insecticides must be used to treat wood packaging materials, always use methods other than fumigation (for example, apply heat treatment at the minimum wood core temperature of 56 °C for a minimum duration of 30 minutes (ISPM No. 15 (2009))).**

If products such as units are directly fumigated or packed with fumigated wooden materials, halogen substances (including fluorine, chlorine, bromine and iodine) contained in fumes may contribute to the erosion of the capacitors. When exporting the products, make sure to comply with the laws and regulations of each country.

⚠ **Do not use the products in conjunction with any components that contain halogenated flame retardants (bromine, etc). Failure to observe this may cause the erosion of the capacitors.**

⚠ **Securely fix the motor to the machine. The motor could come off during operation if insecurely fixed.**

⚠ **Always install the motor with reduction gear in the designated direction. Failure to observe this could result in oil leaks.**

⚠ **Always install a cover, etc., over the shaft so that the rotary section of the motor cannot be touched during motor rotation.**

⚠ **When installing a coupling to the servomotor shaft end, do not apply impacts by hammering, etc. The encoder could be damaged.**

⚠ **Use a flexible coupling when connecting with a ball screw, etc., and keep the shaft core deviation smaller than the tolerable radial load of the shaft.**

⚠ **Do not use a rigid coupling as an excessive bending load will be applied on the shaft and could cause the shaft to break.**

⚠ **Do not apply a load exceeding the tolerable level onto the motor shaft. The shaft or bearing could be damaged.**

❗ **Before using this product after a long period of storage, please contact the Service Center.**

⚠ **Following the UN recommendations, battery units and batteries should be transported based on the international regulations such as those determined by International Civil Aviation Organization (ICAO), International Air Transport Association (IATA), International Maritime Organization (IMO) and U.S. Department of Transportation (DOT).**

(3) Items related to wiring

⚠ CAUTION

⚠ **Correctly wire this product. Failure to observe this could result in motor runaway, etc.**

⚠ **Incorrect terminal connections could cause the devices to rupture or damage, etc. Always connect the cables to the indicated connectors or terminals.**

⚠ **Do not install a phase advancing capacitor, surge absorber or radio noise filter on the output side of the drive unit.**

⚠ **Correctly connect the output side (terminal U, V, W). The motor will not run properly if incorrectly connected.**

⚠ **Always install an AC reactor per each power supply unit.**

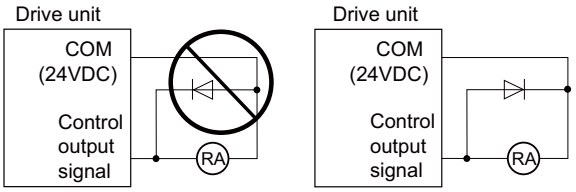
⚠ **Always install an appropriate breaker per each power supply unit. A breaker cannot be shared for multiple power supply units.**

⚠ **Do not directly connect a commercial power supply to the motor. Failure to observe this could result in faults.**

❗ **When using an inductive load such as relays, always connect a diode in parallel to the load as a noise countermeasure.**

❗ **hen using a capacitive load such as a lamp, always connect a protective resistor serially to the load to suppress rush currents.**

⚠ **Do not mistake the direction of the surge absorption diode to be installed on the DC relay for the control output signal. If mistaken, the signal will not be output due to fault in the drive unit, and consequently the protective circuit, such as emergency stop, could be disabled.**



🚫 **Do not connect or disconnect the cables between units while the power is ON.**

⚠ **Do not connect or disconnect the PCBs while the power is ON.**

⚠ **Do not pull the cables when connecting/disconnecting them.**

⚠ **Securely tighten the cable connector fixing screw or fixing mechanism. The motor could come off during operation if insecurely fixed.**

⏚ **Always treat the shield cables indicated in the Connection Manual with grounding measures such as cable clamps.**

⚠ **Separate the signal wire from the drive line or power line when wiring.**

⚠ **Carry out wiring so that there is no possibility of short circuit between wires, nor of dangerous state.**

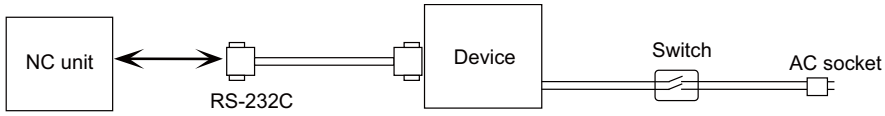
⚠ **Use wires and cables whose wire diameter, heat resistance level and bending capacity are compatible with the system.**

⏚ **Ground the device according to the requirements of the country where the device is to be used.**

⚠ CAUTION

⚠ **Wire the heat radiating fins and wires so that they do not contact.**

⚠ **When using the RS-232C device as a peripheral device, caution must be paid for connector connection/ disconnection. Always use a double-OFF type AC power supply switch on the device side, and connect/ disconnect the connector with the AC power supply on the device side OFF.**



⚠ **Using a stabilized power supply without overcurrent protection may cause the unit's failure due to miswiring of 24V.**

⚠ **12V, 5V, and 3.3V output from connectors are to supply the power for dedicated peripheral devices. Do not use for other equipment to supply the power since we do not guarantee the NC operation by voltage down or noise sneaking.**

When using an inductive load such as a relay, always connect a diode in parallel to the load to prevent a counter-electromotive force.

When the rush current exceeds the maximum output current, always connect a protective resistor serially to the load to suppress rush currents.

⚠ **The wires from the surge absorber should be connected without extensions.**

(4) Set up

⚠ WARNING

Do not cancel the emergency stop before confirming the basic operation.

Always set the stroke end and stroke limit. Failure to set this could result in collision with the machine end.

⚠ CAUTION

If the descriptions relating to the "restrictions" and "allowable conditions" conflict between this manual and the machine tool builder's instruction manual, the latter has priority over the former.

The operations to which no reference is made in this manual should be considered impossible.

This manual is written on the assumption that all the applicable functions are included. Some of them, however, may not be available for your NC system. Refer to the specifications issued by the machine tool builder before use.

Some screens and functions may differ depending on each NC system (or version), and some functions may not be possible. Please confirm the specifications before starting to use.

If the battery low warning is issued, save the machining programs, tool data and parameters in an input/output device, and then replace the battery. When the battery alarm is issued, the machining programs, tool data and parameters may have been destroyed. Replace the battery and then reload the data.

Do not adjust the spindle when possible risks associated with adjustment procedures are not thoroughly taken into consideration

Be careful when touching spindle's rotating section, or your hand may be caught in or cut.

(5) Operation and Adjustments

⚠ CAUTION

If the operation start position is set in a block which is in the middle of the program and the program is started, the program before the set block is not executed. Please confirm that G and F modal and coordinate values are appropriate. If there are coordinate system shift commands or M, S, T and B commands before the block set as the start position, carry out the required commands using the MDI, etc. If the program is run from the set block without carrying out these operations, there is a danger of interference with the machine or of machine operation at an unexpected speed, which may result in breakage of tools or machine tool or may cause damage to the operators.

Under the constant surface speed control (during G96 modal), if the axis targeted for the constant surface speed control moves toward the spindle center, the spindle rotation speed will increase and may exceed the allowable speed of the workpiece or chuck, etc. In this case, the workpiece, etc. may jump out during machining, which may result in breakage of tools or machine tool or may cause damage to the operators.

Check and adjust programs and each parameter before starting operation. Failure to observe this could result in unpredictable operations depending on the machine.

Do not make drastic adjustments or changes in the parameters as the operation could become unstable.

In the explanation on bits, set all bits not used, including blank bits, to "0".

(6) Usage

⚠ CAUTION

⚠ **Use this product within the range of environmental condition described in this manual.**
Using this product in an environment outside the range could result in electric shock, fire, operation failure, or damage to or deterioration of the product.

❗ **Install an external emergency stop circuit so that the operation can be stopped and the power turns OFF immediately when unforeseen situation occurs. A contactor, etc., is required in addition to the shutoff function mounted in the controller.**

⚠ **Turn OFF the power immediately if any smoke, abnormal noise or odor is generated from the controller, drive unit or motor.**

🚫 **Only a qualified technician may disassemble or repair this product.**

⚠ **Do not alter.**

⚠ **Use a noise filter, etc. to reduce the effect of electromagnetic disturbances in the case where electromagnetic disturbances could adversely affect the electronic devices used near the drive unit.**

⚠ **Use the drive unit, motor and each regenerative resistor with the designated combination. Failure to observe this could result in fires or faults.**

⚠ **The combination of the motor and drive unit that can be used is determined. Be sure to check the models of motor and drive unit before test operation.**

🚫 **The brakes (electromagnetic brakes) mounted in the servomotor are used for the purpose of holding, and must not be used for normal braking. Also, do not run the motor with the motor brake applied. Motor brake is used for the purpose of holding.**

⚠ **For the system running via a timing belt, install a brake on the machine side so that safety can be ensured.**

⚠ **Be sure to confirm SERVO OFF (or READY OFF) when applying the electromagnetic brake. Also, be sure to confirm SERVO ON prior to releasing the brake.**

❗ **When using the DC OFF type electromagnetic brake, be sure to install a surge absorber on the brake terminal.**

🚫 **Do not connect or disconnect the cannon plug while the electromagnetic brake's power is ON. The cannon plug pins could be damaged by sparks.**

⚠ **After changing programs/parameters, or after maintenance/inspection, always carry out a test operation before starting actual operation.**

⚠ **Use the power that are complied with the power specification conditions (input voltage, input frequency, tolerable instantaneous power failure time) indicated in each specifications manual.**

⚠ **When making encoder cables, do not mistake connection. Failure to observe this could result in malfunction, runaway or fire.**

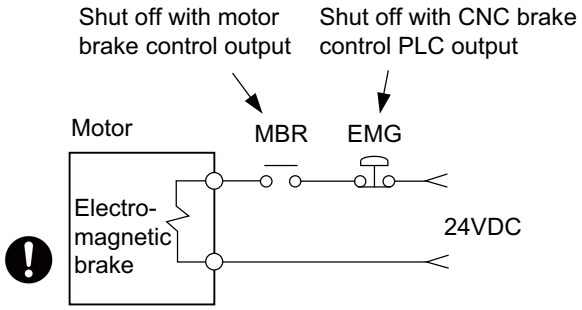
⚠ **Surge absorber to be selected varies depending on input power voltage.**

(7) Troubleshooting

⚠ CAUTION

⚠ **Use a motor with electromagnetic brakes or establish an external brake mechanism for the purpose of holding; this serves as countermeasures for possible hazardous situation caused by power failure or product fault.**

⚠ **Use a double circuit structure for the electromagnetic brake's operation circuit so that the brakes will activate even when the external emergency stop signal is issued.**



⚠ **The machine could suddenly restart when the power is restored after an instantaneous power failure, so stay away from the machine. (Design the machine so that the operator safety can be ensured even if the machine restarts.)**

⚠ **To secure the absolute position, do not shut off the servo drive unit's control power supply when its battery voltage drops (warning 9F) in the servo drive unit side.**

❗ **If the battery voltage drop warning alarm occurs in the controller side, make sure to back up the machining programs, tool data and parameters, etc. with the input/output device before replacing the battery. Depending on the level of voltage drop, memory loss could have happened. In that case, reload all the data backed up before the alarm occurrence.**

(8) Maintenance, inspection and part replacement

⚠ CAUTION

⚠ **Periodically back up the programs, tool data and parameters to avoid potential data loss. Also, back up those data before maintenance and inspections.**

❗ **When replacing the battery on the controller side, the machining programs, tool data and parameters should be backed up with the input/output device beforehand.**
In case the memory is damaged in replacing the batteries, reload all the data backed up before replacing the battery.

⚠ **The electrolytic capacitor's capacity will drop due to deterioration. To prevent secondary damage due to capacitor's faults, Mitsubishi Electric recommends the electrolytic capacitor to be replaced approx. every five years even when used in a normal environment. Contact the Service Center for replacements.**

⚠ **Do not perform a megger test (insulation resistance measurement) during inspection.**

⚠ **Do not replace parts or devices while the power is ON.**

⚠ **Do not short-circuit, charge, overheat, incinerate or disassemble the battery.**

⚠ **There may be a unit filled with substitute Freon in the heat radiating fins of the 37kW or smaller unit. Be careful not to break the heat radiating fins during maintenance or replacement.**

(9) Disposal

⚠ CAUTION

⚠ **Take the batteries and backlights for LCD, etc., off from the controller, drive unit and motor, and dispose of them as general industrial wastes.**

Do not alter or disassemble controller, drive unit, or motor.

⚠ **Collect and dispose of the spent batteries and the backlights for LCD according to the local laws.**

(10) General precautions

To explain the details, drawings given in the instruction manual, etc., may show the unit with the cover or safety partition removed. When operating the product, always place the cover or partitions back to their original position, and operate as indicated in the instruction manual, etc.

Treatment of waste

The following two laws will apply when disposing of this product. Considerations must be made to each law. The following laws are in effect in Japan. Thus, when using this product overseas, the local laws will have a priority. If necessary, indicate or notify these laws to the final user of the product.

(1) Requirements for "Law for Promotion of Effective Utilization of Resources"
   (a) Recycle as much of this product as possible when finished with use.
   (b) When recycling, often parts are sorted into steel scraps and electric parts, etc., and sold to scrap contractors. Mitsubishi Electric recommends sorting the product and selling the members to appropriate contractors.

(2) Requirements for "Law for Treatment of Waste and Cleaning"
   (a) Mitsubishi Electric recommends recycling and selling the product when no longer needed according to item (1) above. The user should make an effort to reduce waste in this manner.
   (b) When disposing a product that cannot be resold, it shall be treated as a waste product.
   (c) The treatment of industrial waste must be commissioned to a licensed industrial waste treatment contractor, and appropriate measures, including a manifest control, must be taken.
   (d) Batteries correspond to "primary batteries", and must be disposed of according to local disposal laws.

Disposal

(Note) This symbol mark is for EU countries only.
This symbol mark is according to the directive 2006/66/EC Article 20 Information for end-users and Annex II.

Your MITSUBISHI ELECTRIC product is designed and manufactured with high quality materials and components which can be recycled and/or reused.
This symbol means that batteries and accumulators, at their end-of-life, should be disposed of separately from your household waste.
If a chemical symbol is printed beneath the symbol shown above, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows:
Hg: mercury (0.0005%), Cd: cadmium (0.002%), Pb: lead (0.004%)
In the European Union there are separate collection systems for used batteries and accumulators.
Please, dispose of batteries and accumulators correctly at your local community waste collection/recycling centre.

Please, help us to conserve the environment we live in!

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(日本語 /Japanese)
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Handling of our product

(English)
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

본 제품의 취급에 대해서

(한국어 /Korean)
이 기기는 업무용 (A 급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며 가정외의 지역에 서 사용하는 것을 목적으로 합니다 .

Contents

1

Outline

Remote service is a network service which enables users to check a state of machine tools from a web browser by viewing information of machine tools equipped with Mitsubishi Electric CNC via the Internet. There are two methods to connect remote service, RGU connection and NC direct connection.
RGU connection connects to remote service via a remote service gateway (hereinafter RGU). The compatible NC control units (hereinafter NC) are as follows.
For DI connection models, a DI connection with an RGU is required. In this case, applicable functions are restricted. For the restrictions, refer to the explanation of each function.

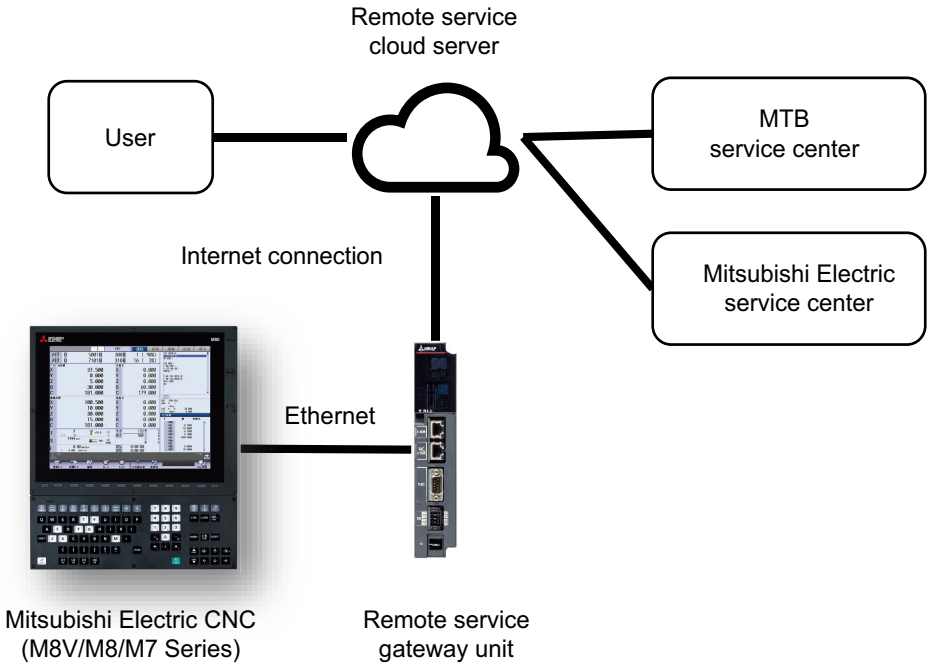
Supported models	DI connection models
M800V Series	C70
M80V Series	MELDAS 60/60S Series
M800 Series	MELDAS 600 Series
M80 Series	EZMotion-NC E60/E68 Series
E80 Series	MELDAS C6/C64
C80 Series	MELDASMAGIC 64
M700V Series	MELDAS 500 Series
M70V Series	MELDAS 50 Series
M700 Series	MELDAS C5
M70 Series	MELDAS 300 Series
E70 Series	MELDAS M3/L3
	MELDAS C3/C3S
	Mitsubishi Electric EDMs (Electrical Discharge Machines) (*1)

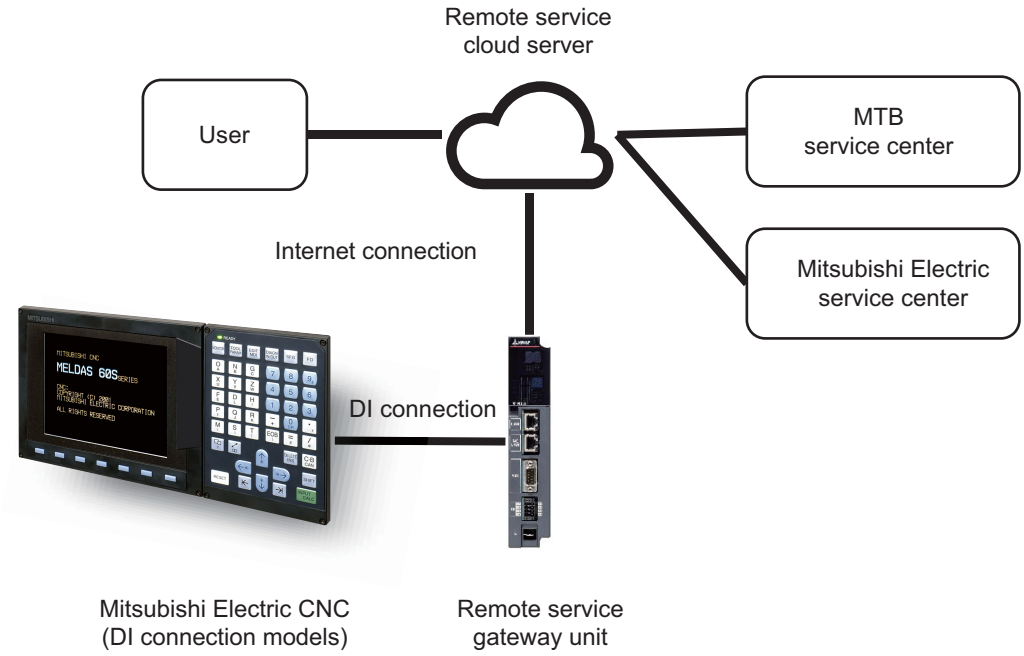
(*1) Please contact your Mitsubishi Electric dealer if you wish to connect it because installation may not be possible or additional construction may be required depending on the machine specifications.

NC direct connection uses only an NC to connect remote service without using the RGU. The compatible NC is M8V Series.
NC acquires and transfers information to the cloud server by the connection above. By doing so, users can view various information through a web browser under an Internet-accessible environment.

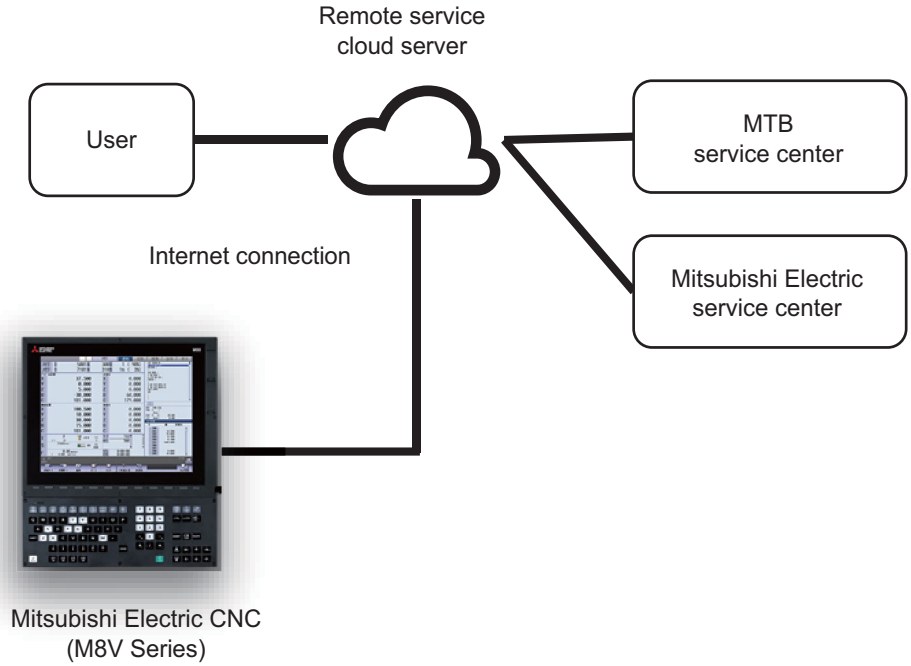
1.1 System Image

1.1.1 RGU Connection





1.1.2 NC Direct Connection



1.2 Characteristics

Main functions available from the remote service are as follows.
Users can view a state of machines from a remote place through a web screen.
The machine tool builder (MTB) can access screens related to machine maintenance and carry out maintenance.

Function	Main functions	User classification	
		Users	Machine tool builder (MTB)
Devices	Listing device information, specifying detailed display object	○	○
Operation	Graph display of operation rate, machining program name, ONB No.	○	-
Use	Servo axis load graph, spindle load graph, power consumption amount	○	-
Alarm	Current alarm, alarm history, total display	○	○
Diagnosis	S/W configuration, H/W configuration, I/F diagnosis, parameter reference, self diagnosis, key operation history, sampling chart	○	○
Utility	Operation status acquisition, alarm diagnosis (Note 1), email notification settings (Note 1)	○	-
	History data acquisition	○	○
	NC file data, online storage, auto backup setup	○	○ (Note 2)
Others	Service call (Note 1)	○	—

(Note 1) This function may be unavailable depending on the license type. Unavailable functions are unavailable to all users.
(Note 2) Online storage and auto backup setup are unavailable.
(Note 3) Only graph display of operation rate and operation status acquisition are available for DI connection models.

1.3 Operation Environment

Operation environment of Mitsubishi Electric CNC remote service screen (hereinafter referred to as "remote service screen") are described below.

Operation environment of personal computer

Items	Details
OS	Windows 8.1/Windows 10 64bit
Browser	Microsoft Edge (Ver38) Google Chrome (Ver65)
Memory	3 GB or more

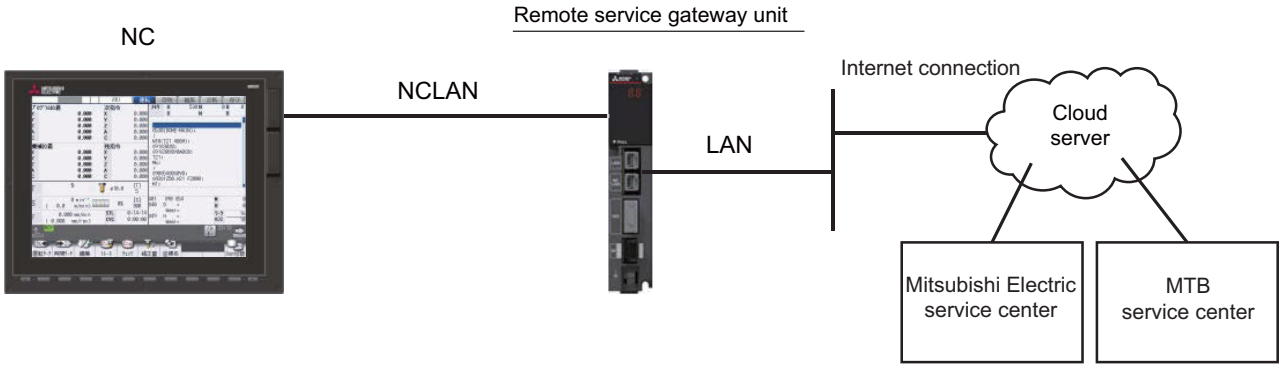
Operation environment of smart phones and tablet devices

Items	Details
OS	iOS
Browser	Safari
Memory	3 GB or more

2

Connection (RGU Connection)

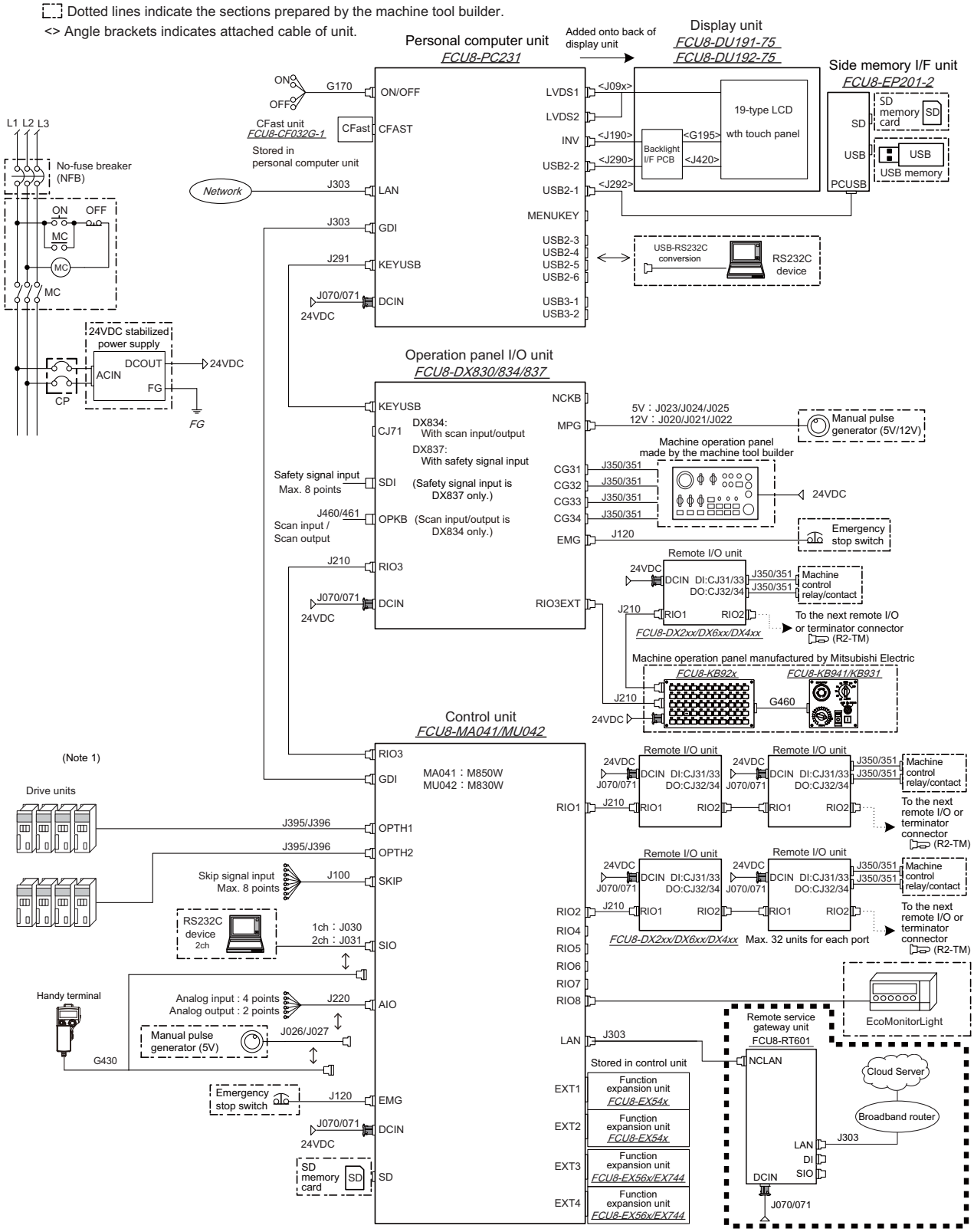
2.1 System Basic Configuration Drawing



2.2 General Connection Diagram

2.2.1 Connection Example: Remote Service Gateway Unit and 800W/M80W Series

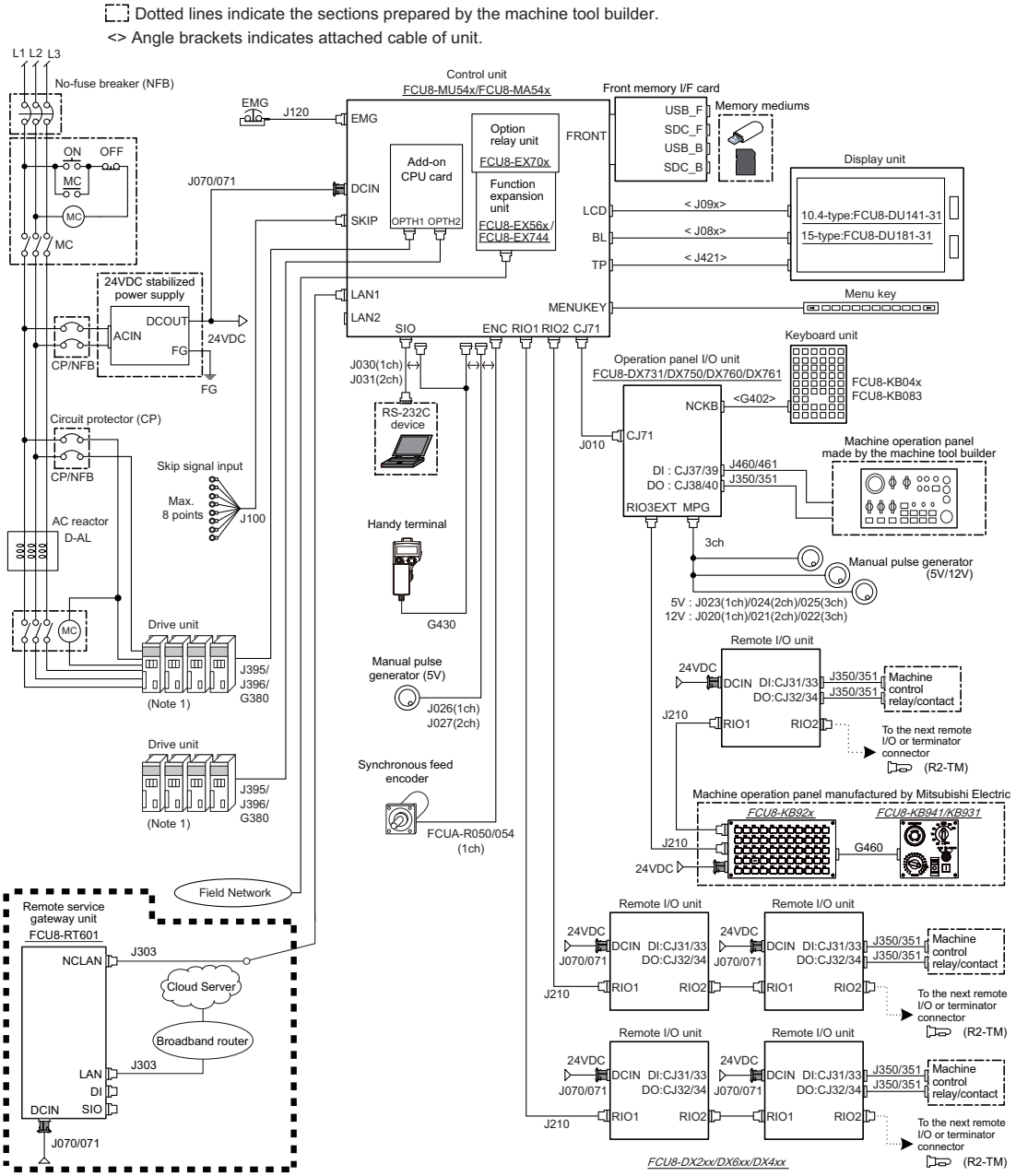
This is an example of M800W Series, Windows-based display (19-type).



(Note) The above drawing shows an example of connection. For details of the connection methods, refer to "2.7 Connecting Remote Service Gateway Unit".

2.2.2 Connection Example: Remote Service Gateway Unit and M800S/M80/E80 Series

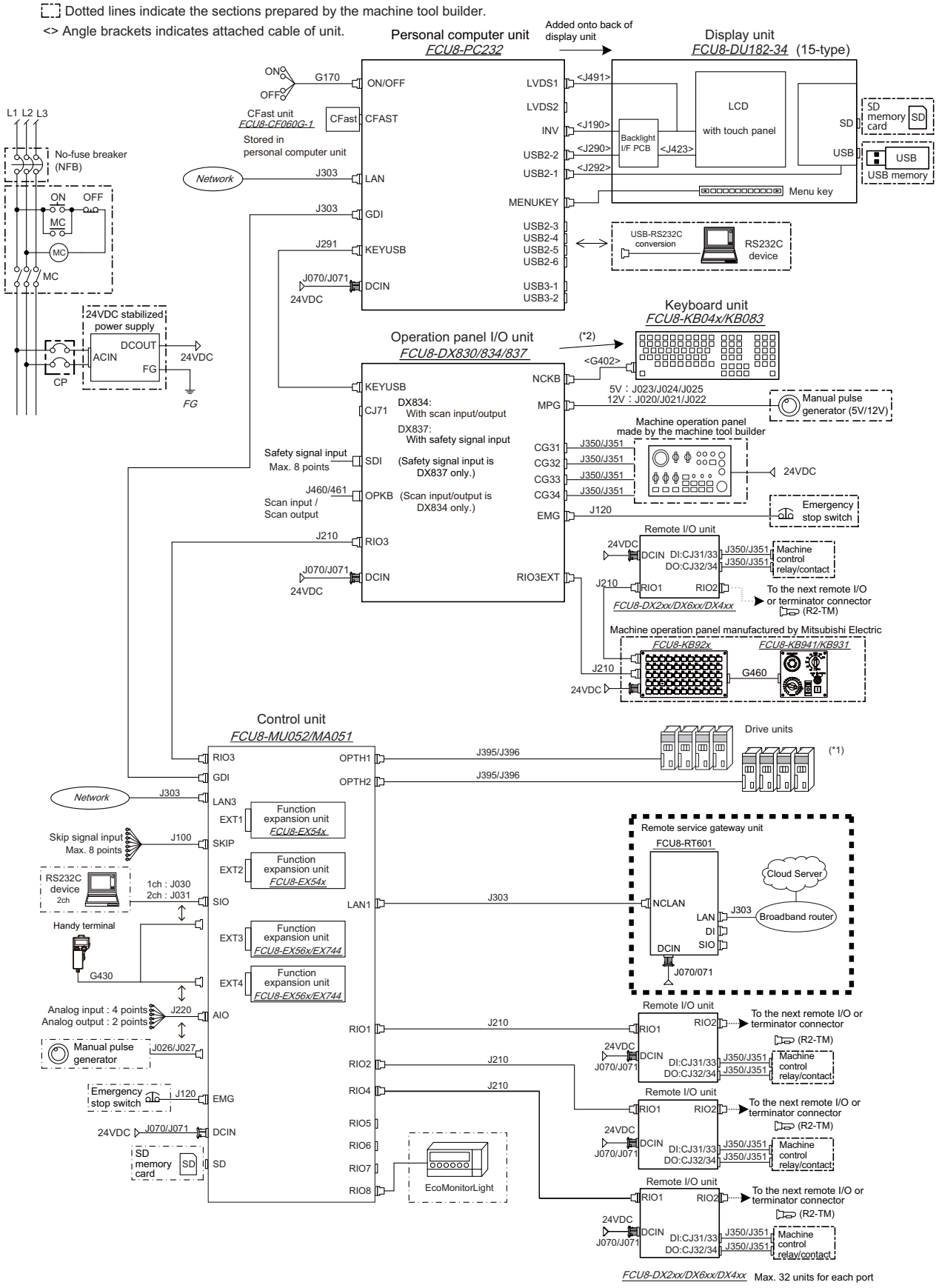
This is an example of M800S Series, equipped with the operation panel I/O unit FCU8-DX731/DX750/DX760/DX761.



(Note) The above drawing shows an example of connection. For details of the connection methods, refer to "2.7 Connecting Remote Service Gateway Unit".

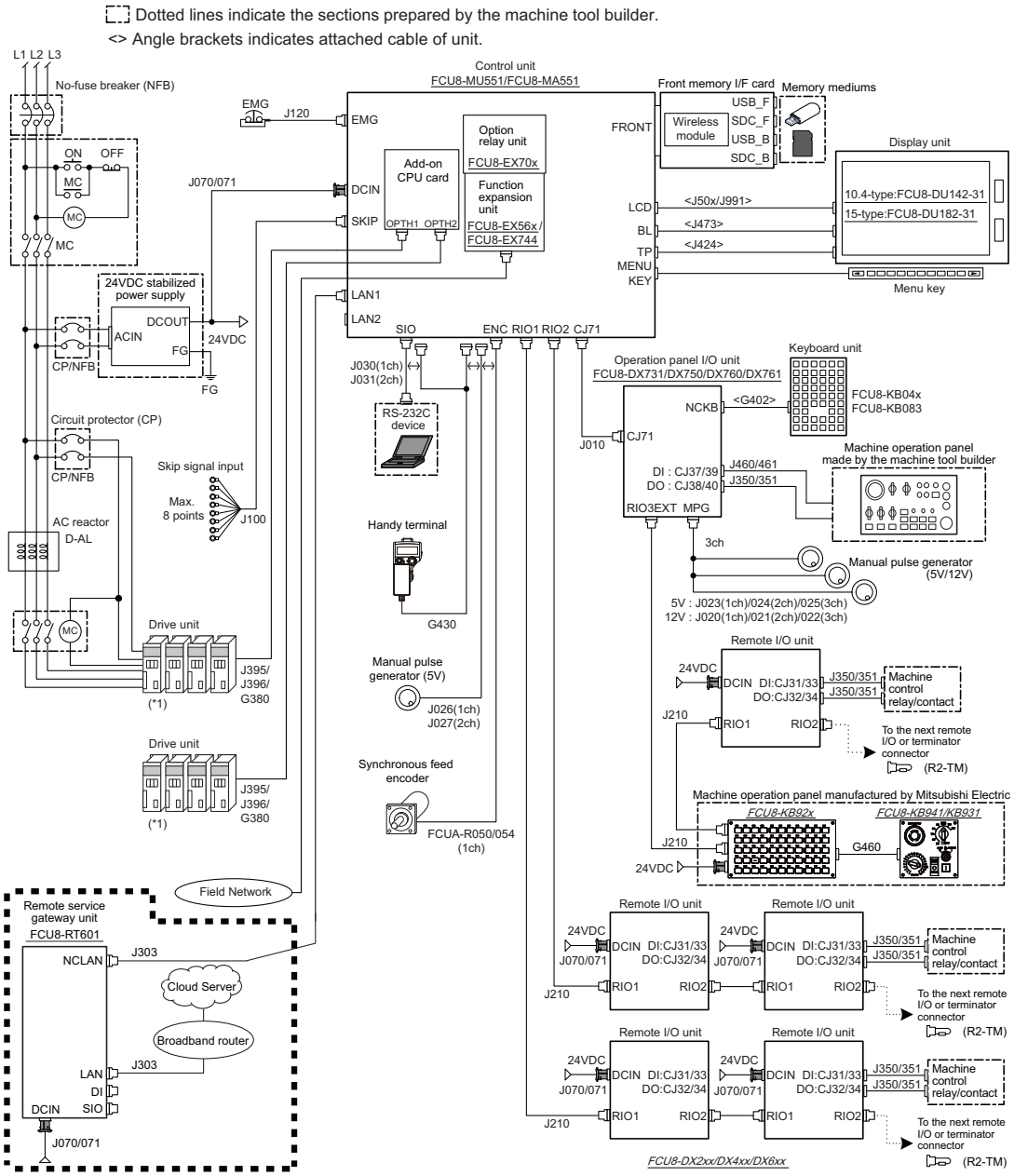
2.2.3 Connection Example: Remote Service Gateway Unit and M800VW/M80VW Series

This is an example of M800VW Series, equipped with the operation panel I/O unit FCU8-DX731/DX750/DX760/DX761.



2.2.4 Connection Example: Remote Service Gateway Unit and M800VS/M80V Series

This is an example of M800VS Series, equipped with the operation panel I/O unit FCU8-DX731/DX750/DX760/DX761.



2.3 List of Configuration

2.3.1 Module Configuration List

Classification	Type	Components	Remarks
[IoT unit]			
Remote service gateway unit	FCU8-RT601	Base control card 7SEG card	Not applicable

2.3.2 Replacements

Replacements	Part type
Protection fuse for remote service gateway unit	LM40

2.3.3 Cables

Type	Application	Available cable length (m)	Maximum cable length
J070	24VDC power cable	1, 2, 3, 5, 7, 10, 15	15 m
J071	24VDC power cable (for long distance)	20	20 m
J303	LAN straight cable	1, 2, 3, 5, 7, 10, 15, 20, 30, 40, 50	50 m

2.4 General Specifications

2.4.1 Environment Conditions (Installation Environment Conditions)

Unit name			Remote service gateway unit
Unit type			FCU8-RT601
General specifications	Ambient temperature	During operation	0 to 55 °C (Note 1)
		During storage	-20 to 60 °C
	Ambient humidity	Long term	10 to 75% RH (with no dew condensation)
		Short term (Note 2)	10 to 95% RH (with no dew condensation)
	Vibration resistance		4.9 m/s^2 or less
	Shock resistance		29.4 m/s^2 or less
	Working atmosphere		No corrosive gases, dust or oil mist
	Altitude		Operation/Storage: 1000 meters or less above sea level Transportation: 13000 meters or less above sea level (Note 3)
Power supply voltage			24VDC
Current consumption (max)			0.4 A
Instantaneous stop tolerance time			36 ms or less
Maximum heating value (W)			9.6 W (Note 4)
Mass			0.7 kg
Outline dimension			40 mm (W) × 151 mm (D) × 205 mm (H)

(Note 1) Installable inside the operation panel as it can operate under the environment of 58 °C.

(Note 2) Short term means within one month.

(Note 3) For the whole NC system, consider the characteristics of the drive units when the altitude is more than 1000 meters above sea level.
Refer to the manual of drive unit for details.

(Note 4) Maximum heating value here is the value excluding DI.

2.4.2 24VDC Stabilized Power Supply Selecting Conditions

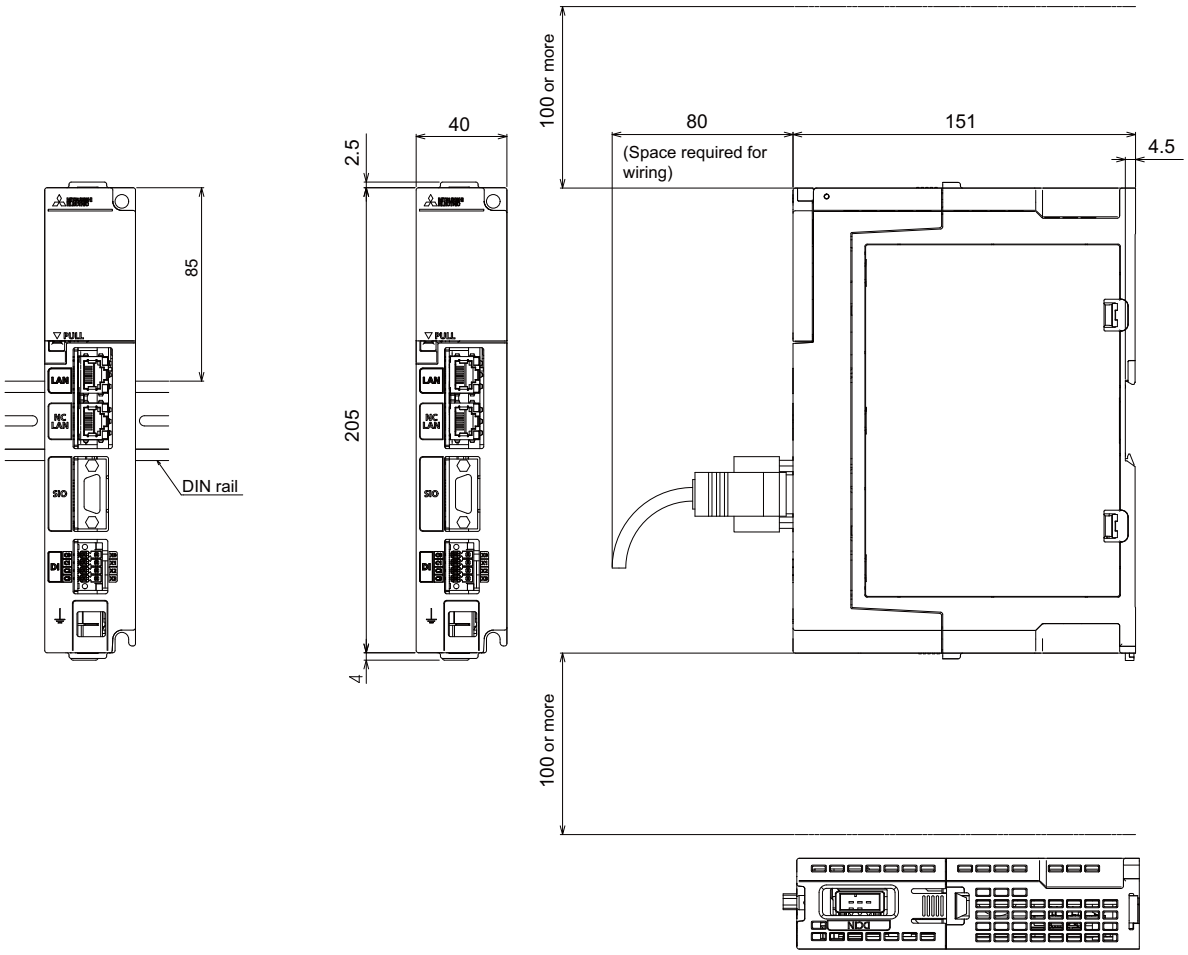
Considering the following characteristics for the stabilized power supply, select a power supply that complies with laws, regulations, and safety standards of the country where the machine will be installed.

Items		Specifications	Remarks
Output	**Voltage**	24VDC	When the stabilized power supply and 24VDC input unit are distant from each other, select the stabilized power supply which is possible to set output voltage 24VDC or more allowing for the influence of voltage drop by the cable.
	Voltage fluctuation	±5%	
	Current	-	Calculate the current value by referring to maximum current consumption for the unit which uses the power supply.
	Ripple noise	0.2 V (P-P)	
	Output holding time	min 20 ms	Output holding time is decided by loading ratio; however, the stabilized power supply which complies with the specification on the left must be selected during maximum loading.
	Overcurrent output shutoff function	-	Use a power supply having the overcurrent output shutoff function.

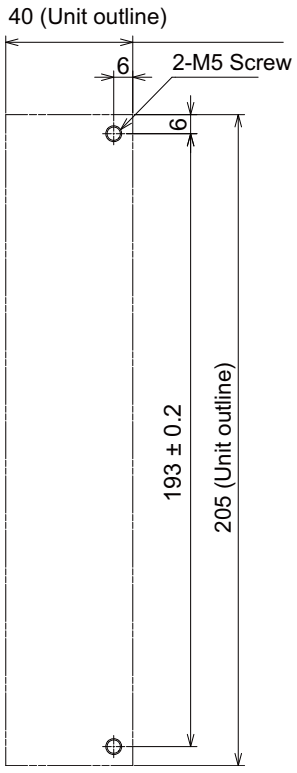
⚠ CAUTION

1. Using a stabilized power supply without overcurrent protection may cause the unit's failure due to miswiring of 24V.

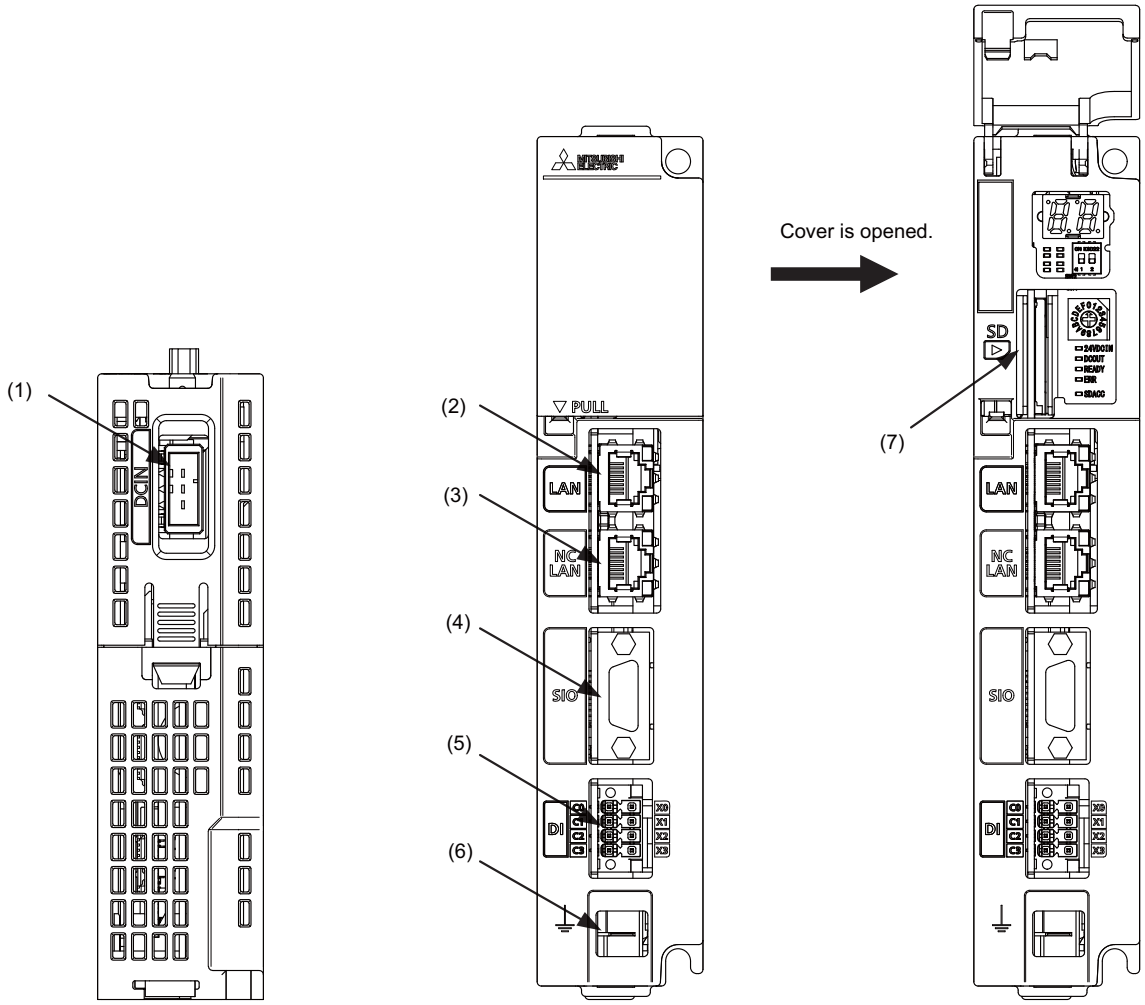
2.4.3 Outline Dimension



2.4.4 Installation Dimension

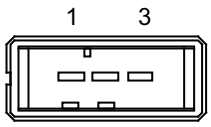


2.4.5 Connectors



No.	Connector name	Description
(1)	DCIN	24VDC input
(2)	LAN	Ethernet communication
(3)	NCLAN	Ethernet communication for NC control unit connection
(4)	SIO	System reserved
(5)	DI	System reserved
(6)	FG	FG terminal
(7)	SD	SD card I/F

(1) DCIN (24VDC input)



1	I	+24V
2		0 V
3		FG

<Cable side connector type>

Connector: 2-178288-3
Contact: 1-175218-5
Recommended manufacturer: Tyco Electronics

(a) Specifications of power supply

Consider the following characteristics when selecting the stabilized power supply (prepared by machine tool builder). Use a power supply that complies with CE Marking or that follows the safety standards given below.

[Stabilized power supply selection items]

Items		Standard setting
Output	**Voltage fluctuation**	±5% or less of 24VDC
	Ripple noise	200 mV (P-P)
Power capacity		Calculate the current value as a reference of maximum current consumption for the unit which uses the power supply.
Output holding time		20 ms
Overcurrent protection		Required

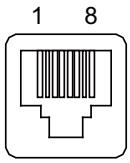
[Standards]

Safety Standards: UL1950, CSA C22.2 No. 234 approved, IEC950 compliant
Noise Terminal Voltage: FCC Class A, VCCI-Class A
High Harmonics Current Restrictions: IEC61000-3-2

(Note) 24VDC voltage may drop temporarily due to rush current at the beginning of 24V power supply to the control unit.
The level of voltage drop depends on the capacity of the power supply. Do not share the power supply with the devices that generate alarms to warn the voltage drop.

> **⚠ CAUTION**
>
> **1. Using a stabilized power supply without overcurrent protection may cause the unit's failure due to miswiring of 24V.**

(2) LAN (Ethernet communication)



1	I/O	TXRXD0+
2	I/O	TXRXD0-
3	I/O	TXRXD1+
4	I/O	TXRXD2+
5	I/O	TXRXD2-
6	I/O	TXRXD1-
7	I/O	TXRXD3+
8	I/O	TXRXD3-

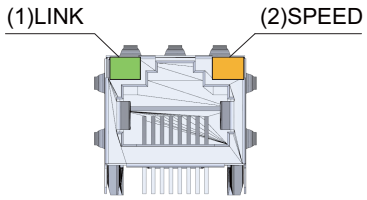
- Connect connector case with FG pattern.
- Use J303 cable when directly connecting a device such as a personal computer to the unit.

<Cable side connector type>

Connector: J00026A0165

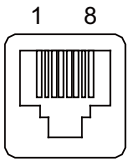
Recommended manufacturer: Japan Telegärtner

Lighting specification of LAN LED



LED name	Indication	Details	
LINK	Communication status	Lit (Yellow green)	LINK is established.
		Flashing	Communicating
		Not lit	LINK is not established.
SPEED	Communication speed	Lit (Yellow green)	1000 Base
		Lit (Yellow)	100 Base
		Not lit	10 Base

(3) NCLAN (Ethernet communication for NC control unit connection)



1	O	TXD+
2	O	TXD-
3	I	RXD+
4		NC
5		NC
6	I	RXD-
7		NC
8		NC

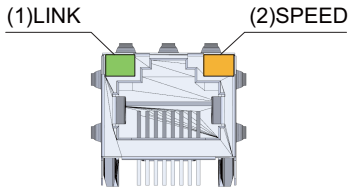
- Connect connector case with FG pattern.

<Cable side connector type>

Connector: J00026A0165

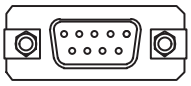
Recommended manufacturer: Japan Telegärtner

Lighting specification of NCLAN LED



LED name	Indication	Abbreviations in this manual	
LINK	Communication status	Lit (Yellow green)	LINK is established.
		Flashing	Communicating
		Not lit	LINK is not established.
SPEED	Communication speed	Lit (Yellow)	100 Base
		Not lit	10 Base

(4) SIO (RS-232C communication 1 channel)



No.	Signal name	I/O	No.	Signal name	I/O
1	DCD(N.C)	I	6	DR(DSR)	I
2	RD(RXD)	I	7	RS(RTS)	O
3	SD(TXD)	O	8	CS(CTS)	I
4	ER(DTR)	O	9	RI(N.C.)	I
5	GND	-			
A	FG	-	B	FG	-

- Connect connector case with FG pattern.

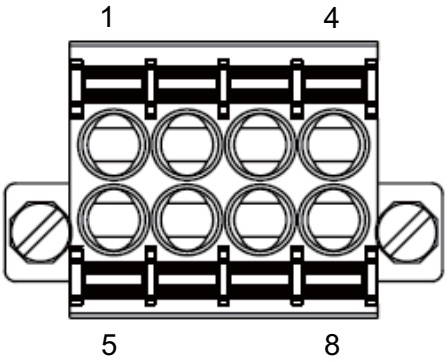
<Cable side connector type>

Plug: 17DE-13090-C

Shell: 17JE-09H-1A

Recommended manufacturer: DDK

(5) DI (Digital input 4 channels)



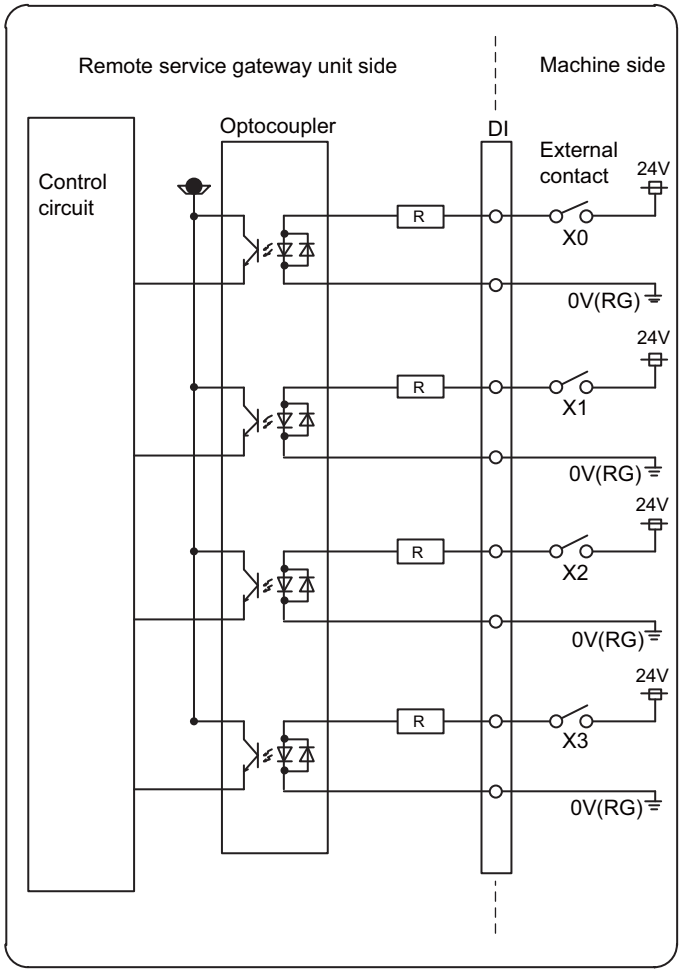
No.	Signal name	I/O	Supplement	No.	Signal name	I/O	Supplement
1	X0	I	DI (ch0)	5	C0	-	RG (ch0)
2	X1	I	DI (ch1)	6	C1	-	RG (ch1)
3	X2	I	DI (ch2)	7	C2	-	RG (ch2)
4	XI3	I	DI (ch3)	8	C3	-	RG (ch3)

- COM separate type connector
- The cable side connector is provided as an accessory of the unit.
- Screw-fastening type connector is recommended.
- Easy lock release type connector is distributed; however, using this type connector could result in connection faults due to large vibration.

<Cable side connector type>

Connector: DFMC1.5/4-STF-3.5 (Standard module)
DFMC1.5/4-STF-3.5 BKO-CB1257H01 (Pin code printed)
Recommended manufacturer: Phoenix Contact

(a) Overview of digital signal input circuit (COM separate type)

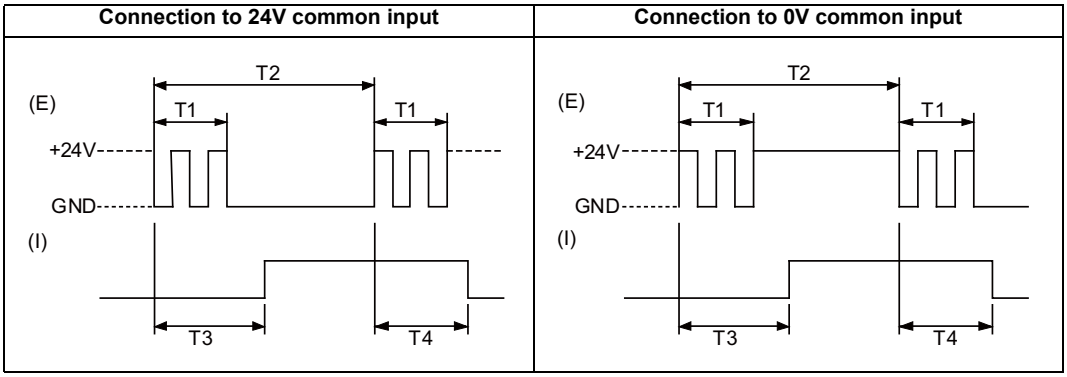


Input conditions

The input signals must be used within the following condition ranges.

		Remote service gateway unit
1	Input voltage at external contact ON	**18 V or more, 25.2 V or less**
2	Input current at external contact ON	**7.18 V or more, 11.38 mA or less**
3	Input voltage at external contact OFF	**3.8 V or less**
4	Input current at external contact OFF	**0.7 V or less**
5	Input resistance	**2.2 kΩ**
6	Tolerable chattering time	**1 ms or less**
7	Input signal holding time	**1.7 ms or more**
8	Input circuit operation delay time	**1 to 2 ms**
9	Machine side contact capacity	**30 V or more, 16 mA or less**

DI Input timing



(E): External signal, (I): Internal signal

(6) FG (FG terminal)

(7) SD (SD card I/F)

2.4.6 Exclusive SD Cards for Mitsubishi Electric CNC

Items		FCU8-SD001G	FCU8-SD004G
Capacity		1 GB	4 GB
NAND Flash		SLC (Note 1)	
Ambient temperature	During operation	-25 °C to +85 °C	
	During storage	-40 °C to +85 °C	
Ambient humidity	During operation	5% to 95%RH (with no dew condensation)	
	During storage	5% to 95%RH (with no dew condensation)	

(Note 1) SLC stands for Single Level Cell, and it stores one bit data in each memory cell.
This provides longer life span and high product reliability in comparison with such as MLC (Multi Level Cell) and TLC (Triple Level Cell), which are commonly applied to SD cards.

(Note 2) Do not touch the terminal part with fingers, etc. when handling the SD cards.
A stain on the terminal part of SD card causes a poor contact or a failure.

2.4.6.1 SD Interface

Standards	**SD/SDHC (Note 1)**
Transfer speed	Depends on the connecting SD card
Maximum capacity	32 GB
Number of free ports	1

(Note 1) SDXC is not supported.

(1) Precautions for use of commercially available SD card

Mitsubishi Electric will not provide performance guarantee and maintenance for commercially available SD card, mini SD card or micro SD card (converting adapter required). Using any of them requires the machine tool builder a careful performance check.

Commercially available devices may not be compatible with Mitsubishi Electric units or suitable FA environment for temperature- or noise-wise.

(2) Precautions for insertion/removal of SD card

When inserting/removing an SD card, turn the Mitsubishi Electric device's power OFF. Do not remove the card or turn OFF the power during access to the SD card. Failure to observe this could cause the memory contents to be erased.

As a precaution, always backup important data by duplicating it, for example, as Mitsubishi Electric will not guarantee the broken or lost data.

2.5 Installation

2.5.1 Heat Radiation Countermeasures

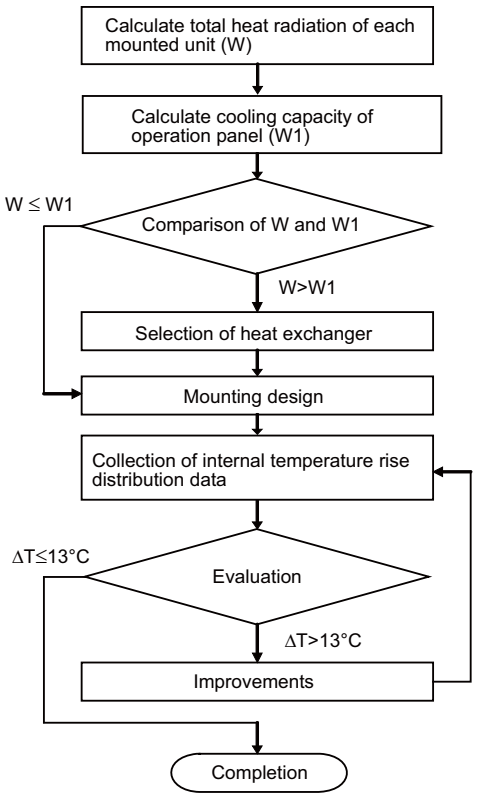
Refer to the following method for heat radiation countermeasures.
The remote service gateway unit can be installed inside the operation panel or the electric cabinet.
When the unit is to be installed inside the operation panel, follow the procedures of heat radiation countermeasures.

Example of heat radiation countermeasures

<Assumed conditions>

(1) Average internal temperature of operation panel: T ≤ 58 °C
(2) Peripheral temperature of operation panel: Ta ≤ 0 °C to 45 °C
(3) Internal temperature rise value: ΔT = T - Ta (max) = 13 °C

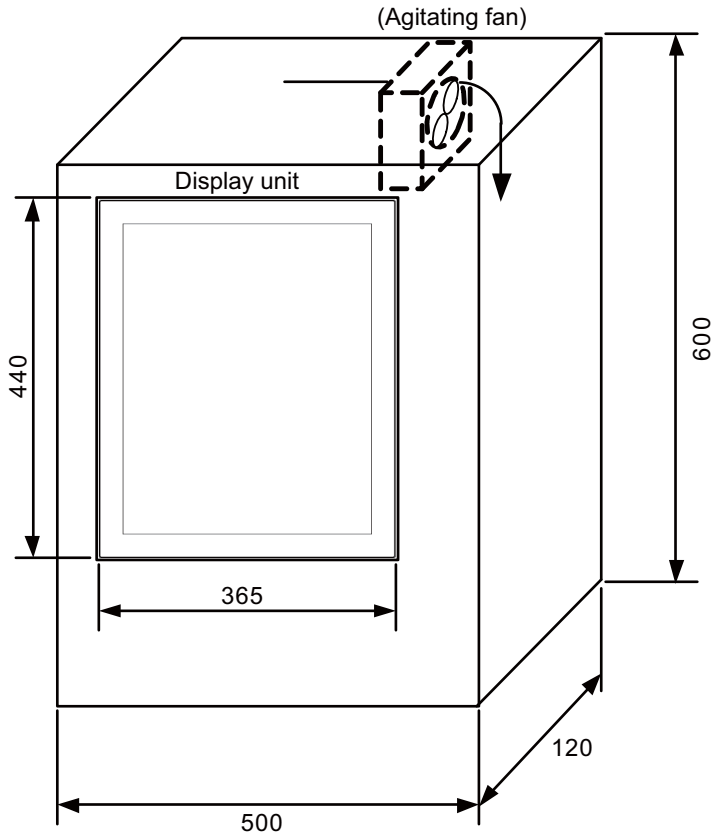
Procedures for heat design and verification



<Supplemental explanation>

(1) Refer to "General Specification" for the heat generated by each unit.
(2) Enclosed cabinet (thin steel plate) cooling capacity calculation equation (W1)
W1 = U × A × ΔT
U: 6 W/m^2 °C
A: Effective heat radiation area (m^2) (Area where heat can be radiated from operation panel)
ΔT: Internal temperature rise value (13 °C)
(Note)?8 W/m^2 °C can be applied only when the operation panel is small enough that the internal temperature stays uniform.
(3) Points of caution for heat radiation countermeasures when designing mounting state
- Consider convection in operation panel (eliminate heat spots).
- Collect hot air at suction port of heat exchanger in operation panel.
(4) Criterion for internal temperature rise distribution data
ΔT (average value) ≤ 13 °C
ΔTmax (maximum value) ≤ 15 °C
R (inconsistency ΔTmax - ΔTmin) ≤ 6 °C
(Evaluate existence of heat spots)

The following shows an example of calculation applied to heat radiation countermeasures for the operation panel when 19-type display unit is used. Because heat accumulates in the upper portions of the unit, install an agitating fan as required.



Calculation example of panel internal heating value (When the remote service gateway unit in installed inside the operation panel)

* Maximum heating value described "2.4.1 Environment Conditions (Installation Environment Conditions)" is the value excluding DI.

(1) Calculation of unit heating value (When FCU8-DU191-75 + FCU8-DX837 is assumed to be used)

Heating value (W)

Total heating value of units (W):

38.6 W (= display unit + operation panel I/O unit + remote service gateway unit)

Total heating value (W) by machine input (D1) of operation panel I/O unit

8.3 W = ((24 V)^2/5 kΩ) × 72 points)

Total heating value when the following DIs are simultaneously turned ON

- 64 points of the operation panel I/O unit DI
- 8 points of safety DI

1.05 W = ((24 V)^2/2.2 kΩ) × 4 points)

Total heating value when the DIs of 4 points for the remote gateway unit are simultaneously turned ON

Total heating value W = 47.95 W (38.6 + 8.3 + 1.05)

(2) Calculation of operation panel cooling capacity

Tolerance value for temperature rise (Δt)

- Panel internal temperature (according to each unit's specification) T ≤ 58 °C
- Panel peripheral temperature (according to machine's specification) Ta ≤ 45 °C

Tolerance value for internal temperature rise ΔT = 13 °C (T - Ta)

Heat radiation area (A)

The surface of the molded unit, which has lower radiation capacity than the metal plate surface, should be excluded from the heat radiation area in principle.

The bottom of the operation panel, which has difficulty in radiating due to the temperature distribution, should also be excluded from the heat radiation area in principle.

Heat radiation area A

= 0.643 mm^2 (≈ 0.5 × 0.12 + 0.6 × 0.5 × 2 + 0.6 × 0.12 × 2 - 0.44 × 0.365)

(Top surface) (Front, rear surface) (Both sides surface) (Unit surface)

Operation panel cooling capacity (W1)

Calculate the cooling capacity to keep the temperature rise in the operation panel 13 °C or less.

Cooling capacity W1 = 50.2 W (6 × A × ΔT)

(3) Comparison of heating value and operation panel cooling capacity

The operation panel cooling capacity is over the heating value, thus installing the heat exchanger is presumed to be unnecessary.

(4) Confirmation with the actual machine

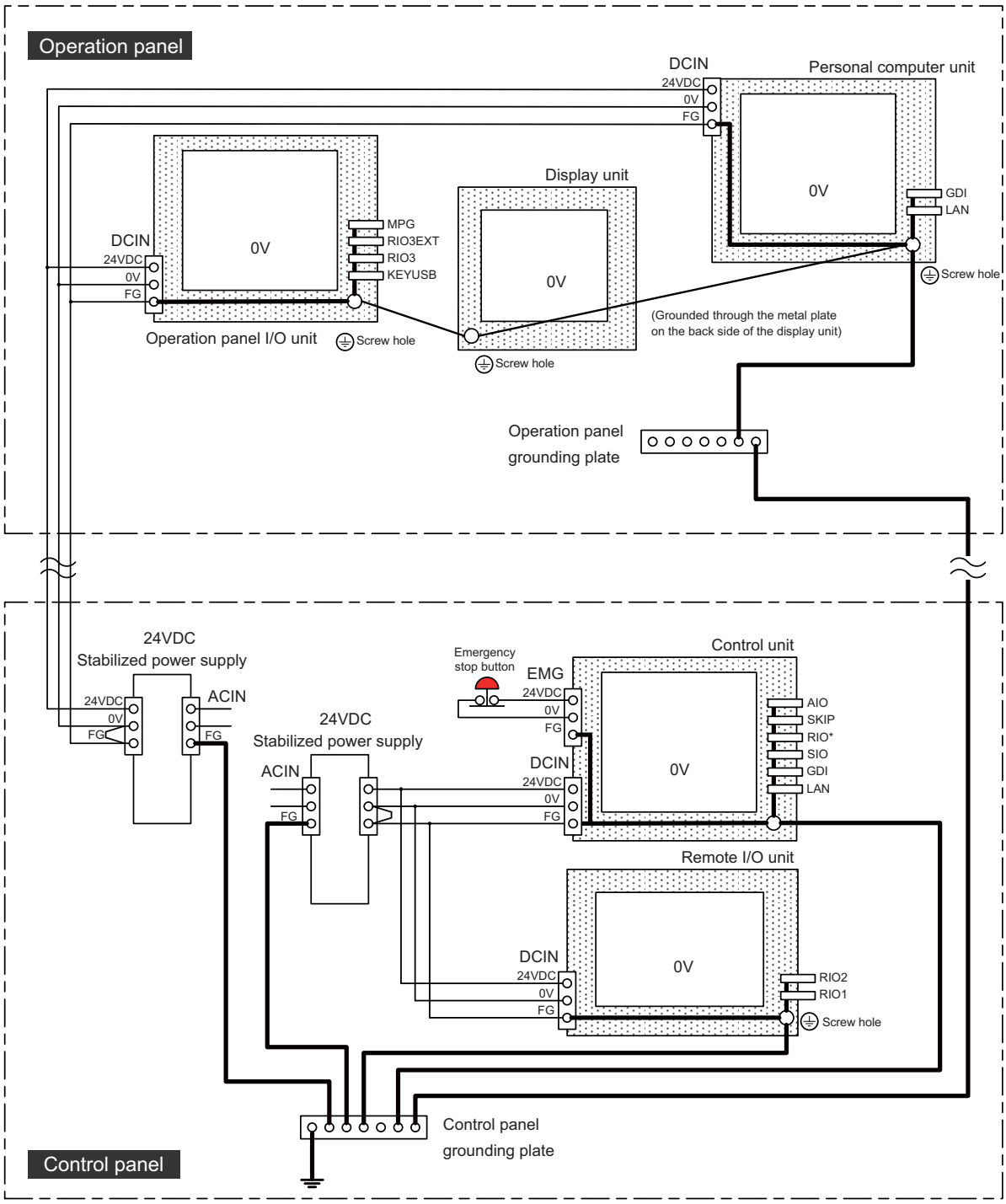
The result of the calculation above is only a rough indication. The actual temperature rise may differ according to the structure of the operation panel.

Be sure to confirm the temperature rise value in the operation panel when the machine is running.

2.5.2 Noise Countermeasures

2.5.2.1 Connection of Frame Ground (FG)

The frame should basically be grounded at one ground point.
Because the personal computer unit and the operation panel I/O unit are located in a place away from the electric cabinet, connect the ground terminal of the personal computer to the grounding plate of the operation section and connect the grounding plate of the operation panel to the grounding plate of the electric cabinet. (Be sure to ground the ground terminal of the personal computer. Otherwise, it affects controllability of the touchscreen.)
Connect 0V (common) and FG on the 24VDC power supply.

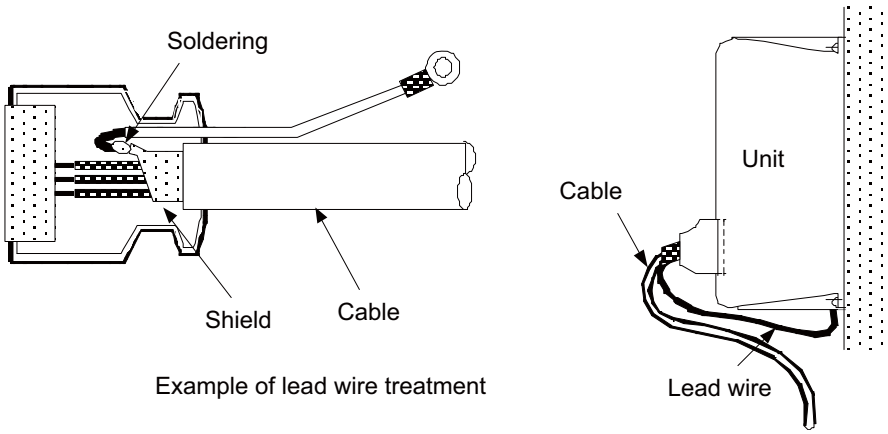


: Indicates that the metal case of connector is connected to FG ⏚ according to the pattern on PCB.

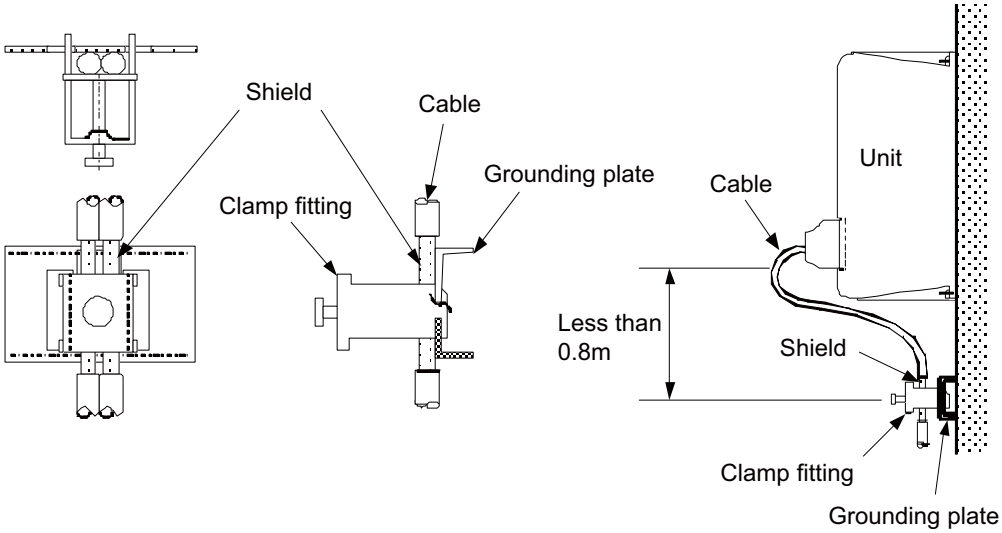
2.5.2.2 Shield Clamping of Cables

The shield of the shield cable connected to the control unit and drive unit must be connected to the grounding plate to stabilize operation while preventing malfunctioning due to noise.
The shield can be connected to the grounding plate with lead wires or clamp fittings. Refer to the following drawings to fix the shield cable.

[Example of connection with lead wire]



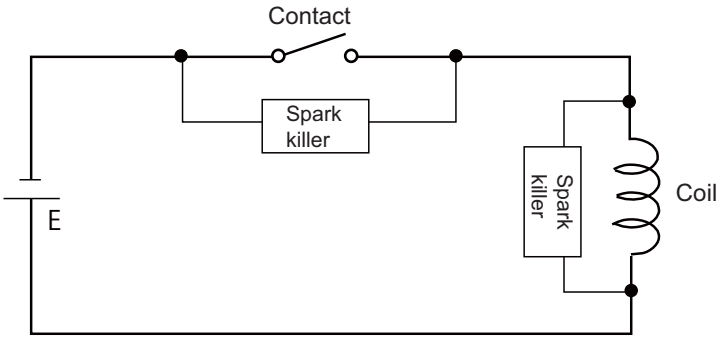
[Example of connection with clamp fitting]



(1) Peel part of the cable sheath and expose the shield as shown in the drawing. Press the exposed part against the grounding plate with the cable clamp fittings.
(2) If the cable is thin, clamp several together in a bunch.
(3) Tighten the cable with appropriate strength not to damage the wire material.
(4) Connect each grounding plate together and ground them at one point.

2.5.2.3 Connecting Spark Killers

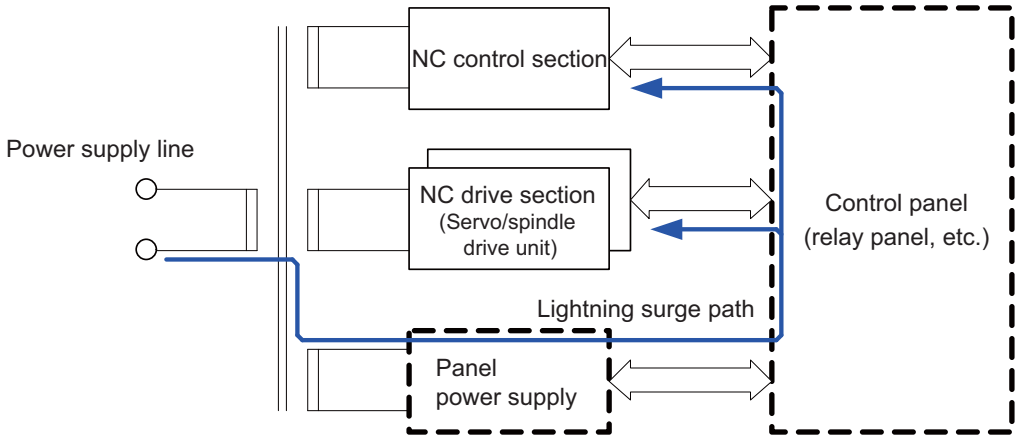
The noise which is generated during the operation of the coil or contact needs to be eliminated.
Connect the spark killers (CR composite element) in parallel with the coil and the contact for the countermeasure.
The spark killer is effective in eliminating the noise generated by electromagnetic induction.



Spark killer	C : 0.033 to 0.1μF R : 10 to 120Ω

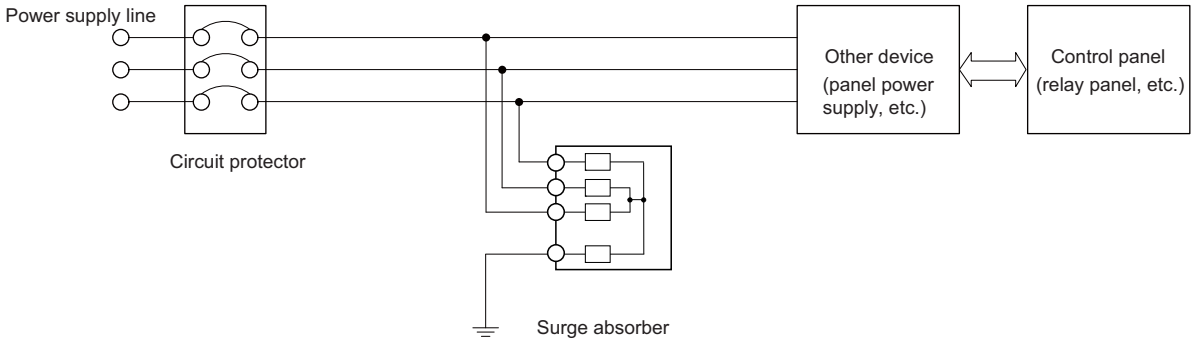
2.5.2.4 Lightning Surge Protection Countermeasure

Generally, the lightning surge intrudes into the control power supply of device from the power supply line, and the surge may damage the control power supply and the internal circuit.
For protection from the lightning surge, MITSUBUSHI NC unit has the surge absorber for the control power supply of the NC control section and the NC drive section.
However, when there is a device which is not applied with the countermeasure as illustrated below, the lightning surge may intrude through the signal line of the device and may damage the NC device.



Path of damage caused by lightning surge

(1) Protection countermeasure method
Add the surge absorber to the power supply lines as illustrated below for the power supply device, etc., which are separately prepared.
The following two items are needed to protect the entire system from surge.
- Surge absorber installation
- Circuit protector installation



Lightning surge countermeasure for three-phase power supply line

(2) Product example of surge absorber
Example of using OKAYA ELECTRIC INDUSTRIES surge absorber

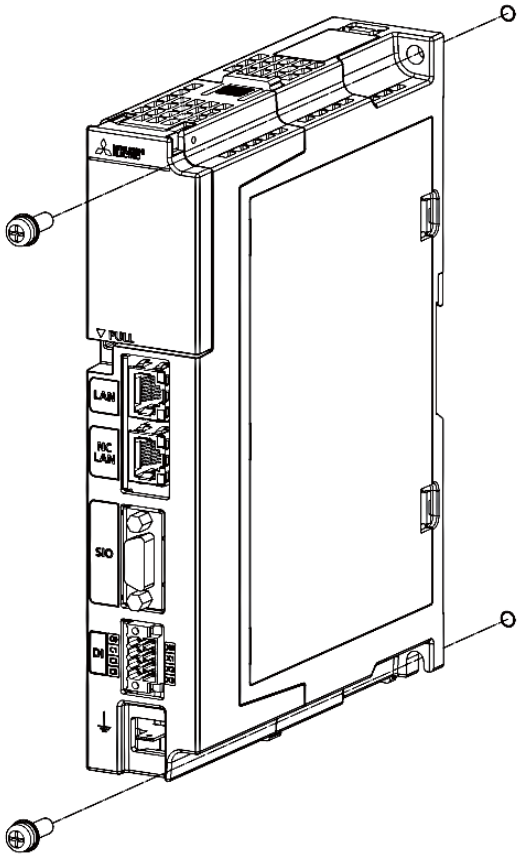
Type	Rated Voltage (50/60 Hz)	DC Breakdown voltage	Voltage protection level	Normal discharge current	Maximum discharge current	Surge current life
RSPD-250-U4	250 VAC (Three phases)	700 V ± 25%	1.3 kV	8/20 μs 2.5 kA	8/20 μs 5 kA	Approx. 300 times 8/20 μs-1 kA

(Note) Refer to "EMC Installation Guidelines: EMC Countermeasure Parts: Surge Absorber" for the outline, etc. Refer to the manufacturer catalog for detailed characteristics, outline and connection methods of the surge absorber.

2.5.3 Unit Installation

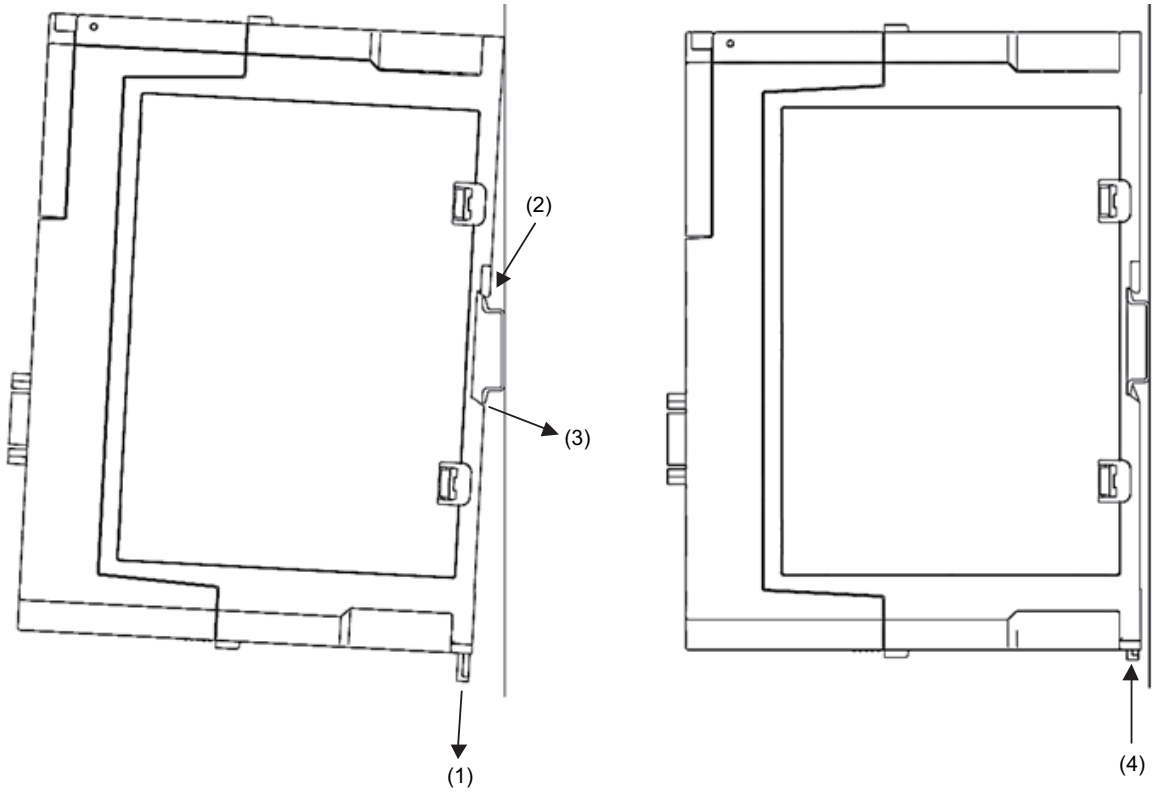
Mount the remote gateway unit with the prescribed number of fixing screws.
(Note) Refer to "General Specifications" for the installation dimension and the screw hole position.

[FCU8-RT601]



Fixing screw : M5 (2 pcs)

[Install to DIN rail]
(1) Pull down the rail hook.
(2) Hook the upper latch of the unit on the DIN rail.
(3) Push the unit into the rail.
(4) Lock it.



Designate one of the types listed below as DIN rail standard.
- TH35-7.5Fe: 7.5
- TH35-7.5AL: 7.5
- TH35-15Fe: 15

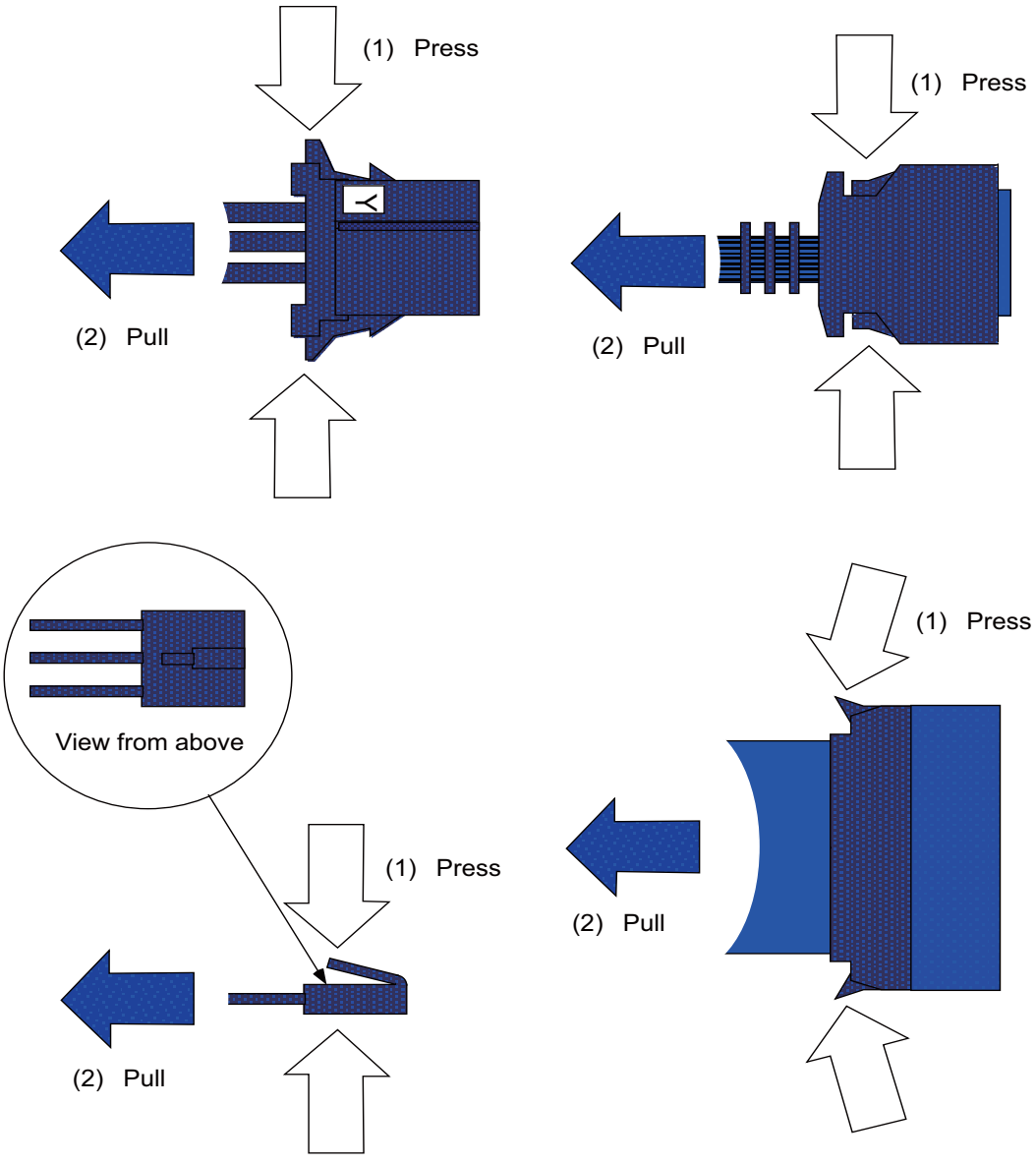
2.6 Precautions for Connecting

2.6.1 Precautions for Wiring

2.6.1.1 Precautions when Connecting/Disconnecting Cables

If the cable is connected/disconnected without turning the power OFF, the normal unit or peripheral devices could be damaged, and risks could be imposed.
Disconnect each cable with the following procedures.

(a) For the following type of connector, press the tabs with a thumb and a forefinger in the direction of the arrow, and pull the connector off.

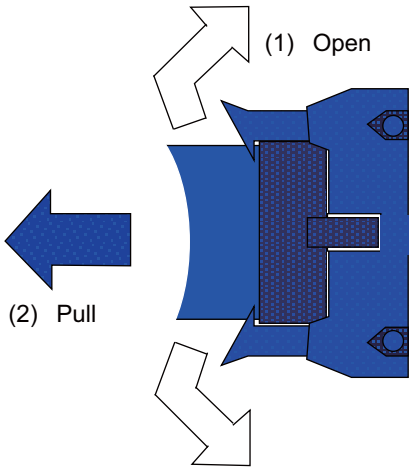


⚠ CAUTION

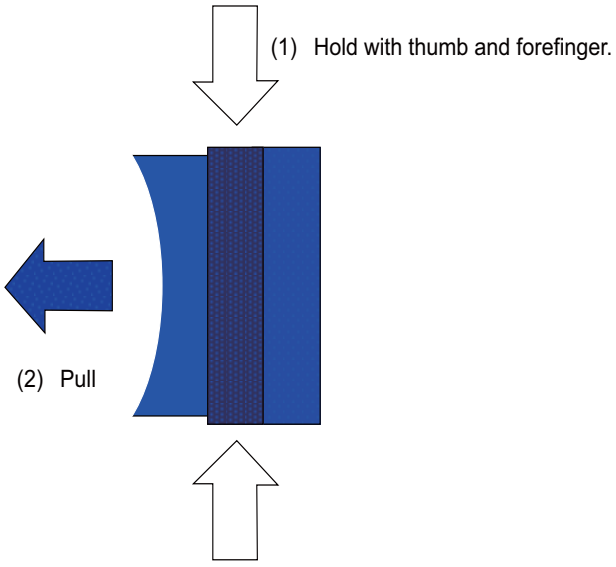
1. Do not connect or disconnect the cables between units while the power is ON.

2. Do not pull the cables when connecting/disconnecting it.

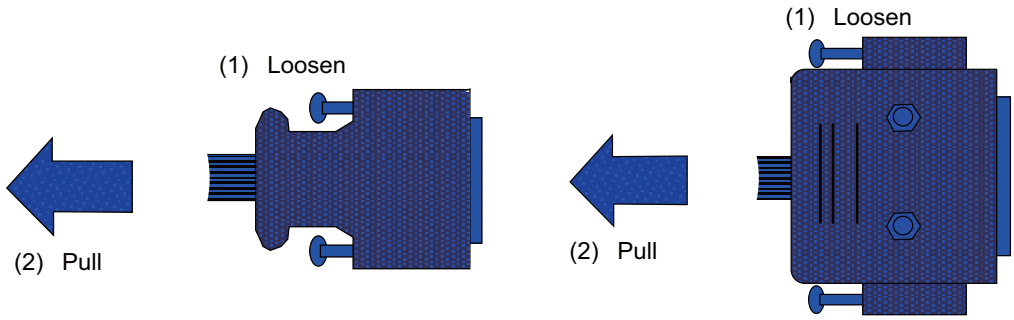
(b) For a flat cable type connector with latches, open the latches in the directions of the arrows, and pull the connector off.



(c) For a flat cable type connector without latches, hold the connector with a thumb and a forefinger, and pull the connector off.



(d) For the screw fixed type connector, loosen the two fixing screws, and pull the connector off.

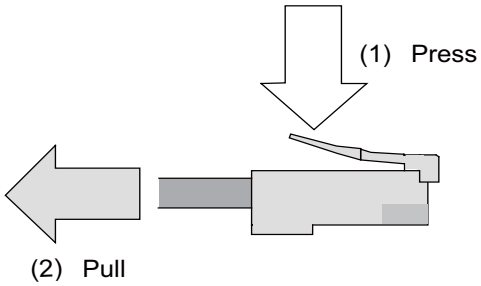


⚠ CAUTION

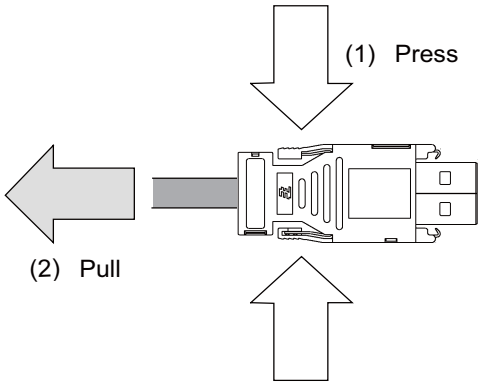
1. Do not connect or disconnect the cables between units while the power is ON.

2. Do not pull the cables when connecting/disconnecting it.

(e) For the Ethernet connector, pull it off while holding down the locked latch.



(f) For the USB connector, pull it off while holding down the locked latch.



⚠ CAUTION

1. Do not connect or disconnect the cables between units while the power is ON.

2. Do not pull the cables when connecting/disconnecting it.

2.6.1.2 Precautions for Connecting 24V Power Supply

(1) Note that when 24V power is supplied to the unit, welding may occur on the contacts due to rush current when both of the following conditions are met.
- When 24 VDC's ON/OFF are directly controlled by a magnetic switch such as relay
- When heat capacity of the contacts for relay, etc. used to control 24 VDC's ON/OFF is small

2.6.2 Turning the Power ON/OFF

For details on the process of turning the power ON/OFF, refer to "Connection and Setup Manual" of the NC you are using.

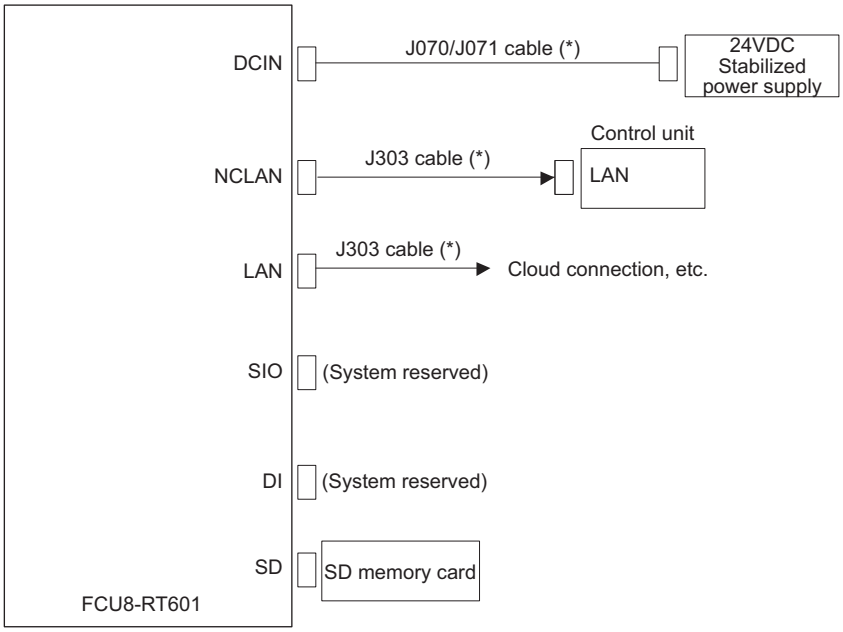
2.6.3 Turning the Power ON/OFF of Remote Service Gateway Unit

Turn ON the power of the remote service gateway unit at the same time or earlier when the NC control unit is turned ON.

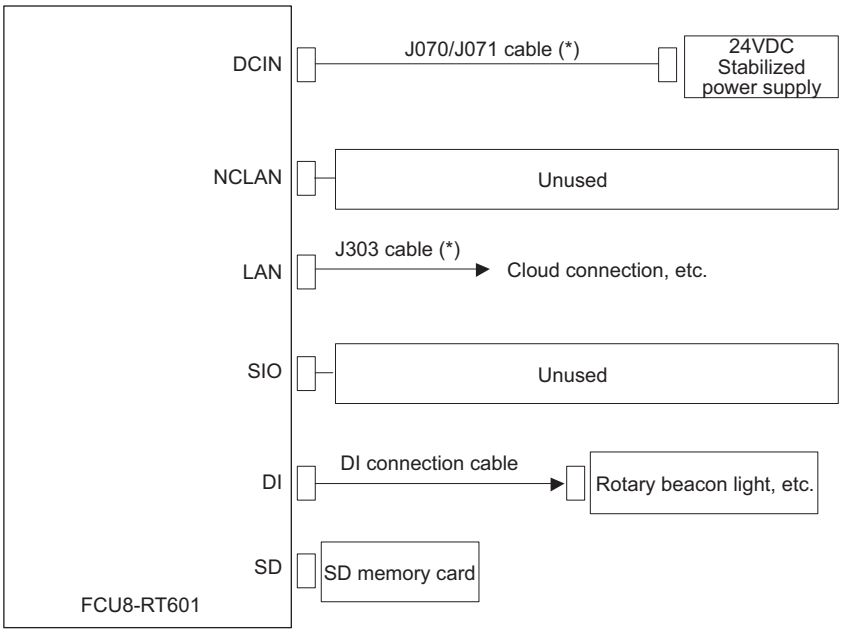
2.7 Connecting Remote Service Gateway Unit

2.7.1 General Connection System Drawing

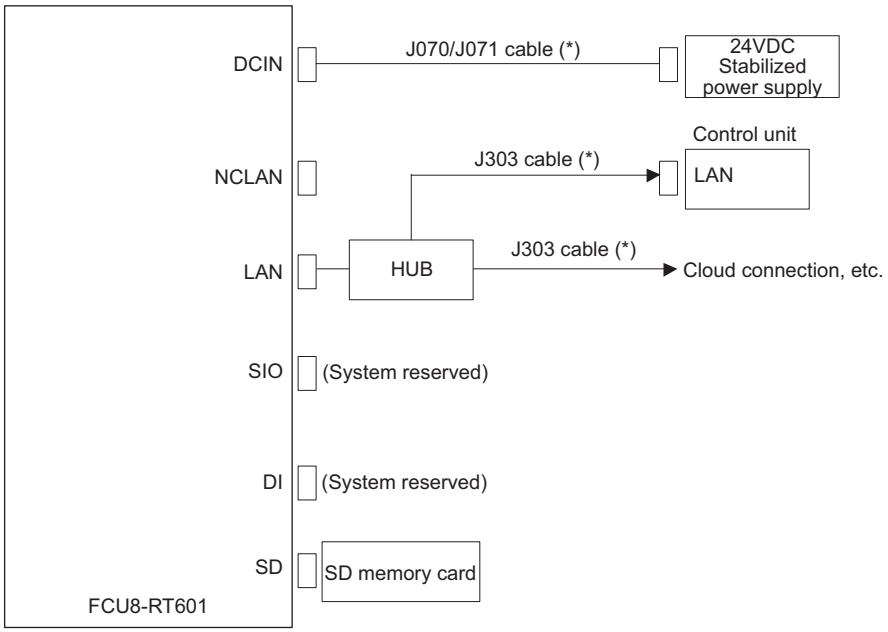
(1) When an NC control unit communicates with the RGU by an Ethernet connection



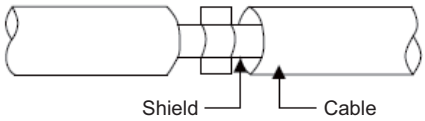
(2) When an NC control unit communicates with the RGU by a DI connection



(3) When an NC control unit communicates with the RGU and other devices



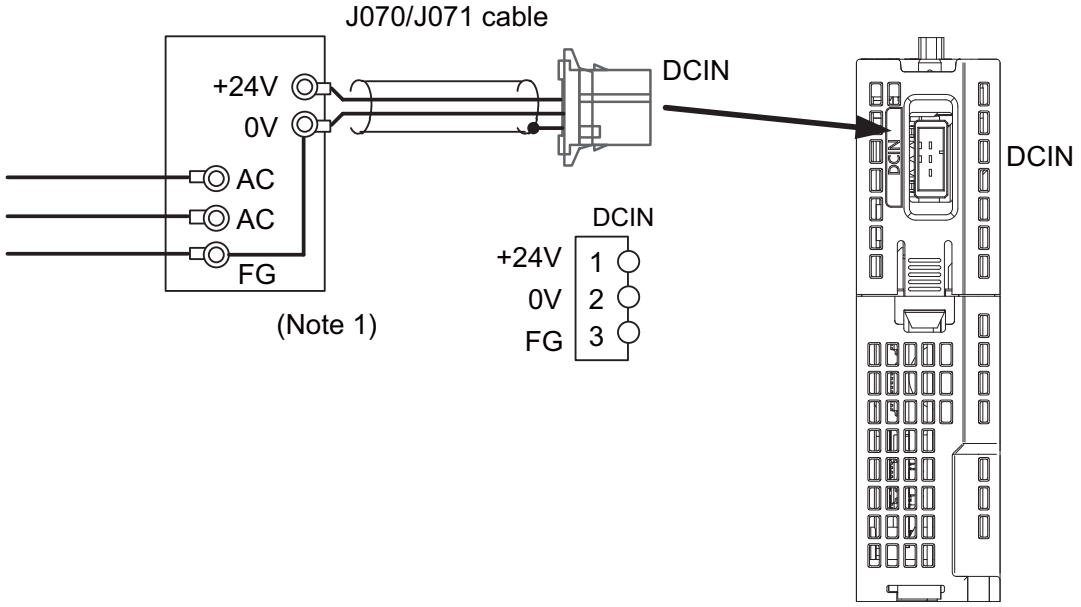
(*) in the figure indicates the cables to be wired to the outside of the operation panel.
In some environments, external noise may affect the system. Thus we recommend the following countermeasure against external noise.
Expose the wire by removing part of the cable shield, and apply a shield clamp fitting.



When you cannot use the shield clamp, make sure to install a ferrite core as a substitute.

<Related items>
Shield clamp fitting: "EMC Installation Guidelines: EMC Countermeasure Parts: Shield Clamp Fitting"
Ferrite core: "EMC Installation Guidelines: EMC Countermeasure Parts: Ferrite Core"

2.7.2 Connecting with Power Supply



(Note 1) For noise countermeasure, short between 0 V and FG using connectors.

(Note 2) Rush current may cause welding on the contacts, when a magnetic switch such as relay directly controls 24VDC's ON/OFF during 24 V power supply to the control unit.
Use relay with large heat capacity of contacts to control 24VDC's ON/OFF.

<Related Items>

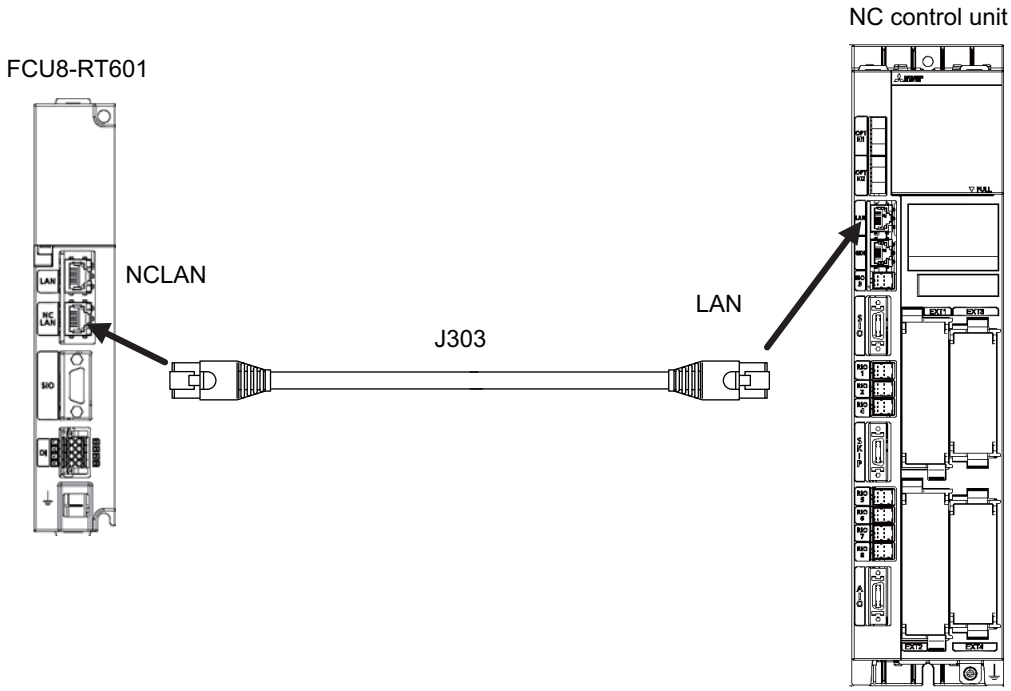
Cable drawing: "Cable: J070/J071 Cable"

Connector pin assignment: "General Specifications: Connectors" (DCIN connector)

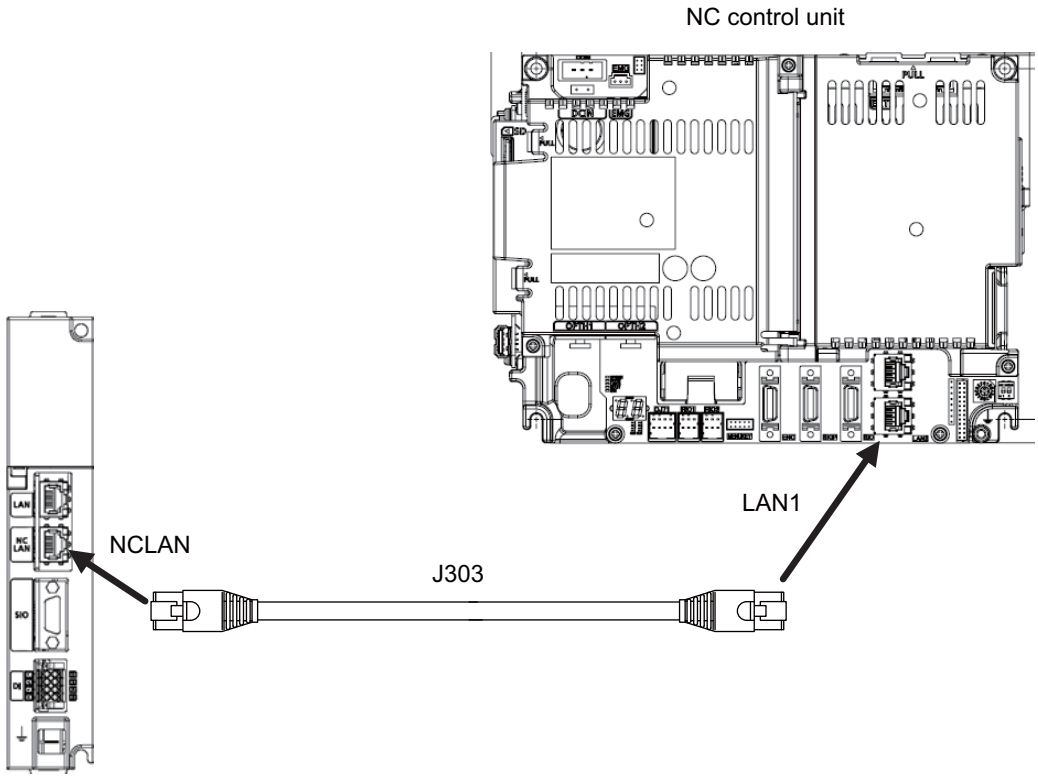
2.7.3 Connecting with Control Unit

(1) When an NC control unit communicates with the RGU by an Ethernet connection

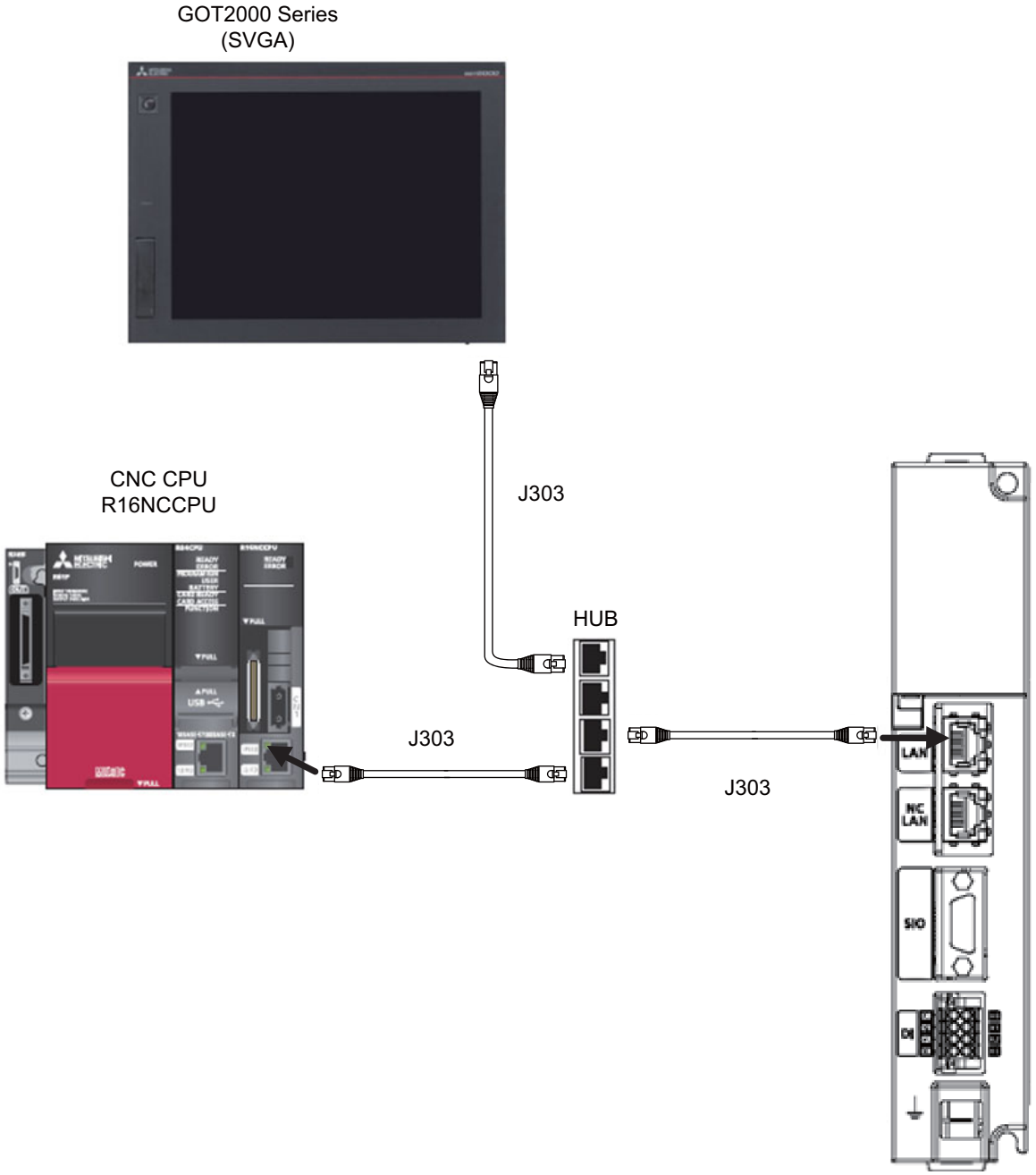
<M800W/M80W>



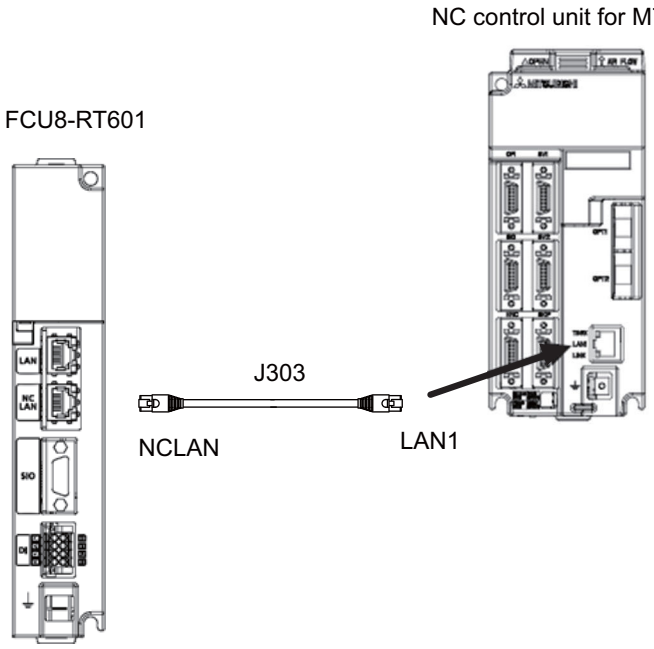
<M800S/M80/E80>



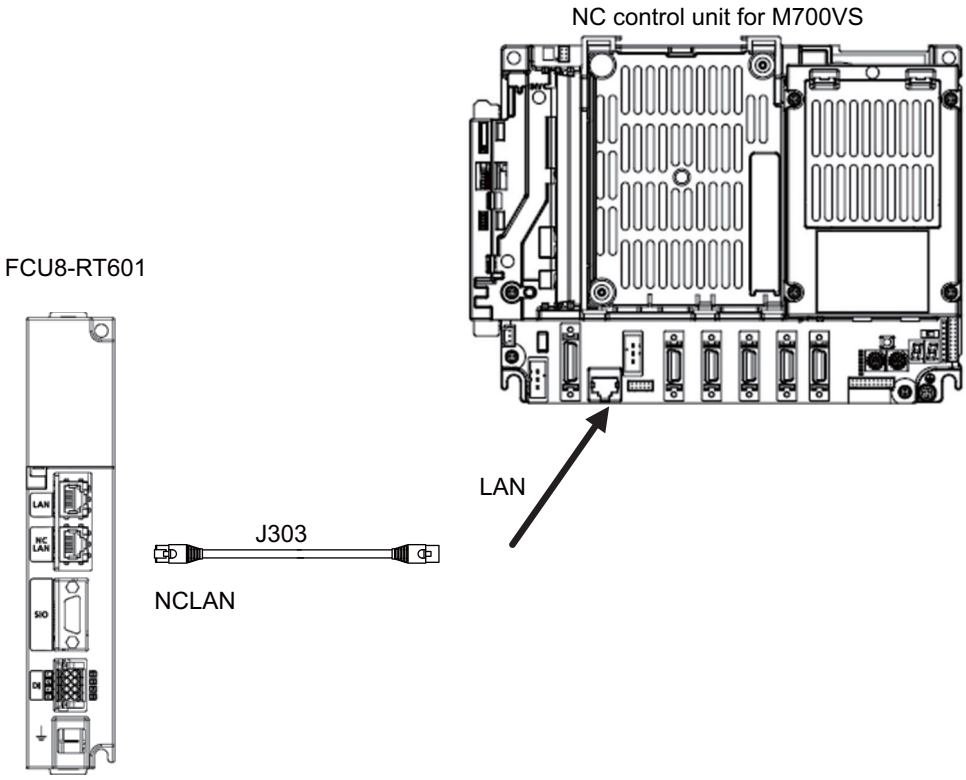
< C80 >


GOT2000 Series
(SVGA)
CNC CPU
R16NCCPU
J303
HUB
J303
J303
LAN
NC LAN
SIO
DI

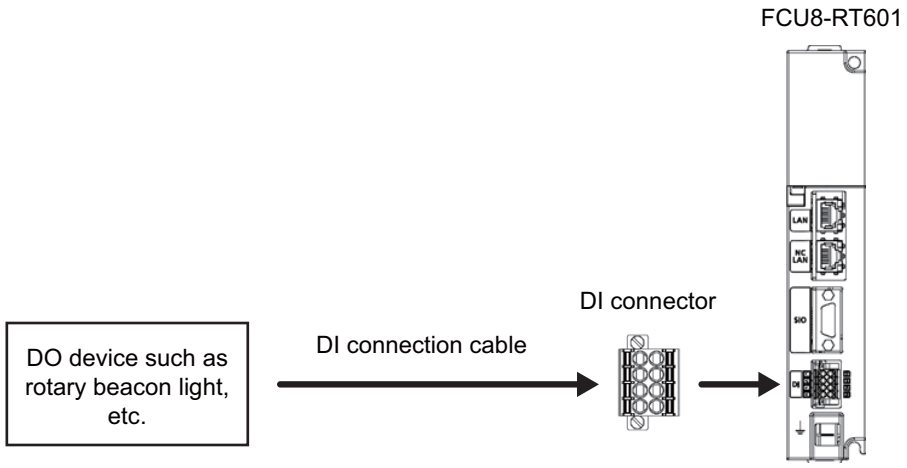
<M700VW/M700>



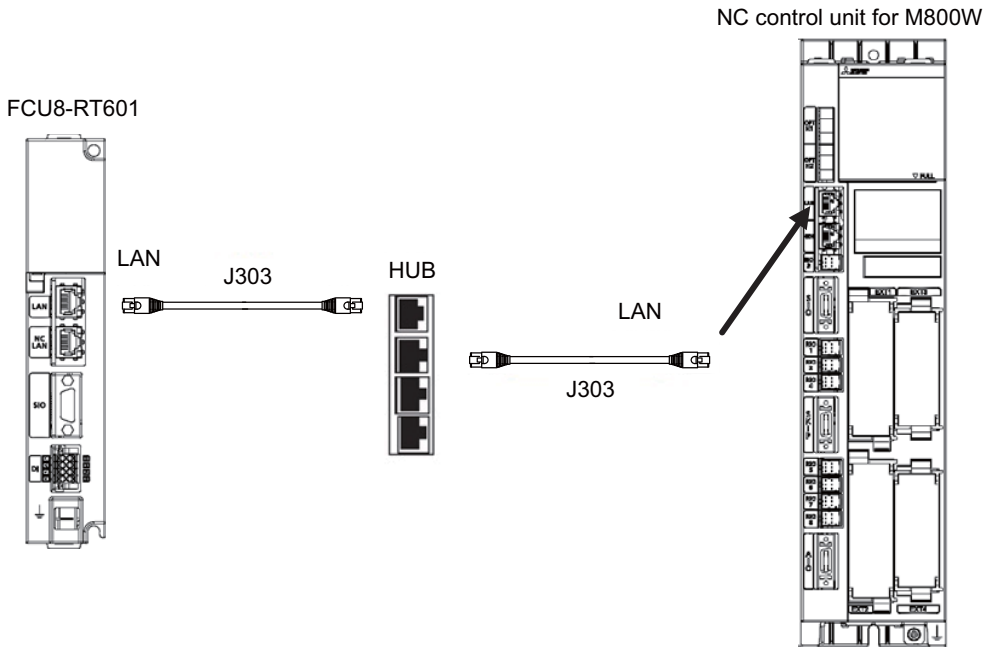
<M700VS/M70V/M70/E70>



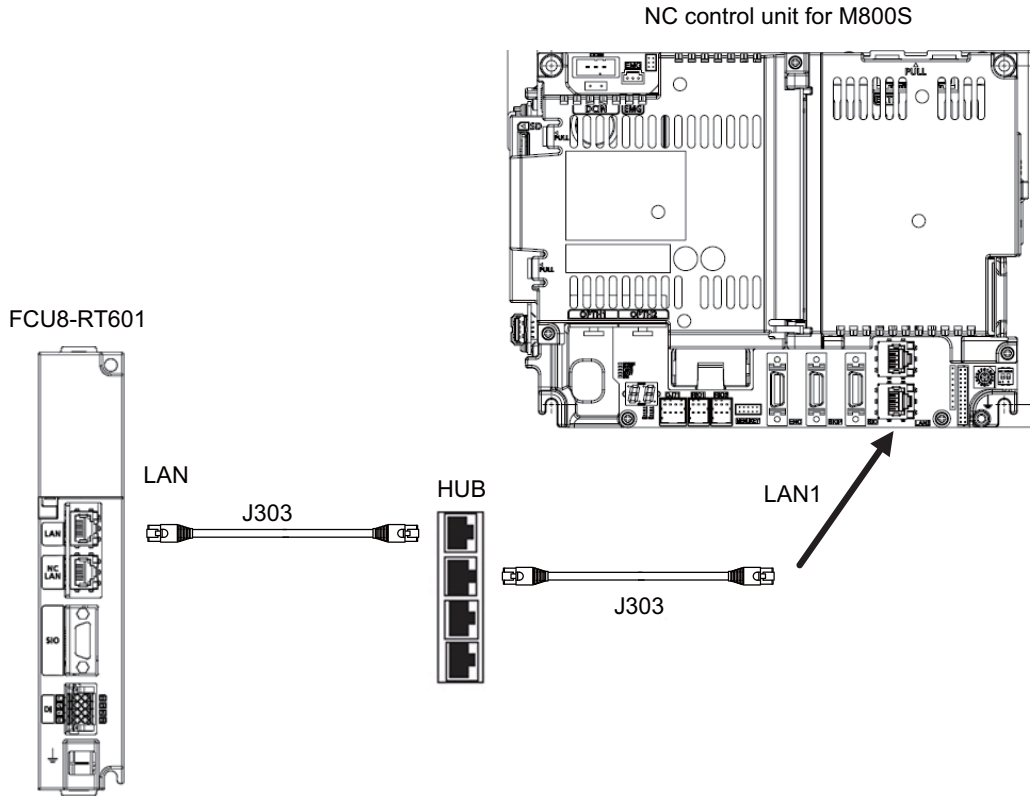
(2) When an NC control unit communicates with the RGU by a DI connection



(3) When an NC control unit communicates with the RGU and other devices
<M800W/M80W>

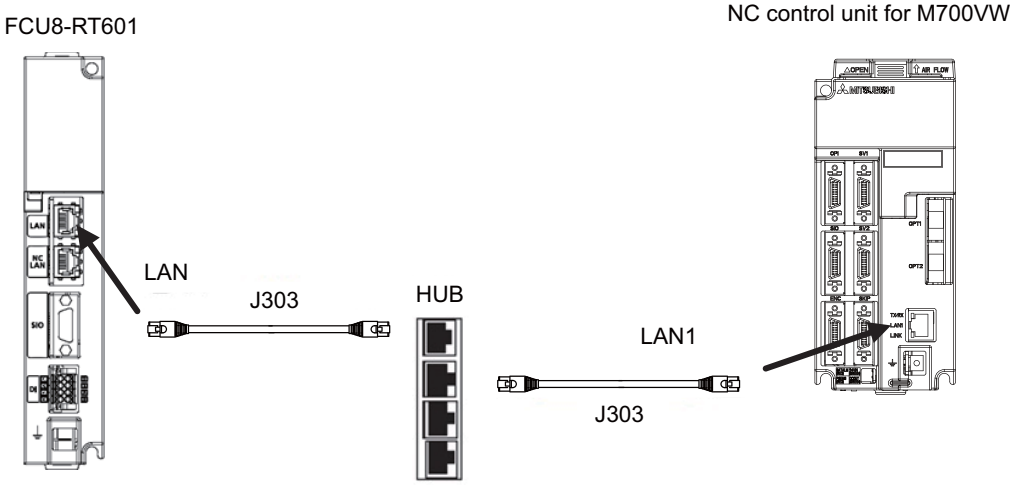


<M800S/M80/E80>

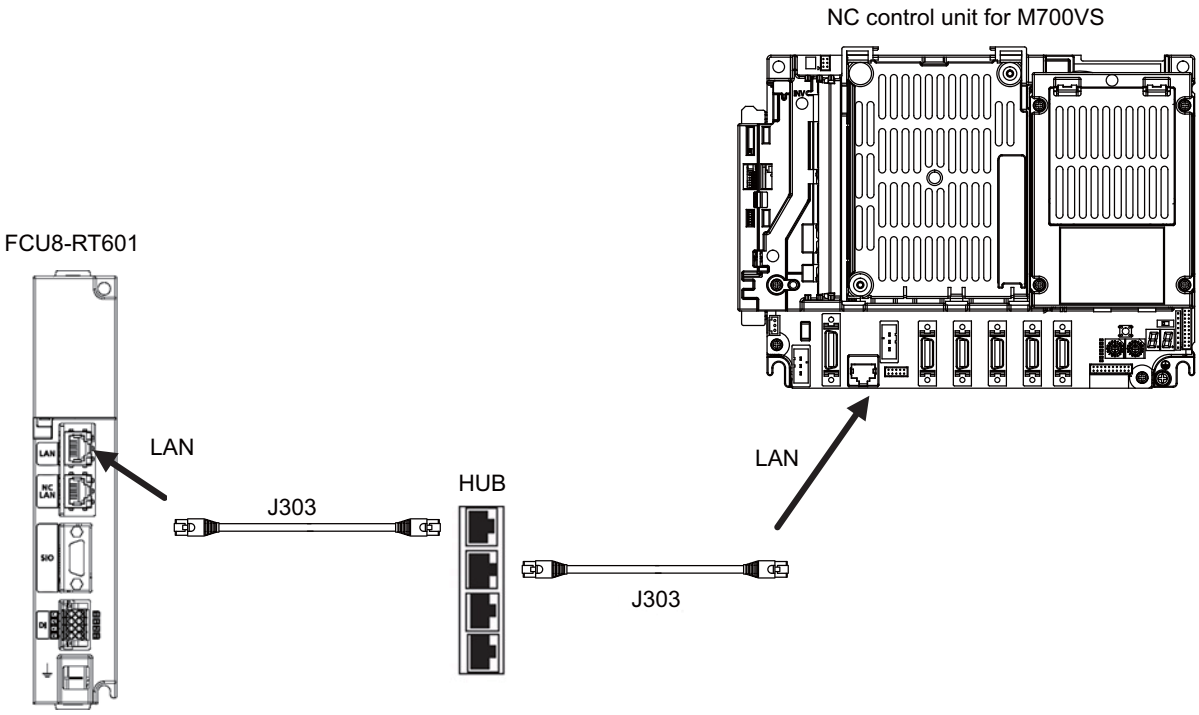


< C80 >
The connection method is the same as that of "(1) When an NC control unit communicates with the RGU by an Ethernet connection".

<M700VW/M700>



<M700VS/M70V/M70/E70>



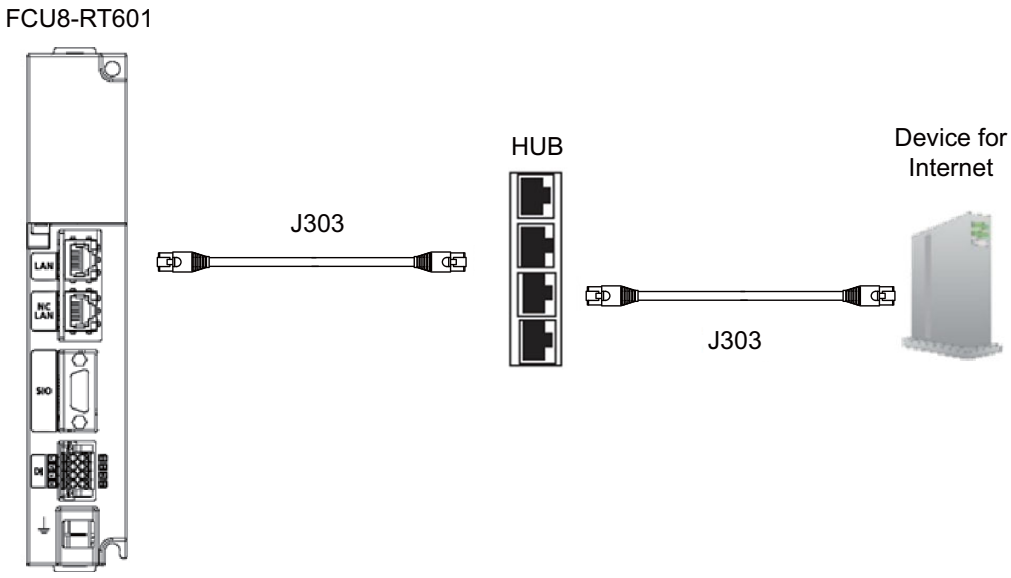
<Related Items>

Cable drawing: "Cable: J303 Cable"

Connector pin assignment: "General Specifications: Connectors" (NCLAN connector)

2.7.4 Connecting with Host Device (Cloud Server)

To communicate with a host device, connect the RGU to a device for Internet connection as follows.



<Related Items>

Cable drawing: "Cable: J303 Cable"

Connector pin assignment: "General Specifications: Connectors" (LAN connector)

2.8 Cables

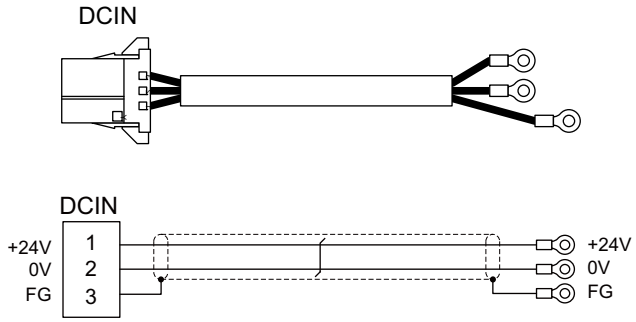
Cable list

No.	Cable type	Maximum cable length	Supplement	Connectors
1	J070	15 m	24VDC power cable	DCIN
2	J071	20 m	24VDC power cable (for long distance)	
3	J303	50 m	LAN straight cable	NCLAN/LAN

<J070/J071 cable outline drawing>

Maximum cable length: 15 m (J070)/20 m (J071)

Application: 24VDC power cable



[DCIN]
Connector: 2-178288-3
Contact: 1-175218-5
Recommended manufacturer: Tyco Electronics

[J070 cable]
Wire material: 2464C BIOS-CL3-16 02C × 16AWG (26/0.26)
Recommended manufacturer: BANDO DENSEN

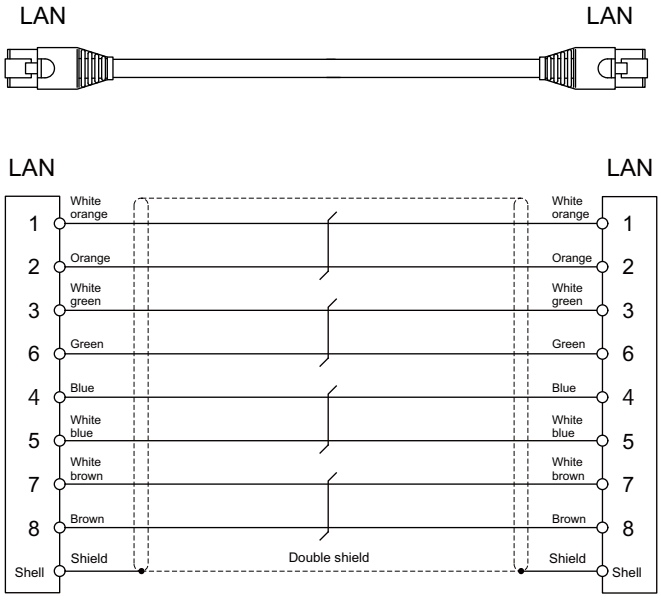
[J071 cable]
Wire material: UL2464-SB TEW 2×14AWG(41/0.26)LF Black × White
Recommended manufacturer: Hitachi Metals

Crimp terminal: R1.25-4 × 3
Recommended manufacturer: JST

<J303 cable outline drawing>

Maximum cable length: 50 m

Application: LAN straight cable



[LAN]
Connector: J00026A0165
Boot: B00080F0090
Recommended manufacturer: Japan Telegärtner

Wire material: FANC-IEF-SB 24AWG × 4P
Recommended manufacturer: Kuramo Electric

3

Initial Setup

This chapter explains the standard procedures when this unit is newly connected to Mitsubishi Electric CNC remote service. Turn ON each device by following setup procedures.
For details for remote service connection method, refer to "3.2 When Using RGU Connection" and "3.3 When Using NC Direct Connection".
For details for the models and versions to use this function, refer to "3.4 Applicable Models".

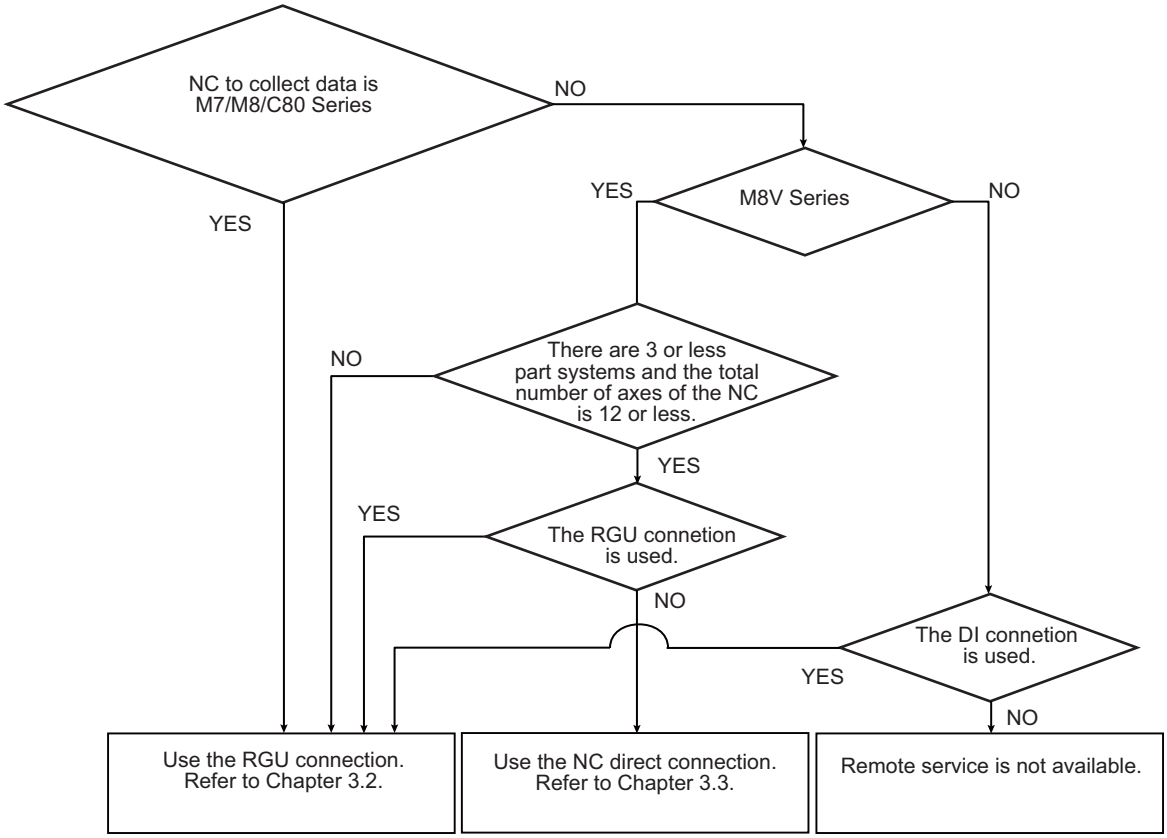
< Compatible NC for each connection >

Connection method	Available models				
	M7 Series	M8 Series	C80 Series	M8V Series	DI connection models
RGU connection	○	○	○	○	○
NC direct connection	×	×	×	○ (*1)	×

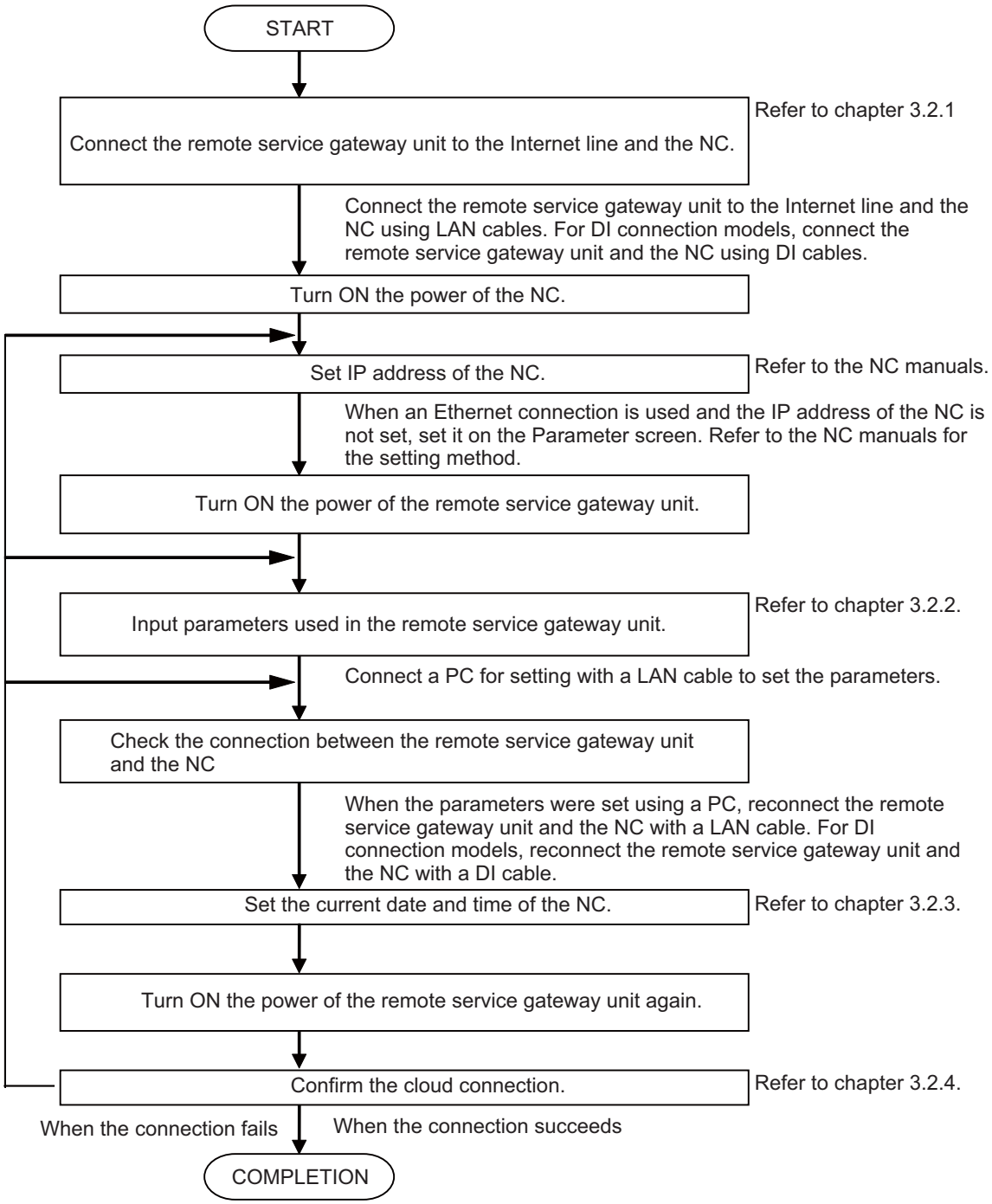
(*1) The remote service can be used when NC direct connection is used in the configuration where there are 3 or less part systems and the total number of axes of the NC is 12 or less. If there are more part systems or axes, use the RGU.

3.1 Setup Procedures

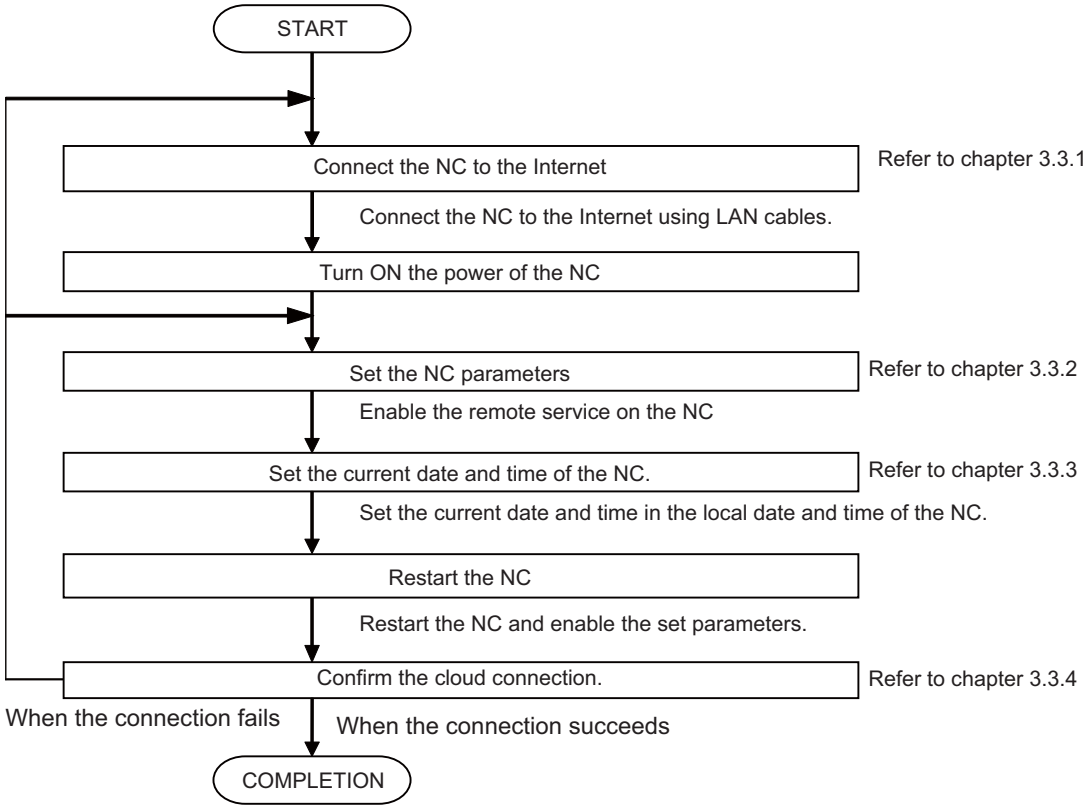
The following flow chart shows the setup procedures.



3.1.1 When Using RGU Connection



3.1.2 When Using NC Direct Connection



3.2 When Using RGU Connection

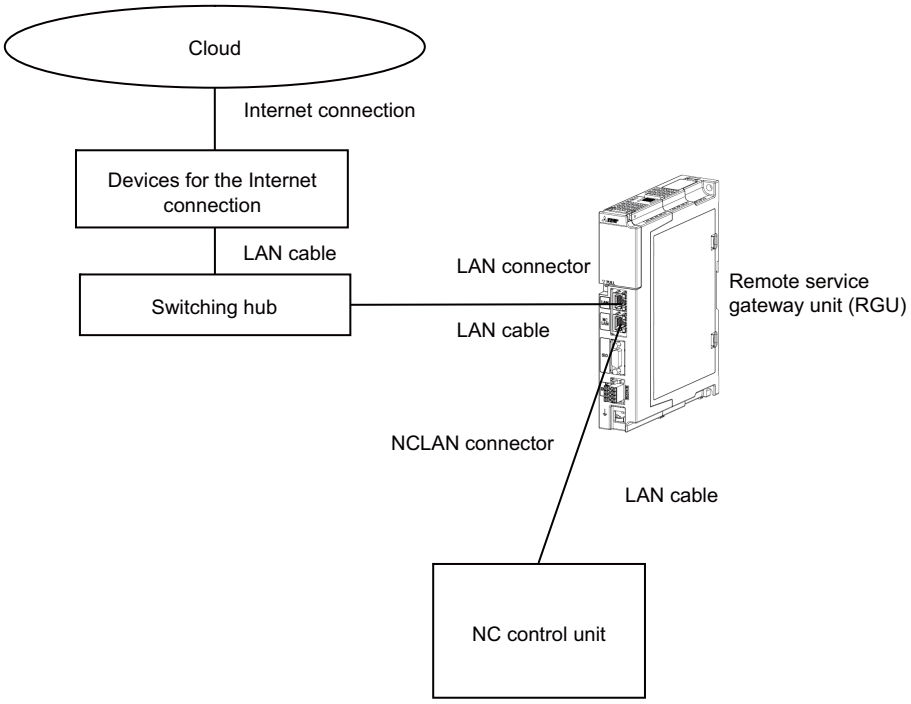
3.2.1 Connecting with Remote Service Gateway Unit (RGU)

To communicate with a cloud server, connect the device for Internet connection, the NC control unit, and the remote service gateway unit using LAN cables. For the DI connection models, connect the NC control unit and the RGU using DI connection cables. When the remote service gateway function of the NC control unit and parameter "#8170 Remote Service" are both enabled, the remote service gateway function of the NC control unit is stopped even when an RGU is connected to avoid a simultaneous connection to the cloud. When this occurs, the "E040" error is displayed on the 7-segment LED. Stop the remote service gateway function, then restart the RGU. For the NC models that can use the remote service function, refer to "3.4 Applicable Models".

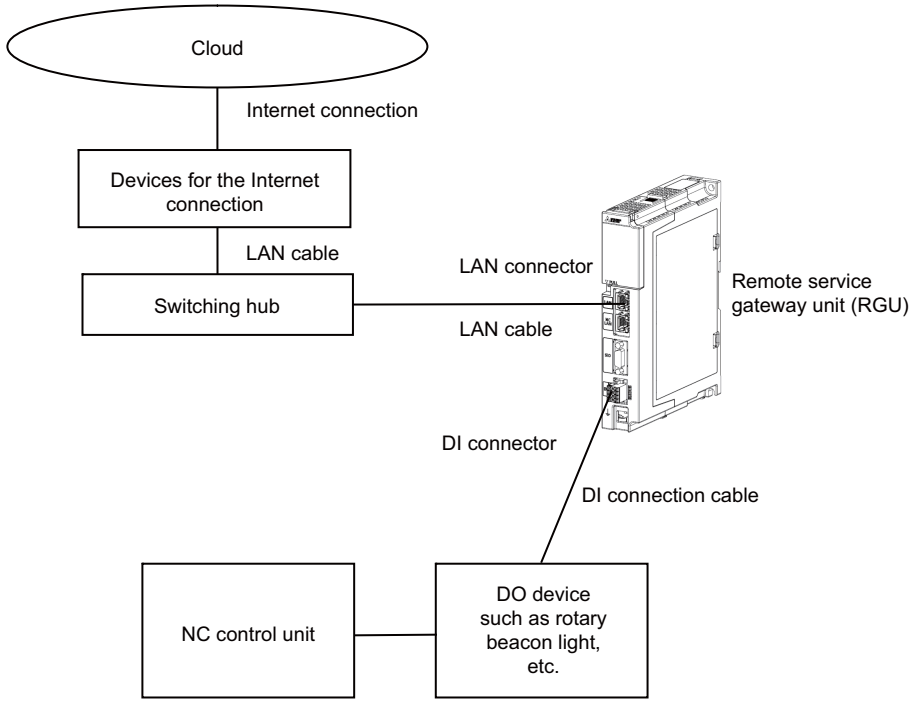
3.2.1.1 Network Connecting Method

Prepare a commercially available switching hub and connect the switching hub, device for Internet connection, RGU, and the NC control unit using LAN cables. For the DI connection models, connect the NC control unit and the RGU using DI connection cables.
The connection method differs depending on the number of devices that an NC control unit communicates with and the method for inputting data to the RGU.
The NC control unit may not be able to connect to the cloud due to the settings of the IP address filter of the NC control unit or the RGU. When connecting via a proxy server, exclude the proxy server address. When a proxy server is not used, using the IP address filter disables the connection to the cloud.

(1) When an NC control unit communicates with the RGU by an Ethernet connection
Use the LAN connector of the RGU for connecting the RGU to the devices for the Internet connection with LAN cables. Use the NCLAN connector of the RGU for connecting the RGU to the NC control unit with a LAN cable.



(2) When an NC control unit communicates with the RGU by a DI connection
Use the LAN connector of the RGU for connecting the RGU to the devices for the Internet connection with LAN cables. Use the DI connector of the RGU for connecting the RGU to the NC control unit with a DI cable. The RGU and the NC control unit are connected via a DO device such as a rotary beacon light.



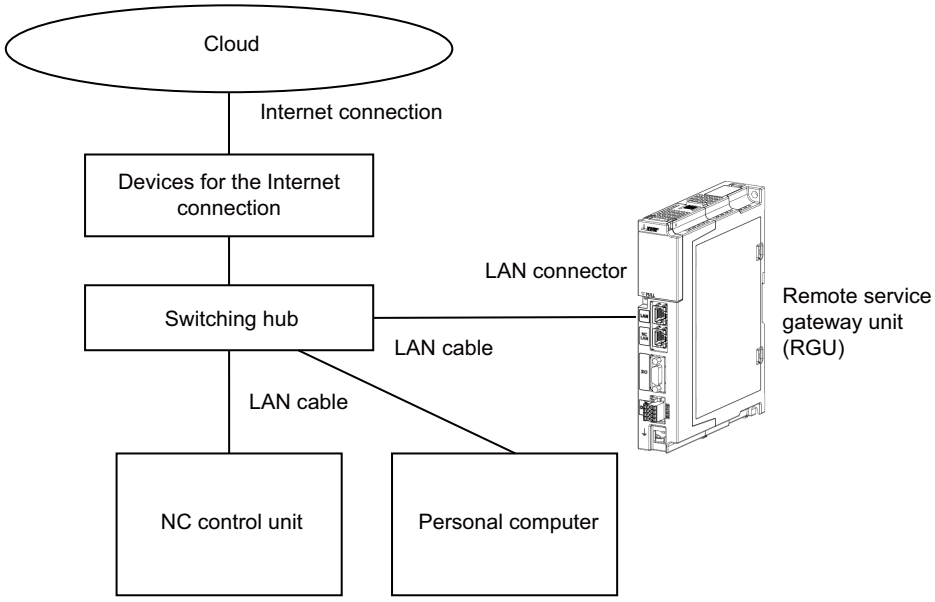
Allocation of operation status to channel priority of DI connector (4 channels)

ch	Priority	Operation status
C0	High	Alarm stop
C1	↑	Stop
C2	↓	Operating
C3	Low	Stand-by

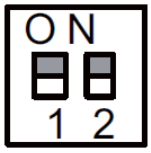
Operation status according to combination of channel input values

C0	C1	C2	C3	Operation status
ON	ON	ON	ON	Alarm stop
ON	ON	ON	OFF	Alarm stop
ON	ON	OFF	ON	Alarm stop
ON	ON	OFF	OFF	Alarm stop
ON	OFF	ON	ON	Alarm stop
ON	OFF	ON	OFF	Alarm stop
ON	OFF	OFF	ON	Alarm stop
ON	OFF	OFF	OFF	Alarm stop
OFF	ON	ON	ON	Stop
OFF	ON	ON	OFF	Stop
OFF	ON	OFF	ON	Stop
OFF	ON	OFF	OFF	Stop
OFF	OFF	ON	ON	Operating
OFF	OFF	ON	OFF	Operating
OFF	OFF	OFF	ON	Stand-by
OFF	OFF	OFF	OFF	Power OFF

(3) When an NC control unit communicates with the RGU and other devices
When an NC control unit communicates with a PC or other devices in addition to the RGU, connect the RGU LAN connector, the NC control unit, and devices (such as a PC) to the switching hub with LAN cables as shown below.

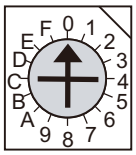


3.2.1.2 DIP Switch



As a standard setting, turn all the DIP switches OFF.

3.2.1.3 Rotary Switch



As a standard setting, set the rotary switch to "0" position.

3.2.2 Setting Parameters

3.2.2.1 Setting the IP Address for the NC Control Unit

Set the IP address for the NC control unit by following the procedures below. For details, refer to the section of "Ethernet Parameters" in "Alarm/Parameter Manual" supplied with your NC.

(1) Display the maintenance screen on the NC.
(2) Press the menu [Param] -> [Ethernet Param] at the bottom of the screen.
(3) Set the IP address, the subnet mask and the default gateway to the parameters "#1926 Global IP address", "#1927 Global Subnet mask" and "#1928 Global Gateway" respectively.
(4) Restart the NC.

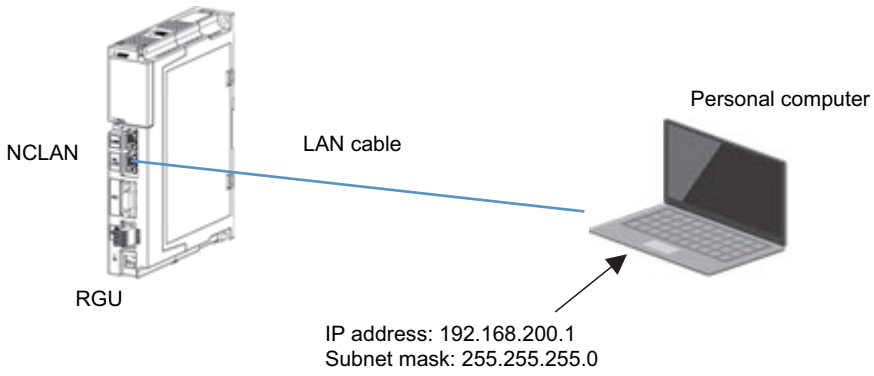
Observe the following precautions when you make the settings.
(Note 1) Set an IP address value for the NC control unit (Parameter "#1926 Global IP address") which does not overlap with the RGU's, GOT, or other devices.

3.2.2.2 Connecting with a PC for Setting

(1) Connect a PC to NC-LAN connector of the RGU using a LAN cable, and various settings can be made via the PC.
(2) The IP address "192.168.200.2" is set to the NC-LAN connector of the RGU as a default value. Set an IP address value of the subnet mask which does not duplicate with the above mentioned address to the PC for setting (e.g. "192.168.200.1").
(3) Open a command prompt window of the PC for setting, and execute the following command.

```
ping 192.168.200.2
```

(4) When the PC responses, it means that the setting is available. When the PC does not response, review the setting.
(5) Disable the proxy setting of your Web browser.

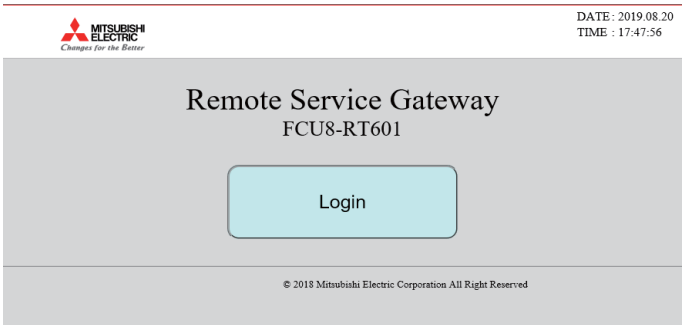


3.2.2.3 Setting the IP Address for the RGU

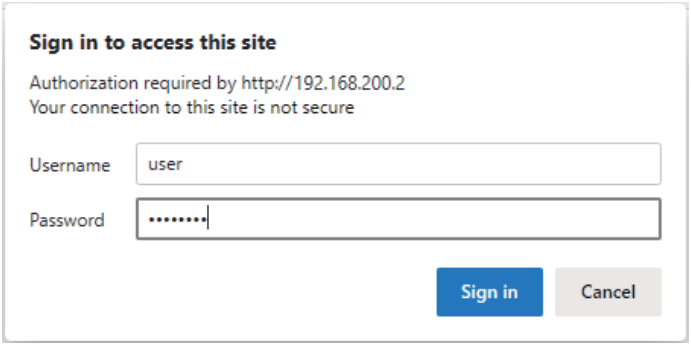
(1) Start up the Web browser on the PC for setting, input the following URL in the address bar of the browser.

```
http://192.168.200.2/
```

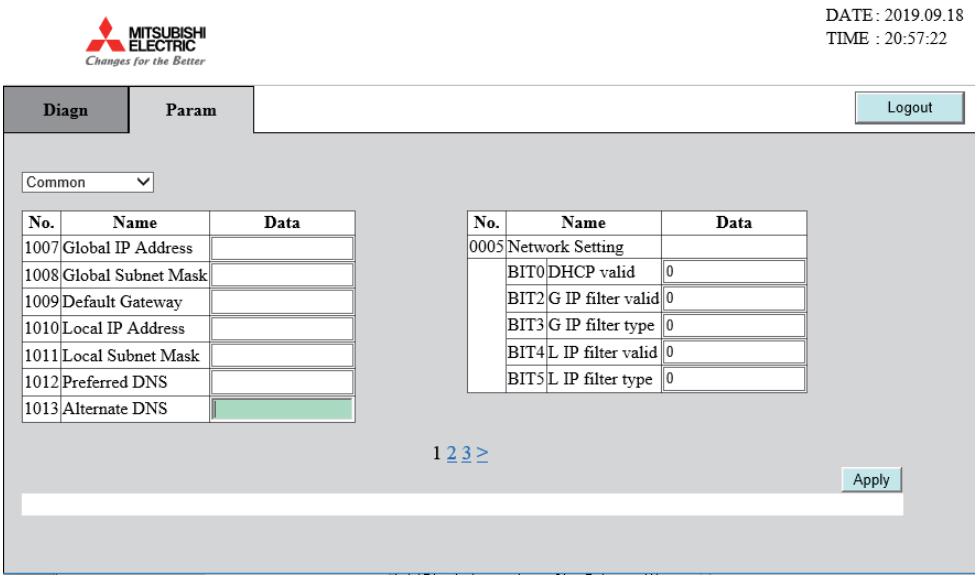
(2) When the following screen appears, press the [Login] button.



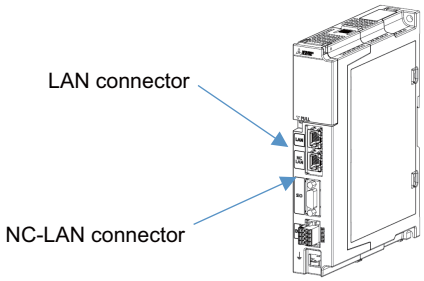
(3) When the following pop-up screen appears, input "user" in the upper field, "password" in the lower field with half-width characters, and then press the [Sign in] button.



(4) Click the [Param] tab.



(5) Input setting values referring to descriptions in the following table, and press the [Apply] button after all items have been input.



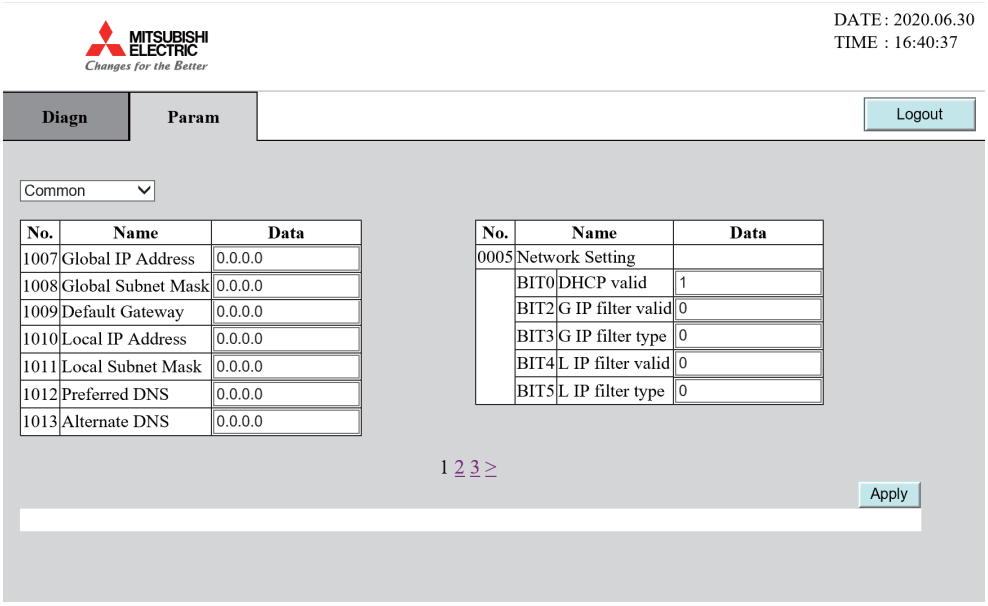
No.	Name	Value to be input
0005 BIT0	Network Setting DHCP valid	Select valid/invalid of network connection with DHCP. When "1" (valid) is set, the IP address of the LAN connector of the RGU and the IP address of the DNS server are set automatically. The setting values of No. 1007, 1008, 1009, 1012, and 1013 are ignored.
1007	Global IP Address	Set the IP address to be assigned to the LAN connector of the RGU. - Make sure that set an IP address value of the different IP address ranges other than that set for No. 1010 belongs. (Example: If "192.168.2.1" is set to No.1010, the setting of No. 1007 must be "192.168.1.1" etc.) - The IP address "192.168.210.1" is set as the default value to the LAN connector of the RGU.
1008	Global Subnet Mask	Set the subnet mask to be assigned to the LAN connector of the RGU. Set the same value as the Internet-connected device.
1009	Default Gateway	Set the IP address of the Internet-connected device. * To confirm the IP address of the Internet-connected device, refer to the manual of the rooter you are using, or ask your network administrator or your Internet provider.
1010	Local IP Address	Set the IP address to be assigned to the NC-LAN connector of the RGU. - Make sure that set an IP address value of the different IP address ranges other than that set for No. 1007 belongs. (Example: If "192.168.1.1" is set to No.1007, the setting of No. 1010 must be "192.168.200.2" etc.) - The IP address "192.168.200.2" is set as the default value to the NC-LAN connector of the RGU.
1011	Local Subnet Mask	Set the subnet mask for the NC-LAN connector of the RGU.
1012	Preferred DNS	Set the IP address of the primary DNS server. * To confirm the IP address of the primary DNS server, ask your network administrator or your Internet provider.
1013	Alternate DNS	- Set the IP address of the secondary DNS server. - If there is only single IP address for the DNS server, set the one for the primary DNS server.

[Setting IP Addresses with DHCP]

The IP addresses of the LAN connector of the RGU and the IP addresses of the DNS server can be set automatically with DHCP. Set the setting screen as follows.

(1) Set the parameter No.1007, 1008, 1009, 1012, and 1013 to "0.0.0.0".

(2) Set "DHCP valid" of the parameter No.0005/BIT0 to "1".



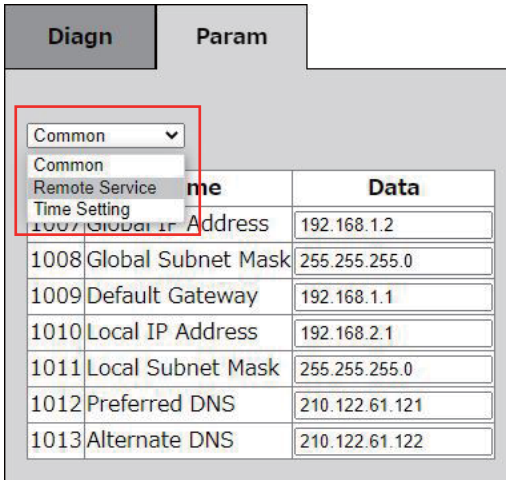
(Note 1) When DHCP is valid, check that the IP address ranges assigned with DHCP do not overlap with the IP addresses set to the NC control unit or the other devices.

(Example) If the IP address range assigned with DHCP is "192.168.2.0" to "192.168.2.128", it has no effect on the NC control unit when the IP address of the NC control unit is set to "192.168.2.129" or "192.168.200.3".

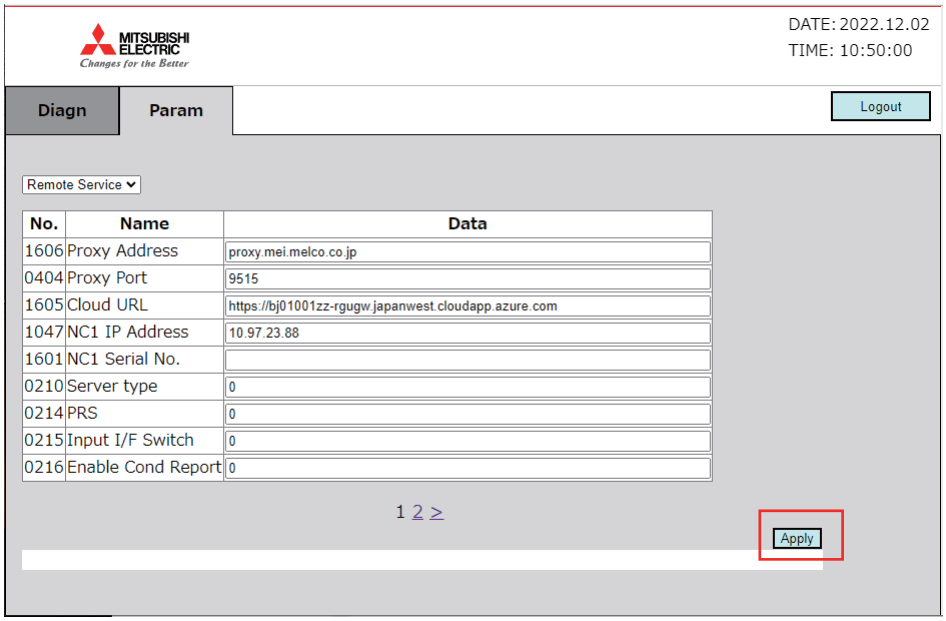
For detailed specifications of the IP address ranges assigned with DHCP, refer to the explanation of DHCP in the instruction manuals of the devices for the Internet connection (router) which are connected with the RGU, or ask your network administrator or your Internet provider.

3.2.2.4 Parameters for Remote Service Connection of the RGU

(1) Select [Remote Service] from the pull-down menu on the upper left.

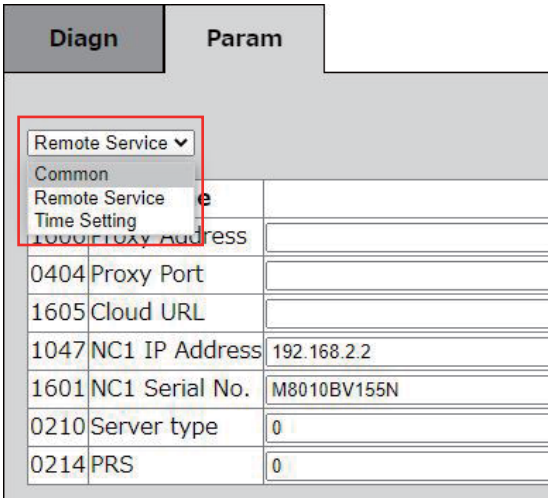


(2) Input setting values referring to descriptions in the following table, and press the [Apply] button after all items have been input.

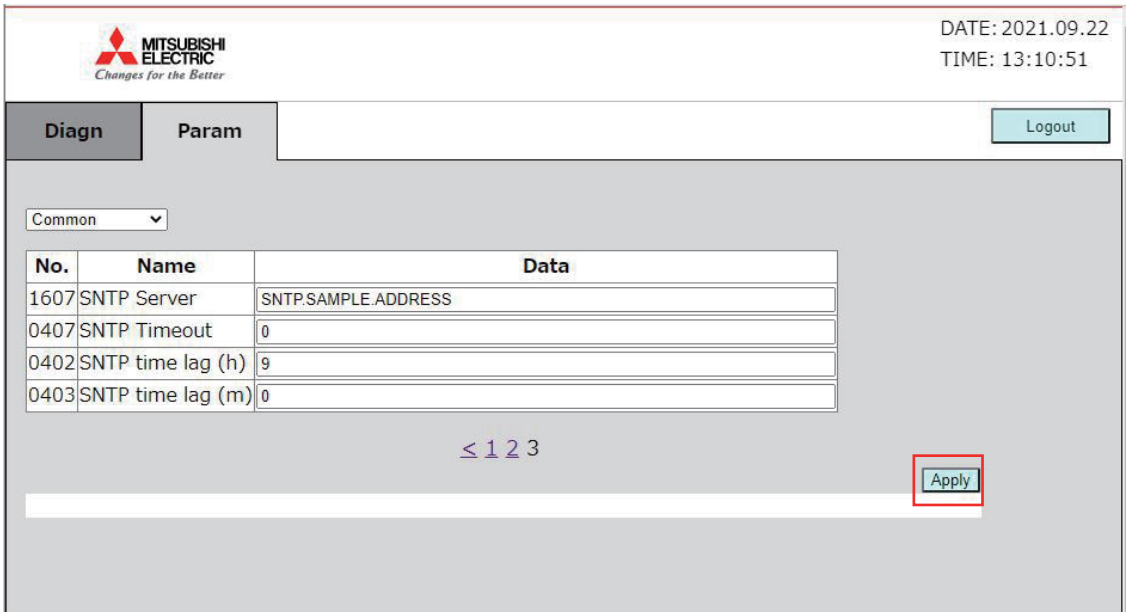


No.	Name	Value to be input
1606	Proxy Address	If a proxy server is used in your network environment, set its address. To confirm the use of the proxy server, ask your network administrator.
0404	Proxy Port	Set the port No. of the proxy server.
1605	Cloud URL	Since it has been input as a factory default setting, you need not change it.
1047	NC1 IP Address	Set the IP address of the NC to be connected.
1601	NC1 Serial No.	Set the serial number of the NC to be connected.
0210	Server Type	Setting is not necessary.
0214	PRS	Setting is not necessary.
0215	Input I/F Switch	Set "0" when using Ethernet to input data. Set "1" when using DI to input data. * When "1" is set with no DI input, the color indicating power OFF is shown in the device screen status of the dashboard screen.
0216	Enable Cond Report	Setting is not necessary.

(3) Select [Common] from the pull-down menu on the upper left to go to page 3.



(4) Input setting values referring to descriptions in the following table, and press the [Apply] button after all items have been input.

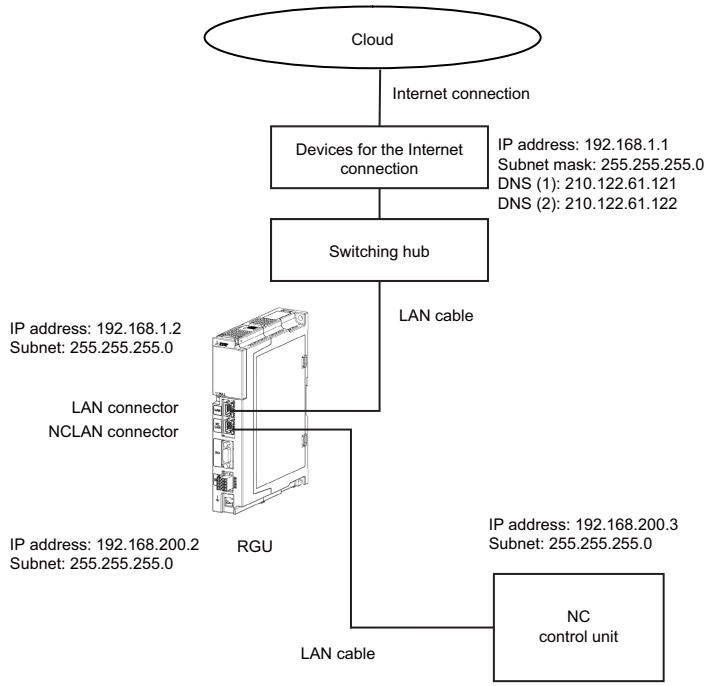


No.	Name	Value to be input
1607	SNTP Server	If an SNTP server is used in your network environment, set its address. If an SNTP server is not used, leave it blank. To confirm the use of the SNTP server, ask your network administrator.
0402	SNTP time lag (h)	Set the time difference from UTC to current location (hour)
0403	SNTP time lag (m)	Set the time difference from UTC to current location (minute)

3.2.2.5 Setting Example

This chapter describes the setting examples of each network configuration shown in " 3.2.1.1 Network Connecting Method".

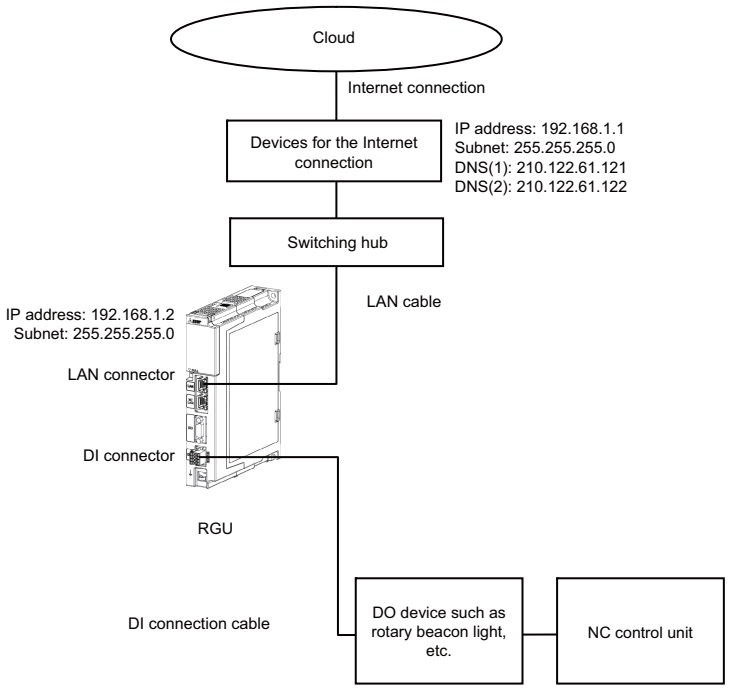
(1) Connecting with the fixed IP address (when an NC control unit communicates with the RGU by anEthernet connection)



<Setting value>

No.	Name	Value to be input
0005 (BIT0)	DHCP valid	0
1007	Global IP Address	192.168.1.2
1008	Global Subnet Mask	255.255.255.0
1009	Default Gateway	192.168.1.1
1010	Local IP Address	192.168.200.2
1011	Local Subnet Mask	255.255.255.0
1012	Preferred DNS	210.122.61.121
1013	Alternate DNS	210.122.61.122
1047	NC1 IP Address	192.168.200.3

(2) Connecting with the fixed IP address (when an NC control unit communicates with the RGU by a DI connection)

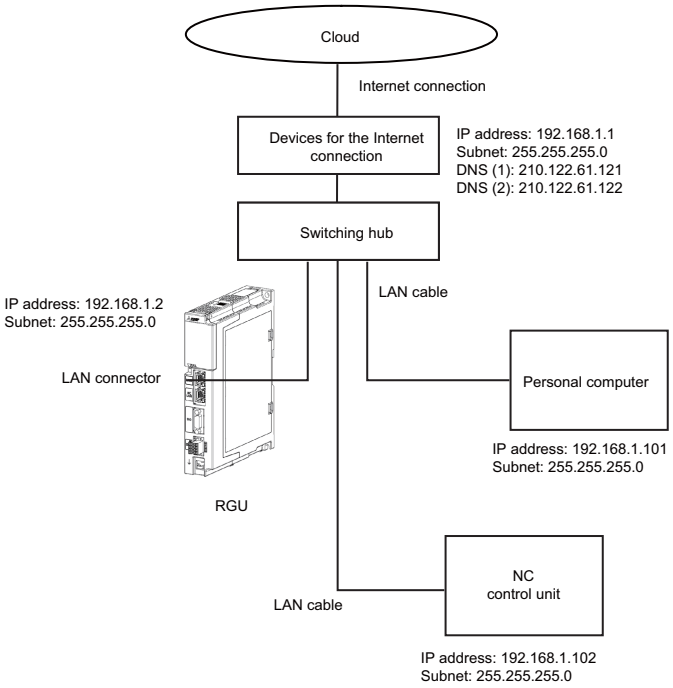


<Setting value>

No.	Name	Value to be input
0215	Input I/F Switch	1
0005 (BIT0)	DHCP valid	0
1007	Global IP Address	192.168.1.2
1008	Global Subnet Mask	255.255.255.0
1009	Default Gateway	192.168.1.1
1010	Local IP Address	192.168.200.2
1011	Local Subnet Mask	255.255.255.0
1012	Preferred DNS	210.122.61.121
1013	Alternate DNS	210.122.61.122
1047	NC1 IP Address	0.0.0.0

(Note 1) NCLAN port is not used. Set the IP address of No.1010 to "0.0.0.0" or "192.168.200.2". Set the IP address of No.1007 outside the range of "192.168.200.1" to "192.168.200.255".

(3) Connecting with the fixed IP address (when an NC control unit communicates with the RGU and other devices)

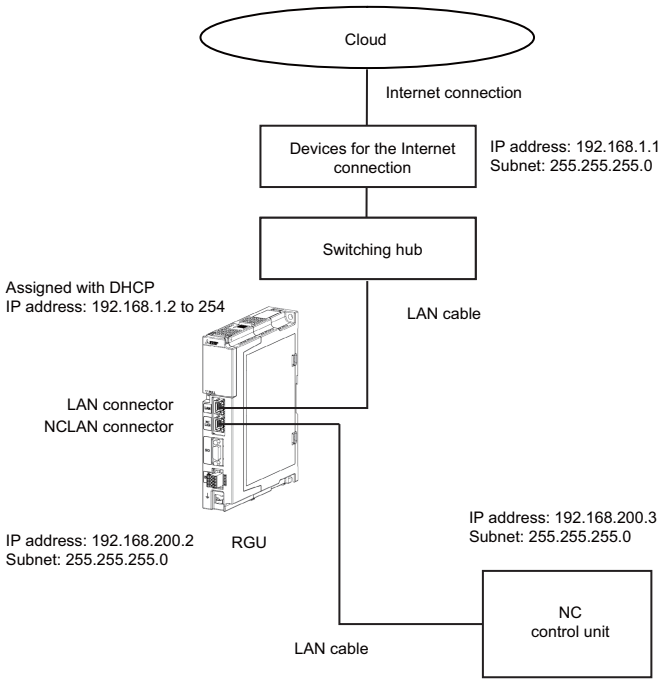


<Setting value>

No.	Name	Value to be input
0005 (BIT0)	DHCP valid	0
1007	Global IP Address	192.168.1.2
1008	Global Subnet Mask	255.255.255.0
1009	Default Gateway	192.168.1.1
1010	Local IP Address	192.168.200.2
1011	Local Subnet Mask	255.255.255.0
1012	Preferred DNS	210.122.61.121
1013	Alternate DNS	210.122.61.122
1047	NC1 IP Address	192.168.1.102

(Note 1) NCLAN port is not used. Set the IP address of No.1010 to "0.0.0.0" or "192.168.200.2". Set the IP address of No.1007 outside the range of "192.168.200.1" to "192.168.200.255".

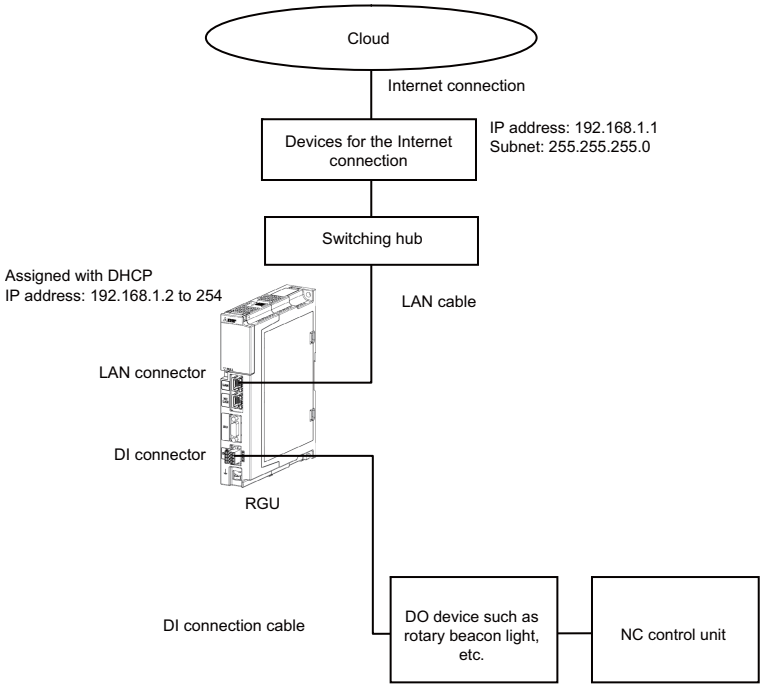
(4) Connecting with DHCP (when an NC control unit communicates with the RGU by an Ethernet connection)



<Setting value>

No.	Name	Value to be input
0005 (BIT0)	DHCP valid	1
1007	Global IP Address	0.0.0.0
1008	Global Subnet Mask	0.0.0.0
1009	Default Gateway	0.0.0.0
1010	Local IP Address	192.168.200.2
1011	Local Subnet Mask	255.255.255.0
1012	Preferred DNS	0.0.0.0
1013	Alternate DNS	0.0.0.0
1047	NC1 IP Address	192.168.200.3

(5) Connecting with DHCP (when an NC control unit communicates with the RGU by a DI connection)

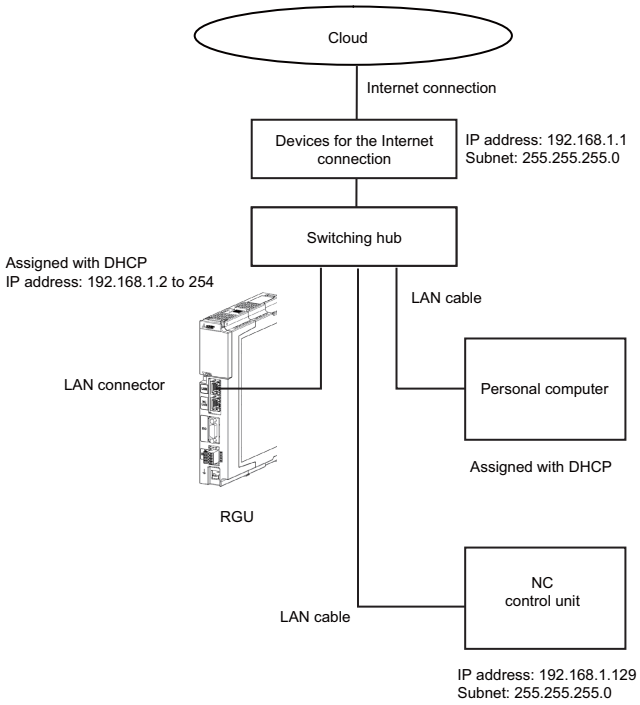


<Setting value>

No.	Name	Value to be input
0215	Input I/F Switch	1
0005 (BIT0)	DHCP valid	1
1007	Global IP Address	0.0.0.0
1008	Global Subnet Mask	0.0.0.0
1009	Default Gateway	0.0.0.0
1010	Local IP Address	192.168.200.2
1011	Local Subnet Mask	255.255.255.0
1012	Preferred DNS	0.0.0.0
1013	Alternate DNS	0.0.0.0
1047	NC1 IP Address	0.0.0.0

(Note 1) NCLAN port is not used. Set the IP address of No.1010 to "0.0.0.0" or "192.168.200.2". Also, adjust the DHCP setting of the devices for the Internet connection so that IP address outside the range of "192.168.200.1" to "192.168.200.255" is assigned for No.1007.

(6) Connecting with DHCP (when an NC control unit communicates with the RGU and other devices)



<Setting value>

No.	Name	Value to be input
0005 (BIT0)	DHCP valid	1
1007	Global IP Address	0.0.0.0
1008	Global Subnet Mask	0.0.0.0
1009	Default Gateway	0.0.0.0
1010	Local IP Address	192.168.200.2
1011	Local Subnet Mask	255.255.255.0
1012	Preferred DNS	0.0.0.0
1013	Alternate DNS	0.0.0.0
1047	NC1 IP Address	192.168.200.3

(Note 1) NCLAN port is not used. Set the IP address of No.1010 to "0.0.0.0" or "192.168.200.2". Also, adjust the DHCP setting of the devices for the Internet connection so that IP address outside the range of "192.168.200.1" to "192.168.200.255" is assigned for No.1007.

3.2.3 Setting the Current Date and Time of the NC Control Unit

Set the current date and time in the date and time of the NC control unit.
Refer to the NC control unit manual for the setting method.

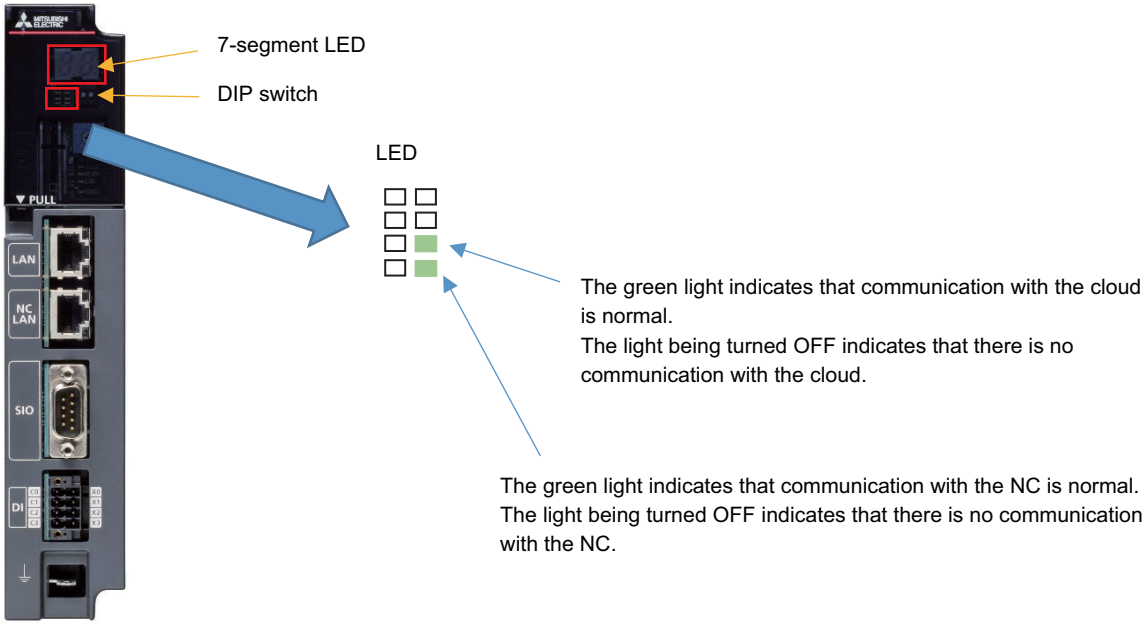
After setting the current date and time, restart of the NC control unit is not required, while restart of the RGU is required.
The current date and time of the NC control unit need to be within the expiration date of the server certificate for the cloud server.
When the current date and time of the NC control unit exceeds the expiration date of the server certificate for the cloud server, the communication with the cloud server fails.

3.2.4 Checking Cloud Connection Status

The connection status to the cloud can be checked on the remote service screen of the NC or on the setting screen of the remote service gateway unit.

3.2.4.1 Checking the Status by LEDs

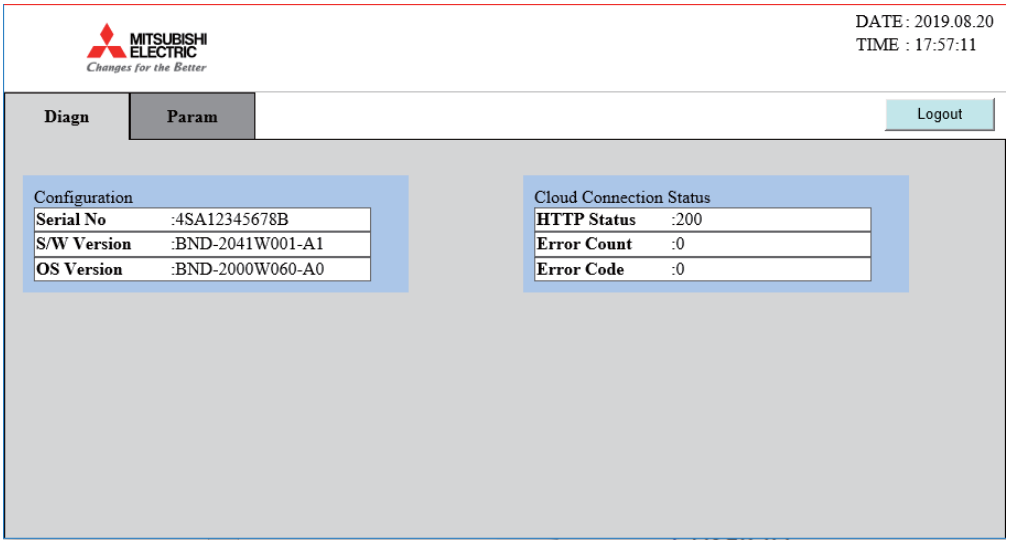
Turn ON the power supply and wait until startup is completed. After displaying "09" on the 7-segment LED for one minute, the display changes to "--" and startup is completed. Eight LEDs are located to the left of the DIP switch as shown in the figure below. The two LEDs on the lower right are used for checking the connection status to the cloud and the NC.
When both LEDs are lit in green, the NC and the cloud are communicating normally.
When either or neither of LEDs is not lit, check the network connection status to the NC or to the Internet, referring to descriptions in the following figure.



3.2.4.2 Checking on the Setting Screen

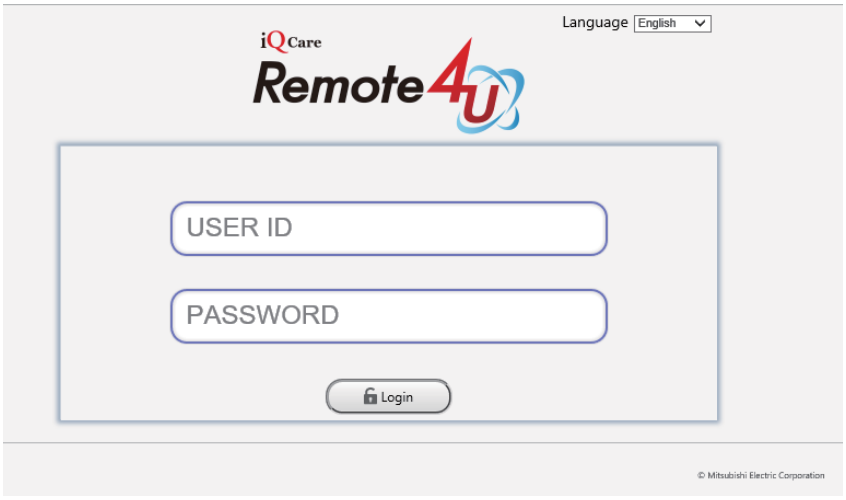
(1) Connect the NC-LAN connector and the PC for setting using a LAN cable.
(2) Display the setting screen of the RGU on the Web browser of the PC for setting by following the procedures in "3.2.2.3 Setting the IP Address for the RGU".
(3) Press the [Diagn] tab and check the value of "HTTP Status" in the "Cloud Connection Status" column. When the value is "200" to "299", the communication has been established.

HTTP Status	Remedy
0	Communication has not started. Refresh the screen after a while.
200 to 299 (normal)	None. Communication with the cloud is normal.
Other than the above	Check the network connection status in "3.2.1 Connecting with Remote Service Gateway Unit (RGU)" or the setting contents in "3.2.2 Setting Parameters".

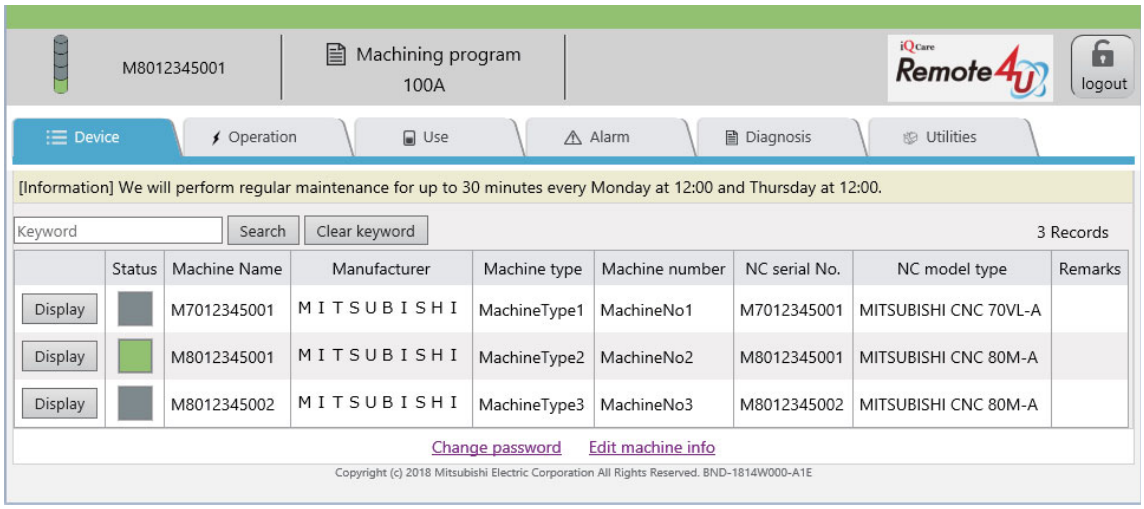


3.2.4.3 Checking on the Remote Service Screen

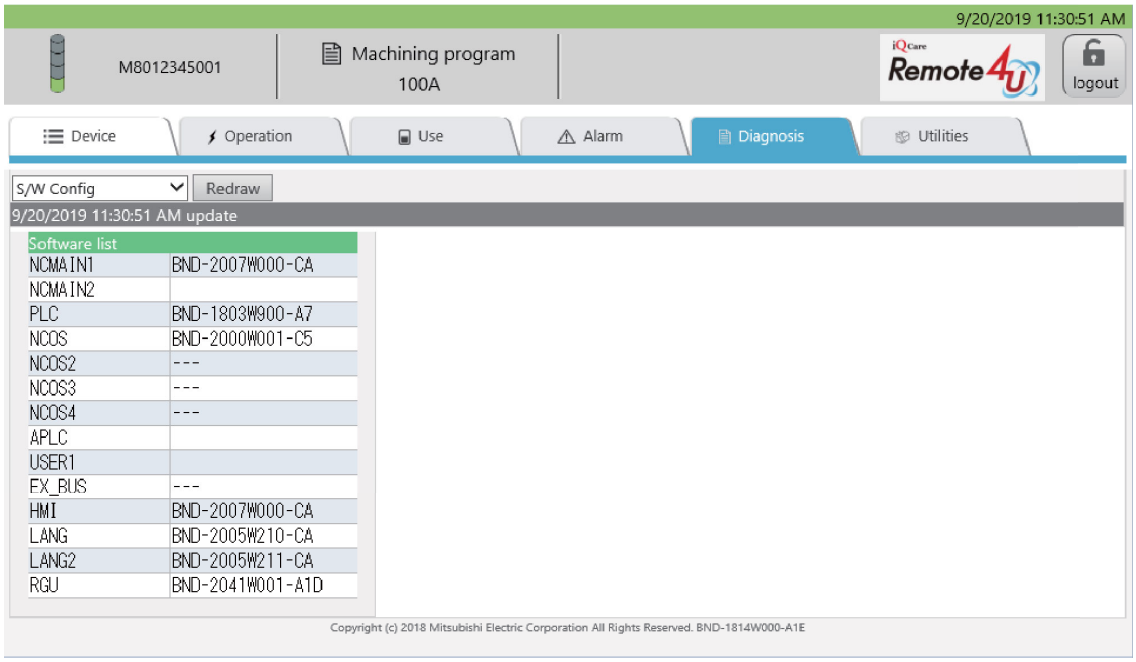
(1) Prepare the written notice for your account provided by Mitsubishi Electric.
(2) Start up a Web browser on a device which can be connected to the Internet.
(3) Input the URL given in the notice in the address bar of the browser.
(4) Input the user ID and the password given in the notice on the login screen.



(5) Check that the "Device" screen is displayed.
(6) Select the device to be checked and then press the [Display] button.



(7) When the software list is displayed as shown in the figure the following, the communication with the cloud has been established.
When the list is not displayed, the communication between the device and cloud has not been made normally. Check the network configuration, connection status of the LAN cable and parameter settings.



3.3 When Using NC Direct Connection

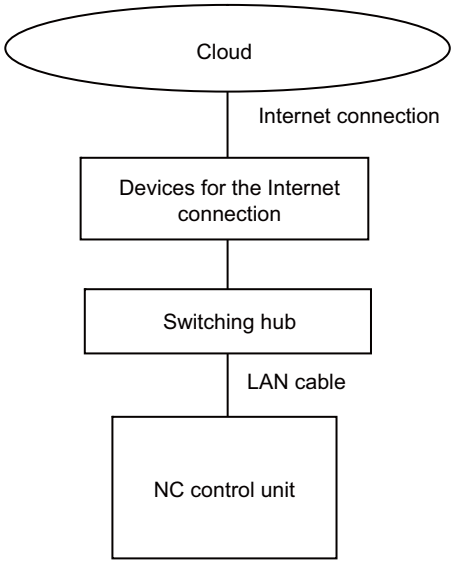
3.3.1 NC Connection

To communicate with a cloud server, connect the device for Internet connection and the NC control unit using LAN cables. Refer to "M800VW/M80VW Series Connection and Setup Manual (IB-1501612)" and "M800VS/M80V Series Connection and Setup Manual (IB-1501613)" for details of the connection method.
When connecting the NC to the Internet, take security into consideration when configuring devices for Internet connection. Refer to the manuals of each device for details.
The NC control unit may not be able to connect to the cloud due to the settings of the IP address filter of the NC control unit. When connecting via a proxy server, exclude the proxy server address. When a proxy server is not used, using the IP address filter disables the connection to the cloud.
The following are the connection examples for M800VS.

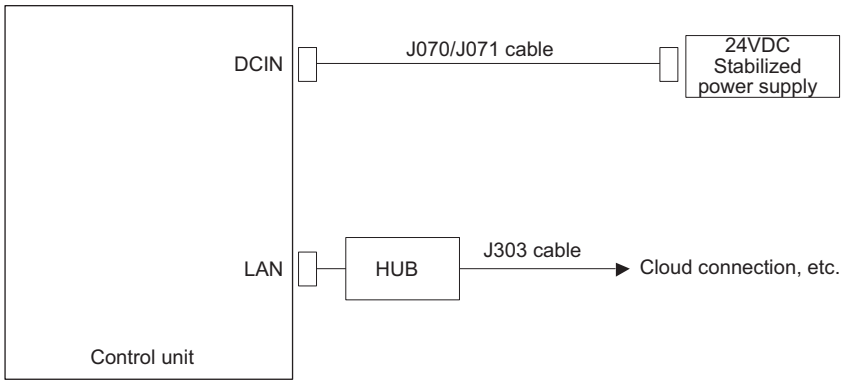
3.3.1.1 Network Connecting Method

Prepare a commercially available switching hub and connect the switching hub, device for Internet connection, and the NC control unit using LAN cables.

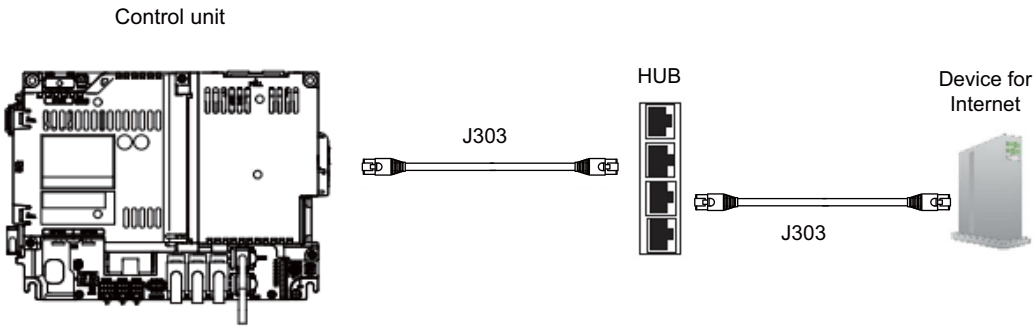
(1) When an NC control unit communicates only with the RGU
Use the LAN connector of the RGU for connecting the RGU to the devices for the Internet connection with LAN cables. Use the NCLAN connector of the RGU for connecting the RGU to the NC control unit with a LAN cable.



3.3.1.2 General Connection System Drawing



3.3.1.3 Connecting with Host Device (Cloud Server)



<Related Items>

Cable drawing: "Cable: J303 Cable"

Connector pin assignment: "General Specifications: Control unit (M800VS)" (LAN1/LAN2 connector)

Each item is for M800VS. Refer to "M800VW/M80VW Series Connection and Setup Manual (IB-1501612)" and "M800VS/M80V Series Connection and Setup Manual (IB-1501613)" for Items of other M8V Series.

3.3.2 Setting Parameters

3.3.2.1 Setting the IP Address for the NC Control Unit

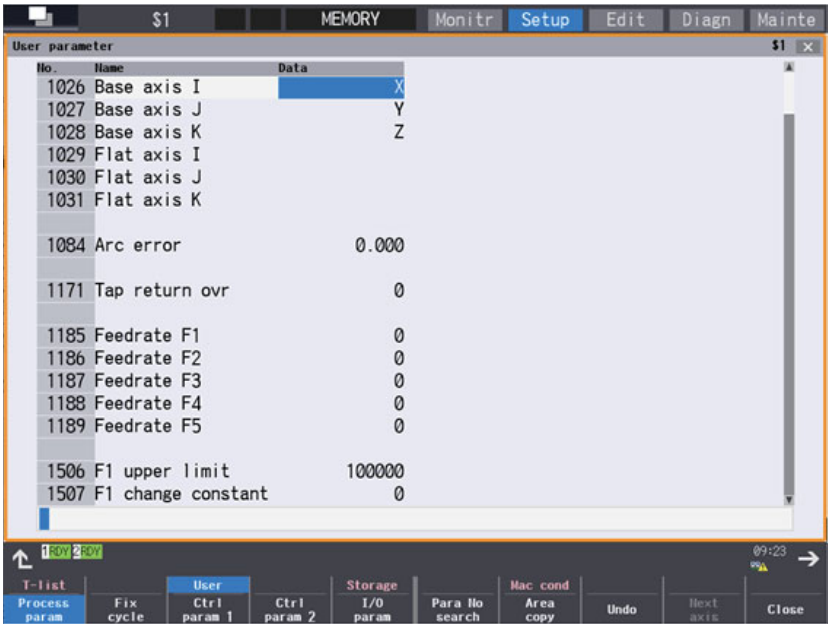
Set the IP address for the NC control unit by following the procedures below. For details, refer to the section of "Ethernet Parameters" in "Alarm/Parameter Manual" supplied with your NC.

(1) Display the maintenance screen on the NC.
(2) Press the menu [Param] -> [Ethernet Param] at the bottom of the screen.
(3) Set the IP address, the subnet mask and the default gateway to the parameters "#1926 Global IP address", "#1927 Global Subnet mask" and "#1928 Global Gateway" respectively.
(4) Restart the NC.

Observe the following precautions when you make the settings.
(Note 1) Set an IP address value for the NC control unit which does not duplicate with other devices.

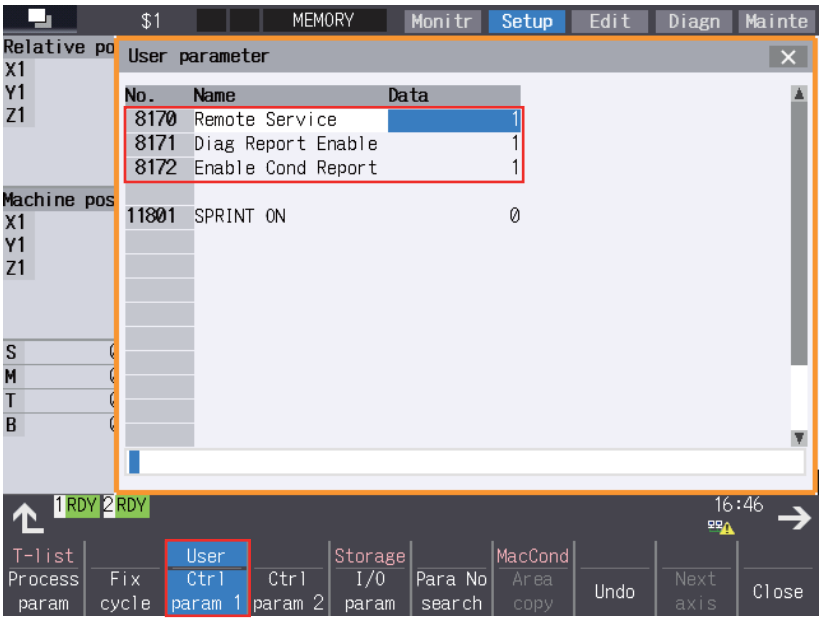
3.3.2.2 Parameters for Remote Service Connection

(1) Select [User] on the [Setup] screen of the NC.

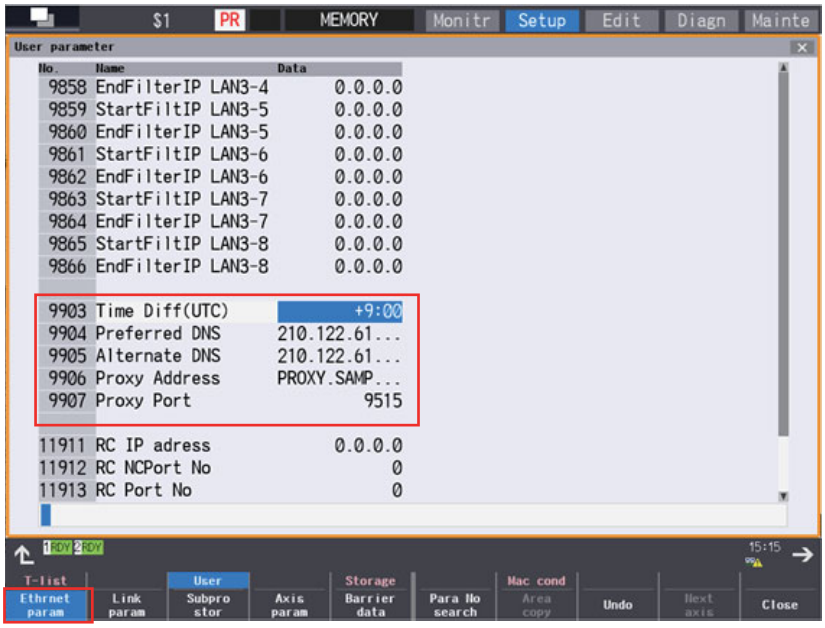


(2) Input setting values as shown in the following table. Restart the NC after all items have been input and "PR" is displayed.

< Control parameter >



< Ethernet parameter >



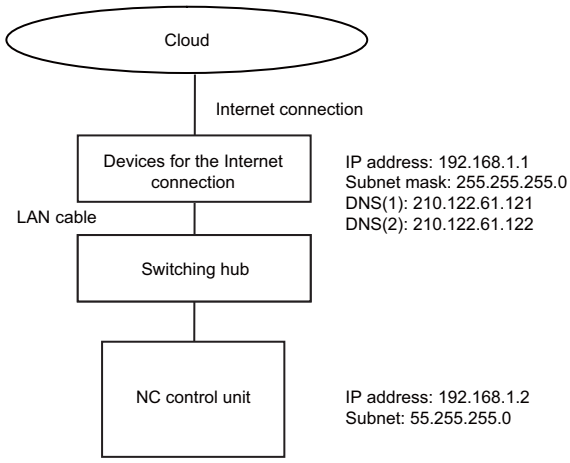
No.	Data types	Name	Value to be input
8170	Control parameter 1	Remote Service	Set the remote service function to valid or invalid. 0: invalid, 1: valid
8171	Control parameter 1	Diag Report Enable	Set the acquisition of the machining result list CSV file to valid or invalid. 0: invalid, 1: valid
9903	Ethernet parameter	Time Diff (UTC)	Set the time difference from UTC to the location of the NC.
9904	Ethernet parameter	Preferred DNS	Set the IP address of the primary DNS server. * To confirm the IP address of the primary DNS server, ask your network administrator or your Internet provider.
9905	Ethernet parameter	Alternate DNS	- Set the IP address of the secondary DNS server. - If there is only single IP address for the DNS server, set the one for the primary DNS server.
9906	Ethernet parameter	Proxy Address	If a proxy server is used in your network environment, set its address. To confirm the use of the proxy server, ask your network administrator.
9907	Ethernet parameter	Proxy Port	Set the port No. of the proxy server.

#8170 and #8171 can also be set by opening the "Mainte" screen and selecting "Parameter" - > "Ctrl param 1" at the bottom of the screen.

3.3.2.3 Setting Example

This chapter describes the setting examples of each network configuration shown in " 3.3.1 NC Connection".

(1) Connecting with the fixed IP address (when an NC control unit communicates only with the RGU)



<Setting value>

No.	Name	Value to be input
1926	Global IP Address	192.168.1.2
1927	Global Subnet Mask	255.255.255.0
1928	Default Gateway	192.168.1.1
9904	Preferred DNS server	210.122.61.121
9905	Alternate DNS server	210.122.61.122
8170	Remote Service	1
8171	Diag Report Enable	1

3.3.3 Setting the Current Date and Time of the NC Control Unit

Set the current date and time in the date and time of the NC control unit.
Refer to the NC control unit manual for the setting method.

After setting the current date and time, restart of the NC control unit is not required.
The current date and time of the NC control unit need to be within the expiration date of the server certificate for the cloud server.
When the current date and time of the NC control unit exceeds the expiration date of the server certificate for the cloud server, the communication with the cloud server fails.

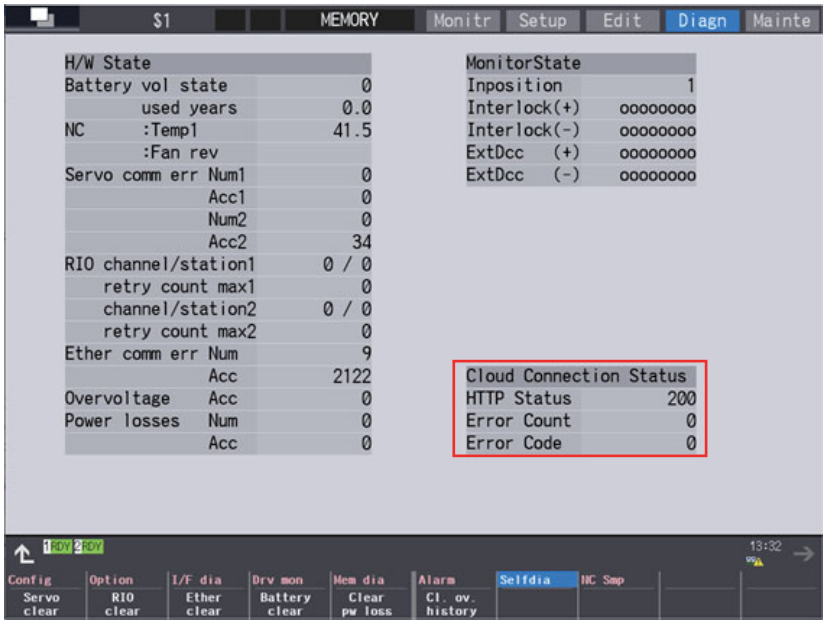
3.3.4 Checking Cloud Connection Status

The connection status to the cloud can be checked on the remote service screen of the NC or on the setting screen of the remote service gateway unit.

3.3.4.1 Checking on the Self Diagnosis Screen of the NC Control Unit

(1) Select the [Selfdia] screen from the diagnosis screen of the NC control unit.
(2) Check the value of "HTTP Status" in the "Cloud Connection Status" column. When the value is "200" to "299", the communication has been established.

HTTP Status	Remedy
0	Communication has not started. Refresh the screen after a while.
200 to 299 (normal)	None. Communication with the cloud is normal.
Other than the above	Check the network connection status in "3.3.1 NC Connection" or the setting contents in "3.3.2 Setting Parameters".



(Note 1) Refresh the screen (move to another screen and move back to the [Selfdia] screen) to check the latest value because the value of "HTTP Status" is the one displayed when this screen was displayed.

3.3.4.2 Checking on the Remote Service Screen

Checking method is the same as that of the RGU connection. Refer to "3.2.4.3 Checking on the Remote Service Screen".

3.3.4.3 Precautions

If there is a delay when refreshing the NC screen during the NC operation, the NC may have an overload, which could disrupt the usage of the remote service. The remote service can be used when NC direct connection is used in the configuration where there are 3 or less part systems and the total number of axes of the NC is 12 or less. If there are more part systems or axes, use the RGU.
When using an RGU, check "3.2 When Using RGU Connection" for details of the RGU connection. When the remote service gateway function of the NC is enabled and the parameter "#8170 Remote Service" is set to "1" (Enable), the RGU function is stopped to avoid a simultaneous connection to the cloud. When this occurs, the "E040" error is displayed on the 7-segment LED. The value "0" in "HTTP Status" of the diagnosis screen also shows that the RGU is not connected to the cloud. Disable the remote service of the NC (set #8170 to "0"), then restart the RGU.

3.4 Applicable Models

The following shows the connection method for each NC. ○ shows "Available" and × shows "Unavailable". The alphanumeric characters indicate that the version or later are compatible. Remote service is not available in earlier versions.

	M8V Series						
	M800VW		M80VW	M800VS		M80V	
	M850VW	M830VW	-	M850VS	M830VS	Type A	Type B
RGU connection	○	○	○	○	○	○	○
NC direct connection	A2	A2	A2	A2	A2	A2	A2

	M8 Series									
	M800W		M80W	M800S		M80			E80	
	M850W	M830W	-	M850S	M830S	Type A	Type B	Type LA	Type A	Type B
RGU connection	○	○	○	○	○	○	○	○	○	○
NC direct connection	×	×	×	×	×	×	×	×	×	×

	C80 Series
	C80
	-
RGU connection	○
NC direct connection	×

	M7V Series							
	M700VW			M700VS			M70V	
	M750VW	M730VW	M720VW	M750VS	M730VS	M720VS	Type A	Type B
RGU connection	○	○	○	○	○	○	○	○
NC direct connection	×	×	×	×	×	×	×	×

	M7 Series					
	M700			M700		E70
	M750	M730	M720	Type A	Type B	-
RGU connection	○	○	○	○	○	○
NC direct connection	×	×	×	×	×	×

3.5 NC Versions on which Operation Has Been Confirmed

NC Series	RGU connection	NC direct connection
M70/M700	Ver. FM	-
M70V/M700V	Ver. L8	-
M80/M800	Ver. D0	-
M80V/M800V	Ver. A0	Ver. A2
C80	Ver. B5	-

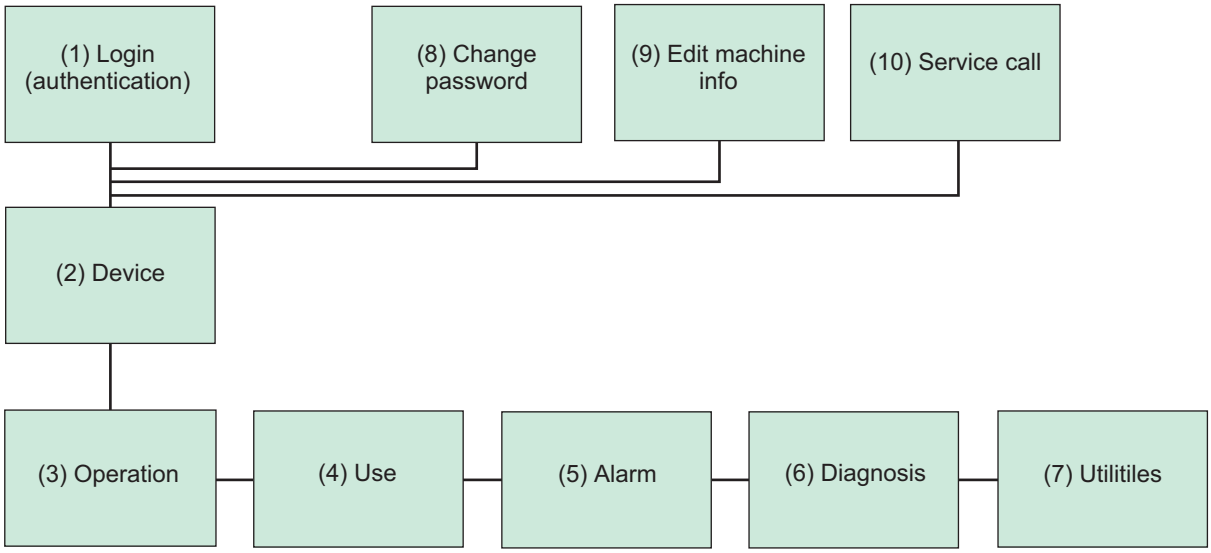
4

NC Remote Service

4.1 Remote Service Screen

The following diagram and table explain the configuration for functions (screens) and their outlines.

[Function (screen) configurations]



[Function outlines]

No.	Screen name	Main functions	Remarks	Available when power OFF or communication disconnected
1	Login	Log into your account assigned in advance.	User registration is required in advance for the first login.	○
2	Device	Listing device information, specifying detailed display object	Machine information of the logged-in user must be registered in advance to list the device on "Device" screen.	○
3	Operation	Graph display of operation rate, machining program name, ONB No.	(*2)	○
4	Use	Servo axis load graph, spindle load graph, power consumption amount	(*3)	-
5	Alarm	Current alarm, alarm history, total display	(*3)	-
6	Diagnosis	S/W configuration, H/W configuration, I/F diagnosis, parameter reference, self diagnosis, key operation history, sampling chart	(*3)	-
7	Utilities	Operation status acquisition, history data acquisition, NC file data, alarm diagnosis, email notification settings	(*4)	△ (*1)
8	Change password	Changing password		○
9	Edit machine info	Edit items which can be freely input on "Device" screen.		○
10	Service call	Send an email to contact our service center for support.		○

(*1) Only operation status acquisition, NC file data, alarm diagnosis, and email notification settings are available when the power supply is OFF or communication is disconnected.
(*2) Only a graph display of operation rate is available for DI connection models.
(*3) This function is unavailable for DI connection models.
(*4) Only operation status acquisition is available for DI connection models.

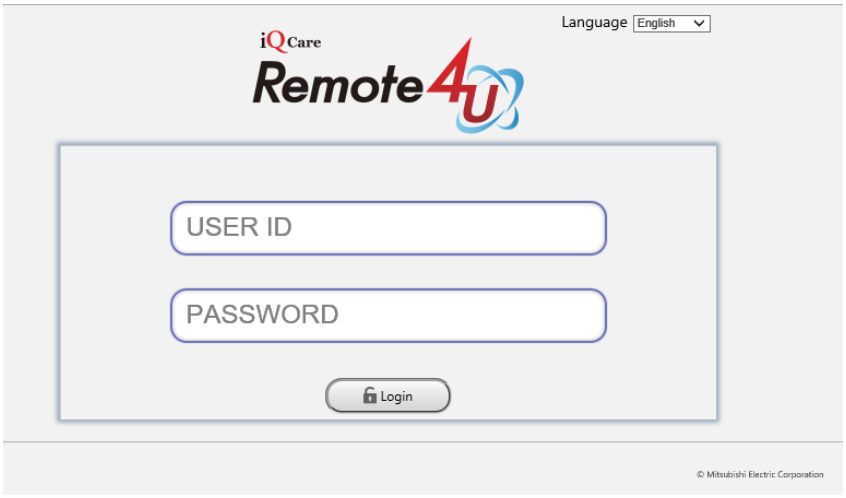
Refer to "1.2 Characteristics" to see available screens for each user classification.

4.2 Basic Operations

For the basic operations of the remote service screen, follow the procedures in the section 4.2.1 to 4.2.6.

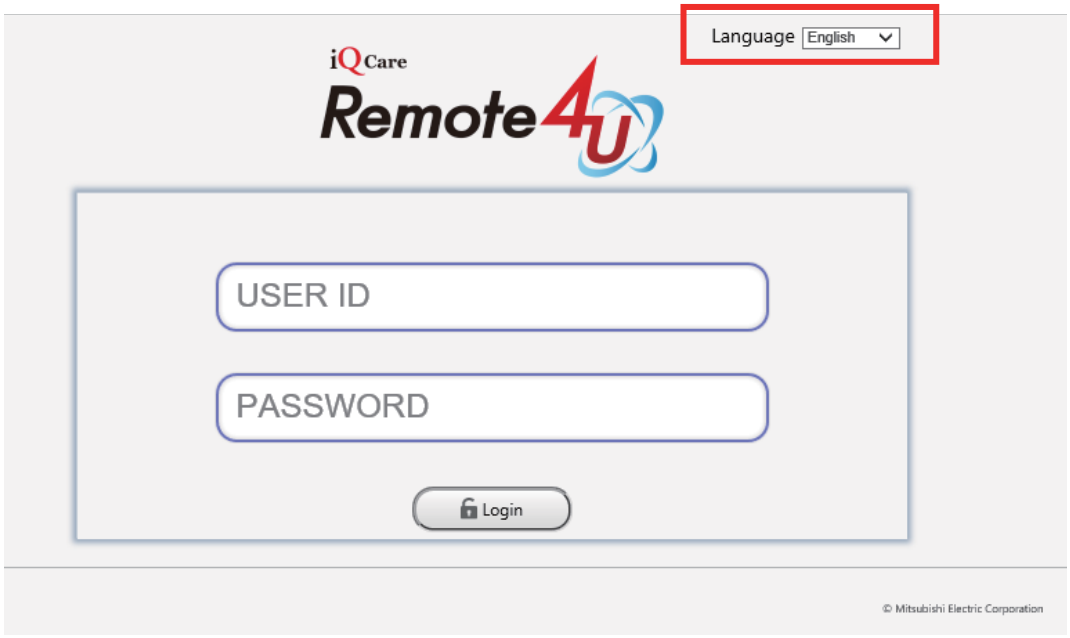
4.2.1 Starting Up a Browser

Start a browser on a PC (a tablet PC or a smartphone), and access to the login screen.
(The URL of the login screen is given in the written notice for your account.)
When you access to the URL, the login screen appears.



4.2.2 Display Language Setting

Display language in the remote service screen can be changed.
Select the display language from the pull-down menu on the upper right of the login screen.



Language specifications

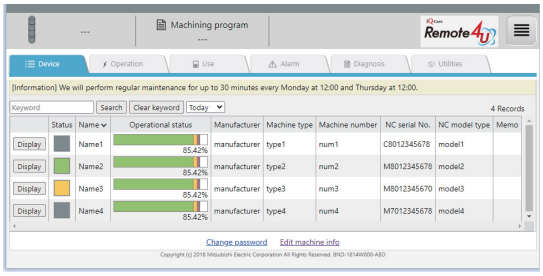
No.	Label	Setting item	Available languages	Default setting	Remarks
1	Language	Display language	Japanese (*1) English	Matches with the OS locale (*2)	Japanese and English are available.

(*1) When the OS of the displaying device does not support Japanese, the text is corrupted and it is not displayed correctly.
(*2) Interfaces are displayed in Japanese when OS language is Japanese, and they are displayed in English in other cases.

4.2.3 Logging in to Remote Service

Input the user ID and the password on the screen, and then press [Login] button.
After a user log in successfully, the "Device" screen appears.
For more details of login operation, refer to "4.3.1 Login Screen".

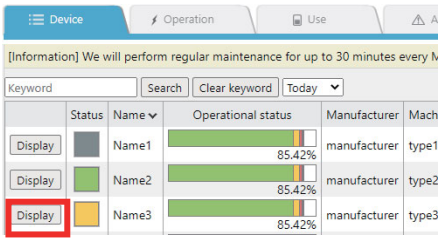
Login screen



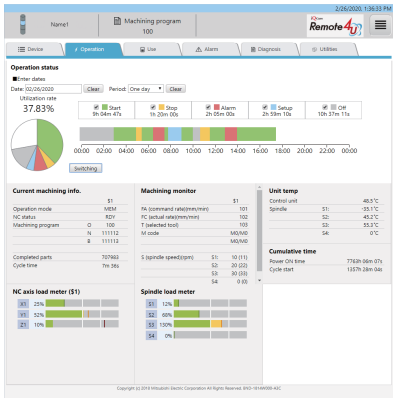
"Device" screen

4.2.4 Device Selection

Press the [Display] button for a device to be checked the operation status while the "Device" screen is displayed. This changes the screen to the "Operation" screen.



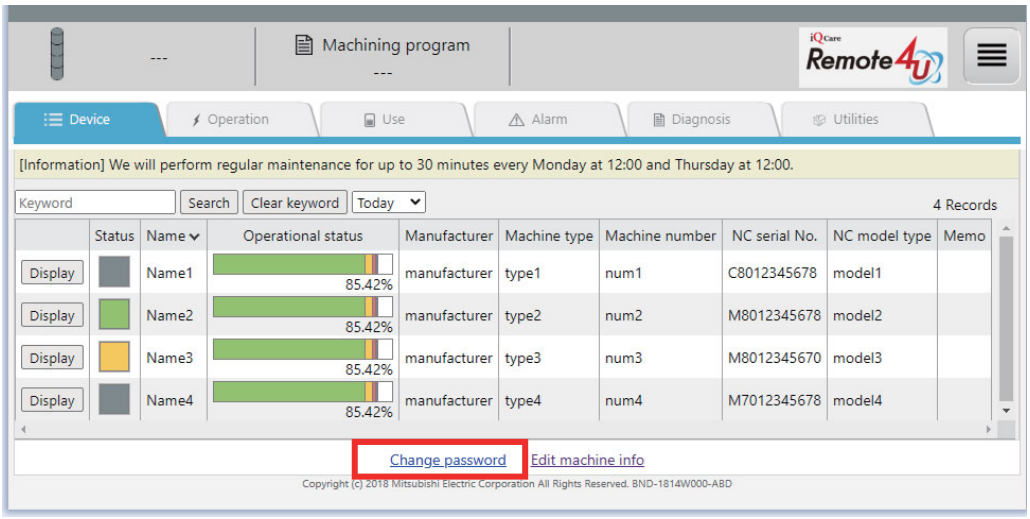
"Device" screen



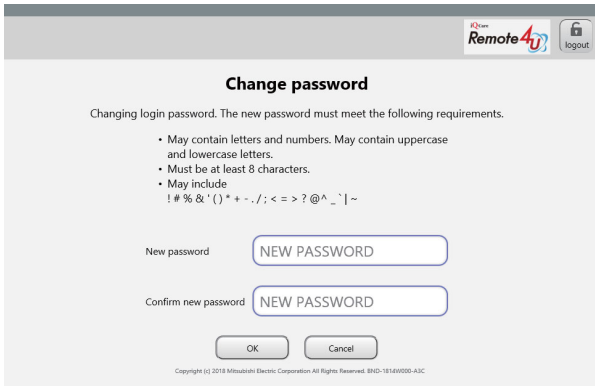
"Operation" screen

4.2.5 Changing Password

To display the password change screen, press the hyperlink of "Change password" at the bottom of the "Device" screen.



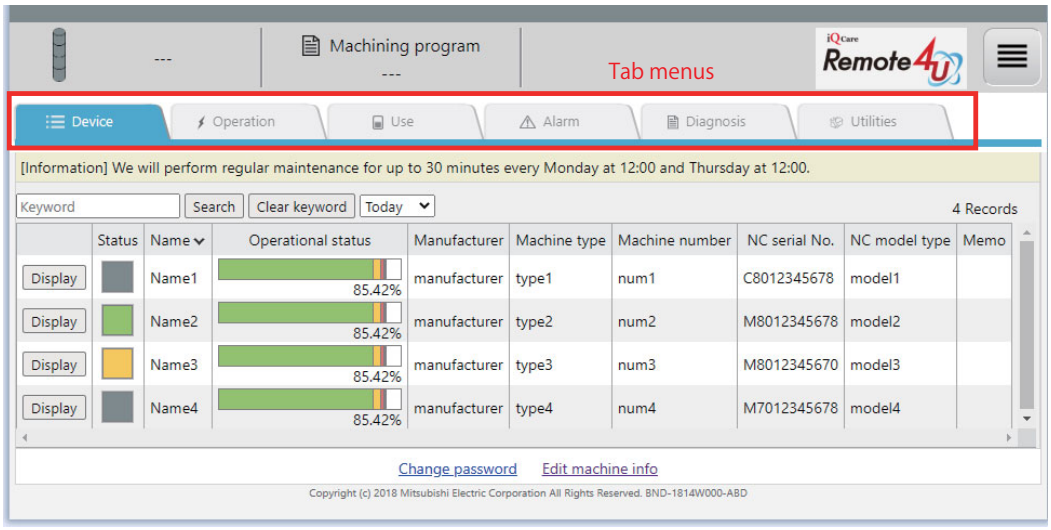
"Device" screen



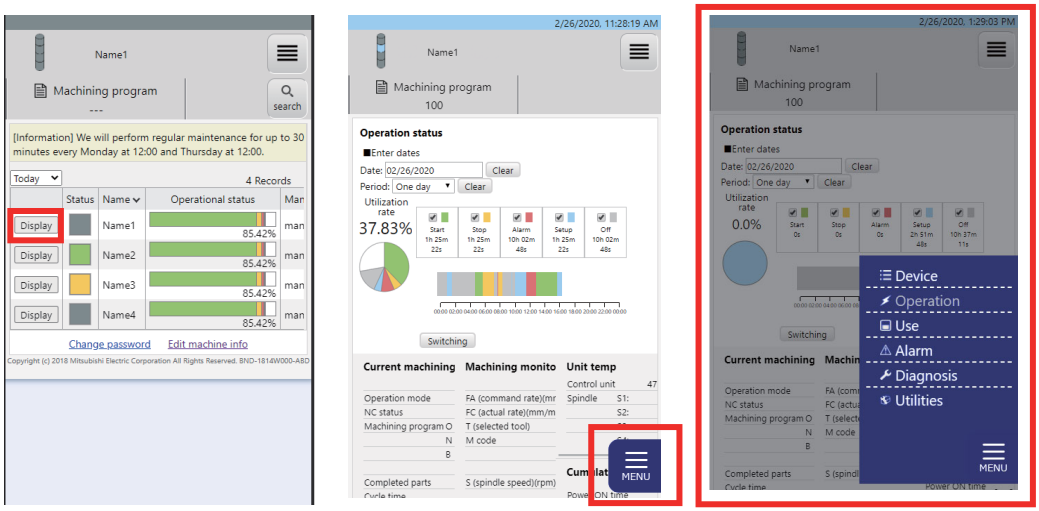
"Change password" screen

4.2.6 Changing Screens

Change the screen by pressing each tab menu.
When the browser is started (initial status), the "Device" screen is displayed, and the tabs other than [Device] are disabled (unselectable).
After the screen changes to "Operation" screen by performing the procedures in "4.2.4 Device Selection", all tabs are enabled (selectable).
Refer to "1.2 Characteristics" to see available tab menus for each user classification.

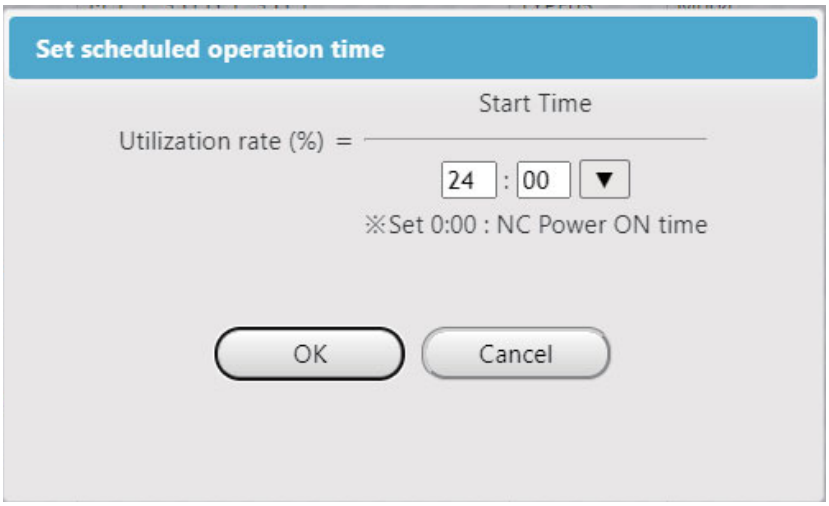


When you have logged in to the remote service using a smartphone or a tablet PC, tap the [Menu] button at the bottom right to change the screen. After you log in (initial status), the "Device" screen appears.
After the screen changes to "Operation" screen by performing the procedures in "4.2.4 Device Selection", the [Menu] button appears at the bottom right of the screen and all tabs are enabled (selectable).
(*) After any of the devices is selected in "Device" screen, the [Menu] button appears at the bottom right of the screen and you can perform menu operations.



4.2.7 Scheduled Operation Time Setting

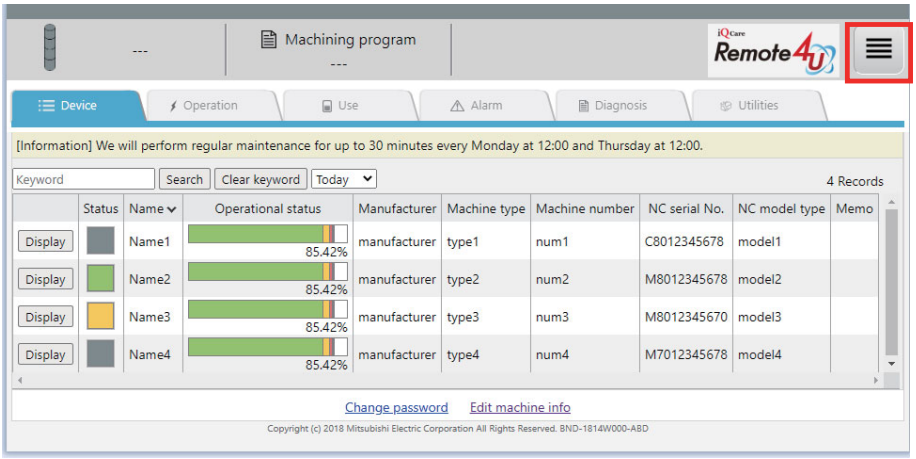
The scheduled operation time for calculating the utilization rate displayed on the operation screen can be set.
Press the menu button at the upper right of the screen, and select [Set scheduled operation time].
Input the scheduled operation time on the "Set scheduled operation time" dialog.
* The default value is 24:00. 0:00 to 24:00 can be set to the scheduled operation time.
* When 00:00 is set, the utilization rate is calculated by using the NC power ON time as the denominator.
(For details, refer to the items of the utilization rate in "4.3.3 Operation Screen".)



Press the [OK] button to reflect the setting.
(Note) There are restrictions regarding the setting of the utilization rate. For details, refer to (6) in "4.4 Restrictions".

4.2.8 Logging Out of Remote Service

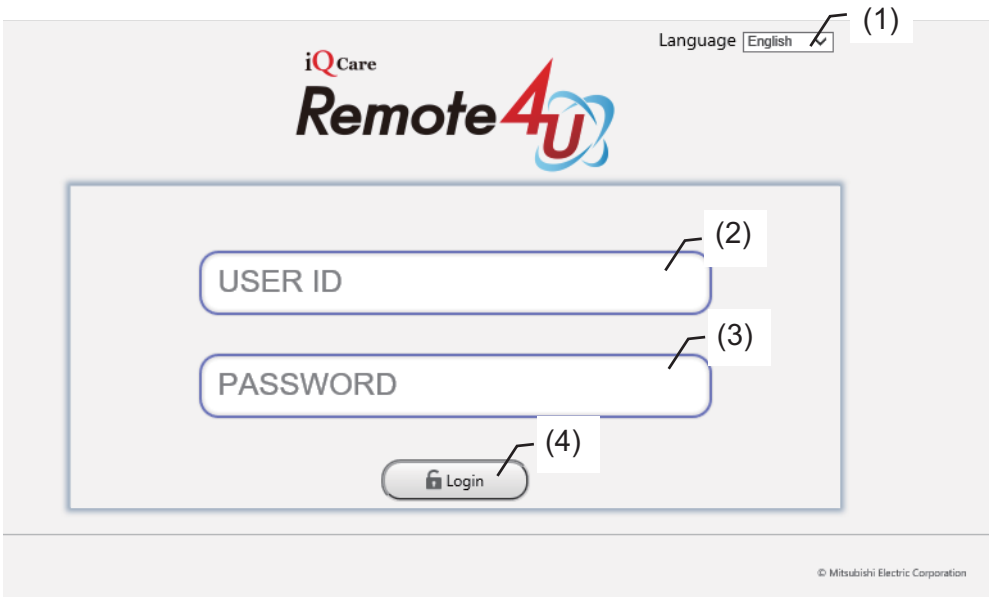
Press the menu button at the upper right of the screen, and select [Logout].
Press the [Cancel] button on the log out confirmation dialog to return to the screen before selecting [Logout].
Press the [OK] button to log out.
After you log out, the login screen appears.



4.3 Details of Each Function

This section describes the specifications of each screen.
The contents of each screen (excluding the login screen) are refreshed at regular intervals.

4.3.1 Login Screen



Display items

No.	Item	Specifications	Remarks
(1)	Language	Select the display language of the screen.	Japanese and English are available. (Refer to the following table "Language specifications".)
(2)	USER ID	Enter the user ID.	
(3)	PASSWORD	Enter the password.	
(4)	Login button	Press this button to log in. After a user log in successfully, the "Device" screen appears.	

Language specifications

No.	Label	Item	Available languages	Default setting	Remarks
1	Language	Display language	Japanese (*1) English	Matches with the OS locale (*2)	Japanese and English are available.

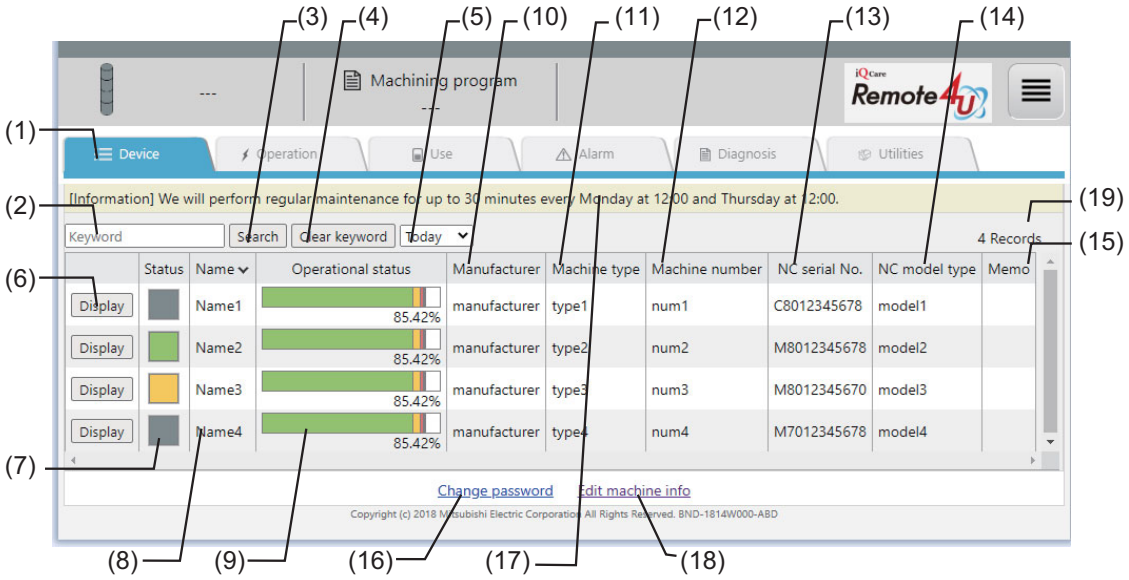
(*1) When the OS of the displaying device does not support Japanese, the text is corrupted and it is not displayed correctly.

(*2) Interfaces are displayed in Japanese when OS language is Japanese, and they are displayed in English in other cases.

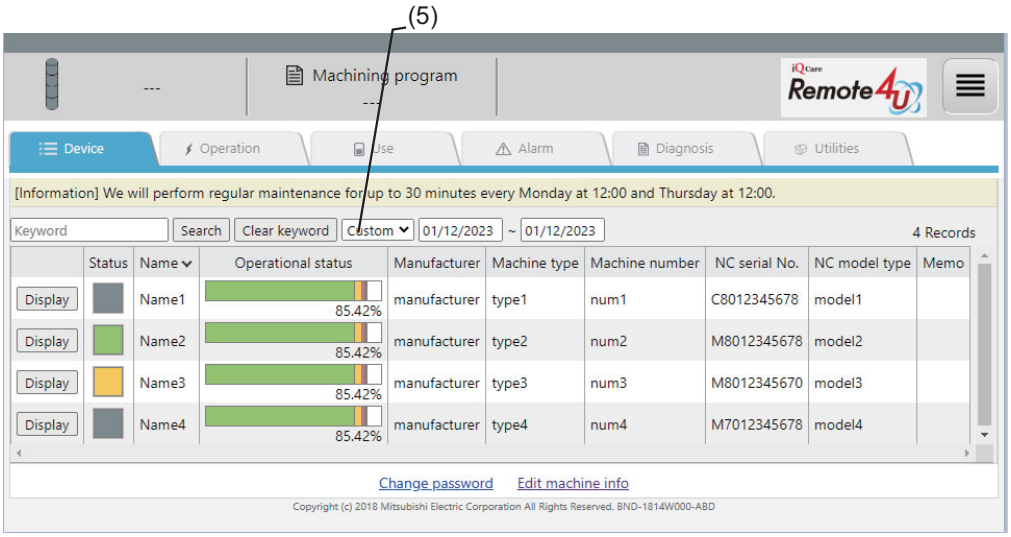
4.3.2 Device Screen

The "Device" screens for each PC, tablet PC and smartphone are as follows.
The "Device" screen shows the operation status of the devices that are monitored in a list.
Click on each title to sort (ascending, descending).

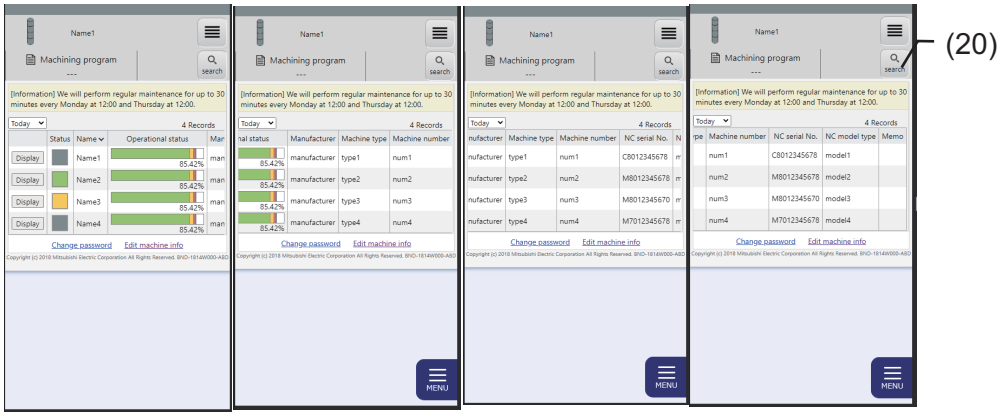
"Device" screen (for PC)



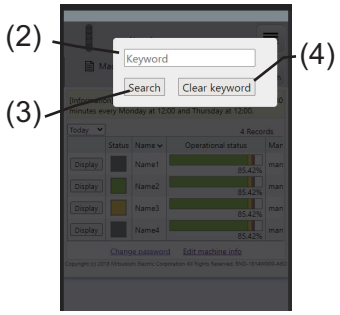
When [Custom] is selected



"Device" screen (for tablet PC or smartphone)



When [Search] button is tapped on a tablet PC or a smartphone:



Display items

No.	Item	Specifications
(1)	Tab menu	Click a tab to change screen. Refer to "4.2.6 Changing Screens" for details on changing screens.
(2)	Keyword input box	Input a search keyword. ■ Items which can be searched Free input item 1 ("Machine Name"), "Manufacturer", "Machine type", "Machine number", "NC serial No.", "NC model type" and free input item 2 ("Remarks") ■ Searching conditions Strings which is partially matched the input keyword including space character(s) is searched. However, when a space character has been input at the beginning or at the end of the keyword, it will be ignored. (Example) When "M800 123" is input as a search keyword, "M800 123" is regarded as a single word. Even though "M8003123" is registered to the machine information, it will not be searched. ■ Maximum number of input characters Up to 32 characters (for both half-width and full-width character) ■ Others - Only one keyword can be input. The search cannot be performed for multiple keywords. - The search is performed without distinguishing upper- and lower-case letters.
(3)	Search button	Press the [Search] button to execute a search. The search is performed for all machine information. When the [Search] button is pressed without inputting a keyword, all machine information are displayed. You cannot refine your search within the results of the previous search.
(4)	Clear keyword button	Clears the input keyword in the box. * The search result is not cleared (reset) by pressing this button.

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(5)</td><td>Specified period</td><td>Specify the period for operation status.
When this screen is displayed for the first time, "Today" is specified. The operation status from "00:00" to "24:00" of today is displayed.
When [Custom] is selected, specify the target date (start) and the target date (end).
The operation status is not displayed in the following cases.
- The specified period exceeds 7 days.
- The target date (start) is after the target date (end).</td></tr>
<tr><td>(6)</td><td>Display button</td><td>Press the [Display] button to transit the "Operation" screen.</td></tr>
<tr><td>(7)</td><td>Status</td><td>Displays the operation status of each device.
<table>
<tr><th>Operation status</th><th>Display color</th><th>Details</th></tr>
<tr><td>Operating</td><td>Green</td><td>Automatic operation</td></tr>
<tr><td>Stop</td><td>Yellow</td><td>Stopped during automatic operation</td></tr>
<tr><td>Alarm stop</td><td>Red</td><td>Stopped due to an alarm</td></tr>
<tr><td>Stand-by</td><td>Blue</td><td>Before automatic operation</td></tr>
<tr><td>Power OFF/ Communication disconnected</td><td>Gray</td><td>Power OFF, communication with the NC or the server can not be made, or the remote service gateway unit stop state</td></tr>
</table>
[Alarm stop]
Operation alarm, program error, servo alarm, system alarm or PLC alarm has occurred in the control device.

[Stop]
Control device is being stopped or paused during automatic operation.
When the parameter "#1238 set10/bit7" is enabled (NC alarm 5 (XCB1) is enabled), alarms to be output to NC alarm 5 are in the stop state.
Example:
Error code: Details
0004: External interlock axis found
0102: Cutting override zero
0103: External feedrate zero
0109: Block start interlock
0110: Cutting block start interlock
0125: Rapid override zero
0200: Interference check disabled
1033: Sp-Sp polygon (G51.2) cut interlock
[Operating]
Control device is being in automatic operation. ("Alarm stop" takes precedence over this status.)
[Power OFF/Communication disconnected]
The power of control device is OFF, or the communication with the device is not made.

* When the data collecting server or the remote service gateway stops, the data is calculated (counted) as a "Power OFF/Communication disconnected" data. The operation status in such a situation is not counted.

[Stand-by]
The status other than that indicated above.</td></tr>
<tr><td>(8)</td><td>Free input Item 1 (Machine Name (*1))</td><td>Displays a machine name. Machine type is displayed as a default.
The machine name can be edited on the machine information edit screen.
For details on editing, refer to "4.3.9 Machine Information Edit Screen".</td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(9)</td><td>Operation status</td><td>Displays the operation status of each device.

The percentage of "accumulated time/(24 x period)" of the operation status is displayed as a chart.
<table>
<tr><th>Operation status</th><th>Display color</th><th>Details</th></tr>
<tr><td>Operating</td><td>Green</td><td>Automatic operation</td></tr>
<tr><td>Stop</td><td>Yellow</td><td>Stopped during automatic operation</td></tr>
<tr><td>Alarm stop</td><td>Red</td><td>Stopped due to an alarm</td></tr>
<tr><td>Stand-by</td><td>Blue</td><td>Before automatic operation</td></tr>
<tr><td>Power OFF</td><td>Gray</td><td>Power OFF, communication with the NC or the server cannot be made, or the remote service gateway unit stop state</td></tr>
</table>
■ When "0:00" is set to the scheduled operation time, the utilization rate is calculated using the following formula.

$$\text{Utilization rate (\%)} = \frac{\text{Time of "Operating" operation status}}{\text{Accumulated time of operation status (excluding Power OFF/communication disconnected)}} \times 100$$

■ When the time other than "0:00" is set to the scheduled operation time, the utilization rate is calculated using the following formula.

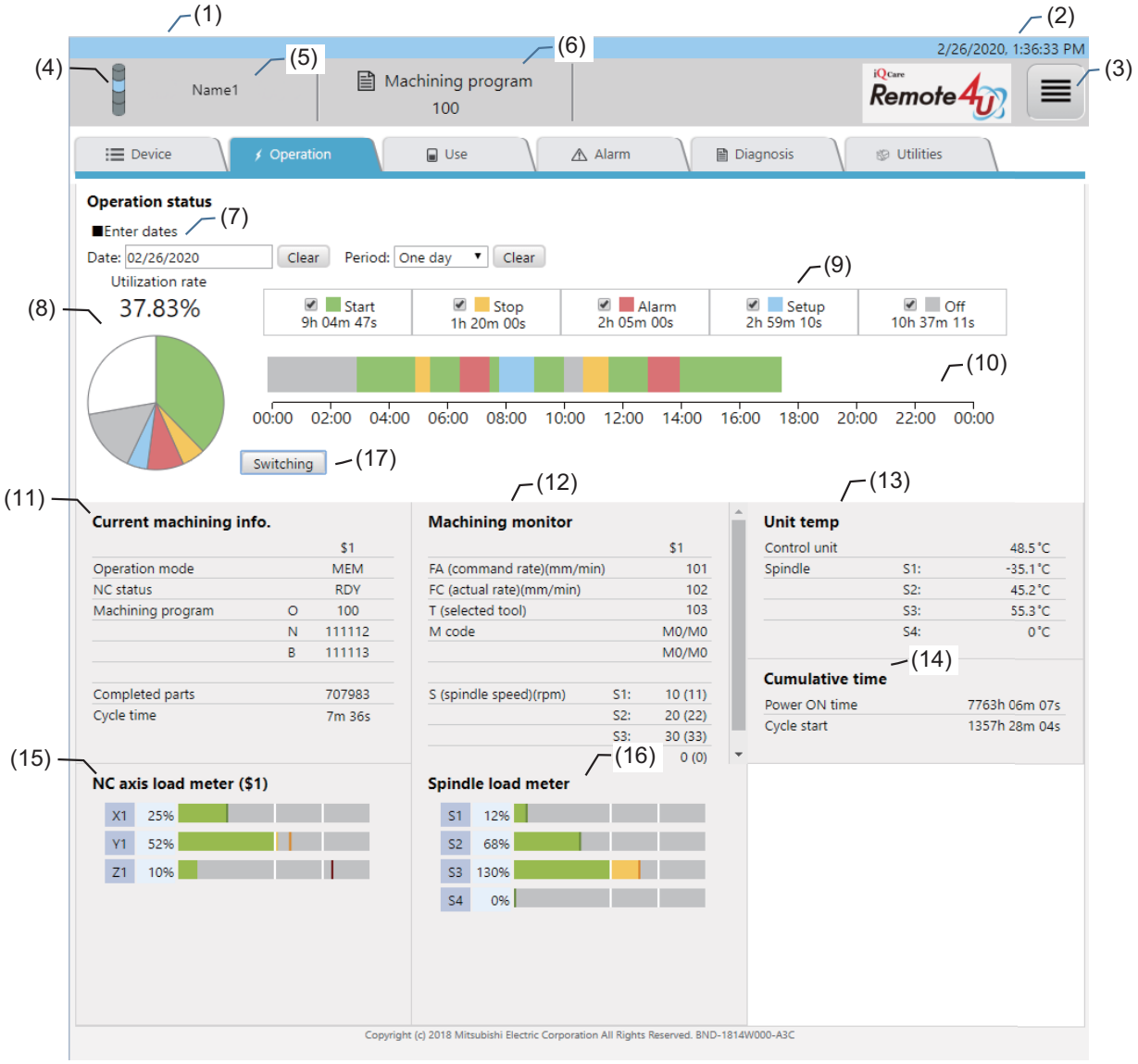
$$\text{Utilization rate (\%)} = \frac{\text{Time of "Operating" operation status}}{\text{Scheduled operation time}} \times 100$$</td></tr>
<tr><td>(10)</td><td>Manufacturer (*1)</td><td>Displays the name of the manufacturer.</td></tr>
<tr><td>(11)</td><td>Machine type (*1)</td><td>Displays the machine type.</td></tr>
<tr><td>(12)</td><td>Machine number (*1)</td><td>Displays the machine number.</td></tr>
<tr><td>(13)</td><td>NC serial No. (*1)</td><td>Displays the NC serial No.</td></tr>
<tr><td>(14)</td><td>NC model type (*1)</td><td>Displays the NC model type.</td></tr>
<tr><td>(15)</td><td>Free input Item 2 (Remarks (*1))</td><td>Displays remarks. Remarks can be edited on the machine information edit screen.
For details on editing, refer to "4.3.9 Machine Information Edit Screen".</td></tr>
<tr><td>(16)</td><td>Change password</td><td>Press the hyperlink of "Change password" to transit the password change screen.</td></tr>
<tr><td>(17)</td><td>Information</td><td>Displays Informations.</td></tr>
<tr><td>(18)</td><td>Edit machine info</td><td>Displays only when the machine information (title or details) can be edited.
Press the hyperlink of "Edit machine info" to transit the machine information edit screen.
The same machine information as the search result of the "Device" screen is displayed on the machine information edit screen.</td></tr>
<tr><td>(19)</td><td>Records</td><td>Displays the number of devices currently displayed. When a search is performed, the number of searched devices is displayed.</td></tr>
<tr><td>(20)</td><td>Search button</td><td>Displays the keyword input dialog.
The [search] button is displayed only when you use a tablet PC or a smartphone.
To close the keyword input dialog, press the portion outside the dialog or press the [search] button again.</td></tr>
</table>

(*1) Since texts in a cell is not wrapped, scroll in the horizontal direction to display the whole texts.

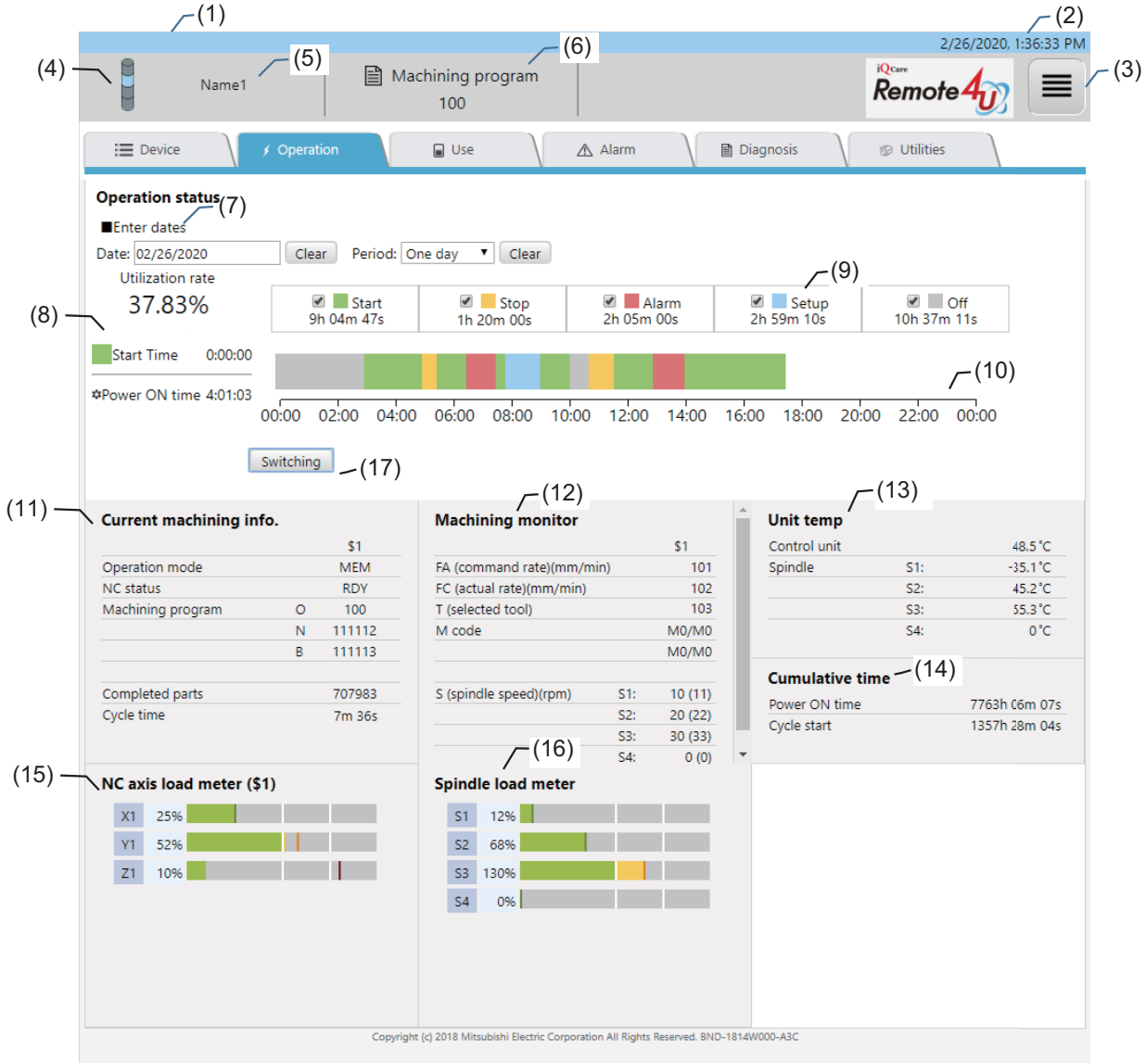
4.3.3 Operation Screen

The "Operation" screen shows the operation status of the selected device (by pressing the [Display] button) on the "Device" screen.

Operation screen (pie chart)



Operation screen (fraction)



Display items

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(1)</td><td>Alarm information</td><td>The information of one alarm is displayed at the top left of the screen. This is not displayed for DI connection models.
■ Alarm messages
(a) NC alarm message
- NC alarm occurrence (All part systems)
- NC alarm occurrence (Each part system)
(b) PLC alarm message
■ Priority ranking for alarm display
1: NC alarm (All part systems)
2: NC alarm (Each part system)
3: PLC alarm
■ Background colors and icons
The background color of the screen indicates the operation status.
<table>
<tr><th>Operation status</th><th>Icon</th><th>Alarm message</th><th>Font color</th><th>Background color</th></tr>
<tr><td>Alarm stop</td><td>  </td><td>EMG Emergency stop EXIN $1</td><td>White</td><td>Red</td></tr>
<tr><td>Stopped</td><td>  </td><td>M01 Cutting override zero 0102 $1</td><td>Black</td><td>Yellow</td></tr>
<tr><td>Operating</td><td></td><td></td><td>-</td><td>Green</td></tr>
<tr><td>Stand-by</td><td></td><td></td><td>-</td><td>Blue</td></tr>
<tr><td>Power OFF/
Communication disconnected</td><td></td><td></td><td>-</td><td>Gray</td></tr>
</table></td></tr>
<tr><td>(2)</td><td>Date/Time of data</td><td>The date and time of the obtained data is displayed at the top right of the screen.
The display format of the date and time varies depending on the display language.
<table>
<tr><th>Language</th><th>Display format</th><th>Example</th></tr>
<tr><td>Japanese</td><td>YYYY/M/D HH:MM:SS</td><td>2018/1/6 14:48:33</td></tr>
<tr><td>English</td><td>M/D/YYYY HH:MM:SS XM</td><td>1/6/2018, 2:48:33 PM</td></tr>
</table>
The background color of data display area varies depending on the operation status.
<table>
<tr><th>Operation status</th><th>Font color</th><th>Background color</th><th>Remarks</th></tr>
<tr><td>Alarm stop</td><td>White</td><td>Red</td><td></td></tr>
<tr><td>Stopped</td><td>Black</td><td>Yellow</td><td></td></tr>
<tr><td>Operating</td><td>Black</td><td>Green</td><td></td></tr>
<tr><td>Stand-by</td><td>Black</td><td>Blue</td><td></td></tr>
<tr><td>Power OFF/
Communication disconnected</td><td>White</td><td>Gray</td><td></td></tr>
</table></td></tr>
<tr><td>(3)</td><td>Menu button</td><td>Press this button to display the pull-down menu.
Press the [X] button to close the pull-down menu.
<table>
<tr><th>Item</th><th>Details</th></tr>
<tr><td>Set scheduled operation time</td><td>For details, refer to "4.2.7 Scheduled Operation Time Setting".</td></tr>
<tr><td>Logout</td><td>For details, refer to "4.2.8 Logging Out of Remote Service".</td></tr>
</table></td></tr>
<tr><td>(4)</td><td>Indicator light</td><td>Operation status is indicated by a four-color cylinder.
For operation status definitions, refer to explanations in "4.3.2 Device Screen".</td></tr>
<tr><td>(5)</td><td>Type information</td><td>Displays the machine name.</td></tr>
<tr><td>(6)</td><td>Machining program</td><td>Displays the name of the machining program being executed. A part system which has the smaller No. is displayed preferentially. If $1 does not exist, $2 or later is displayed in ascending order. This is not displayed for DI connection models.</td></tr>
<tr><td>(7)</td><td>Specified period</td><td>Specifies utilization rate or period for operation status.
When this screen is displayed for the first time, no period is specified. In this case, the utilization rate from 00:00 to 24:00 of that day is displayed.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(8)</td><td>Utilization rate
(Pie chart/ Fraction)</td><td>When 0:00 is set to the scheduled operation time, the percentage of the accumulated time of the operation status "Operating" in the specified period, excluding Power OFF/Communication disconnected, is displayed on the pie chart. Press (17) Display change button to display the accumulated time of the operation status "Operating" as a ratio of the accumulated time, and the accumulated times of the operation statuses, excluding Off and communication disconnected.

When a time other than 0:00 is set to the scheduled operation time, the ratio of the accumulated time of "Operating" operation status to the scheduled operation time is displayed as a ratio.

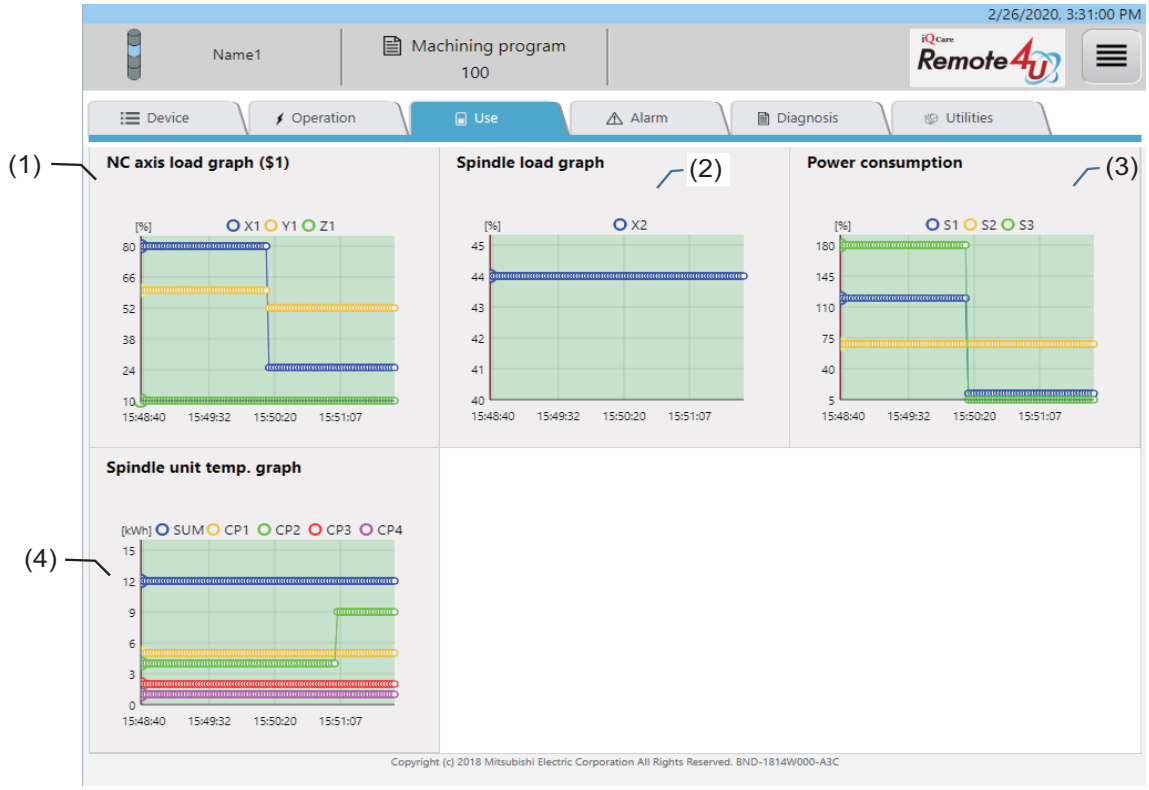
■ When 0:00 is set to the scheduled operation time, the utilization rate is calculated using the following formula.
Utilization rate (%) = Time of "Operating" operation status / Accumulated time of operating statuses (excluding Off / Communication disconnected) x 100
■ When the time other than 0:00 is set to the scheduled operation time, the utilization rate is calculated using the following formula.
Utilization rate (%) = Time of "Operating" operation status / Scheduled operation time x 100
* Restrictions apply to the calculation of the utilization rate. For details, refer to (7) in "4.4 Restrictions".</td></tr>
<tr><td>(9)</td><td>Utilization rate
(List)</td><td>The list shows accumulated operation time of each operation status.
The accumulated time of each operation status and their percentages in the specified period are displayed.</td></tr>
<tr><td>(10)</td><td>Operation status
(Time series graph)</td><td>Operation status of the specified period is displayed as a time series graph
If the specified period is longer than 7 days, this graph is not displayed.
<table>
<tr><th>Operation status</th><th>Display color</th><th>Remarks</th></tr>
<tr><td>Alarm (Alarm stop)</td><td>Red</td><td></td></tr>
<tr><td>Stop</td><td>Yellow</td><td></td></tr>
<tr><td>Start (Operating)</td><td>Green</td><td></td></tr>
<tr><td>Setup (Stand-by)</td><td>Blue</td><td></td></tr>
<tr><td>Off (Power OFF)</td><td>Gray</td><td></td></tr>
<tr><td>Communication disconnected</td><td>No color</td><td></td></tr>
</table>
"Communication disconnected" means the state that data collecting server or the remote service gateway stopped. The data for operation status is not collected for that term. The blank (white-colored) portion of the time series graph or the pie chart indicates the time of "Server stopped".</td></tr>
<tr><td>(11)</td><td>Current machining information</td><td>Displays the following machining information. "$" indicates the part system No. This is not displayed for DI connection models.
<table>
<tr><th>Item</th><th>Remarks</th></tr>
<tr><td>Operation mode</td><td></td></tr>
<tr><td>NC status</td><td></td></tr>
<tr><td>Machining program
- O No.
- N No.
- B No.</td><td></td></tr>
<tr><td>Completed parts</td><td>The setting of parameter #8001 (M code to count machined workpieces) and operation of the machining program which describes the M code registered in #8001 are required to display completed parts.</td></tr>
<tr><td>Cycle time</td><td></td></tr>
</table></td></tr>
<tr><td>(12)</td><td>Machining monitor</td><td>Displays the following values. This is not displayed for DI connection models.
<table>
<tr><th>Item</th><th>Remarks</th></tr>
<tr><td>FA (command rate)</td><td>The unit of the 1st part system is displayed after "FA (command rate)" item.</td></tr>
<tr><td>FC (actual rate)</td><td>The unit of the 1st part system is displayed after "FC (actual rate)" item.</td></tr>
<tr><td>T (selected tool)</td><td></td></tr>
<tr><td>M code</td><td></td></tr>
<tr><td>S (spindle speed)
- Actual value
- Command value</td><td></td></tr>
</table></td></tr>
</table>

<table>
<tr><th>No.</th><th>Item</th><th colspan="2">Specifications</th></tr>
<tr><td rowspan="5">(13)</td><td rowspan="5">Unit temperature</td><td colspan="2">Displays the following values. This is not displayed for DI connection models.</td></tr>
<tr><td>Item</td><td>Remarks</td></tr>
<tr><td>Control unit (temperature)</td><td></td></tr>
<tr><td>Spindle (temperature)</td><td>Up to 8 axes</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="5">(14)</td><td rowspan="5">Cumulative time</td><td colspan="2">Displays the following values. This is not displayed for DI connection models.</td></tr>
<tr><td>Item</td><td>Remarks</td></tr>
<tr><td>Machining power ON time</td><td></td></tr>
<tr><td>Automatic startup</td><td></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="11">(15)</td><td rowspan="11">NC axis load meter ($1 to $8)</td><td colspan="2">Displays the NC axis load information for each system as a meter display (Up to 8 part systems). This is not displayed for DI connection models.</td></tr>
<tr><td>Item</td><td>Remarks</td></tr>
<tr><td>1st part system ($1)</td><td></td></tr>
<tr><td>2nd part system ($2)</td><td></td></tr>
<tr><td>3rd part system ($3)</td><td></td></tr>
<tr><td>4th part system ($4)</td><td></td></tr>
<tr><td>5th part system ($5)</td><td></td></tr>
<tr><td>6th part system ($6)</td><td></td></tr>
<tr><td>7th part system ($7)</td><td></td></tr>
<tr><td>8th part system ($8)</td><td></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="4">(16)</td><td rowspan="4">Spindle load meter</td><td colspan="2">Displays the spindle load information as a meter display (Up to 8 axes). This is not displayed for DI connection models.</td></tr>
<tr><td>Item</td><td>Remarks</td></tr>
<tr><td>Spindle load meter</td><td></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td>(17)</td><td>Display change button</td><td colspan="2">Switches the display of the time series graph explained in item (10) or the utilization rate explained in item (8) or (9).
Click this button to switch the display between pie chart and fraction, and to switch the graph direction between vertical and horizontal explained in item (10).
When a horizontal bar graph with multiple dates specified is displayed, the scale can be set across the dates. Up to 7 days can be displayed on the graph.
The vertical graph cannot be displayed in the following cases.
- When [One day] is selected
- When [Any period] is selected and the same day is set for both the start date and the end date</td></tr>
</table>

4.3.4 Use Screen

The "Use" screen shows the consumption information of the selected device (by pressing the [Display] button) on the "Device" screen.

For details, refer to the sections of "Power Consumption Computation" and "EcoMonitorLight" in "PLC Programming Manual" supplied with your NC.



Display items

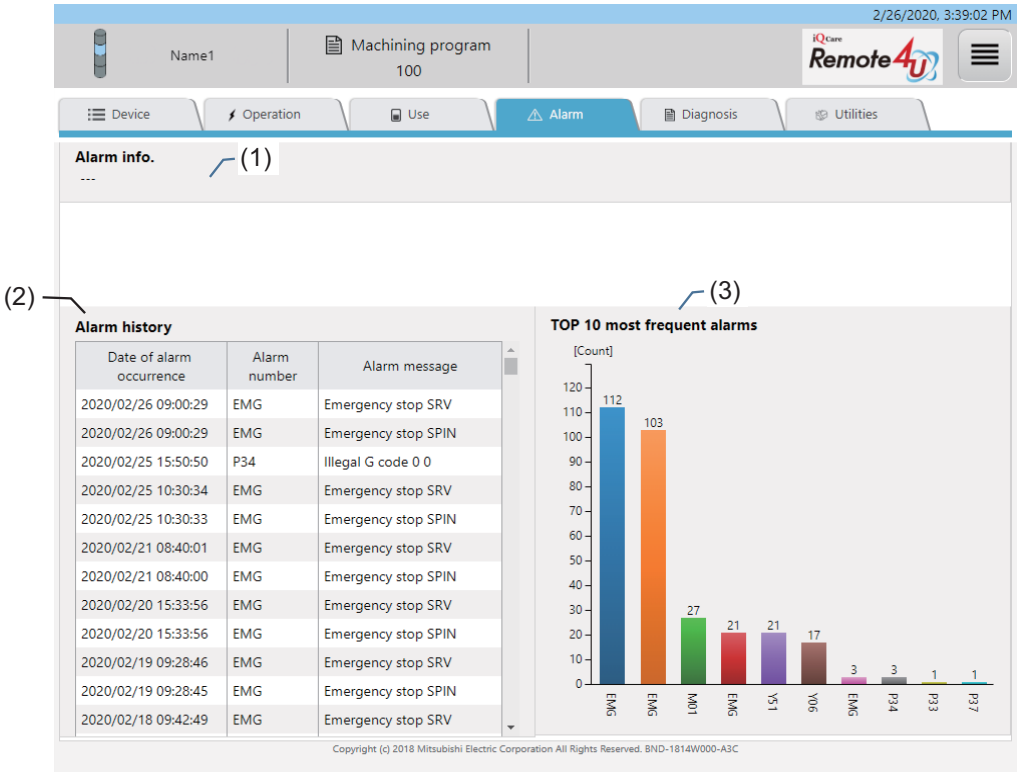
No.	Item	Specifications
(1)	NC axis load graph ($1) to ($8) (*1)	Displays the NC axis load information as a graph. ■ Graph display details (a) Horizontal axis: Time (time series) (b) Vertical axis: NC axis load value (%) (c) Display items: The latest 1000 items (plotted) ■ Display items
		Item: 1st part system ($1) to 8th part system ($8) — Remarks:
(2)	Spindle load graph (*1)	Displays the spindle load information as a graph. ■ Graph display details (a) Horizontal axis: Time (time series) (b) Vertical axis: Temperature of each spindle (%) (c) Display items: The latest 1000 items (plotted) ■ Display items
		Item: Spindle: 1 to 8 — Remarks:

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(3)</td><td>Power consumption
(*1)</td><td>Displays the power consumption as a graph.
■ Graph display details
(a) Horizontal axis: Time (time series)
(b) Vertical axis: Power consumption (kWh)
(c) Display items: The latest 1000 items (plotted)
■ Display items
<table><tr><th>Item</th><th>Remarks</th></tr><tr><td>Power consumption</td><td></td></tr></table></td></tr>
<tr><td>(4)</td><td>Spindle unit temperature graph
(*1)</td><td>Displays the spindle unit temperature as a graph.
■ Graph display details
(a) Horizontal axis: Time (time series)
(b) Vertical axis: Temperature of each spindle (°C)
(c) Display items: The latest 1000 items (plotted)
■ Display items
<table><tr><th>Item</th><th>Remarks</th></tr><tr><td>Spindle unit temperature</td><td></td></tr></table></td></tr>
</table>

(*1) When this screen is displayed, data sampling starts and the cumulative data is displayed on the graph. After transiting any other screen from the "Use" screen, all the cumulative data are cleared. When the screen returns to the "Use" screen, no data remains for each items.

4.3.5 Alarm Screen

The "Alarm" screen shows the alarms currently occur on the selected device (by pressing the [Display] button) on the "Device" screen.



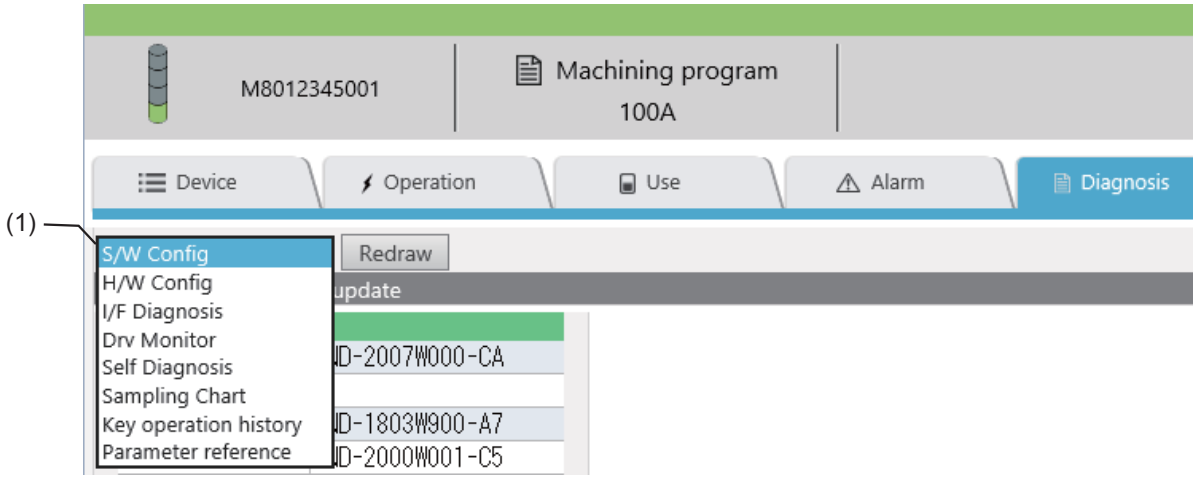
Display items

No.	Item	Specifications
(1)	Alarm information	Displays the information for all the alarms currently occur. An alarm information includes an alarm code and an alarm message. ■ Display items
		Item: NC alarm - All part systems - Each part system — Remarks:
		Item: PLC alarm — Remarks: A PLC alarm information includes only an alarm code. No alarm message is displayed.
(2)	Alarm history	The alarm history recorded in the NC is displayed. The date when the alarm occurred (in descending order) and the part system No. are displayed in the alarm history. Pressing a date in the "Date of alarm occurrence" column will transit the screen to an Alarm diagnosis screen in which the pressed date and time is specified. For details, refer to "4.3.7.4 Alarm Diagnosis".
(3)	Top 10 most frequent alarms	The Top 10 most frequent alarms are displayed.

(Note) The NC time is used when saving the time of alarm occurrences.
If the current time is different to the NC time, the time of operation data and alarm diagnosis data is also different to that of the alarm occurrence.
Example: If an alarm occurs when the current time is 12:00:00 and the NC time is 13:00:00, the time of alarm occurrence will be 13:00:00. However, the data at this time will be saved as at 12:00:00.

4.3.6 Diagnosis Screen

The "Diagnosis" screen shows the various machine information of the selected device (by pressing the [Display] button) on the "Device" screen.
The display contents vary depending on the item selected by the pull-down menu.
For details of the display contents, refer to 4.3.6.1 to 4.3.6.8.

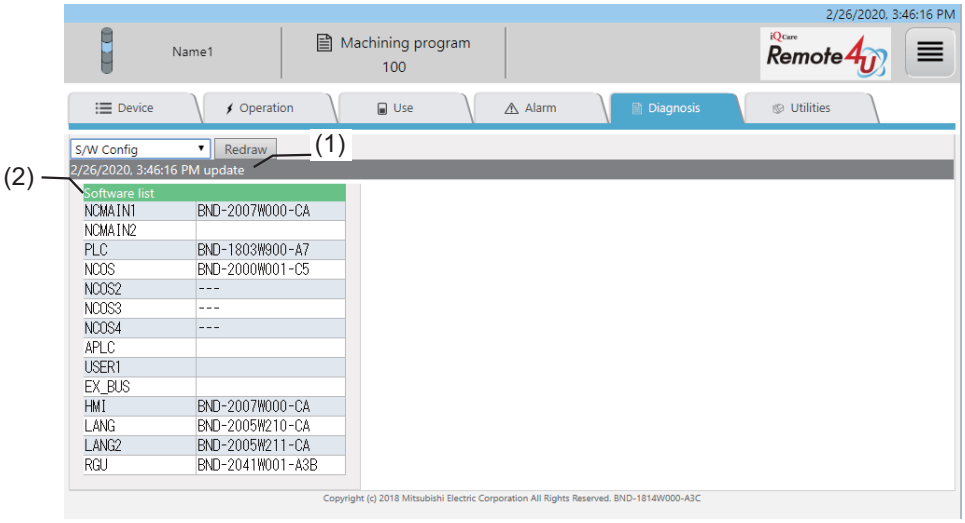


Display items

No.	Item	Specifications
(1)	Pull-down menu for diagnosis items	"S/W Config", "H/W Config", "I/F Diagnosis", "Drv Monitor", "Self Diagnosis", "Sampling Chart", "Key operation history", and "Parameter reference" are in the list.

4.3.6.1 S/W Configuration

This screen shows the S/W configuration.

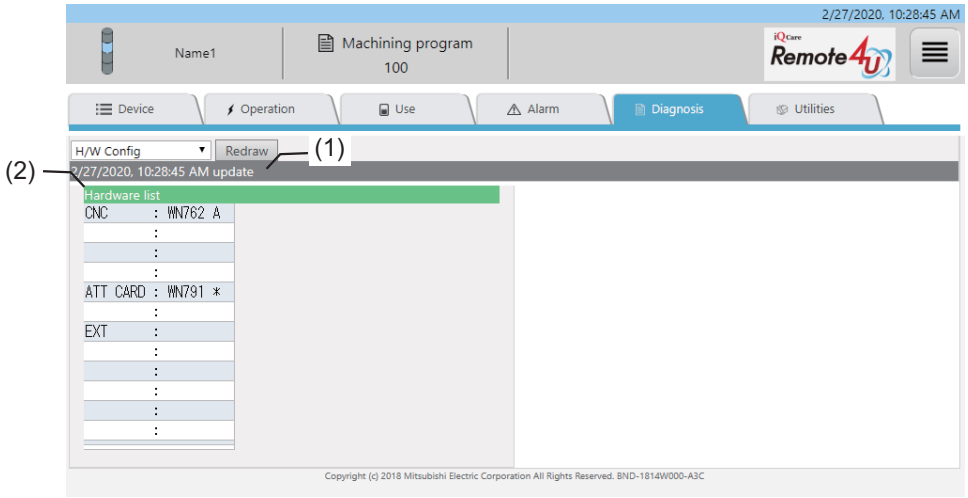


Display items

No.	Item	Specifications
(1)	NC update time	Displays the time that data acquisition from the NC started for the items displayed on the screen.
(2)	Software list	Displays the software information of the device.

4.3.6.2 H/W Configuration

This screen shows the H/W configuration.

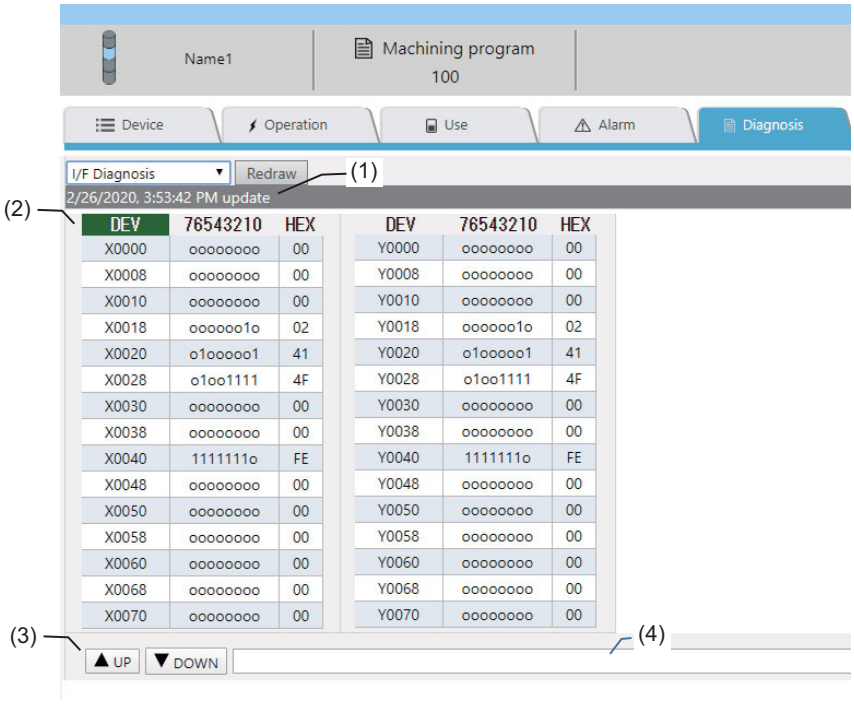


Display items

No.	Item	Specifications
(1)	NC update time	Displays the time that data acquisition from the NC started for the items displayed on the screen.
(2)	Hardware list	Displays the hardware information of the device.

4.3.6.3 I/F Diagnosis

This screen shows the device information.



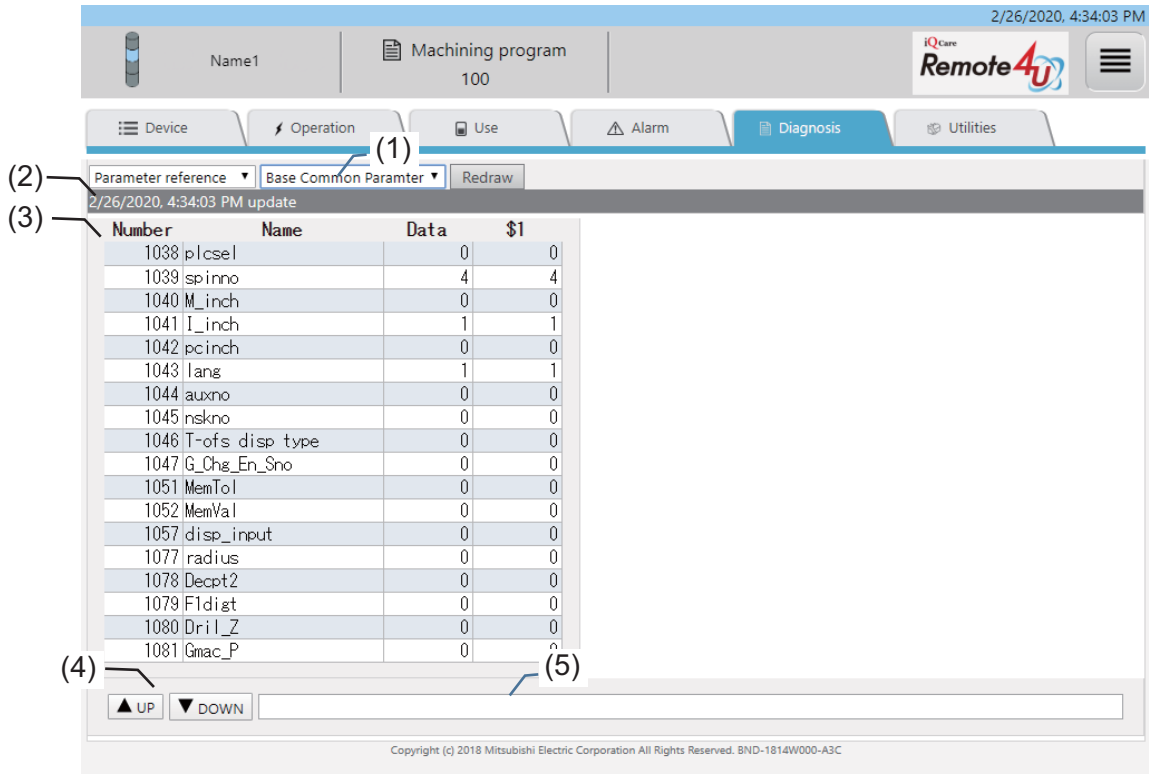
Display items

No.	Item	Specifications
(1)	NC update time	Displays the time that data acquisition from the NC started for the items displayed on the screen.
(2)	Device information list	The information of the selected device are displayed in the list. Pressing the [DEV] button changes the background color of the cell to green, and the devices of that column becomes active (editable).
(3)	UP/DOWN buttons	For the active device in the list, press the [UP] button to display the previous page, and press [DOWN] button to display the next page.
(4)	Keyword input area for a device search	For the active device, a search can be performed by inputting the device number as a keyword. The types of devices which can be displayed are as follows.

Device type	Range which can be displayed
X	0 to 8191
Y	0 to 8191
D	[M7] x = 0 to 2047 / [M8] x = 0 to 8191
R	[M7] x = 0 to 13311 / [M8] x = 0 to 32767

4.3.6.4 Parameter Reference

This screen shows the parameter information.



Display items

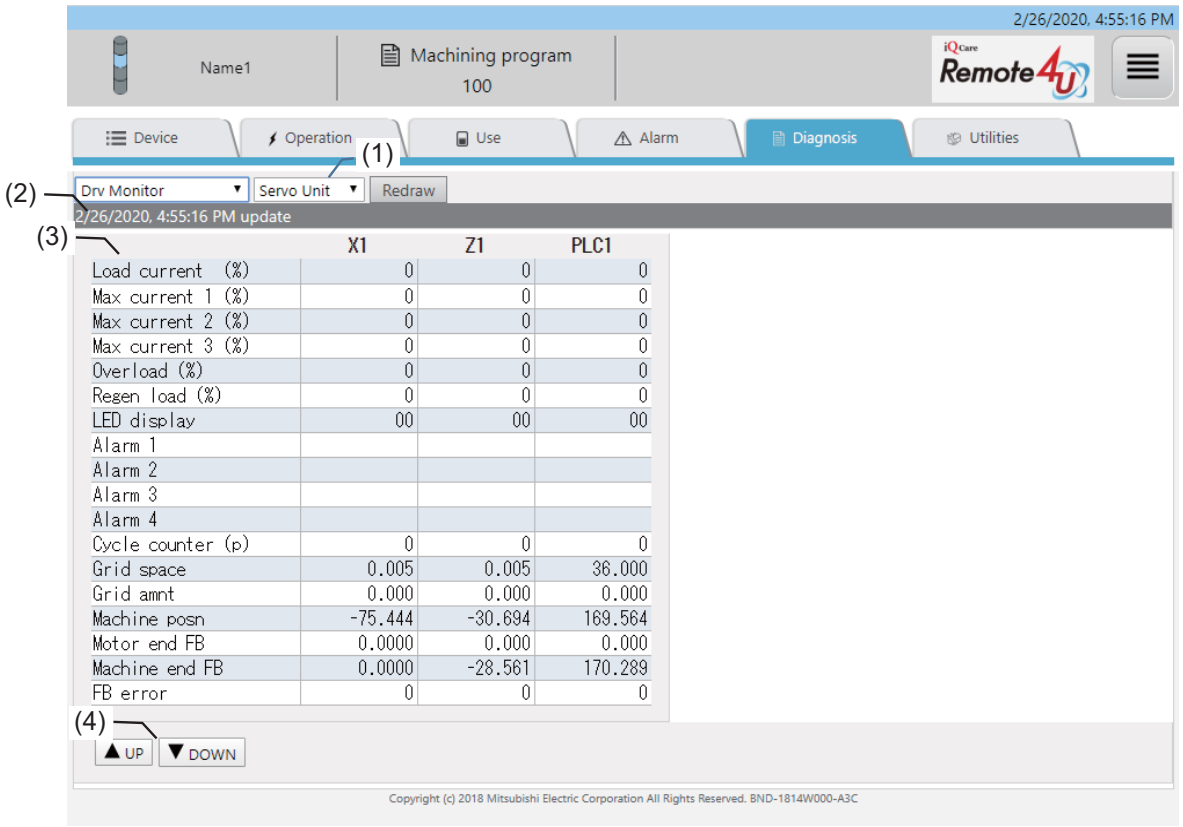
No.	Item	Specifications
(1)	Pull-down menu for parameter types	Selects a parameter type to be displayed. The types of parameters which can be displayed are as follows. Displays the parameters of NC version indicated in the following table. The parameters which have been added after the indicated versions are not displayed.

Data types	NC version				
	M700/M70	M700V/ M70V	M800/M80	M800V/ M80V	C80
Machining parameter	FM	L8	D0	A2	B5
Control parameter 1	FM	L8	D0	A2	B5
Control parameter 2	FM	L8	D0	A2	B5
Base system parameter	FM	L8	D0	A2	B5
Base axis specification parameter	FM	L8	D0	A2	B5
Base common parameter	FM	L8	D0	A2	B5
Axis specification parameter	FM	L8	D0	A2	B5

(2)	NC update time	Displays the time that data acquisition from the NC started for the items displayed on the screen.
(3)	Machining parameter	The parameters belong to the selected type are displayed in the list.
(4)	UP/DOWN buttons	Press the [UP] button to display the previous page, and press [DOWN] button to display the next page.
(5)	Keyword input box for parameter No. search	A search can be performed for a input parameter No. Input a parameter No. to be searched and press the [Enter] button. The information for the parameter is displayed. When non-existent parameter No. in the list is input, nothing is displayed.

4.3.6.5 Drive Monitor

This screen shows the drive monitor information.



	X1	Z1	PLC1
Load current (%)	0	0	0
Max current 1 (%)	0	0	0
Max current 2 (%)	0	0	0
Max current 3 (%)	0	0	0
Overload (%)	0	0	0
Regen load (%)	0	0	0
LED display	00	00	00
Alarm 1			
Alarm 2			
Alarm 3			
Alarm 4			
Cycle counter (p)	0	0	0
Grid space	0.005	0.005	36.000
Grid amnt	0.000	0.000	0.000
Machine posn	-75.444	-30.694	169.564
Motor end FB	0.0000	0.000	0.000
Machine end FB	0.0000	-28.561	170.289
FB error	0	0	0

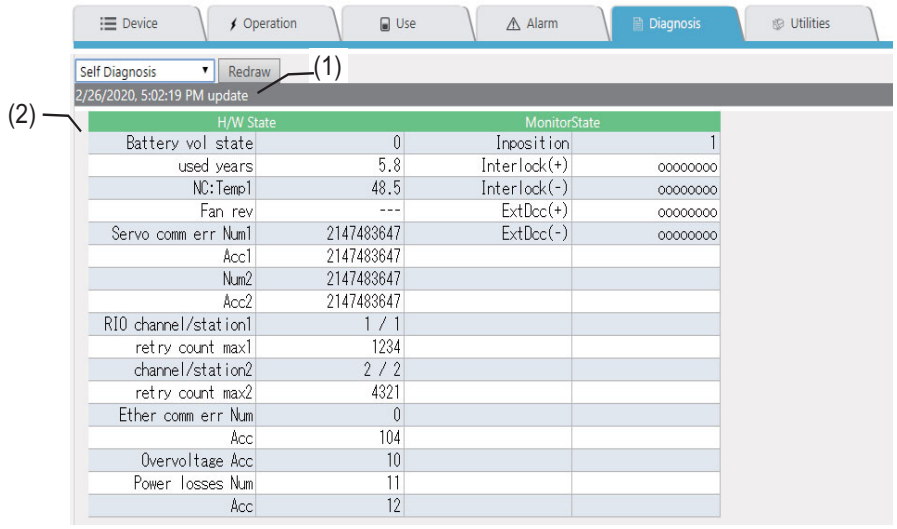
Display items

No.	Item	Specifications
(1)	Pull-down menu for drive monitor types	Selects a unit type to be displayed.
(2)	NC update time	Displays the time that data acquisition from the NC started for the items displayed on the screen.
(3)	Drive monitor information	The drive monitor information of the selected unit are displayed in the list.
(4)	UP/DOWN buttons	Press the [UP] button to display the previous page, and press [DOWN] button to display the next page.

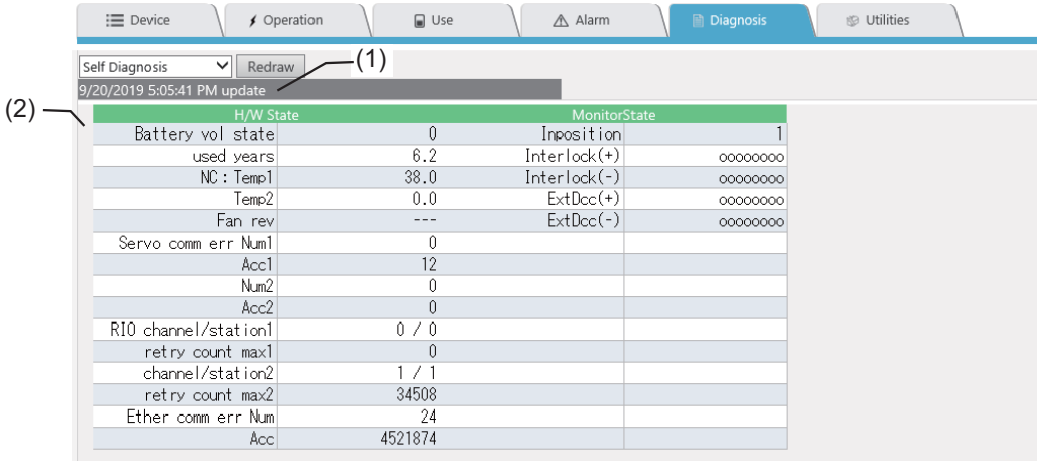
4.3.6.6 Self Diagnosis

This screen shows the self diagnosis of the NC screen.

Machine diagnosis screen (self diagnosis) (M8 Series)



Machine diagnosis screen (self diagnosis) (M7 Series)



Display items

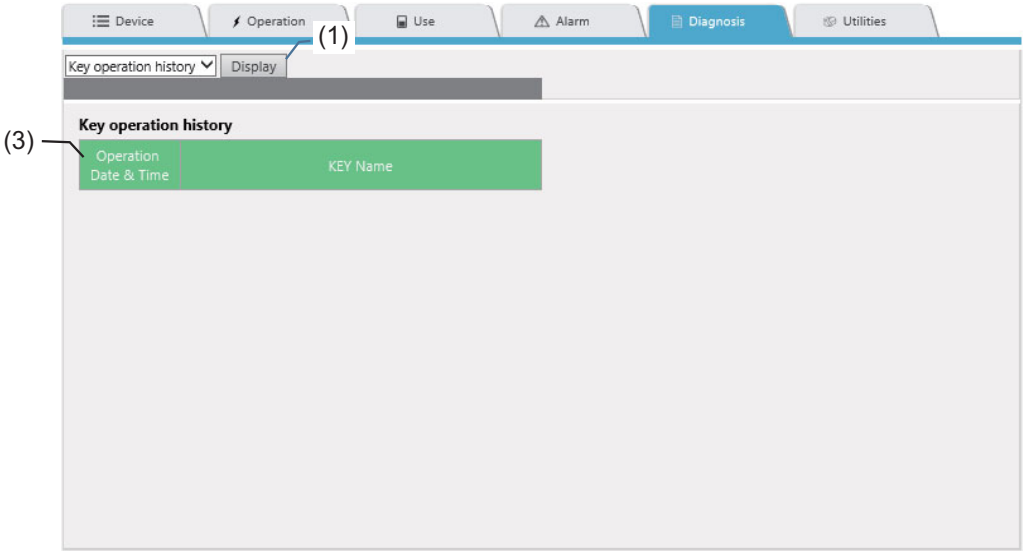
No.	Item	Specifications
(1)	NC update time	Displays the time that data acquisition from the NC started for the items displayed on the screen.
(2)	Self diagnosis information	As the self diagnosis information, H/W status is displayed in the left, and operation status is is displayed in the right. Items to be displayed differ depending on the model (M8 Series or M7 Series).

Model type	NC : Temp. 1	NC : Temp. 2	Overvoltage Acc Power losses Acc
M7	Displayed	Displayed	Not displayed
M8	Displayed	Not displayed	Displayed

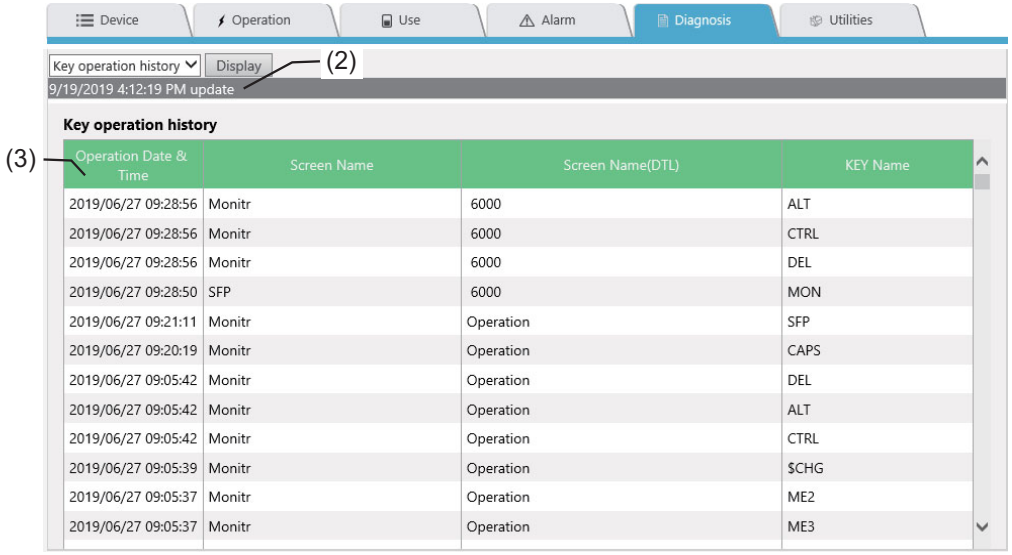
4.3.6.7 Key Operation History

This screen shows key operation history.

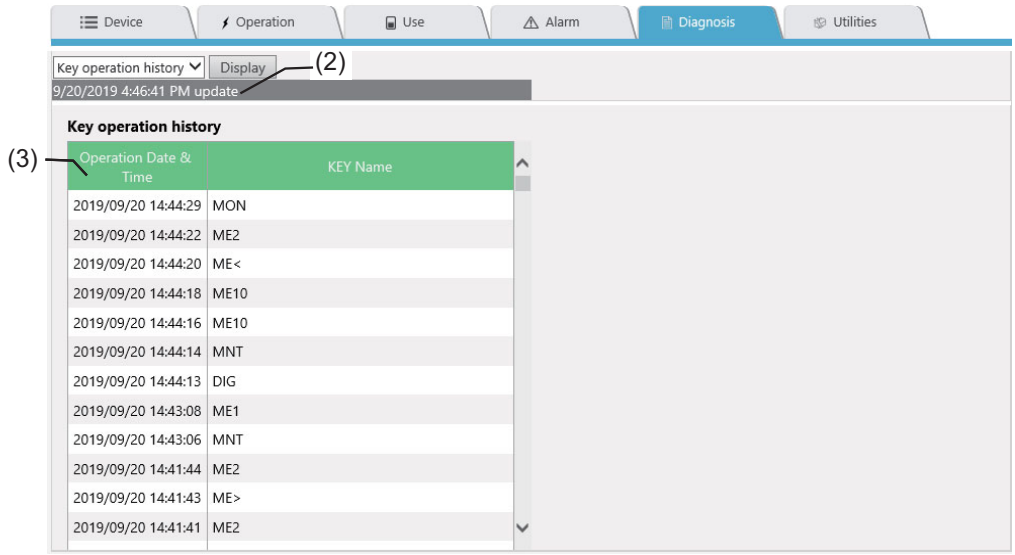
Default display when "Key operation history" is selected on the machine diagnosis screen



Display after pressing the [Display] button of the "Key operation history" default screen on the machine diagnosis screen (M8 Series)



Display after pressing the [Display] button of the "Key operation history" default screen on the machine diagnosis screen (M7 Series)



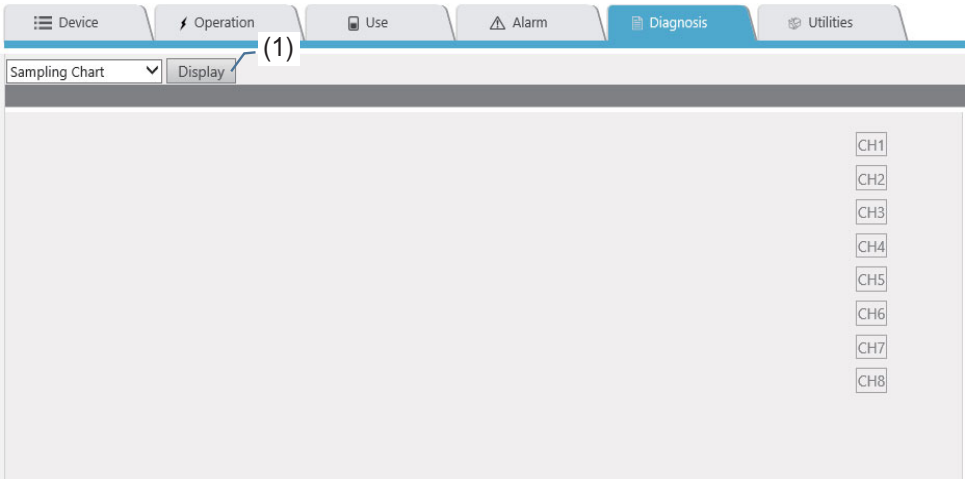
Display items

No.	Item	Specifications
(1)	Display button	The key operation history is not displayed just after the screen transits by selecting the "Key operation history" menu. Press the [Display] button to display the NC key operation history.
(2)	Update time	Displays the time that data update from the [Display] button pressed.
(3)	Key operation history	Displays the key operation history as a list. The history is displayed in descending order of operation date.

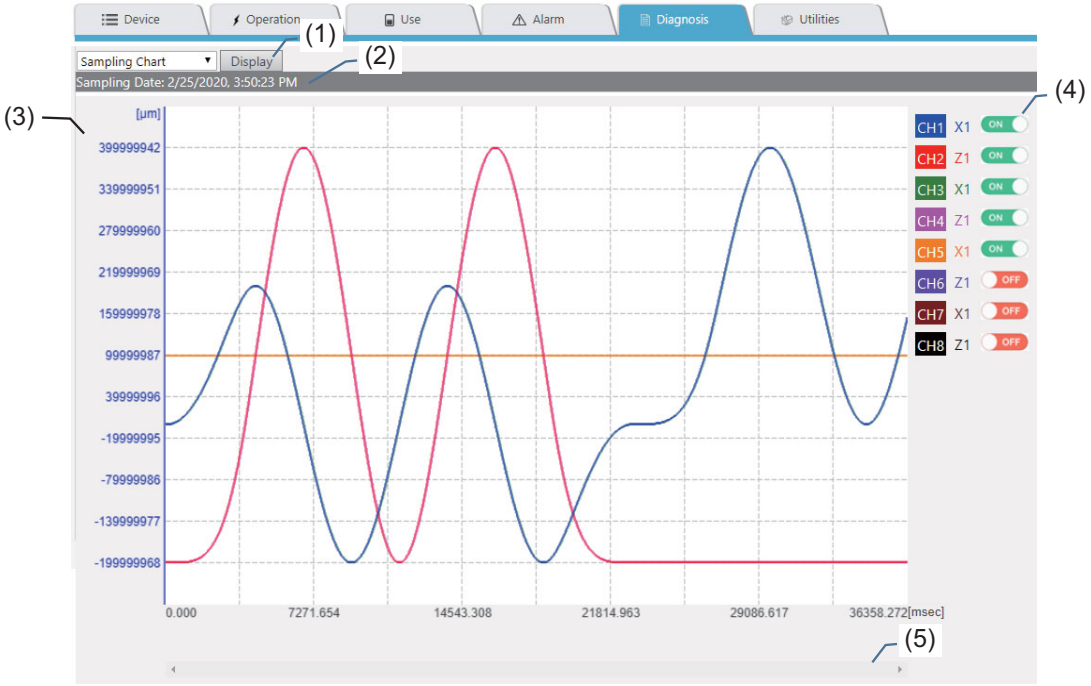
4.3.6.8 Sampling Chart

This screen shows the NC sampling data.
Sampling charts can be displayed only for M8 Series.

Default display when "Sampling Chart" is selected on the machine diagnosis screen



Display after pressing the [Display] button of the "Sampling Chart" default screen on the machine diagnosis screen



Display items

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(1)</td><td>Display button</td><td>The waveform graph is not displayed just after the screen transits by selecting the "Sampling Chart" menu.
Press the [Display] button to display the waveform graph of the NC sampling data.

NC sampling conditions to display the waveform graph are as follows.
<table>
<tr><th>Item name</th><th>Setting value</th><th>Remarks</th></tr>
<tr><td>The number of channels</td><td>1 to 8</td><td>Maximum 8 channels of data is displayed as a waveform graph.
The data which exceeds 8 channels is not displayed.</td></tr>
<tr><td>Output conditions</td><td>0</td><td>Available at 0 (the decimal number)</td></tr>
<tr><td>Header output</td><td>0</td><td>0 (header output) is necessary to be designated</td></tr>
</table>
When displaying a waveform graph failed, the message indicated in the table below is displayed on a dialog box.
<table>
<tr><th>Conditions to fail</th><th>Error message and remedy</th></tr>
<tr><td>When multiple file acquisition requests are made to the target NC simultaneously</td><td>Since the target NC is being processed, data can not be acquired.
Please use it again after a while.</td></tr>
<tr><td>When an error occurs during the sampling data acquisition</td><td>An error occurred while acquiring data.
Please use it again after a while.</td></tr>
<tr><td>When the sampling data format is not normal</td><td rowspan="2">The sampling data format is not supported.
Please change the extraction condition of sampling data and use again.</td></tr>
<tr><td>When the number of the sampling data is 0</td></tr>
</table></td></tr>
<tr><td>(2)</td><td>Sampling Date</td><td>Displays the time that data sampling.</td></tr>
<tr><td>(3)</td><td>Waveform graph</td><td>Displays a waveform graph.
Nothing is displayed just after the screen transits by selecting the "Sampling Chart" menu.

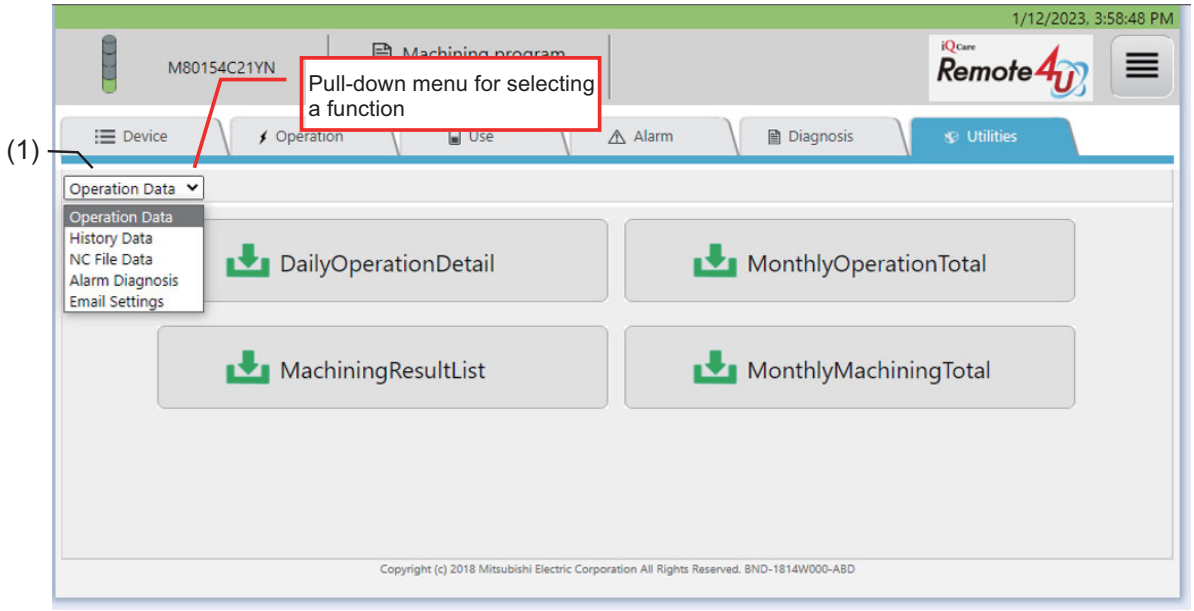
The following table shows examples of the vertical axis value in the memory and their display units.
<table>
<tr><th>Unit of the channel</th><th>Display example of the value
(No digit after the decimal point)</th><th>Display example of the unit</th></tr>
<tr><td>Blank (No setting)</td><td>12345678</td><td>(None)</td></tr>
<tr><td>B: 1μm</td><td>12345678</td><td>[μm]</td></tr>
<tr><td>C: 0.1μm</td><td>12345678</td><td>[0.1 μm]</td></tr>
<tr><td>D: 10nm</td><td>12345678</td><td>[10 nm]</td></tr>
<tr><td>E: 1nm</td><td>12345678</td><td>[nm]</td></tr>
<tr><td>S: Every spindle plus of conventional compatibility</td><td>12345678</td><td>[kWh/pulse]</td></tr>
</table>
The following table shows examples of the horizontal axis value in the memory and their display units.
<table>
<tr><th>Type</th><th>Sampling cycle
(Setting range: 1 to 255)</th><th>Display example of the value
(3 digits after the decimal point)</th><th>Display example of the unit</th></tr>
<tr><td>Standard</td><td>1.777 ms × setting value</td><td>2737.778</td><td>[msec]</td></tr>
<tr><td>High-cycle sampling</td><td>0.222 ms (fixed)</td><td>2737.778</td><td>[msec]</td></tr>
</table></td></tr>
<tr><td>(4)</td><td>Channel display/non-display switching button</td><td>As the legends in the previous page, the axis name is displayed at the right of the channel icon (e.g "CH1"), and ON/OFF switch is displayed at the right of the axis name. Pressing the switch in the "ON" state changes the state to "OFF". Similarly, pressing the switch in the "OFF" state changes the state to "ON".
Pressing a legend itself to display the Y axis (memory) of the selected legend.</td></tr>
<tr><td>(5)</td><td>Scroll bar in the horizontal direction</td><td>You can scroll all the graphs in the horizontal direction.</td></tr>
</table>

(Note) Do not change the sampling conditions after data sampling when displaying the waveform graph. An incorrect waveform graph may be displayed.

4.3.7 Utilities Screen

The following functions are available on the "Utilities" screen.
- Saving operation status data and history data in CSV format.
- Downloading the files in the target NC to the device being used.
- Displaying the data set by the user before and after the alarm occurrence as a graph or a list in chronological order.
- Receiving an email when an NC satisfies the conditions set by a user.
- Backing up files in an NC to an online storage.
- List, download, or delete files in an online storage.

Which type of the data to be saved can be switched by the pull-down menu.
"Operation Data", "NC File Data", "Alarm Diagnosis", and "Email notification settings" are displayed when the power supply is OFF.
For details of the display contents, refer to 4.3.7.1 to 4.3.7.5.



Display items

No.	Item	Specifications
(1)	Pull-down menu for data type	Operation status acquisition, history data acquisition, NC file data, alarm diagnosis, and email notification settings can be selected. Only operation status acquisition is available for DI connection models.

Data file is saved with the following formats.

Example of the actual saved data

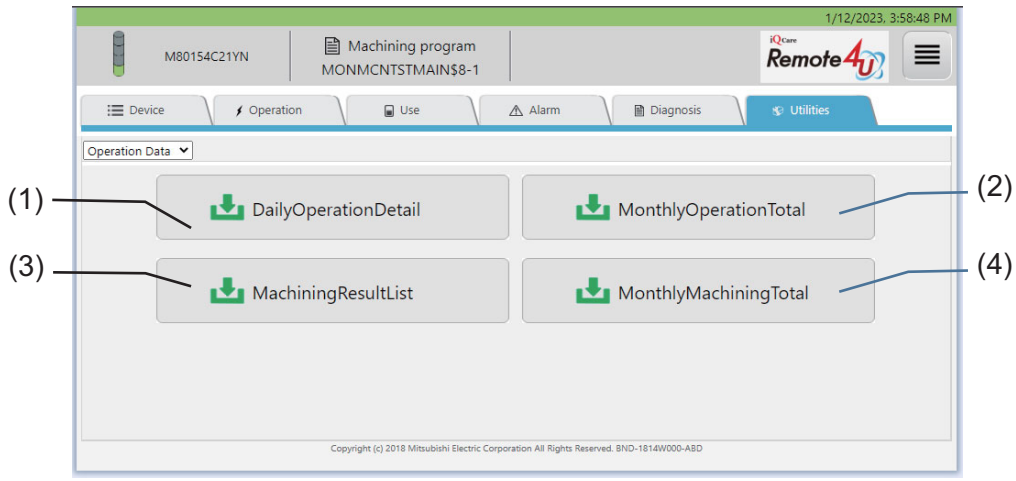
```
"date"  "start" "stop"  "alarm" "setup" "off"   "system"
"2019-03-01"    "19:38:00"      "2:05:00"       "0:40:00"       "1:31:00"       "0:06:00"       "1"
"2019-03-01"    "12:38:00"      "2:05:00"       "7:40:00"       "1:31:00"       "0:06:00"       "2"
"2019-03-01"    "20:04:00"      "0:25:00"       "0:45:00"       "0:10:00"       "2:36:00"       "3"

"date"  "program"       "start" "stop"  "alarm" "setup" "system"
"2019-03-01"    "PROG01"        "7:53:00"       "0:00:00"       "0:20:00"       "1:21:00"       "1"
"2019-03-01"    "O1000" "11:45:00"      "2:05:00"       "0:20:00"       "0:10:00"       "1"
"2019-03-01"    "PROG03"        "0:53:00"       "0:00:00"       "7:20:00"       "1:21:00"       "2"
"2019-03-01"    "O1000" "11:45:00"      "2:05:00"       "0:20:00"       "0:10:00"       "2"
"2019-03-01"    "PROG03"        "20:04:00"      "0:25:00"       "0:45:00"       "0:10:00"       "3"

"time"  "program_main_o"        "main_n"        "main_b"        "program_active_o"      "active_n"      "active_b"      "status"        "system"
"2019-03-01 00:06:00"   "PROG01"        "100"   "1"     ""      ""      ""      "SETUP" "1"
"2019-03-01 00:06:00"   "PROG03"        "100"   "1"     ""      ""      ""      "SETUP" "2"
"2019-03-01 00:06:00"   "PROG03"        "100"   "1"     ""      ""      ""      "SETUP" "3"
"2019-03-01 00:11:00"   "PROG01"        "100"   "2"     ""      ""      ""      "START" "1"
"2019-03-01 00:11:00"   "PROG03"        "100"   "2"     ""      ""      ""      "START" "2"
"2019-03-01 00:11:00"   "PROG03"        "100"   "2"     ""      ""      ""      "START" "3"
"2019-03-01 00:20:00"   "PROG01"        "100"   "100"   "PROG01SUB"     "1500"  "10"    "ALARM" "1"
"2019-03-01 00:20:00"   "PROG03"        "100"   "100"   "PROG01SUB"     "1500"  "10"    "ALARM" "2"
"2019-03-01 00:20:00"   "PROG03"        "100"   "100"   "PROG03SUB"     "1500"  "10"    "ALARM" "3"
"2019-03-01 00:30:00"   "PROG01"        "100"   "2"     ""      ""      ""      "SETUP" "1"
"2019-03-01 00:31:00"   "PROG01"        "100"   "2"     ""      ""      ""      "START" "1"
"2019-03-01 01:00:00"   "PROG03"        "100"   "2"     ""      ""      ""      "SETUP" "3"
"2019-03-01 01:01:00"   "PROG03"        "100"   "2"     ""      ""      ""      "START" "3"
"2019-03-01 07:30:00"   "PROG03"        "100"   "2"     ""      ""      ""      "SETUP" "2"
"2019-03-01 07:31:00"   "PROG03"        "100"   "2"     ""      ""      ""      "START" "2"
"2019-03-01 08:06:00"   "PROG01"        "100"   "1"     ""      ""      ""      "SETUP" "1"
"2019-03-01 08:06:00"   "PROG03"        "100"   "1"     ""      ""      ""      "SETUP" "2"
"2019-03-01 09:11:00"   "PROG01"        "100"   "2"     ""      ""      ""      "START" "1"
"2019-03-01 09:11:00"   "PROG03"        "100"   "2"     ""      ""      ""      "START" "2"
"2019-03-01 09:20:00"   "PROG01"        "100"   "100"   "PROG01SUB"     "1500"  "10"    "ALARM" "1"
"2019-03-01 09:20:00"   "PROG03"        "100"   "100"   "PROG01SUB"     "1500"  "10"    "ALARM" "2"
"2019-03-01 09:30:00"   "PROG01"        "100"   "2"     ""      ""      ""      "SETUP" "1"
"2019-03-01 09:30:00"   "PROG03"        "100"   "2"     ""      ""      ""      "SETUP" "2"
"2019-03-01 09:40:00"   "O1000" "100"   "2"     ""      ""      ""      "SETUP" "1"
"2019-03-01 09:40:00"   "O1000" "100"   "2"     ""      ""      ""      "SETUP" "2"
"2019-03-01 09:50:00"   "O1000" "200"   "2"     ""      ""      ""      "START" "1"
"2019-03-01 09:50:00"   "O1000" "200"   "2"     ""      ""      ""      "START" "2"
"2019-03-01 17:40:00"   "O1000" "200"   "2"     "O1000SUB"      "15"    "2"     "ALARM" "1"
```

Common specifications on saving data

No.	Specifications	Details
(1)	File format	The file is output as tab-delimited text (UTF-16LE (with BOM)).
(2)	Extension for saving file	CSV format
(3)	Rule for strings description	Enclose all items in double quotes (").
(4)	Item name	Use only lowercase alphanumeric characters.

4.3.7.1 Operation Status Acquisition

The operation status acquisition screen is displayed by selecting "Operation Data" from the pull-down menu.
On this screen, you can save the data of "DailyOperationDetail", "MonthlyOperationTotal" , "MachiningResultList" or "MonthlyMachiningTotal" as a file to your device.
Only "DailyOperationDetail" and "MonthlyOperationTotal" are available for DI connection models.



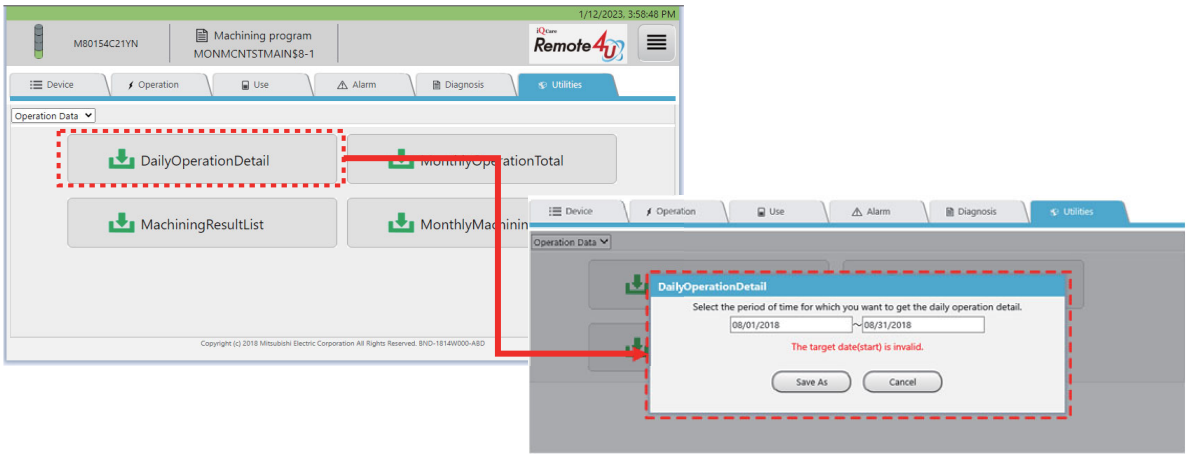
Display items

No.	Item	Specifications
(1)	[DailyOperationDetail] button	Saves the detailed information of daily operation in a file. When this button is pressed, a dialog box to specify the period appears. Input the period. For details of the data to be saved in the file, refer to "4.3.7.1.1 Daily Operation Detail".
(2)	[MonthlyOperationTotal] button	Saves the aggregated data of monthly operation in a file. When this button is pressed, a dialog box to specify the period appears. Input the period. For details of the data to be saved in the file, refer to "4.3.7.1.2 Monthly Operation Total".
(3)	[MachiningResultList] button	Saves the machining result list in a file. When this button is pressed, a dialog box to specify the date appears. Input the date. For details of the data to be saved in the file, refer to "4.3.7.1.3 Machining Result List". This button is not displayed for DI connection models.
(4)	[MonthlyMachiningTotal] button	Saves the aggregated data of monthly machining result in a file. When this button is pressed, a dialog box to specify the period appears. Input the period. For details of the data to be saved in the file, refer to "4.3.7.1.4 Monthly Machining Total". This button is not displayed for DI connection models.

4.3.7.1.1 Daily Operation Detail

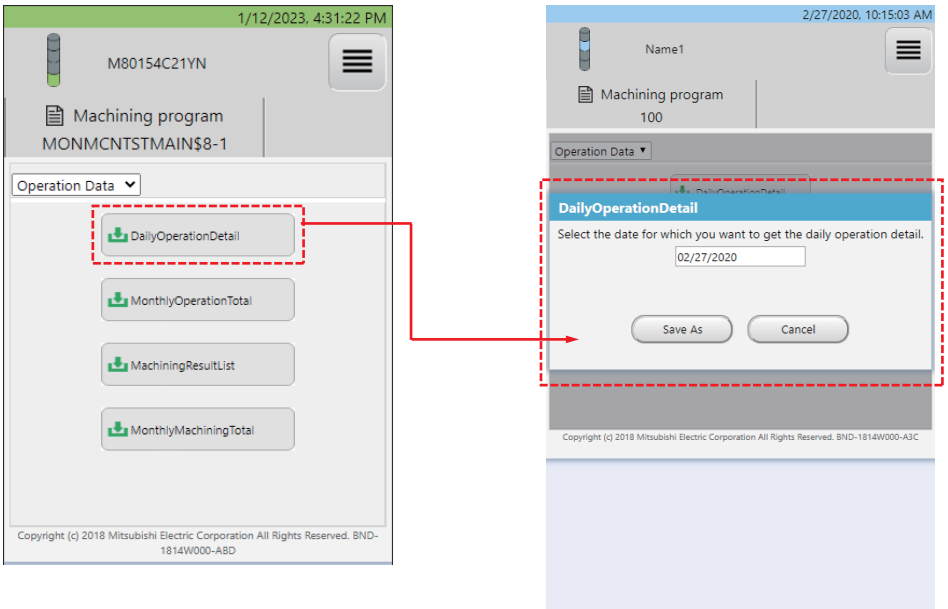
You can save the operation status of a device using this function.
When the [DailyOperationDetail] button is pressed, a dialog box to specify the period appears. The target period to acquire the data can be specified on the dialog box.
The target period can be specified up to 7 days.

"DailyOperationDetail" screen (PC)



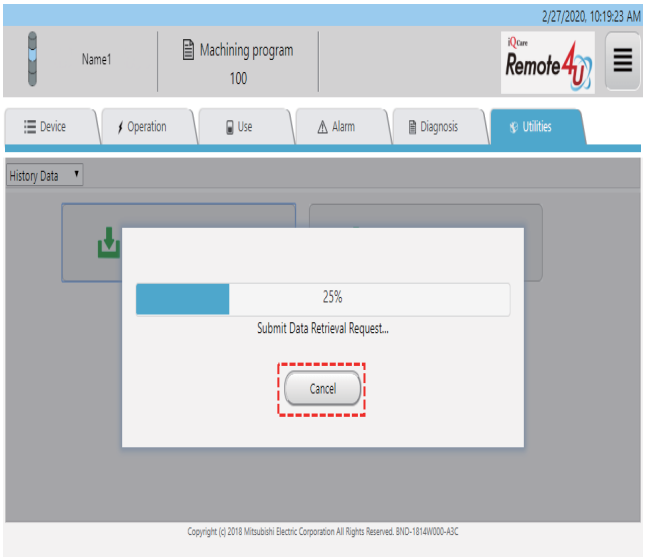
When the [DailyOperationDetail] button is tapped on a tablet PC or a smartphone, a dialog box to specify the date appears. The target date to acquire the data can be specified on the dialog box.

"DailyOperationDetail" screen (Smartphone)



When the [Cancel] button is pressed during file saving process, the operation can be canceled.

Display example when a file is downloading



The target data is acquired on a daily basis in the specified period.
The following data are saved in the order of the time, part system No., and name of machining program.
- Total operation time for each part system
- Operation time by program change
- Operation log

When the number of part systems for the target device is not found, "Off" is output at the current number of systems.

Details for each item of "DailyOperationDetail" are as follows.

Output contents of "DailyOperationDetail"

```
date       start    stop     alarm    setup    off      system
2019-03-01 8:41:38  0:00:00  0:00:00  5:02:16  0:01:36  1
2019-03-01 10:35:42 1:23:45  0:01:23  3:00:12  1:10:10  2
```

(1) Total time for each part system
Aggregates operation time for each part system.

```
date       program    start    stop     alarm    setup    system
2019-03-01 PROG03     8:41:38  0:00:00  0:00:00  5:02:16 1
2019-03-01 PROG1000   10:35:42 1:23:45  0:01:23  3:00:12 1
2019-03-01 PROG03     8:41:38  0:00:00  0:00:00  5:02:16 2
2019-03-01 PROG1000   10:35:42 1:23:45  0:01:23  3:00:12 2
```

(2) Operation time by program change
Aggregates operation time by each machining program.
The data is not output for DI connection models.

```
time               prog_main_o   prog_main_n prog_main_b  prog_sub_o    prog_sub_n prog_sub_b  status  system
2019-03-01 00:06:00  PROG03        100         1                                                  SETUP   1
2019-03-01 00:08:00  PROG1000      100         1                                                  SETUP   2
2019-03-01 00:11:00  PROG03        100         2                                                  START   1
2019-03-01 00:20:00  PROG03        100         100          PROG03SUB     1500       10         ALARM   1
2019-03-01 00:30:00  PROG1000      100         2                                                  START   2

.....

2019-03-01 23:55:00  PROG03        100         2            PROG03SUB     1500       10         STOP    2
```

(3) Operation log
Machining program execution state at the change of the operation status

(1) Total operation time for each part system

The accumulated time of the operation status is output for each part system.

Output example of "DailyOperationDetail" (Total operation time for each part system)

```
date       start    stop     alarm    setup    off      system
2019-03-01 8:41:38  0:00:00  0:00:00  5:02:16  0:01:36  1
2019-03-01 10:35:42 1:23:45  0:01:23  3:00:12  1:10:10  2
```

Specifications for the saved file of "DailyOperationDetail" (Total operation time for each part system)

Item name	Details	Format
date	The date in the specified target period	yyyy-mm-dd
start	Aggregate result of the time for each part system when its operation status is "Start"	hh:mm:ss
stop	Aggregate result of the time for each part system when its operation status is "Stop"	hh:mm:ss
alarm	Aggregate result of the time for each part system when its operation status is "Alarm"	hh:mm:ss
setup	Aggregate result of the time for each part system when its operation status is "Setup"	hh:mm:ss
off	Aggregate result of the time for each part system when its operation status is "Off" or when the communication is disconnected.	hh:mm:ss
system	Part system No.	Numeric value

(2) Operation time by program change

The accumulated time of the operation status by each program change is output for each part system.
The data is not output for DI connection models.

Output example of "DailyOperationDetail" (Total operation time by program change)

```
date       program    start    stop     alarm    setup    system
2019-03-01 PROG03     8:41:38  0:00:00  0:00:00  5:02:16  1
2019-03-01 PROG1000   10:35:42 1:23:45  0:01:23  3:00:12  1
2019-03-01 PROG03     8:41:38  0:00:00  0:00:00  5:02:16  2
2019-03-01 PROG1000   10:35:42 1:23:45  0:01:23  3:00:12  2
```

Specifications for the saved file of "DailyOperationDetail" (Total operation time by program change)

Item name	Details	Format
date	The date in the specified target period	yyyy-mm-dd
program	The name of main program currently being executed is output for each part system in the order of execution.	String
start	Aggregate result of the time when the operation status is "Start" classified by main program name (*1)	hh:mm:ss
stop	Aggregate result of the time when the operation status is "Stop" classified by main program name (*1)	hh:mm:ss
alarm	Aggregate result of the time when the operation status is "Alarm" classified by main program name (*1)	hh:mm:ss
setup	Aggregate result of the time when the operation status is "Setup" classified by main program name (*1)	hh:mm:ss
system	Part system No. in which the main program is being executed (*1)	Numeric value

(*1) When one program is executed multiple times in a part system on the same day; however another program is executed in between the said programs, the data will be aggregated separately.

(3) Operation log

The program name being executed when the operation status is changed is output for each part system.

Output contents of "DailyOperationDetail" (Operation log)

```
time                prog_main_o    prog_main_n prog_main_b  prog_sub_o     prog_sub_n prog_sub_b  status  system
2019-03-01 00:06:00  PROG03         100         1                                                  SETUP   1
2019-03-01 00:08:00  PROG1000       100         1                                                  SETUP   2
2019-03-01 00:11:00  PROG03         100         2                                                  START   1
2019-03-01 00:20:00  PROG03         100         100          PROG03SUB      1500       10         ALARM   1
2019-03-01 00:30:00  PROG1000       100         2                                                  START   2

......

2019-03-01 23:55:00  PROG03         100         2            PROG03SUB      1500       10         STOP    2
```

Specifications for the saved file of "DailyOperationDetail" (Operation log)

Item name	Details	Format
time	The date when an event occurred	yyyy-mm-dd hh:mm:ss
prog_main_o	Main program name being executed	String
prog_main_n	Main N number being executed	String
prog_main_b	Main B number being executed	String
prog_sub_o	Sub program name being executed	String
prog_sub_n	Sub N number being executed	String
prog_sub_b	Main B number being executed	String
status	Operation status	Uppercase alphabetic characters
system	Part system No.	Numeric value

File name specifications to be saved

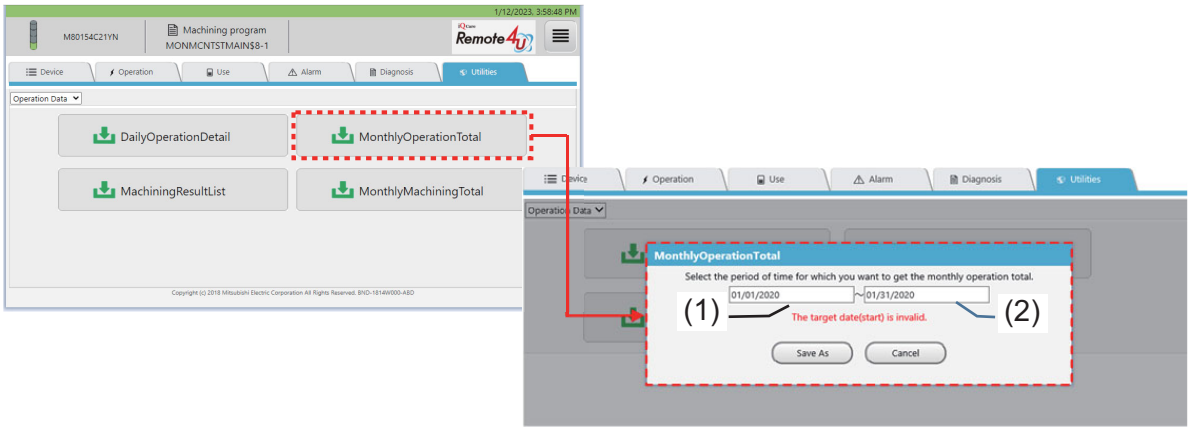
File name	Specifications
Dayope_machine name_yymmdd.csv	The "yymmdd" is the date specified on the screen. The "machine name" is the free input item 1 ("Machine Name") of the currently selected device. When you specified the period for this function, output data of the period are acquired and saved on a daily basis. When saving the file, a download dialog box appears depending on your browser. The file name or storage location on saving the file can be changed in the download dialog box.

(Note 1) When the file cannot be saved, shorten the file path length (including file name).

(Note 2) The file path length of the storage location (including file name) has a limitation for the number of the characters. The number of the maximum characters that can be specified depends on the browser specifications.

4.3.7.1.2 Monthly Operation Total

You can save monthly aggregate data of a device using this function.
When the [MonthlyOperationTotal] button is pressed, a dialog box to specify the period appears. The target period to acquire the data can be specified on the dialog box.
The target period can be specified up to 186 days (approximately 6 months).



The target data is acquired on a daily basis in the period specified on the dialog box.
When the number of part systems for the target device is not found, "Off" is output at the current number of systems.
Details for each item of "MonthlyOperationTotal" are as follows.

Output contents of "MonthlyOperationTotal"

```
date        start     stop      alarm     setup     off       system
2019-03-01  12:00:00  0:00:00   0:00:00   12:00:00  0:00:00   1
2019-03-01  12:00:00  0:00:00   0:00:00   12:00:00  0:00:00   2
2019-03-02  12:00:00  0:00:00   0:00:00   12:00:00  0:00:00   1

......

2019-03-31  12:00:00  0:00:00   0:00:00   12:00:00  0:00:00   1
2019-03-31  12:00:00  0:00:00   0:00:00   12:00:00  0:00:00   2
```

Accumulated time of each operation status aggregated by date and part system

Specifications for the saved file of "MonthlyOperationTotal"

Item name	Details	Format
date	The start and end date ((1) and (2) specified on the dialog box of the "MonthlyOperationTotal" screen)	yyyy-mm-dd
start	Aggregate result of the time for each part system when its operation status is "Start"	hh:mm:ss
stop	Aggregate result of the time for each part system when its operation status is "Stop"	hh:mm:ss
alarm	Aggregate result of the time for each part system when its operation status is "Alarm"	hh:mm:ss
setup	Aggregate result of the time for each part system when its operation status is "Setup"	hh:mm:ss
off	Aggregate result of the time for each part system when its operation status is "Off" or when the communication is disconnected.	hh:mm:ss
system	Part system No.	Numeric value

File name specifications to be saved

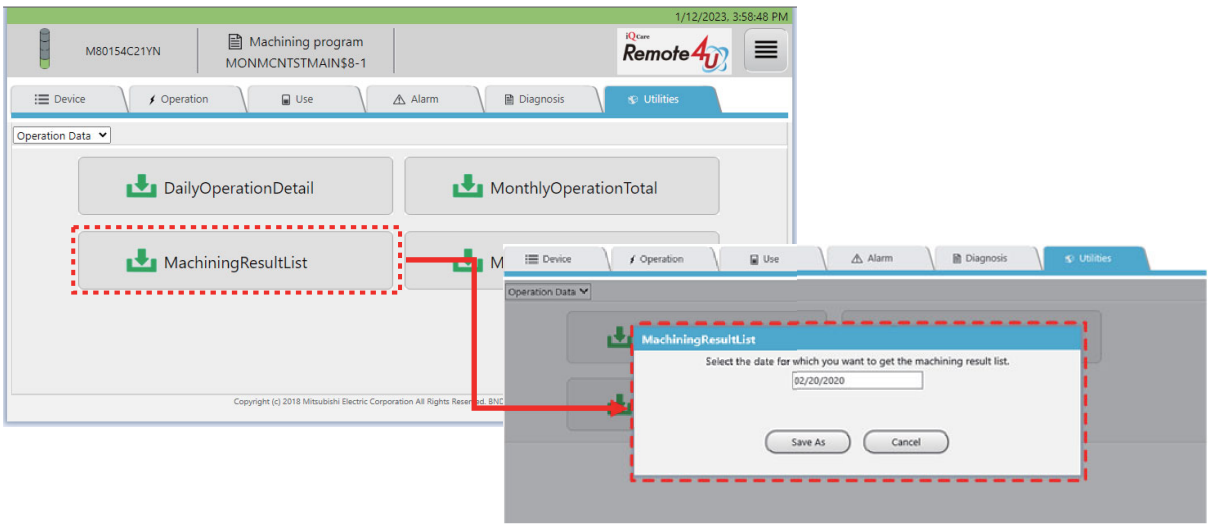
File name	Specifications
monope_machine name_yymmdd1_yymmdd2.csv	The "yymmdd1" is the date (1) specified on the dialog box of the "MonthlyOperationTotal" screen. The "yymmdd2" is the date (2) specified on the dialog box of the "MonthlyOperationTotal" screen. The "machine name" is the free input item 1 ("Machine Name") of the currently selected device. When you specified the period for this function, output data of the period are acquired and it is saved as one file. When saving the file, a download dialog box appears depending on your browser. The file name or storage location on saving the file can be changed in the download dialog box.

(Note 1) When the file cannot be saved, shorten the file path length (including file name).

(Note 2) The file path length of the storage location (including file name) has a limitation for the number of the characters.
The number of the maximum characters that can be specified depends on the browser specifications.

4.3.7.1.3 Machining Result List

You can save the accumulated data for machined workpieces for each part system of a device using this function.
When the [MachiningResultList] button is pressed, a dialog box to specify the date appears. The target date acquire the data can be specified on the dialog box.
The setting of parameter #8001 (M code to count machined workpieces) and operation of the machining program which describes the M code registered in #8001 are required to acquire CSV files of machining result list.



The data of the date specified on the dialog box is acquired.
The time spent for one machining, such as cycle time, cutting time, operation stop or alarm stop, can be saved for each program in the order of the time the machining was completed and part system No.

Details for each item of "MachiningResultList" are as follows.

Output contents of "MachiningResultList"

```
time                program   count cycle_time cutting_time stop     alarm    system
2019-03-01 00:06:00 PROG1000  1     0:03:00    0:02:40      0:00:00 0:00:00  2
2019-03-01 00:08:00 PROG3     1     0:02:00    0:01:16      0:00:00 0:00:00  1
2019-03-01 00:11:00 PROG3     2     0:02:00    0:01:16      0:00:00 0:00:00  1
2019-03-01 00:11:00 PROG1000  2     0:22:00    0:01:16      0:00:00 0:20:00  2


......

2019-03-01 23:40:00 PROG3     200   0:02:00    0:01:16      0:00:00 0:00:00  1
```

Specifications for the saved file of "MachiningResultList"

Item name	Details	Format
time	The date when a machining is started	yyyy-mm-dd hh:mm:ss
program	Main program name	String
count	Number of the machined workpieces	Numeric value
cycle_time	Cycle time for one machining	hhhh:mm:ss
cutting_time	Cutting time for one machining (*1)	hhhh:mm:ss
stop	The time when the operation status is "Stop" for one machining	hhhh:mm:ss
alarm	The time when the operation status is "Alarm" for one machining	hhhh:mm:ss
system	Part system No.	Numeric value

(*1) When using the following NCs, the contents of "cutting time" is the cutting time calculated on the RGU side as the NCs do not have a cutting time.
- M7 Series
- C80 Series
- M8 Series version C0 or before

In this case, the cutting time may differ from the actual cutting time due to the following reasons.
- The cycle for acquiring the calculation values is longer than the cycle in the NC and short cutting times during the cycle for acquiring the calculation values cannot be calculated.
- During cycles determined to be "cutting", the times that are not cutting are still calculated as "cutting".
- The acquisition cycle is delayed.

As the calculation values are accumulated, the difference between the calculation value and the actual cutting time may grow larger.

File name specifications to be saved

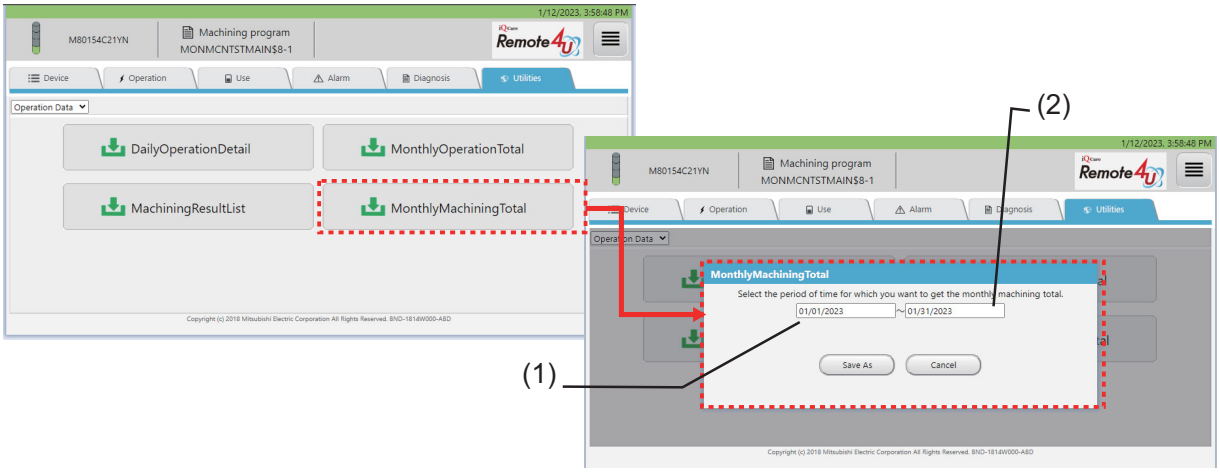
File name	Specifications
mcnlog_machine name_yymmdd_x.csv	The "yymmdd" is the date specified on the screen. The "machine name" is the free input item 1 ("Machine Name") of the currently selected device. When the layout of the machining result file on the same day was changed, output file is saved as a different file, adding "_1" (underscore + number) to the end of the original file name. When saving the file, a download dialog box appears depending on your browser. The file name or storage location on saving the file can be changed in the download dialog box.

(Note 1) When the file cannot be saved, shorten the file path length (including file name).

(Note 2) The file path length of the storage location (including file name) has a limitation for the number of the characters. The number of the maximum characters that can be specified depends on the browser specifications.

4.3.7.1.4 Monthly Machining Total

You can save monthly aggregate data for machined workpieces of a device using this function.
When the [MonthlyMachiningTotal] button is pressed, a dialog box to specify the period appears. The target period to acquire the data can be specified on the dialog box.
The target period can be specified from 1 day to 31 days (approximately 1 month).



The target data is acquired on a daily basis in the period specified on the dialog box.
Details for each item of "MonthlyMachiningTotal" are as follows.

Output contents of "MonthlyMachiningTotal"

date	program	count	cycle_time	cutting_time	stop	alarm	system
2022-07-01	PROG1000	5	0:06:30	0:04:30	0:02:30	0:06:00	1
2022-07-01	PROG1000	2	0:06:00	0:02:15	0:01:30	0:03:00	2
2022-07-01	PROG3	3	0:08:00	0:04:15	0:02:30	0:08:00	2
2022-07-02	PROG1000	7	0:05:10	0:02:15	0:02:30	0:02:00	1
……							
2022-07-31	PROG3	100	0:08:00	0:04:15	0:02:30	0:08:00	2

Accumulated result of machined workpieces aggregated by date, part system and program

Specifications for the saved file of "MonthlyMachiningTotal"

Item name	Details	Format
date	The start and end date ((1) and (2) specified on the dialog box of the "MonthlyMachiningTotal" screen) If the machining took over a day, the machining start date is output.	yyyy-mm-dd
program	Main program name	String
count	Aggregate result of the number of the machined workpieces for each date, part system and program name	Numeric value
cycle_time	Aggregate result of the machining cycle time for each date, part system and program name	hh:mm:ss
cutting_time	Aggregate result of the cutting time for machining for each date, part system and program name	hh:mm:ss
stop	Aggregate result of time for each date, part system and program name when the operation status is "Stop" for machining	hh:mm:ss
alarm	Aggregate result of time for each date, part system and program name when the operation status is "Alarm" for machining	hh:mm:ss
system	Part system No.	Numeric value

File name specifications to be saved

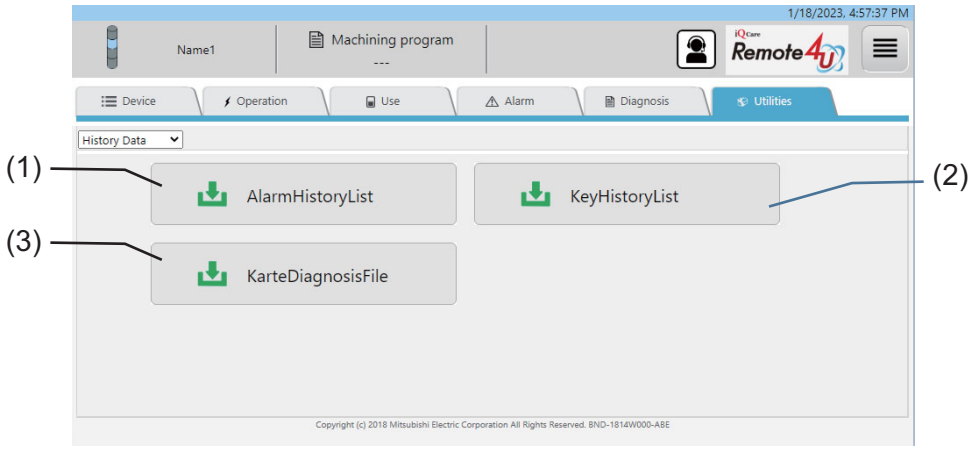
File name	Specifications
monmcnlog_machine name_yymmdd1_yymmdd2.csv	The "yymmdd1" is the date (1) specified on the dialog box of the "MonthlyMachiningTotal" screen. The "yymmdd2" is the date (2) specified on the dialog box of the "MonthlyMachiningTotal" screen. The "machine name" is the free input item 1 ("Machine Name") of the currently selected device. When saving the file, a download dialog box appears depending on your browser. The file name or storage location on saving the file can be changed in the download dialog box.

(Note 1) When the file cannot be saved, shorten the file path length (including file name).

(Note 2) The file path length of the storage location (including file name) has a limitation for the number of the characters.
The number of the maximum characters that can be specified depends on the browser specifications.

4.3.7.2 History Data Acquisition

The history data acquisition screen is displayed by selecting "History Data" from the pull-down menu.
On this screen, you can save the data of "AlarmHistoryList" or "KeyHistoryList" as a file to your device.



Display items

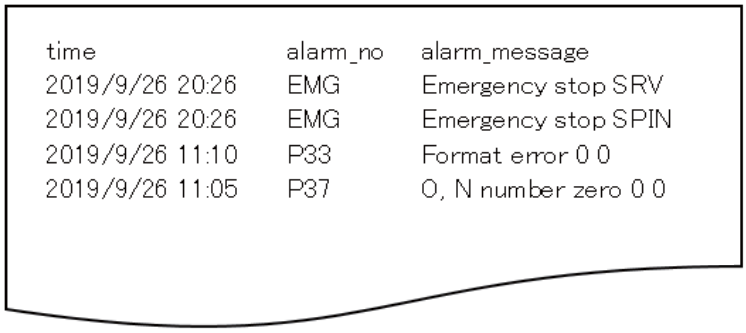
No.	Item	Specifications
(1)	[AlarmHistoryList] button	Saves the alarm history in a file. For details of the data to be saved in the file, refer to "4.3.7.2.1 Alarm History List".
(2)	[KeyHistoryList] button	Saves the key operation history in a file. For details of the data to be saved in the file, refer to "4.3.7.2.2 Key History List".
(3)	[KarteDiagnosisFile] button	Saves the machine condition monitoring report log file to be read in the machine condition monitoring report viewer.

4.3.7.2.1 Alarm History List

You can save the alarm history for the specified period of a device using this function.
The alarm history currently stored in the device is target to be output.

Details for each item of "AlarmHistoryList" are as follows.

Output contents of "AlarmHistoryList"



time	alarm_no	alarm_message
2019/9/26 20:26	EMG	Emergency stop SRV
2019/9/26 20:26	EMG	Emergency stop SPIN
2019/9/26 11:10	P33	Format error 0 0
2019/9/26 11:05	P37	O, N number zero 0 0

Specifications for the saved file of "AlarmHistoryList"

Item name	Details	Format
time	The date when an alarm occurred	yyyy-mm-dd hh:mm:ss
alarm_no	No. of the occurred alarm	String
alarm_message	Message of the occurred alarm	String

File name specifications to be saved

File name	Specifications
armlog_machine name_yymmdd.csv	"yymmdd" is the current date. "machine name" is the free input item 1 ("Machine Name") of the currently selected device. When saving the file, a download dialog box appears depending on your browser. The file name or storage location on saving the file can be changed in the download dialog box.

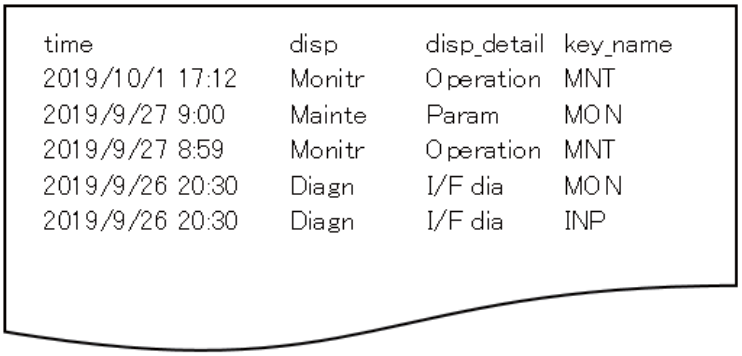
(Note 1) When the file cannot be saved, shorten the file path length (including file name).
(Note 2) The file path length of the storage location (including file name) has a limitation for the number of the characters.
The number of the maximum characters that can be specified depends on the browser specifications.

4.3.7.2.2 Key History List

You can save the NC operation history (key history) for the specified period of a device as a CSV file using this function. The key history currently stored in the device is target to be output.

Details for each item of "KeyHistoryList" are as follows.

Output contents of "KeyHistoryList"



time	disp	disp_detail	key_name
2019/10/1 17:12	Monitr	Operation	MNT
2019/9/27 9:00	Mainte	Param	MON
2019/9/27 8:59	Monitr	Operation	MNT
2019/9/26 20:30	Diagn	I/F dia	MON
2019/9/26 20:30	Diagn	I/F dia	INP

Specifications for the saved file of "KeyHistoryList"

Item name	Details	Format
time	The date when a key operation is performed	yyyy-mm-dd hh:mm:ss
disp	The screen name which was displayed by the key operation (not displayed when M7 Series is selected)	String
disp_detail	Details of the screen which was displayed by the key operation (not displayed when M7 Series is selected)	String
key_name	The input key name	String

File name specifications to be saved

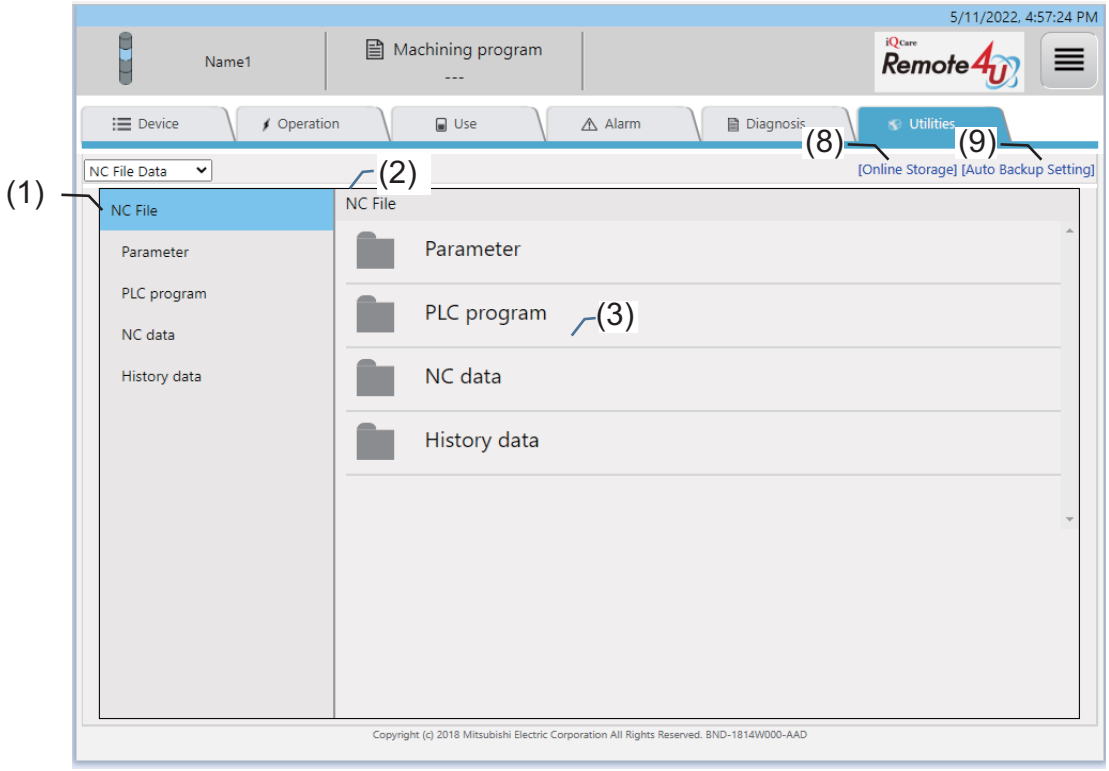
File name	Specifications
keylog_machine name_yymmdd.csv	"yymmdd" is the current date. "machine name" is the free input item 1 ("Machine Name") of the currently selected device. When saving the file, a download dialog box appears depending on your browser. The file name or storage location on saving the file can be changed in the download dialog box.

(Note 1) When the file cannot be saved, shorten the file path length (including file name).
(Note 2) The file path length of the storage location (including file name) has a limitation for the number of the characters.
The number of the maximum characters that can be specified depends on the browser specifications.

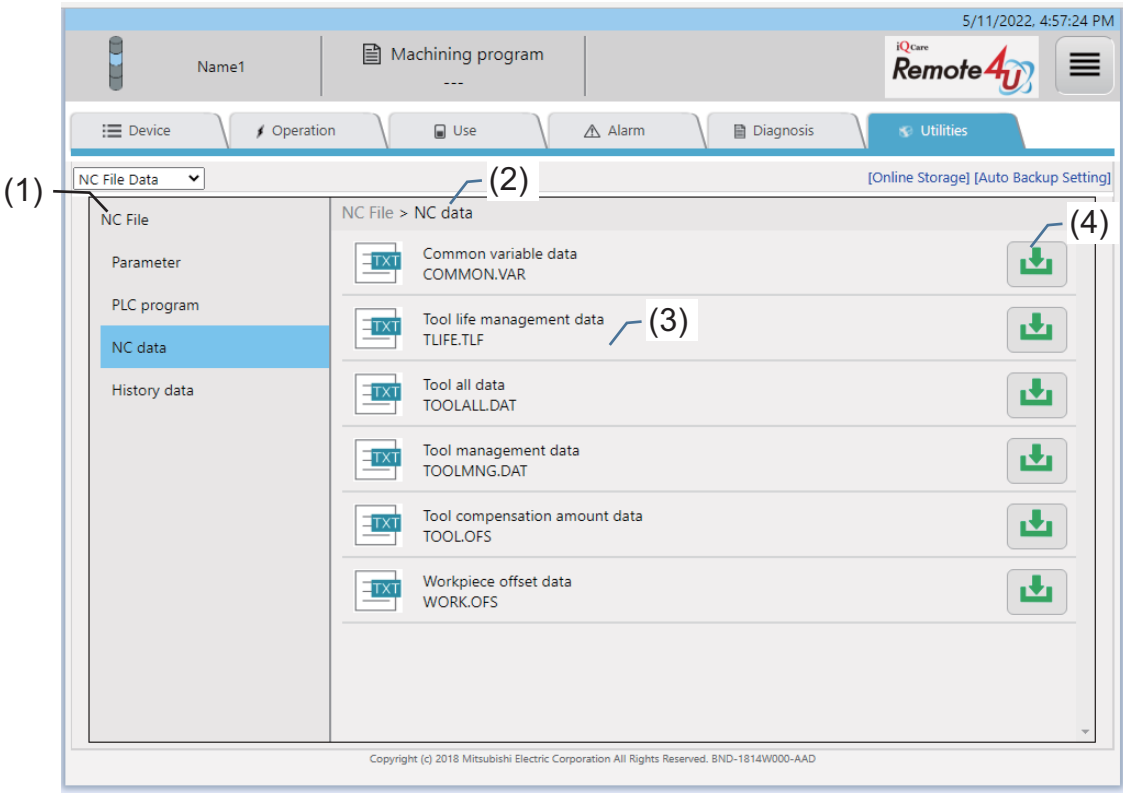
4.3.7.3 NC File Data

The NC file data screen is displayed by selecting "NC File Data" from the pull-down menu for data type.
On this screen, you can download the files in the NC to your device.

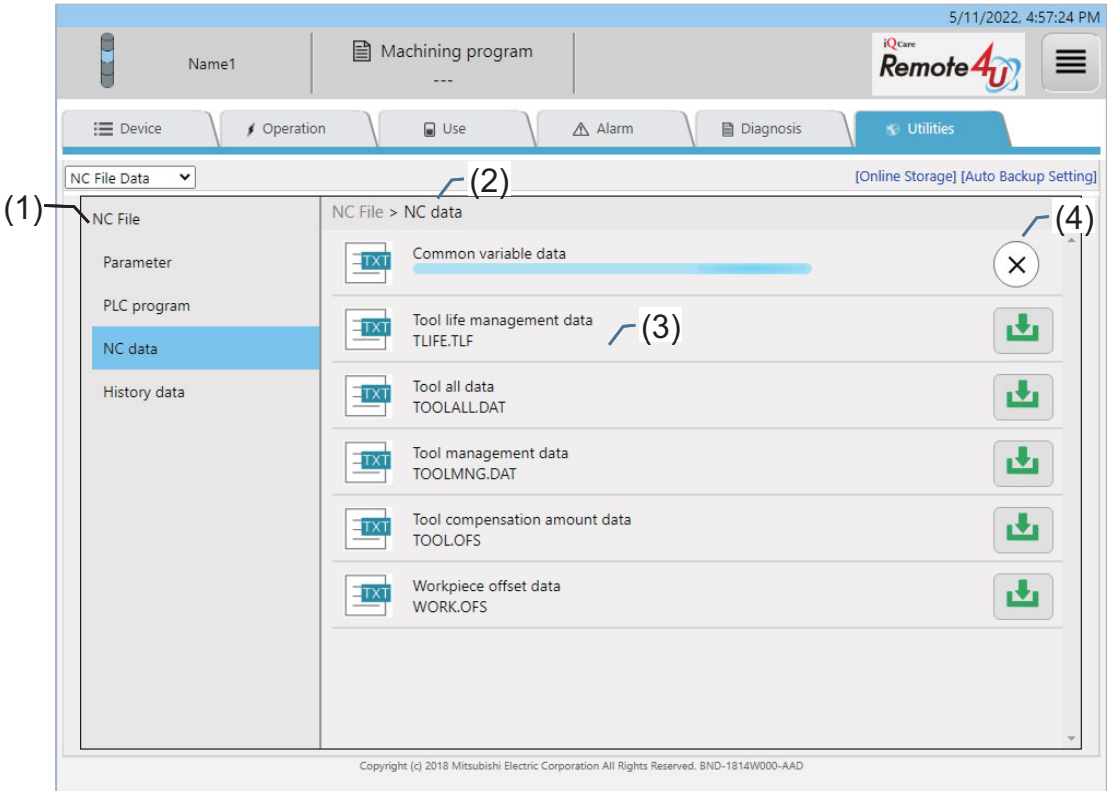
Initial view (for PC)



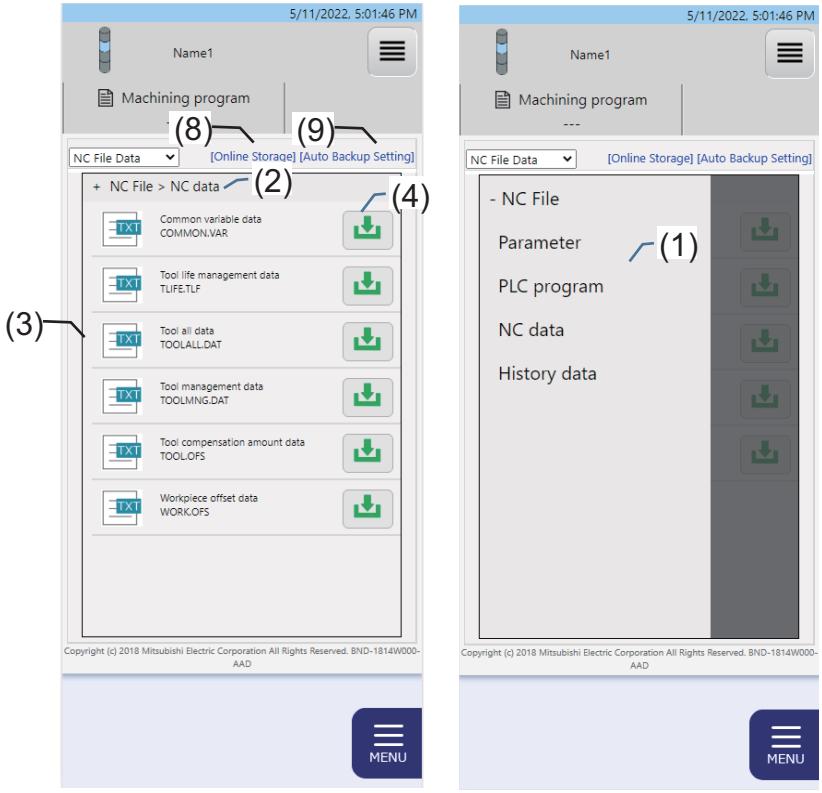
After folder selection (for PC)



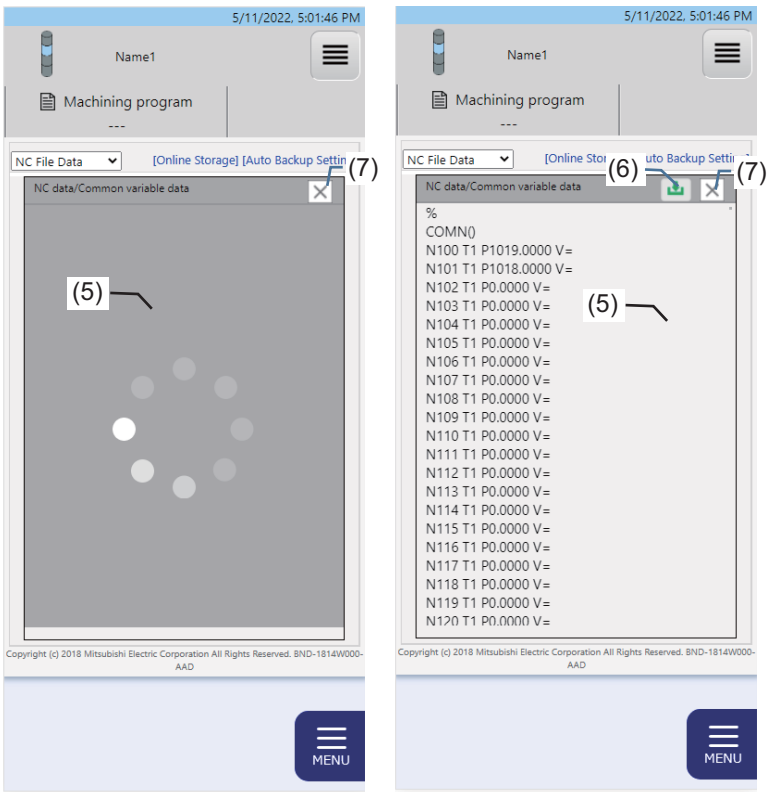
After pressing the download button (for PC)



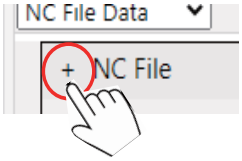
Tablet PC or smartphone screen



Tablet PC or smartphone screen file contents viewing window



Display items

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(1)</td><td>NC folder menu</td><td>Displays the NC folders as a tree structure. The files in a folder that can be acquired are displayed in (3) File list by selecting an NC folder.
* For tablet PCs and smartphones, tap the "+" sign on (2) File list upper menu.
 
</td></tr>
<tr><td>(2)</td><td>File list upper menu</td><td>Displays the tiers to the folder currently displayed in a list format.
The files in a folder that can be acquired are displayed in (3) File list by selecting a folder name.</td></tr>
<tr><td>(3)</td><td>File list</td><td>Displays the files that can be acquired in the folders selected in (1) and (2). (Note)
For tablet PCs and smartphones, tapping the displayed file name opens (5) File contents viewing window, which displays the contents of a file.
* When a binary file is selected, (5) File contents viewing window does not open and the file contents are not displayed.
■ Displayed icons
<table>
<tr><th>Icon</th><th>Details</th></tr>
<tr><td>  </td><td>Folder</td></tr>
<tr><td>  </td><td>Text file</td></tr>
<tr><td>  </td><td>Binary file</td></tr>
</table></td></tr>
<tr><td>(4)</td><td>Download button/cancel button</td><td>Files can be downloaded by pressing the download button.
While downloading, a progress bar is displayed under the file name, and the download button changes to a cancel button.
The download can be canceled by pressing the cancel button.
This is not displayed when the power supply is OFF.
■ Displayed buttons
<table>
<tr><th>Button</th><th>Details</th></tr>
<tr><td>  </td><td>Download button</td></tr>
<tr><td></td><td>Cancel button</td></tr>
</table></td></tr>
<tr><td>(5)</td><td>File contents viewing window</td><td>Displays the contents of the file tapped in (3).
A loading dialog is displayed while loading the file contents for display.</td></tr>
<tr><td>(6)</td><td>Download button (File contents viewing window)</td><td>After displaying the file contents, the file can be downloaded by tapping the download button.</td></tr>
<tr><td>(7)</td><td>Cancel button (File contents viewing window)</td><td>Tapping the cancel button closes the (5) File contents viewing window. Tapping the cancel button while loading the file contents cancels the display and closes the window.</td></tr>
<tr><td>(8)</td><td>[Online storage] link</td><td>When pressed, the screen transits the online storage screen.
For details, refer to "4.3.7.3.1 Online Storage Screen"</td></tr>
<tr><td>(9)</td><td>[Auto Backup Setup] link</td><td>When pressed, the screen transits the screen to configure auto backup setup.
For details, refer to "4.3.7.3.2 Auto Backup Setup".</td></tr>
</table>

(Note) The files that can be acquired for each model are as follows.

M8V Series

Folder	File name	Data type	M800VW Series	M80VW	M800VS Series	M80V Series
Parameters						
	ALL.PRM	Parameters	○	○	○	○
	AUXAXIS.PRM	Auxiliary axis parameters	○	○	×	×
	DEVICENT.PRM	DeviceNet	×	×	○	○
	GEOMETRY.PRM	Rotary-axis angle deviation parameters	○	○	○	○
	SAFEPARA.BIN	Safety parameter file	○	○	○	○
PLC program						
	USERPLC.LAD	PLC program	○	○	○	○
	PROJECT01.LAD	Project 1 PLC program	○	○	○	○
	PROJECT02.LAD	Project 2 PLC program	○	○	○	○
	PROJECT03.LAD	Project 3 PLC program	○	○	○	○
	PROJECT04.LAD	Project 4 PLC program	○	×	○	×
	PROJECT05.LAD	Project 5 PLC program	○	×	○	×
	PROJECT06.LAD	Project 6 PLC program	○	×	○	×
	SAFEPLC1.LAD	Own station safety PLC program file	○	○	○	○
	SAFEPLC2.LAD	Other station safety PLC program file	○	○	○	○
NC data						
	COMMON.VAR	Common variable data	○	○	○	○
	TLIFE.TLF	Tool life management data	×	×	×	×
	TOOLALL.DAT	All tool data	○	○	○	○
	TOOLMNG.DAT	Tool management data	×	×	×	×
	TOOL.OFS	Tool compensation amount data	○	○	○	○
	WORK.OFS	Workpiece offset data	○	○	○	○
History data						
	ALLLOG.LOG	All history	○	○	○	○
	ALMLOG.LOG	Alarm history	○	○	○	○
	KEYLOG.LOG	Key history	○	○	○	○
	NCSAMP.BIN	Sampling data (binary)	○	○	○	○
	NCSAMP.CSV	Sampling data (text)	○	○	○	○
	TOUCHLOG. LOG	Touch history	○	○	○	○

M8 Series/C80 Series

Folder	File name	Data type	M800W Series	M80W	M800S Series	M80 Series	E80 Series	C80
Parameters								
	ALL.PRM	Parameters	○	○	○	○	○	○
	AUXAXIS.PRM	Auxiliary axis parameters	○	○	×	×	×	×
	DEVICENT.PRM	DeviceNet	×	×	○	○	×	×
	GEOMETRY.PRM	Rotary-axis angle deviation parameters	○	○	○	○	○	×
	SAFEPARA.BIN	Safety parameter file	○	○	○	○	○	○
PLC program								
	USERPLC.LAD	PLC program	○	○	○	○	○	×
	PROJECT01.LAD	Project 1 PLC program	○	○	○	○	○	×
	PROJECT02.LAD	Project 2 PLC program	○	○	○	○	○	×
	PROJECT03.LAD	Project 3 PLC program	○	○	○	○	○	×
	PROJECT04.LAD	Project 4 PLC program	○	×	○	×	×	×
	PROJECT05.LAD	Project 5 PLC program	○	×	○	×	×	×
	PROJECT06.LAD	Project 6 PLC program	○	×	○	×	×	×
	SAFEPLC1.LAD	Own station safety PLC program file	○	○	○	○	○	○
	SAFEPLC2.LAD	Other station safety PLC program file	○	○	○	○	○	○
NC data								
	COMMON.VAR	Common variable data	○	○	○	○	○	○
	TLIFE.TLF	Tool life management data	×	×	×	×	×	×
	TOOLALL.DAT	All tool data	○	○	○	○	○	○
	TOOLMNG.DAT	Tool management data	×	×	×	×	×	×
	TOOL.OFS	Tool compensation amount data	○	○	○	○	○	○
	WORK.OFS	Workpiece offset data	○	○	○	○	○	○
History data								
	ALLLOG.LOG	All history	○	○	○	○	○	○
	ALMLOG.LOG	Alarm history	○	○	○	○	○	○
	KEYLOG.LOG	Key history	○	○	○	○	○	○
	NCSAMP.BIN	Sampling data (binary)	○	○	○	○	○	○
	NCSAMP.CSV	Sampling data (text)	○	○	○	○	○	○
	TOUCHLOG. LOG	Touch history	○	○	○	○	○	○

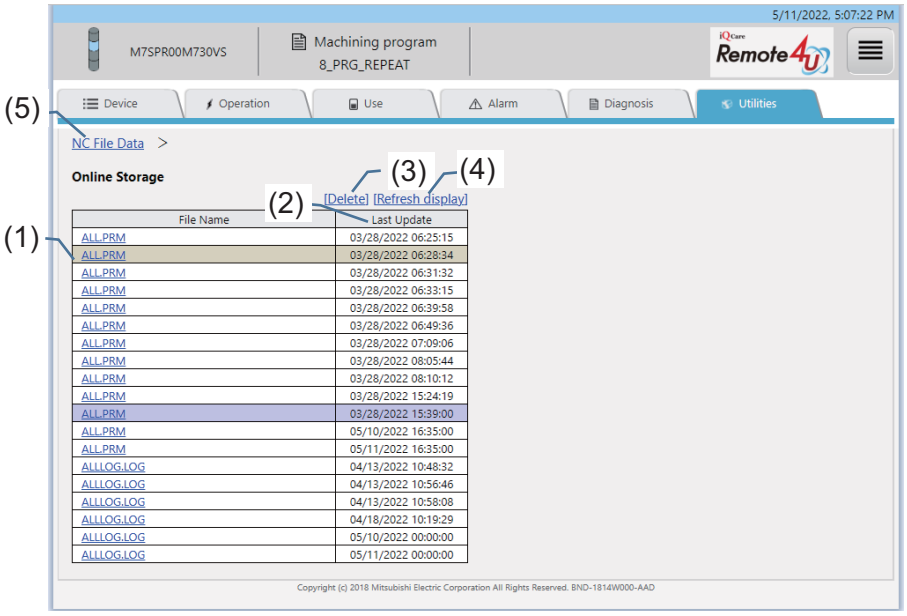
M7 Series

Folder	File name	Data type	M700W Series	M700VS Series	M70V Series	M700 Series	M70 Series	E70
Parameters								
	ALL.PRM	Parameters	○	○	○	○	○	○
	AUXAXIS.PRM	Auxiliary axis parameters	○	×	×	○	×	×
	DEVICENT.PRM	DeviceNet	×	○	○	×	×	×
	GEOMETRY.PRM	Rotary-axis angle deviation parameters	○	○	○	○	○	○
	SAFEPARA.BIN	Safety parameter file	○	○	○	○	○	○
PLC program								
	USERPLC.LAD	PLC program	○	○	○	○	○	○
	PROJECT01.LAD	Project 1 PLC program	×	×	×	×	×	×
	PROJECT02.LAD	Project 2 PLC program	×	×	×	×	×	×
	PROJECT03.LAD	Project 3 PLC program	×	×	×	×	×	×
	PROJECT04.LAD	Project 4 PLC program	×	×	×	×	×	×
	PROJECT05.LAD	Project 5 PLC program	×	×	×	×	×	×
	PROJECT06.LAD	Project 6 PLC program	×	×	×	×	×	×
	SAFEPLC1.LAD	Own station safety PLC program file	○	○	○	○	○	○
	SAFEPLC2.LAD	Other station safety PLC program file	○	○	○	○	○	○
NC data								
	COMMON.VAR	Common variable data	○	○	○	○	○	○
	TLIFE.TLF	Tool life management data	○	○	○	○	○	○
	TOOLALL.DAT	All tool data	×	×	×	×	×	×
	TOOLMNG.DAT	Tool management data	○	○	○	○	○	○
	TOOL.OFS	Tool compensation amount data	○	○	○	○	○	○
	WORK.OFS	Workpiece offset data	○	○	○	○	○	○
History data								
	ALLLOG.LOG	All history	○	○	○	○	○	○
	ALMLOG.LOG	Alarm history	○	○	○	○	○	○
	KEYLOG.LOG	Key history	○	○	○	○	○	○
	NCSAMP.BIN	Sampling data (binary)	×	×	×	×	×	×
	NCSAMP.CSV	Sampling data (text)	○	○	○	○	○	○
	TOUCHLOG. LOG	Touch history	×	×	×	×	×	×

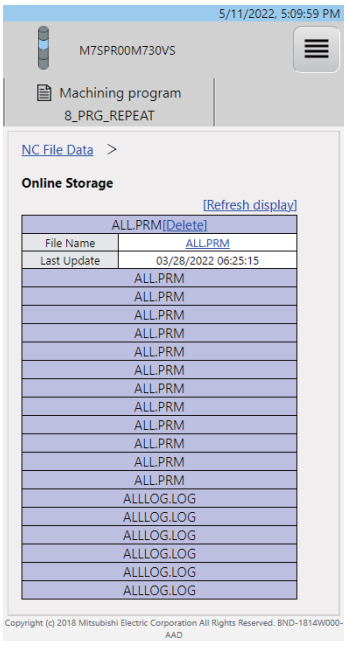
4.3.7.3.1 Online Storage Screen

The "Online storage" screen displays a list of files in online storage.
Files in online storage can be downloaded or deleted from this screen.

Online storage screen (for PC screen)



Online storage screen (for tablet PC or smartphone screen)



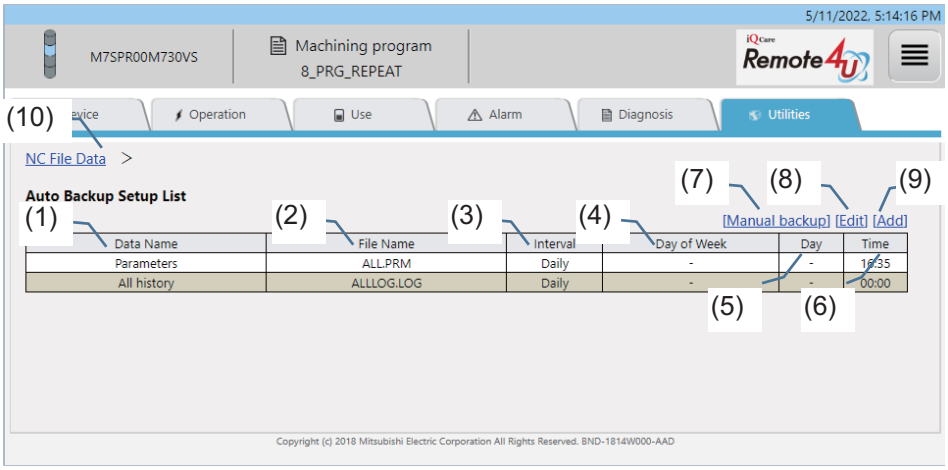
Display items

No.	Item	Specifications
(1)	File Name	Displays the file names of the files in online storage. Pressing the link of the file name downloads the online storage file according to the browser standard specifications.
(2)	Last Update	Displays the latest update date of the online storage file.
(3)	[Delete] link	Selecting a row of the online storage file displays the link. Pressing the link displays a delete confirmation message. Press the OK button to delete the online storage file.
(4)	[Refresh display] link	Refreshes the online storage file list display.
(5)	[NC File Data] link	Returns to the "NC File Data" screen.

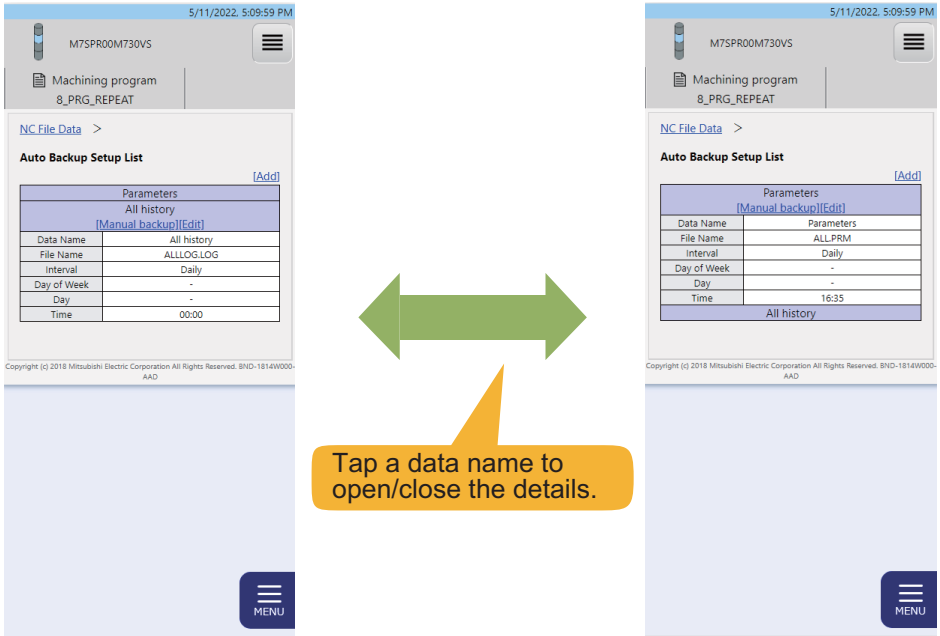
4.3.7.3.2 Auto Backup Setup

Displays the current settings for the auto backup setup list.
By setting the automatic backup, the files in the NC can be backed up in online storage periodically based on a set execution schedule.
The files with an automatic backup setting can also be backed up instantly (manual backup).
The backed up files can be checked on the online storage screen.

Auto backup setup list screen (for PC screen)



Auto backup setup list screen (for tablet PC or smartphone screen)



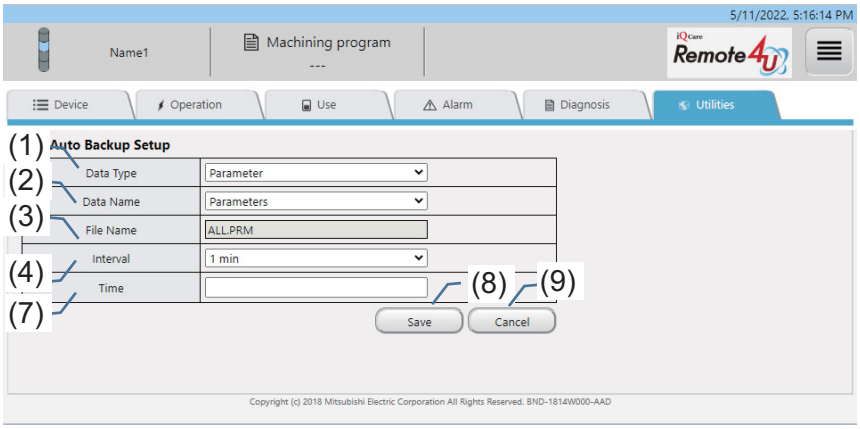
Display items

No.	Item	Specifications
(1)	Data Name	Displays the data name of the target file for an automatic backup.
(2)	File Name	Displays the file name of the target file for an automatic backup.
(3)	Interval	Displays the interval of an automatic backup.
(4)	Day of Week	Displays the day of week for an automatic backup.
(5)	Day	Displays the date for an automatic backup.
(6)	Time	Displays the time for an automatic backup.
(7)	[Manual backup] link	Selecting a row of the auto backup setup displays the link. Press the OK button on the confirmation message dialog to start a manual backup. This is not displayed when the power supply is OFF.
(8)	[Edit] link	Selecting a row of the auto backup setup displays the link and pressing the link opens the edit screen. For details of the edit screen, refer to "4.3.7.3.3 Edit Auto Backup Setup Screen".
(9)	[Add] link	Pressing this opens the edit screen of an auto backup setup. Add the automatic backup settings. This is not displayed when all the files available for an auto backup setup are already registered.
(10)	[NC File Data] link	Returns to the "NC File Data" screen.

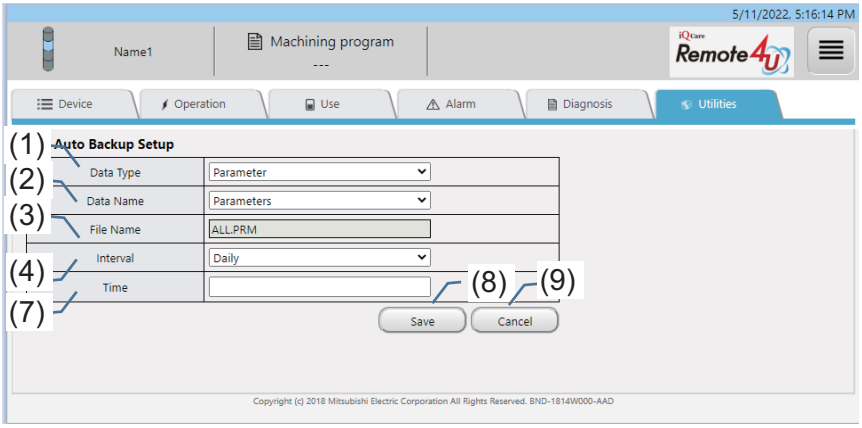
4.3.7.3.3 Edit Auto Backup Setup Screen

Set the target files and execution schedule for an automatic backup.

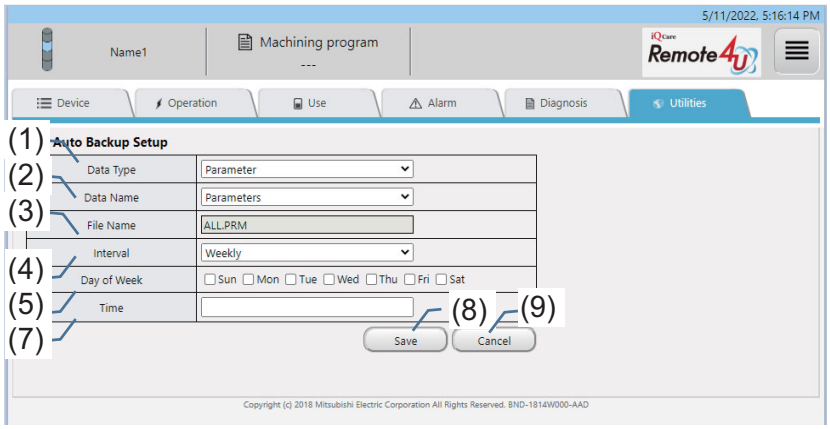
Edit auto backup setup screen (for PC screen, interval: 1 min)



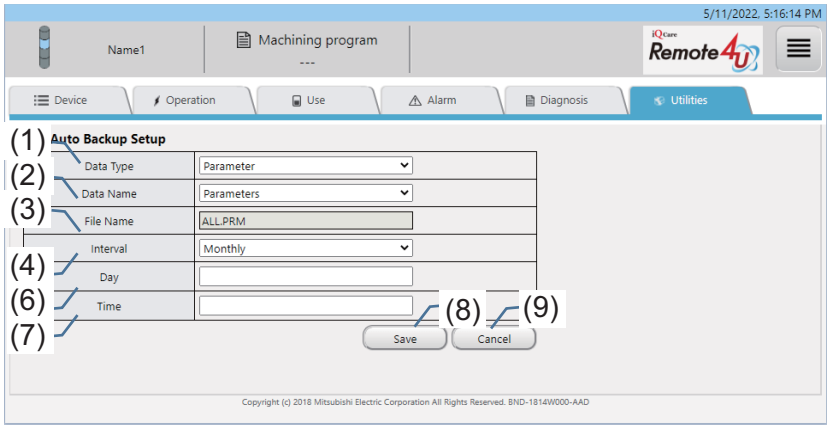
Edit auto backup setup screen (for PC screen, interval: Daily)



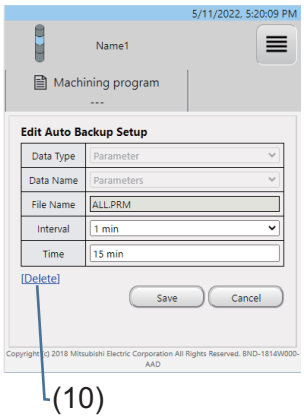
Edit auto backup setup screen (for PC screen, interval: Weekly)



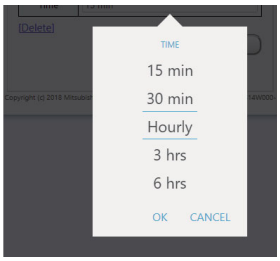
Edit auto backup setup screen (for PC screen, interval: Monthly)



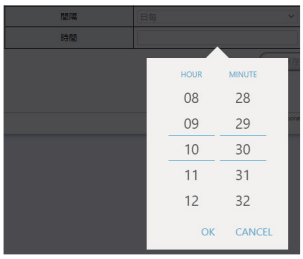
Edit auto backup setup screen (for tablet PC or smartphone screen)



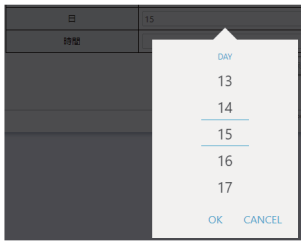
Time specification dialog (Interval: 1 min)



Time specification dialog (Interval: Daily, Weekly, Monthly)



Date specification dialog



Display items

No.	Item	Specifications
(1)	Data Type	Select the file type for an automatic backup. The contents in the menu are the same as those of (1) NC folder menu in "4.3.7.3 NC File Data". The value cannot be changed when transiting this screen by clicking the [Edit] link on the auto backup setup list screen. Types for which all files in the type folder have been registered for an automatic backup setting will not be displayed when transiting this screen by clicking the [Add] link on the auto backup setup list screen.
(2)	Data Name	Select the file data name for an automatic backup. (*1) Displays the file in the type folder selected in (1) Type. The value cannot be changed when transiting this screen by clicking the [Edit] link on the auto backup setup list screen. Data names of files that are already registered for an automatic backup setting will not be displayed when transiting this screen by clicking the [Add] link on the auto backup setup list screen.
(3)	File Name	Displays the target file name for an automatic backup. This is displayed automatically when (1) Data Type and (2) Data Name are selected.
(4)	Interval	Select the interval of an automatic backup. 1 min: Execute an automatic backup at each specified time Daily: Execute an automatic backup everyday at the specified time Weekly: Execute an automatic backup at the specified time on the specified day of week every week Monthly: Execute an automatic backup at the specified time on the specified day of every month
(5)	Day of Week	Select the day of week for an automatic backup. (This is displayed only when "Weekly" is selected for the interval.)
(6)	Day	Specify the date for an automatic backup. (*3) (This is displayed only when "Monthly" is selected for the interval.) Click the textbox to display the date specification dialog. Select the date and click the OK button to set the selected values in the textbox.
(7)	Time	Specify the time for automatic backup. (*2) [When "1 min" is selected for the interval] 15 min, 30 min, Hourly, 3 hrs, 6 hrs [When "Daily", "Weekly", or "Monthly" is selected for the interval] 00:00 to 23:59 Click the textbox to display the time specification dialog. Select the time and click the OK button to set the selected values in the textbox.
(8)	[Save] button	A save confirmation message is displayed. Press the OK button to save the automatic backup settings. When there is a defect in the data contents, an error message is displayed at the top of the screen and the data is not saved. Save the data again after removing the error.
(9)	[Cancel] button	A cancel confirmation message is displayed. Press the OK button to cancel the editing contents.
(10)	[Delete] link	A delete confirmation message is displayed. Press the OK button to delete the automatic backup settings.

(*1) The automatic backup is not executed when the specified file does not exist on the NC.

(*2) The backup is executed when the time set on the NC is at the specified time or later.

(*3) When "Monthly" is selected on the interval and the specified date does not exist in a particular month, the automatic backup is executed at 00:00 or later on the 1st of next month.

4.3.7.3.4 Automatic Backup Setup Method

The following shows the setting methods of the automatic backup.
The setup procedures for executing an automatic backup on the following schedules are shown as examples.
(1) When backing up parameters (ALL.PRM) every 6 hours
(2) When backing up alarm history (ALMLOG.LOG) at 07:00 everyday
(3) When backing up all tool data (TOOLALL.DAT) at 10:00 on every Monday
(4) When backing up common variable data (COMMON.VAR) at 13:00 on every Monday, Wednesday, and Friday
(5) When backing up auxiliary axis parameter (AUXAXIS.PRM) at 21:00 on the 15th of every month
(6) When backing up all history (ALLLOG.LOG) at 22:00 on the 31st of every month

(1) When backing up parameters (ALL.PRM) every 6 hours

Item	Details
Data Type	Select "Parameter".
Data Name	Input "Parameters".
File Name	This is displayed automatically. (ALL.PRM)
Interval	Select "1 min".
Time	Select "6 hrs".

< Date and time when an automatic backup is executed on above setting >
* From 2022/04/01 (Fri) 00:00

Date and time set in the NC	Remarks
2022/04/01 (Fri) 00:00	
2022/04/01 (Fri) 06:00	
2022/04/01 (Fri) 12:00	
2022/04/01 (Fri) 18:00	
2022/04/02 (Sat) 00:00	
...	

(2) When backing up alarm history (ALMLOG.LOG) at 07:00 everyday

Item	Details
Data Type	Select "History data".
Data Name	Input "Alarm history".
File Name	This is displayed automatically. (ALMLOG.LOG)
Interval	Select "Daily".
Time	Select "07:00".

< Date and time when an automatic backup is executed on above setting >
* From 2022/04/01 (Fri) 00:00

Date and time set in the NC	Remarks
2022/04/01 (Fri) 07:00	
2022/04/02 (Sat) 07:00	
2022/04/03 (Sun) 07:00	
2022/04/04 (Mon) 07:00	
2022/04/05 (Tue) 07:00	
...	

(3) When backing up all tool data (TOOLALL.DAT) at 10:00 on every Monday

Item	Details
Data Type	Select "NC data".
Data Name	Input "Tool all data".
File Name	This is displayed automatically. (TOOLALL.DAT)
Interval	Select "Weekly".
Day of Week	Check "Mon".
Time	Select "10:00".

< Date and time when an automatic backup is executed on above setting >

* From 2022/04/01 (Fri) 00:00

Date and time set in the NC	Remarks
2022/04/04 (Mon) 10:00	
2022/04/11 (Mon) 10:00	
2022/04/18 (Mon) 10:00	
2022/04/25 (Mon) 10:00	
2022/05/02 (Mon) 10:00	
...	

(4) When backing up common variable data (COMMON.VAR) at 13:00 on every Monday, Wednesday, and Friday

Item	Details
Data Type	Select "NC data".
Data Name	Input "Common variable data".
File Name	This is displayed automatically. (COMMON.VAR)
Interval	Select "Weekly".
Day of Week	Check "Mon", Wed", and "Fri".
Time	Select "13:00".

< Date and time when an automatic backup is executed on above setting >

* From 2022/04/01 (Fri) 00:00

Date and time set in the NC	Remarks
2022/04/01 (Fri) 13:00	
2022/04/04 (Mon) 13:00	
2022/04/06 (Wed) 13:00	
2022/04/08 (Fri) 13:00	
2022/04/11 (Mon) 13:00	
...	

(5) When backing up auxiliary axis parameter (AUXAXIS.PRM) at 21:00 on the 15th of every month

Item	Details
Data Type	Select "Parameter".
Data Name	Input "Auxiliary axis parameters".
File Name	This is displayed automatically. (AUXAXIS.PRM)
Interval	Select "Monthly".
Date	Select "15".
Time	Select "21:00".

< Date and time when an automatic backup is executed on above setting >

* From 2022/04/01 (Fri) 00:00

Date and time set in the NC	Remarks
2022/04/15 (Fri) 21:00	
2022/05/15 (Sun) 21:00	
2022/06/15 (Wed) 21:00	
2022/07/15 (Fri) 21:00	
2022/08/15 (Mon) 21:00	
...	

(6) When backing up all history (ALLLOG.LOG) at 22:00 on the 31st of every month

Item	Details
Data Type	Select "History data".
Data Name	Input "All history".
File Name	This is displayed automatically. (ALLLOG.LOG)
Interval	Select "Monthly".
Day of Week	Select "31".
Time	Select "22:00".

< Date and time when an automatic backup is executed on above setting >

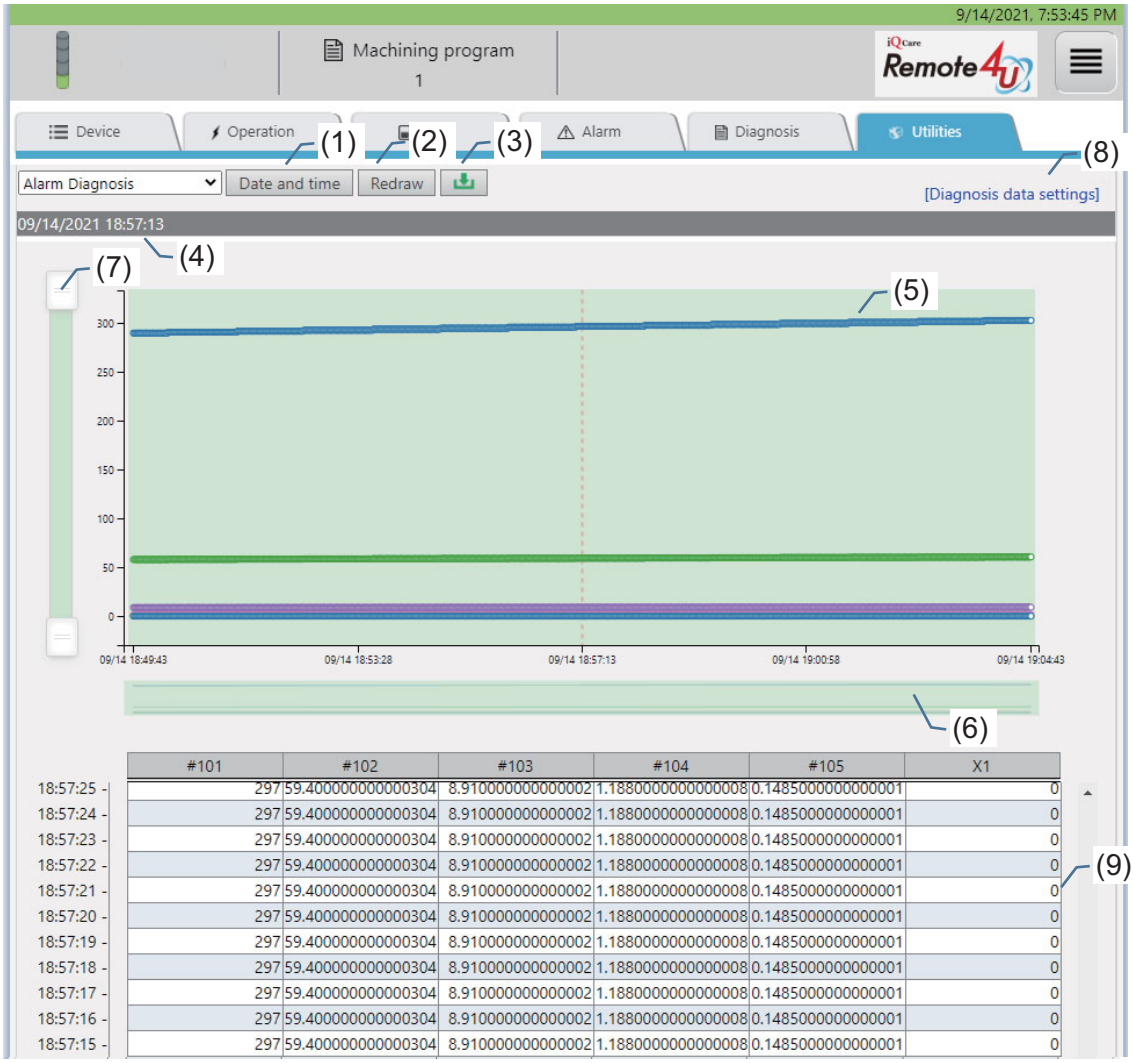
* From 2022/04/01 (Fri) 00:00

Date and time set in the NC	Remarks
2022/04/31 (-) 22:00	As April 31st 2022 does not exist, the automatic backup is executed at 00:00 or later on the 1st of next month
2022/05/01 (Sun) 00:00	
2022/05/31 (Tue) 22:00	
2022/06/31 (-) 22:00	As June 31st 2022 does not exist, the automatic backup is executed at 00:00 or later on the 1st of next month
2022/07/01 (Fri) 00:00	
2022/07/31 (Sun) 22:00	
2022/08/31 (Wed) 22:00	
...	

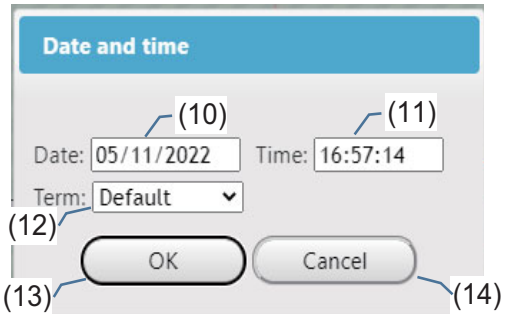
4.3.7.4 Alarm Diagnosis

The "Alarm Diagnosis" screen is displayed by selecting "Alarm Diagnosis" from the pull-down menu.
A graph and a list of the designated data before and after the date/time of an alarm occurrence can be displayed.
This function may be unavailable depending on the license type. Unavailable functions are unavailable to all users.

Alarm diagnosis screen



Date and time dialog



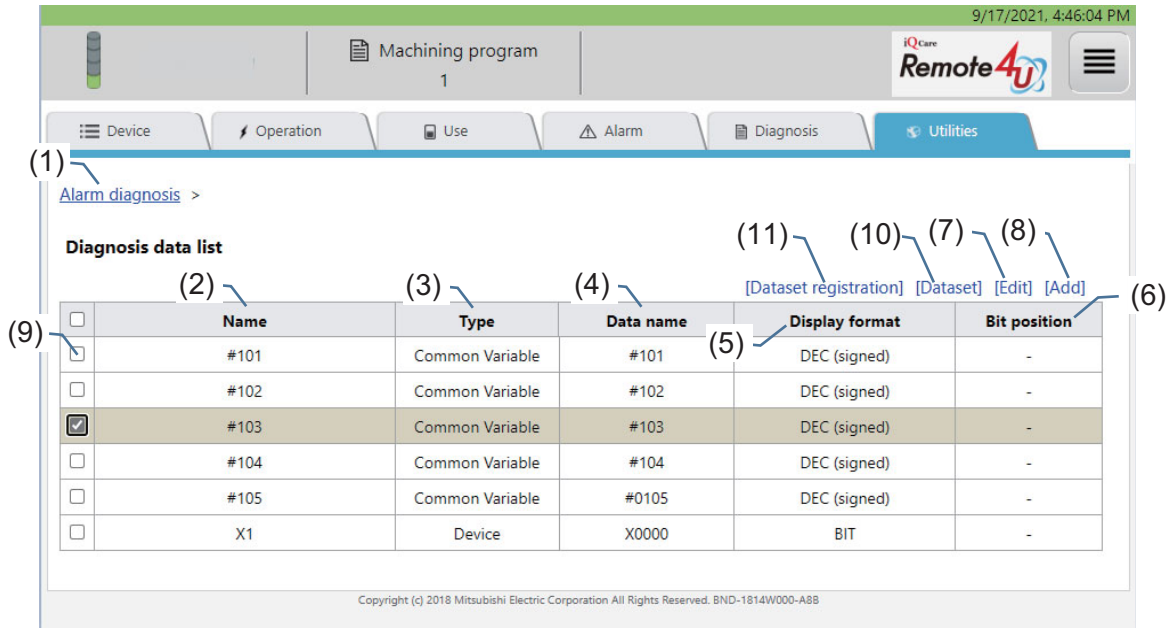
Display items

No.	Item	Specifications
(1)	Date and time button	Displays the date and time dialog.
(2)	Redraw button	Acquires the data of the date/time set on the date and time dialog.
(3)	Download button	Downloads the data of (9) Data list as a CSV file.
(4)	Date and time	Displays the date/time set on the date and time dialog.
(5)	Data graph	Displays the graph of data set on the setting screen. Moving a mouse cursor over points or tapping points on a graph displays data of each point by a tooltip.
(6)	Sub chart	Drag the sub chart to set the range of time to display on a graph. Clicking or tapping outside the set range on the sub chart resets the setting range.
(7)	Range slider	Move the handles on both ends to set the range of values to display in the graph.
(8)	Diagnosis data settings link	Opens the screen to set the data for using diagnosis. Refer to "4.3.7.4.1 Diagnosis Data Settings" for details.
(9)	Data list	Displays the data for the designated date/time selected in (4) in chronological order. When the display format in the diagnosis data setting is bit, "0" is displayed for the designated position bit that is OFF, and "1" is displayed for the designated position bit that is ON. When bit position is "all", all bit statuses are displayed as "0010110111010001". When no data can be displayed, this field is blank
(10)	Date	Selects the designated date.
(11)	Time	Selects the designated time.
(12)	Term	Set the time interval to display in (5) Data graph/(9) Data list. Default: Displays the changing points of the data for 15 minutes before and after the designated date and time. 1h: Displays the changing points of the data for an hour before and after the designated date and time. 24h: Displays the changing points of the data for 24 hours before and after the designated date and time.
(13)	OK button	Clicking this sets the designated date/time and closes the dialog. Then starts acquiring the data of the designated date/time.
(14)	Cancel button	Clicking this closes the dialog without reflecting the settings.

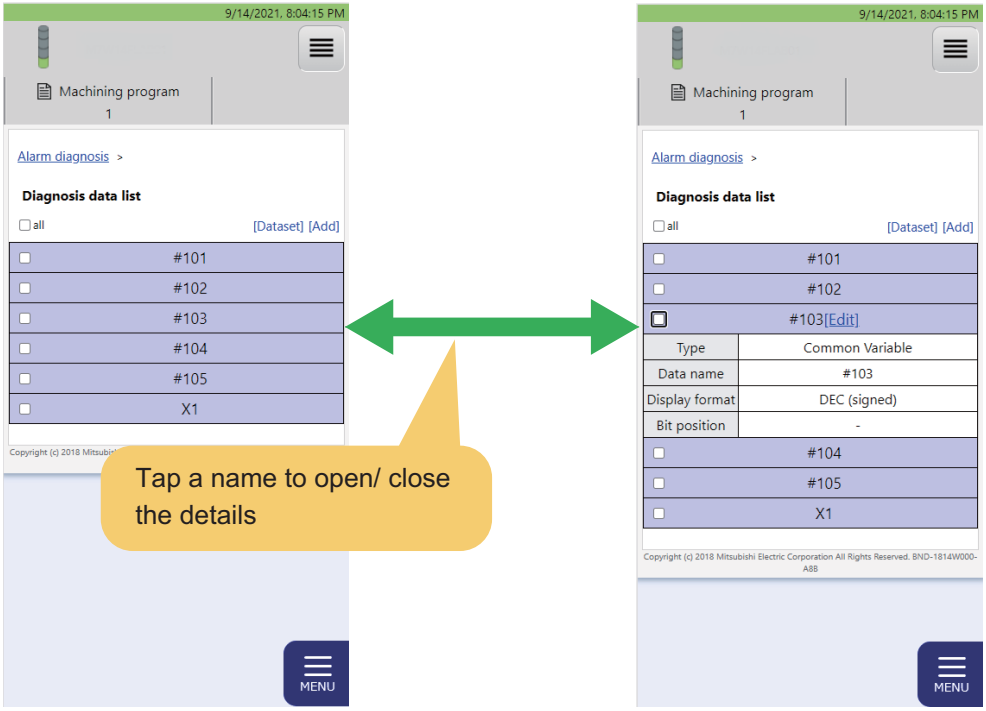
4.3.7.4.1 Diagnosis Data Settings

Clicking the "Diagnosis data settings" link on the alarm diagnosis function screen displays the list of the currently set diagnosis data.

Diagnosis data list screen (for PC Screen)



Diagnosis data list screen (for tablet PC or smartphone screen)

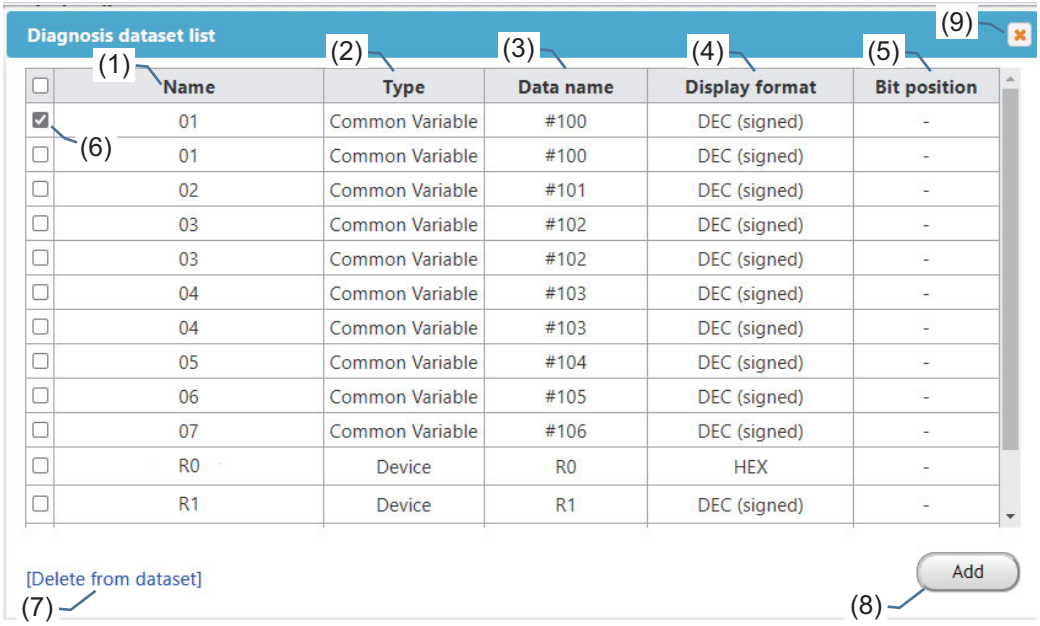


Display items

No.	Item	Specifications
(1)	Alarm diagnosis link	Returns to the "Alarm diagnosis" screen.
(2)	Name	Displays the name.
(3)	Type	Displays the type.
(4)	Data name	Displays the data name.
(5)	Display format	Displays the display format.
(6)	Bit position	Displays the bit position.
(7)	Edit link	Selecting the row of the diagnosis data displays the link. Click it to open the setting screen. For details of the setting screen, refer to "4.3.7.4.2 Diagnosis Data Setting Screen".
(8)	Add link	The setting screen of the diagnosis data and the diagnosis data can be added. Maximum 16 diagnosis data can be set.
(9)	Check box	Select this to switch the check box between ON and OFF.
(10)	Dataset link	Displays the Dataset dialog.
(11)	Dataset registration	This is displayed by setting the check box of (9) Check box to ON. Selecting this registers the data whose check boxes are ON in a dataset.

Dataset dialog

The registered contents on the diagnosis data list can be shared in the organization by using dataset function. Register to the dataset by clicking the [Dataset registration] link on the diagnosis data list. Read and delete from the dataset on the dataset dialog.



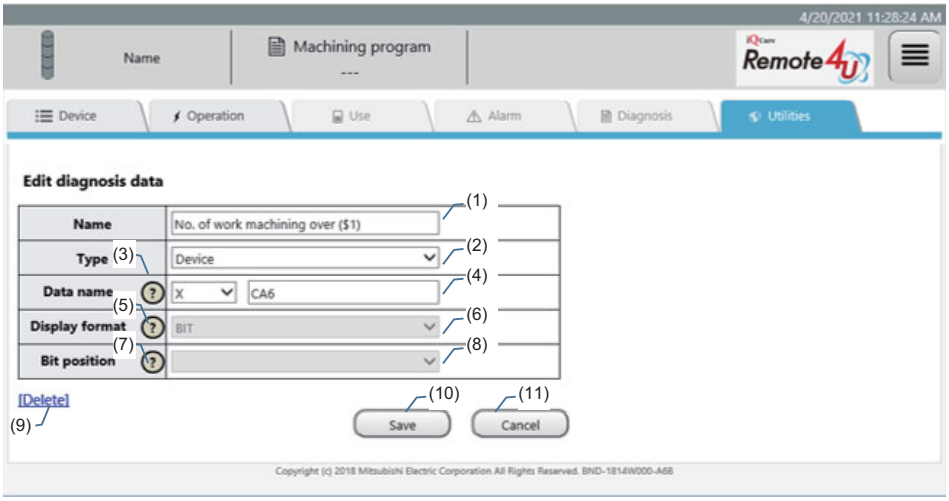
Display items

No.	Item	Specifications
(1)	Name	Displays the name.
(2)	Type	Displays the type.
(3)	Data name	Displays data name.
(4)	Display format	Displays the display format.
(5)	Bit position	Displays the bit position.
(6)	Check box	Select this to switch the check box between ON and OFF.
(7)	"Delete from dataset" button	This button can be selected by setting the check box of (6) Check box to ON. Select this button to display a confirmation dialog and press the OK button to delete the data whose check boxes are ON from the dataset.
(8)	Add button	This button can be selected by setting the check box of (6) Check box to ON. Selecting this button adds the data whose check boxes are ON to the diagnosis data list.
(9)	× button	Closes the Dataset dialog.

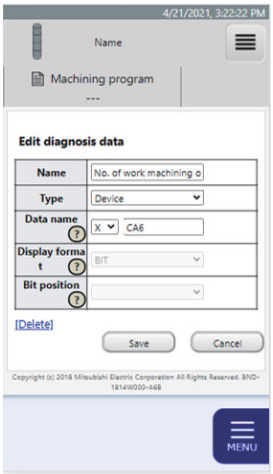
4.3.7.4.2 Diagnosis Data Setting Screen

The diagnosis data can be edited or added.

Diagnosis data setting screen (for PC screen)



Diagnosis data setting screen (for tablet PC or smartphone screen)



Display items

No.	Item	Specifications
(1)	Name	The name of the diagnosis data can be changed. This name is displayed in the data selection pull-down menu of the alarm diagnosis.
(2)	Type	Select one of the following as a type of the diagnosis data. Device Common variable
(3)	Data name help icon	Clicking this icon displays help information.
(4)	Data name	Designate data depending on the item in "(2) Type". Device: Device number Common variable: Common variable number (# is not required) Refer to (*1) for the setting range.
(5)	Display format help icon	Clicking this icon displays help information.
(6)	Display format	Select the format to display the data input in "(4) Data name" on the "Alarm diagnosis" screen. DEC (signed): Displays in signed decimal numbers. DEC (unsigned): Displays in unsigned decimal numbers. HEX: Displays in hexadecimal numbers. BIT: Displays the bit status with "0" and "1".
(7)	Bit position help icon	Clicking this icon displays help information.
(8)	Bit position	When "(6) Display format" is bit, designate the target bit position. Designate the end bit position as the numerical number "0". All bits are the target when selecting "all".
(9)	Delete link	A delete confirmation message is displayed. Click the OK button to delete the diagnosis data.
(10)	Save button	A save confirmation message is displayed. Click the OK button to save the diagnosis data. When there is a defect in the data contents, an error message is displayed at the top of the screen and the data is not saved. Save the data again after removing an error.
(11)	Cancel button	A cancel confirmation message is displayed. Click the OK button to cancel changes to the data.

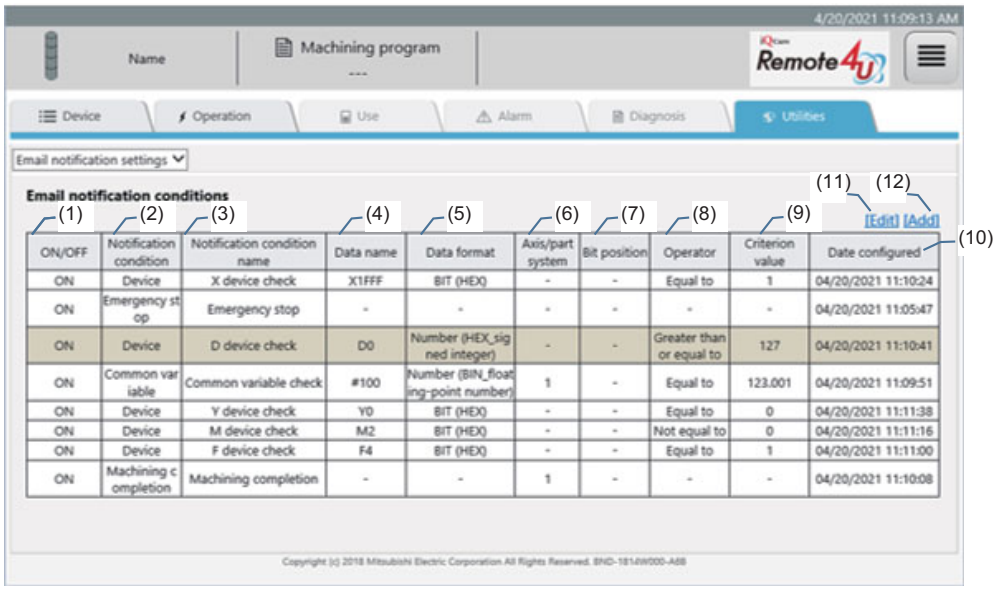
(*1) The setting range of data name is as follows.

Notification condition	Setting range		
	M8/M8V	C80	M7/M7V
Device	X0 to X1FFF	X0 to X1FFF	X0 to X1FFF
	Y0 to Y1FFF	Y0 to Y1FFF	Y0 to Y1FFF
	D0 to D4095	D0 to D8191	D0 to D2047
	R0 to R32767	R0 to R32767	R0 to R13311
	M0 to M61439	M0 to M61439	M0 to M10239
	F0 to F2047	F0 to F2047	F0 to F1023
	L0 to L1023	L0 to L1023	L0 to L511
Common variable	100 to 199, 400 to 999		

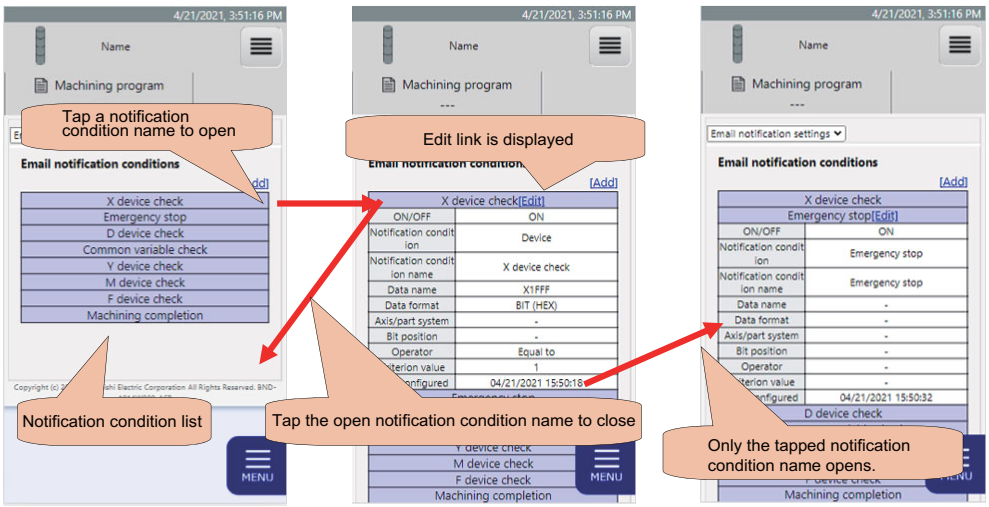
4.3.7.5 Email Notification Settings

The email notification conditions currently set are displayed by selecting "Email notification settings" from the pull-down menu.
By setting the email notification conditions, an email can be received depending on the NC status. The email is sent when the set conditions are satisfied. A maximum of 8 email notification conditions can be set.
This function may be unavailable depending on the license type. Unavailable functions are unavailable to all users.

Email notification conditions screen (for PC screen)



Email notification conditions screen (for tablet PC or smartphone screen)



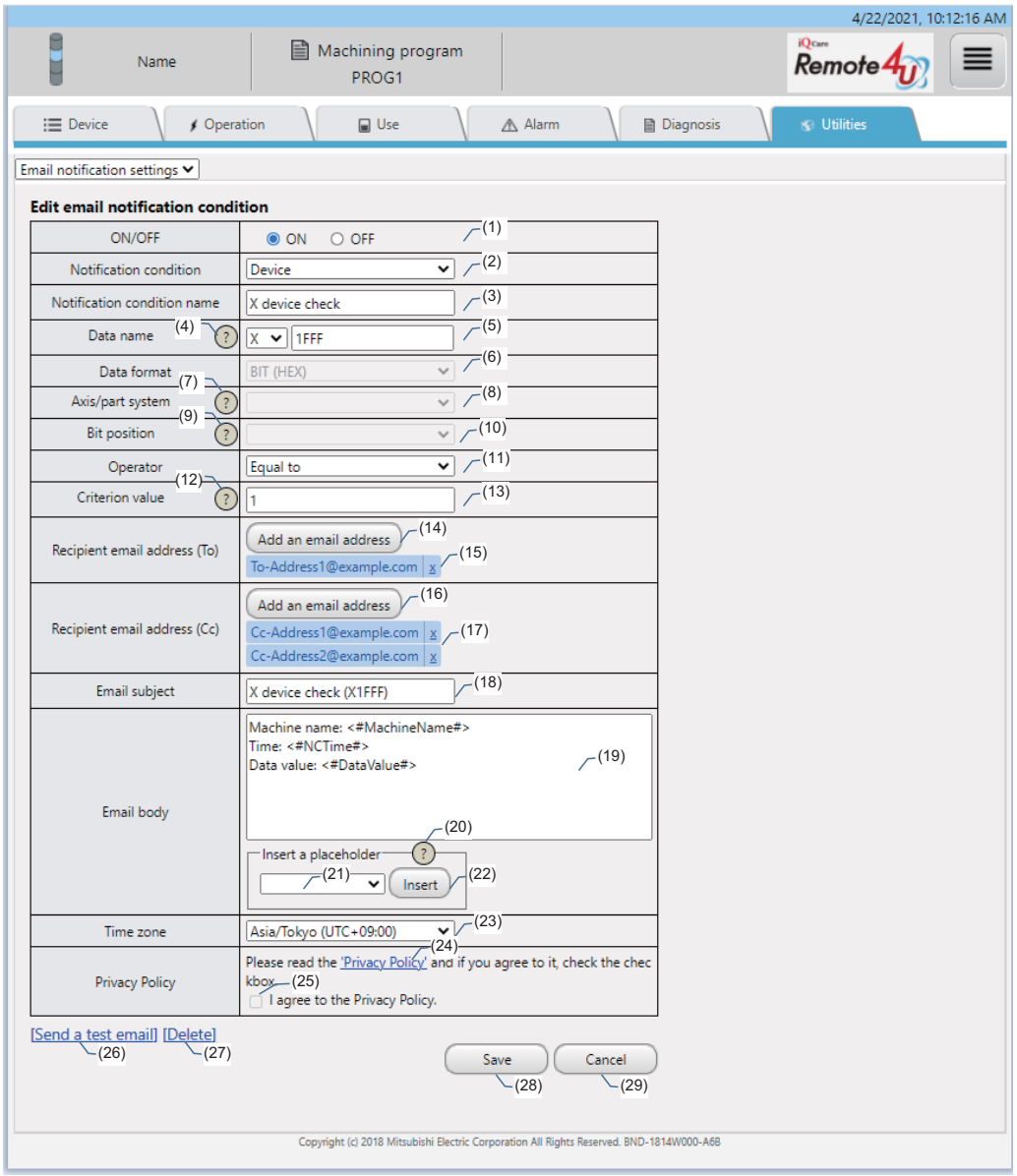
Display items

No.	Item	Specifications
(1)	ON/OFF	Displays the ON or OFF status.
(2)	Notification condition	Displays notification condition.
(3)	Notification condition name	Displays the notification condition name.
(4)	Data name	Displays the data name.
(5)	Data format	Displays the acquired data format.
(6)	Axis/part system	Displays the axis or part system.
(7)	Bit position	Displays the bit position.
(8)	Operator	Displays the judgment condition.
(9)	Criterion value	Displays the judgment value.
(10)	Date configured	Displays the setting date/time.
(11)	Edit link	Selecting the row of the notification condition displays the link and opens the edit screen. For details of edit screen, refer to "4.3.7.5.1 Edit Email Notification Condition Screen".
(12)	Add link	Opens the edit email notification condition screen and notification condition can be added.

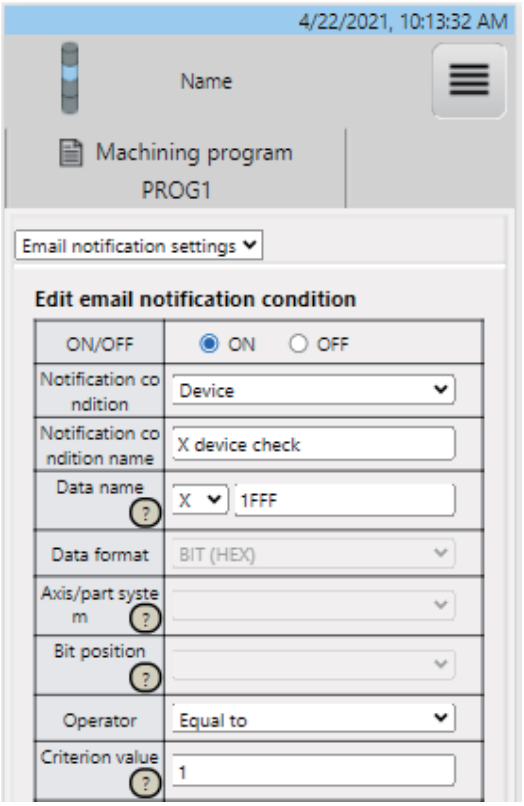
4.3.7.5.1 Edit Email Notification Condition Screen

Set conditions to receive a notification email.
Notification emails are sent from "no_reply_cnc@iqcare-remote4u.com". When the email address receiving notifications is set to reject emails from the domain, set the email to receive emails from the domain "@iqcare-remote4u.com".

Edit email notification condition screen (for PC screen)

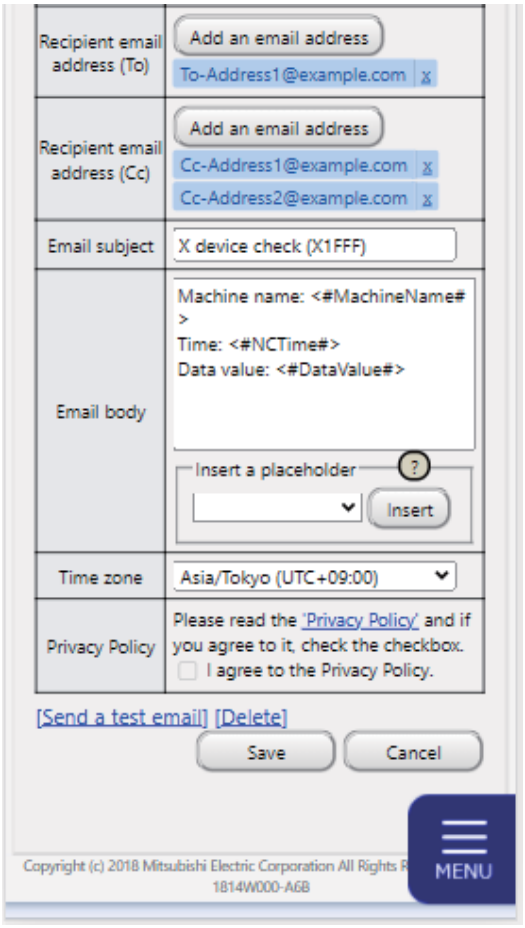


Edit email notification condition screen (for tablet PC or smartphone screen)



Continue

Continued



Display items

No.	Item	Specifications
(1)	ON/OFF	Turn ON/OFF email notification conditions. When turned OFF, an email notification is not sent when conditions are satisfied. After changing from OFF to ON, an email notification will be sent when a status not satisfying conditions changes to a status that satisfies conditions.
(2)	Notification condition	Select the notification condition.
		Notification condition: Timing to send an email
		Device: Set the notification conditions to the device. Sends an email based on the contents input in "(5) Data name", "(11) Operator", and "(13) Criterion value".
		Common variable: Set the notification conditions to common variable. Sends an email based on the contents input in "(5) Data name", "(11) Operator", and "(13) Criterion value".
		Emergency stop: When an emergency stop occurs due to one of the following reasons - Built-in PLC Stop state (STOP) - External PLC Communication error (XTEN) - External PLC Not ready(WAIT) - External PLC Communication error (LINK) - Built-in PLC Software emergency stop output device YC2C is "1". (PLC) - Power-down processing error emergency stop [C80] (IPWD) - LINE - User PLC Illegal codes exist. (LAD) - PLC high-speed processing error (PC-H) - Spindle drive unit emergency stop output (SPIN) - Servo drive unit emergency stop output (SRV)
		Machining completion: Does not send an email when the current number of the machined workpieces which is designated in "(8) Axis/part system" is renewed or is "0".
(3)	Notification condition name	Notification condition name can be changed.
(4)	Data name help icon	Clicking this icon displays help information.
(5)	Data name	Designate the target data of an email notification to match the condition selected in "(2) Notification condition". Device: Device number Common variable: Common variable number (# is not required) Refer to (*1) for the setting range.
(6)	Data format	Select the data format designated in "(5) Data name". (This is input automatically) For a 16/32-bit device, select from the following to match data stored in the device. When the negative values are not stored: Number (HEX_unsigned integer) When the negative values are stored: Number (HEX_signed integer) When each bit has different meaning: BIT (HEX)
(7)	Axis/part system help icon	Clicking this icon displays help information.
(8)	Axis/part system	Designate the target axis/part system to send an email. Select "Unspecified" when all axes and part systems are the target.
(9)	Bit position help icon	Clicking this icon displays help information.
(10)	Bit position	Designate the target bit of the notification. The end bit is "0". This must be input when "(6) Data format" is "BIT (HEX)" for a 16/32-bit device.
(11)	Operator	Designate the detailed judgment conditions to send an email.
		Criterion value: Timing to sending an email
		Equal to: When equal to the judgment value
		Not equal to: When the value differs from the judgment value
		Greater than or equal to: When equal to the judgment value or more
		Less than or equal to: When equal to the judgment value or less
		Greater than: When exceeding the judgment value
		Less than: When below the judgment value
		Contains: When including the judgment characters
		Does not contain: When not including the judgment characters
(12)	Criterion value help icon	Clicking this icon displays help information.

<table>
<tr><th>No.</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(13)</td><td>Criterion value</td><td>Enter the judgment value of "(11) Operator".
Use decimal number to enter numerical values.</td></tr>
<tr><td>(14)</td><td>Recipient email address (To) button</td><td>Add an email address to receive an email.
Only one address can be registered. (*2)</td></tr>
<tr><td>(15)</td><td>Recipient email address (To)</td><td>An email address to receive an email is displayed.
Clicking "x" deletes the address.</td></tr>
<tr><td>(16)</td><td>Recipient email address (Cc) button</td><td>Add the email addresses other than the receiver to receive an email.
Maximum 8 addresses can be registered. (*2)</td></tr>
<tr><td>(17)</td><td>Recipient email address (Cc)</td><td>Email addresses to receive a copy of an email are displayed in a list.
Clicking "x" deletes the address.</td></tr>
<tr><td>(18)</td><td>Email subject</td><td>Enter the title of an email.</td></tr>
<tr><td>(19)</td><td>Email body</td><td>Enter the contents of an email.
The following placeholders are replaced when receiving an email.
<table>
<tr><th>Placeholder</th><th>Replacement contents</th></tr>
<tr><td><#MachineName#></td><td>Free input item 1 on "Device" screen + (NC serial No.)
(Example) Machine01(ABCD0123)
When free input item 1 is a blank, the NC serial No. is displayed.</td></tr>
<tr><td><#NCTime#></td><td>A date and time that satisfies the notification conditions.
This is the date and time of the area set in "(23) Time zone". This is not the date and time of the place where the NC is installed or the date and time set in the NC.</td></tr>
<tr><td><#DataValue#></td><td>Data value to satisfy the notification conditions</td></tr>
</table></td></tr>
<tr><td>(20)</td><td>Insert a placeholder icon</td><td>Clicking this icon displays help information.</td></tr>
<tr><td>(21)</td><td>Selection of a placeholder</td><td>Select the placeholder to input in an email.
<table>
<tr><th>Item</th><th>Placefolder to input</th></tr>
<tr><td>Machine name</td><td><#MachineName#></td></tr>
<tr><td>Time</td><td><#NCTime#></td></tr>
<tr><td>Data value</td><td><#DataValue#></td></tr>
</table></td></tr>
<tr><td>(22)</td><td>Insert a placeholder button</td><td>Inputs the selected placeholder in an email.</td></tr>
<tr><td>(23)</td><td>Time zone</td><td>Set the time zone for the date and time to be displayed in the placeholder <#NCTime#> entered in "(19) Email body".
The representative area based on the time zone of the device being used is set as the default value. Change the area as required.</td></tr>
<tr><td>(24)</td><td>Privacy Policy link</td><td>Clicking the link displays the sentences regarding handling of personal information.</td></tr>
<tr><td>(25)</td><td>Privacy Policy agreement check box</td><td>Check the check box to agree to the privacy policy. When unchecked, the notification condition cannot be saved.
This can be checked after closing the sentences displayed by clicking "(24) Privacy Policy link".</td></tr>
<tr><td>(26)</td><td>Send a test email link</td><td>A test email send confirmation message is displayed. Click the OK button to send a test email. This email is sent to email addresses of "Recipient email address (To)" and "Recipient email address (Cc)". Contents of an email are as below.
<table>
<tr><th>Item</th><th>Details</th></tr>
<tr><td>Email subject</td><td>[Test email (iQ Care Remote4U)] <Input Email subject></td></tr>
<tr><td>Email body</td><td>This is a test email sent from the email notification setting screen of the (iQ Care Remote4U) dashboard screen.
<Input Email body></td></tr>
</table></td></tr>
<tr><td>(27)</td><td>Delete link</td><td>A delete confirmation message is displayed. Click the OK button to delete the notification conditions.</td></tr>
<tr><td>(28)</td><td>Save button</td><td>A save confirmation message is displayed. Click the OK button to save the notification conditions. When there is a defect in the data contents, an error message is displayed at the top of the screen and the data is not saved. Save the data again after removing an error.</td></tr>
<tr><td>(29)</td><td>Cancel button</td><td>A cancel confirmation message is displayed. Click the OK button to cancel the editing contents.</td></tr>
</table>

(*1) The setting range of data name is as below.

Notification condition	Setting range		
	M8/M8V	C80	M7/M7V
Device	X0 to X1FFF	X0 to X1FFF	X0 to X1FFF
	Y0 to Y1FFF	Y0 to Y1FFF	Y0 to Y1FFF
	D0 to D4095	D0 to D8191	D0 to D2047
	R0 to R32767	R0 to R32767	R0 to R13311
	M0 to M61439	M0 to M61439	M0 to M10239
	F0 to F2047	F0 to F2047	F0 to F1023
	L0 to L1023	L0 to L1023	L0 to L511
Common variable	100 to 199, 400 to 999		

(*2) An error does not occur when an email address which does not exist is set. Conduct an email reception test by clicking "(26) Send a test email".
As an error does not occur when an email address is disabled after setting the notification, check if the set email address can still be used when you stop receiving emails.

(*3) When availability of this function changes from "unavailable" to "available" due to a change of the license type, the mail notification conditions set in the past will continue. The mails from up to one day before this function became "available" that satisfy conditions will be sent.

4.3.7.5.2 Notification Condition Setting Method

The following shows the setting methods of the notification condition. The following are the setting procedures to receive an email.

(1) When X4 device is ON

Item	Details
Notification condition	Select "Device".
Data name	Enter "X4".
Data format	This is selected automatically.
Axis/part system	This is not necessary.
Bit position	This is not necessary.
Operator	Select "Equal to" to receive an email when X4 device is ON (when bit is "1").
Criterion value	Select "1" to receive an email when X4 device is ON (when bit is "1").

(2) When D200 device is "100" or below

Item	Details
Notification condition	Select "Device".
Data name	Enter "D200".
Data format	Select "Number (HEX_unsigned integer)" when only positive values are entered in the D200 device with the NC. Select "Number (HEX_signed integer)" when negative values are entered.
Axis/part system	This is not necessary.
Bit position	This is not necessary.
Operator	Select "Less than or equal to" to receive an email when the D200 device is "100" or below.
Criterion value	Select "100" to receive an email when the D200 device is "100" or below.

(3) When bit3 of D300 device is OFF

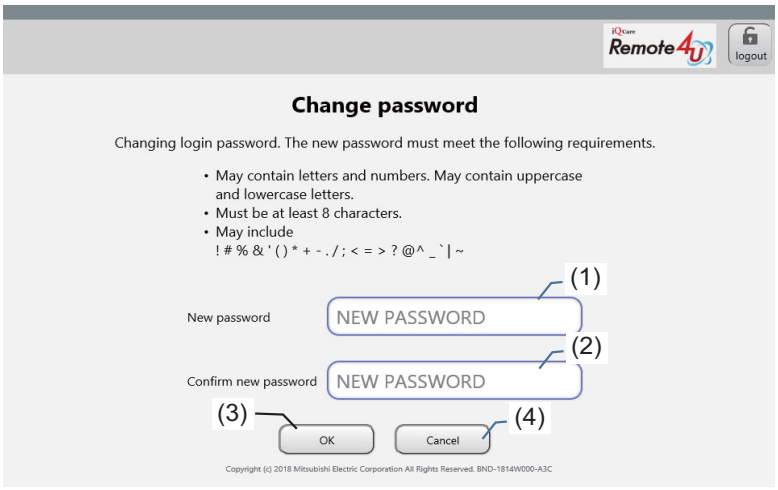
Item	Details
Notification condition	Select "Device".
Data name	Enter "D300".
Data format	Select "BIT (HEX)".
Axis/part system	This is not necessary.
Bit position	Enter "3" because bit3 is the target.
Operator	Select "Equal to" to receive an email when bit3 is OFF (when bit is "0").
Criterion value	Enter "0" to receive an email when bit3 is OFF (when bit is "0").

(4) When common variable #123 of the 3rd part system is "45.6" or more.

Item	Details
Notification condition	Select "Common variable".
Data name	Enter "123".
Data format	This is selected automatically.
Axis/part system	Enter "3" because the 3rd part system is the target.
Bit position	This is not necessary.
Operator	Select "Greater than" to receive an email when common variable is "45.6" or bigger.
Criterion value	Enter "45.6" to receive an email when common variable is "45.6" or bigger.

4.3.8 Password Change Screen

To change the password, enter a new password twice and press the [OK] button.



Display items

No.	Item	Specifications
(1)	New password (*1)	Enter a new password. When you press the Enter key, the cursor moves to the field of "Confirm new password".
(2)	Confirm new password (*1)	Enter a new password.
(3)	OK button	Changes the current password to the new one.
(4)	Cancel button	Transits the previous screen ("Device" screen).

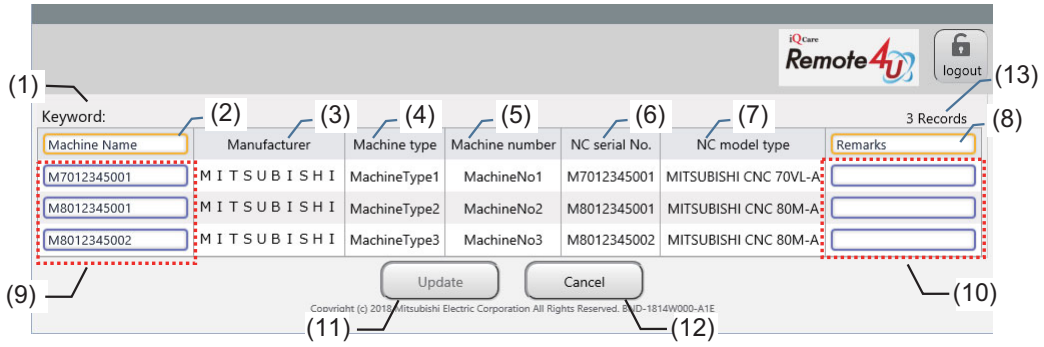
(*1) After the [OK] button is pressed, the new password is checked for the items described in the following table. Password check is performed from (1) in sequence, the last item which matched the new password will be output as the check result.

Specifications for input password check

No.	Conditions	Results
(1)	No password has been input.	The message "New password field is mandatory." appears on the dialog box.
(2)	No password has been input in the "Confirm new password" field.	The message "Confirm new password field is mandatory." appears on the dialog box.
(3)	The different password than that of the "New password" field has been input in in the "Confirm new password" field.	The message "New password and Confirm new password do not match." appears on the dialog box.
(4)	The new password consists of 7 characters or less, or 21 characters or more.	The message "Please follow the password rules." appears on the dialog box.
(5)	No mixture of upper- or lower-case alphabetic characters and numeric characters in the password	The message "Please follow the password rules." appears on the dialog box.
(6)	When any character other than half-width alphanumeric character or usable mark is used for the password ■ Usable marks ! # % & ' ( ) * + - . / ; < = > ? @^ _ ` | ~	The message "Please follow the password rules." appears on the dialog box.
(7)	Changing the password is succeeded.	The password is changed, and screen transits "Device" screen.

4.3.9 Machine Information Edit Screen

On this screen, you can edit some of the information of "4.3.2 Device Screen".
Display items of this screen are the same as "4.3.2 Device Screen".
You can edit some of items in the following table. Items (2) and (8) as titles, and corresponding items (9) and (10) as contents of them are editable.
Only the user who is authorized to edit the machine information by his/her account setting can display this screen.



Display items

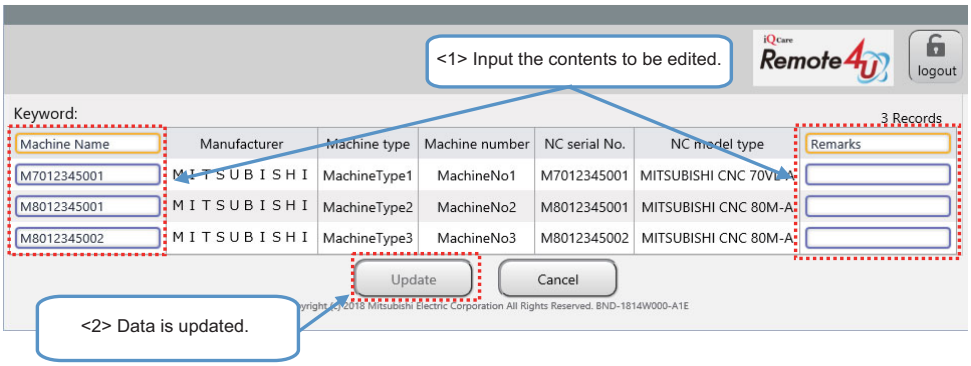
No.	Item	Specifications
(1)	Search keyword	Displays the search keyword for executed search on "Device" screen.
(2)	Free input Item 1 (Title)	Register a title for free input item 1 Default setting: Machine Name Up to 32 characters
(3)	Manufacturer (*1)	Displays the name of the manufacturer.
(4)	Machine type (*1)	Displays the machine type.
(5)	Machine number (*1)	Displays the machine number.
(6)	NC serial No. (*1)	Displays the NC serial No.
(7)	NC model type (*1)	Displays the NC model type.
(8)	Free input Item 2 (Title)	Register a title for free input item 2 Default setting: Remarks Up to 32 characters
(9)	Free input Item 1 (Contents)	Register contents for free input item 1 Default setting: Machine type name Up to 32 characters
(10)	Free input Item 2 (Contents)	Register contents for free input item 2 Default setting: Blank Up to 64 characters
(11)	Update button	The update confirmation dialog is displayed by pressing the [Update] button. Press the [Cancel] button to return to the screen before the [Update] button was pressed. Press the [OK] button to update the input values for the fields of "Machine Name" and "Remarks". After the update is completed, the original screen which calls machine information edit screen appears.
(12)	Cancel button	When the contents on the screen are updated, a cancel confirmation dialog appears. Press [OK] button to return to the original screen which calls machine information edit screen.
(13)	Records	Displays the number of devices currently displayed. When a search was performed on "Device" screen, the number of searched devices is displayed.

(*1) Since texts in a cell is not wrapped, scroll in the horizontal direction to display the whole texts.

4.3.9.1 How to Edit the Machine Information

(1) Edit and update the information

As shown in the figure below, input the contents to be edited and then press the [Update] button.
When the [Update] button is pressed, the message "Would you like to save your updates?" appears on the dialog box. When the [OK] button on the dialog box is pressed, edited contents are saved and the screen transits the "Device" screen.
Note that the [Update] button is disabled if no change is made.
When a space character has been input at the beginning or at the end of the strings on the edit screen, it will be removed to register.



(2) Cancel the input contents

When the [Cancel] button is pressed on the edit screen, the message "Are you sure to discard the editing data?" appears on the dialog box. When the [OK] button on the dialog box is pressed, edited contents are discarded and the screen transits the "Device" screen.

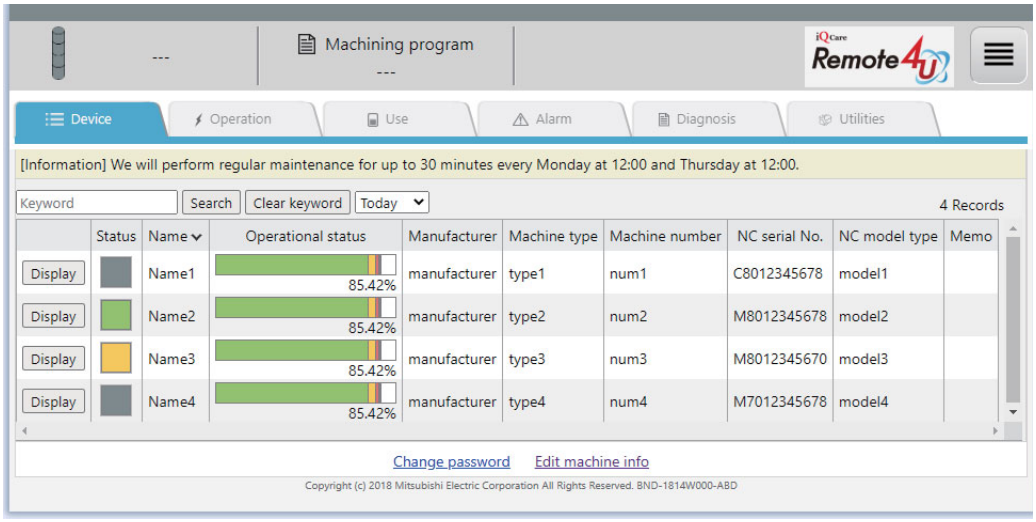
(3) Return to the "Device" screen

To return to the "Device" screen from the machine information edit screen, either the [Update] button or the [Cancel] button needs to be pressed.
Operations using a keyboard or a mouse as listed below, which correspond to "Back" operation of the browser, are disabled.

- "Back" button of the browser
- Contextual menu "Back" of the browser
- "Back Space" key of the keyboard
- Pressing "Alt" key and "<-" key simultaneously on the keyboard
- Side button of the mouse

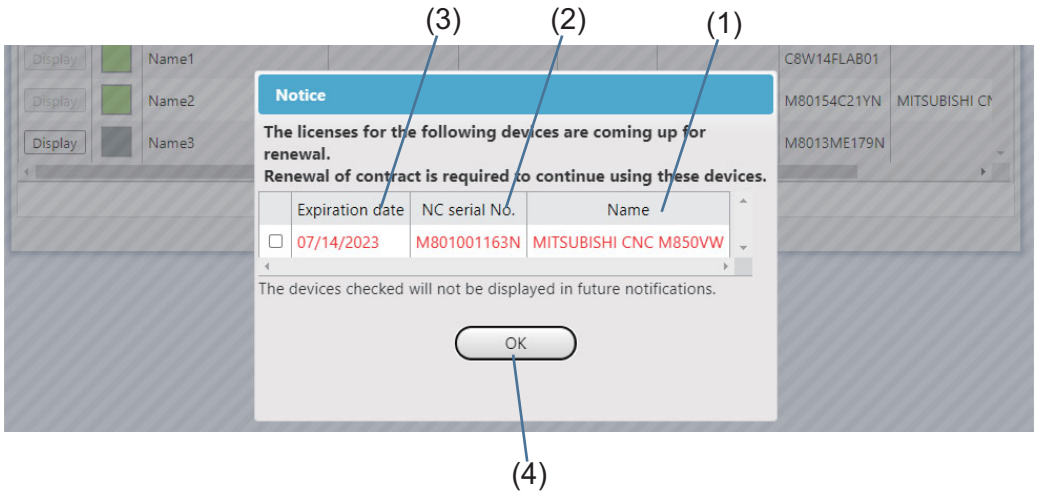
4.3.10 Information Display

Information is displayed on the "Device" screen.



4.3.11 License expiration information

When the license expiration date approaches, the following information is displayed after log-in.
The information is displayed only when you log in with the user's account.



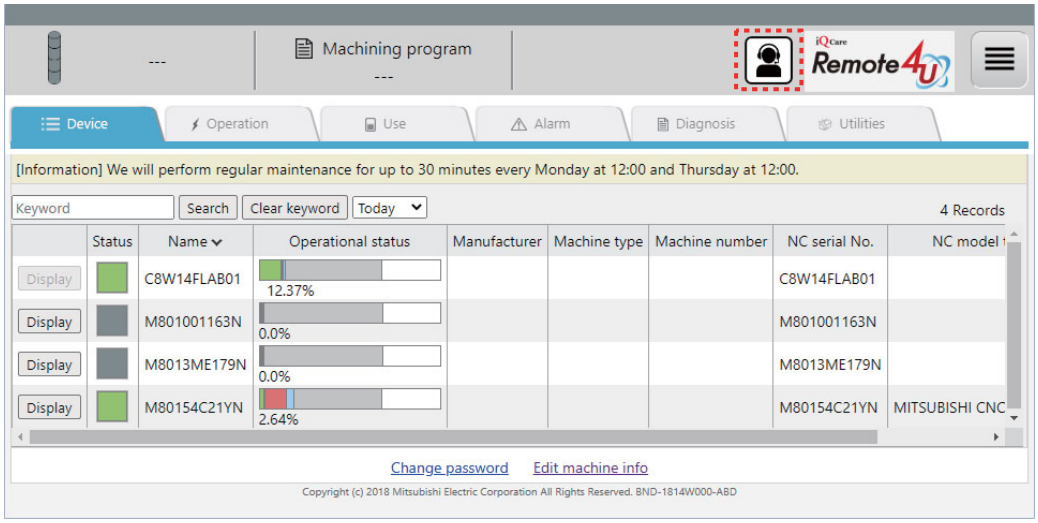
Display item

No.	Item	Specification
(1)	Name (free input item 1)	Displays contents of the machine name (free input item 1).
(2)	NC serial No.	Displays the NC serial No.
(3)	Expiration date	Displays the license expiration date.
(4)	OK button	Closes the information. The information will not be displayed by checking the devices for which the information is no longer required. When the license is updated, the information will be displayed again when the next expiration date approaches.

4.3.12 Service call function

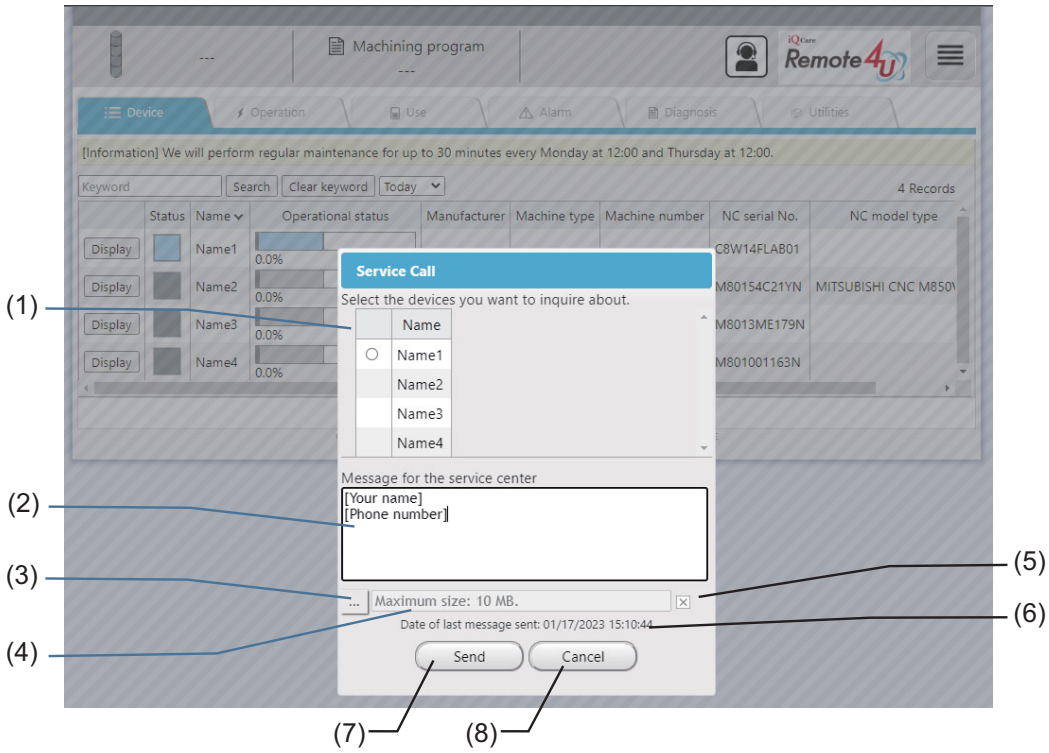
You can send an email in which the return contact information and error contents are described to our service center using this function so that you can receive support from our service center.
Whether this function is available or not depends on the license type of the device. When this function is unavailable for all the devices, the service call button is not displayed.

(1) Service call button
The service call button is displayed in the header part.
When the service call button is selected, the service call dialog box appears.



(2) Service call dialog box

Enter the email contents and click the [Send] button to send the email to our service center.



Display item

No.	Item	Specification
(1)	Devices you want to inquire about	Select a device to be inquired with a radio button. The radio buttons are not displayed for devices for which the service call is not available depending on the license type.
(2)	Message for the service center	Describe the return contact information and error contents.
(3)	Attachment file selection button	Select a file to attach to the email.
(4)	Attachment file name	Displays the file name selected by the attachment file selection button.
(5)	Attachment file clear button	Cancels selection of the attachment file.
(6)	Last sent date and time	Displays the date and time when the email was successfully sent last time.
(7)	Send button	Sends an email with the entered contents to our service center.
(8)	Cancel button	Closes the service call screen.

4.4 Restrictions

(1) "---" is displayed for each item on the screen before the data acquisition from the NC, or when the data acquisition is unsuccessful for devices that are not supported, etc. A blank field is displayed when the value is not set to the NC.

(2) The "Sampling Chart" function cannot be used for M7 Series.

(3) PLC alarms which currently occur are not displayed on M7 Series. (However, they are displayed on the alarm history.)

(4) The year of the alarm occurrence is displayed in accordance with the setting of the RGU.

(5) Depending on the browser using, some interfaces of the application (e.g. calendar) may be displayed in the same language as your PC.

(6) The utilization rate setting is saved in each browser used to make the setting. When using a browser different from the browser which was used for the setting, the setting is initialized.

(7) The scheduled operation time used in the utilization rate calculation is calculated by specifying period on the operation screen as shown below.

Specified period	Denominator
One day	Scheduled operation time
Weekly	Scheduled operation time × 7
Monthly	Scheduled operation time × days in the specified month
3 months	Scheduled operation time × total sum of days in the past three months prior to the specified month
6 months	Scheduled operation time × total sum of days in the past six months prior to the specified month
Any period	Scheduled operation time × days in the specified period (maximum seven days)

(8) Changing to another screen while downloading a file in the NC file data screen of the utilities screen cancels the downloading process.

(9) In the NC file data screen of the utilities screen, when data in the target NC is protected, the message "Failed to get the file" is displayed, and the file cannot be acquired.

4.5 Message Outputs

4.5.1 Output of Messages at the Top of the Browser

This section explains messages displayed on the remote service screen.

The messages appear at the top of the browser (where the alarm messages appear).

No.	Item	Details
1	Indication	Communication error. Failed to connect to the server.
	Condition to be displayed	This message is displayed when communication with the web server failed (data acquisition failed).
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.
2	Indication	A server error has occurred. You will be logged out.
	Condition to be displayed	This message is displayed when a time-out occurs after you logged in the system.
	Remedy	The server side connection may be incorrect. Take some time, and operate it again.
3	Indication	Not available because private browsing is ON. Please turn off private browsing.
	Condition to be displayed	This message is displayed when the the private browsing function of iPhone, etc., is ON.
	Remedy	Turn OFF the private browsing function when you use the remote service.

4.5.2 Message Outputs on the "Utilities" Screen

This section explains messages displayed while operating on the "Utilities" screen.

No.	Item	Details
1	Indication	Please enter a date after the target date (start) for the target date (end).
	Condition to be displayed	When a date before the target date (start) was input for the target date (end)
	Remedy	Please enter a date after the target date (start) for the target date (end).
2	Indication	Please enter the target period within 7 days.
	Condition to be displayed	When the period between the the target date (start) and the target date (end) exceeds 7 days
	Remedy	Input the period between the the target date (start) and the target date (end) within 7 days.
3	Indication	Please enter the target period within 186 days (six months).
	Condition to be displayed	When the period between the the target date (start) and the target date (end) exceeds 186 days
	Remedy	Input the period between the the target date (start) and the target date (end) within 186 days.
4	Indication	There is no operating status data for the target period.
	Condition to be displayed	When there is no operating status data for the target period
	Remedy	Designate another date.
5	Indication	There is no machining result list data for the target date.
	Condition to be displayed	When there is no machining result list data for the target date
	Remedy	Designate another date.
6	Indication	Failed to get operation status data. Try again.
	Condition to be displayed	When an error occurs during data download (The data of "DailyOperationDetail" or "MonthlyOperationTotal")
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.
7	Indication	Failed to get the machining result list data Try again.
	Condition to be displayed	When an error occurs during data download (The data of "MachiningResultList")
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.

No.	Item	Details
8	Indication	Failed to get alarm history. Try again.
	Condition to be displayed	When an error occurs during the alarm data acquisition
	Remedy	There might be some malfunctions in the server. Take some time, and operate it again.
9	Indication	Failed to get key history. Try again.
	Condition to be displayed	When an error occurs during the key history data acquisition
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.
10	Indication	Failed to get the file.
	Condition to be displayed	When an error occurs while getting the file from the NC.
	Remedy	The connection of the NC and the RGU might be incorrect, or the data might be protected. - Check the cable connections of the specified devices. - Check that the data has no protection settings. The file cannot be acquired when these settings are made.
11	Indication	There is no file on the NC.
	Condition to be displayed	When the specified file does not exist on the target NC, or the file is 0 bytes.
	Remedy	Check if the specified file exists on the NC or not.
12	Indication	Communication error (RGU) occurred.
	Condition to be displayed	When an error occurs while sending files to the cloud server.
	Remedy	The connection of the RGU and the cloud server might be incorrect. Check the cable connections of the specified devices, take some time, and operate it again.
13	Indication	Communication error (client) occurred.
	Condition to be displayed	When an error occurs while getting files from the cloud server.
	Remedy	The connection with the server might be incorrect. Check the communication environment of the PC being used. Take some time, and operate it again.
14	Indication	Connection timed out.
	Condition to be displayed	When there is no response from the server for a fixed period of time.
	Remedy	The connection with the server might be incorrect. Check the communication environment of the PC being used. Take some time, and operate it again.
15	Indication	Since the target NC is being processed, data can not be acquired. Please use it again after a while.
	Condition to be displayed	When multiple file acquisition requests are made to the target NC simultaneously.
	Remedy	Use the utilities screen again to acquire the data after leaving it for a while.
16	Indication	Please set the date and time.
	Condition to be displayed	When the redraw button is pressed before setting the date/time
	Remedy	Press the date and time button and set the date/time of data to acquire on the date and time dialog.
17	Indication	Please specify a date/time earlier than the current date/time.
	Condition to be displayed	When the set date and time is later than the current date and time.
	Remedy	- Press the date and time button and set the date/time of the data to acquire on the date and time dialog again.
18	Indication	Failed to retrieve data.
	Condition to be displayed	When an error occurs while acquiring data or data does not exist
	Remedy	- Check the communication environment of the PC being used. - Check if data to be displayed is set.

No.	Item	Details
19	Indication	Failed to retrieve data. Please reconsider the settings.
	Condition to be displayed	When retrieval of data fails because the amount of data items is too large.
	Remedy	- Set a shorter interval for the "interval" setting on the date and time dialog. - Reduce the number of set diagnosis data items.
20	Indication	Some data has failed to be registered. Please try to register the failed data again.
	Condition to be displayed	When an error occurs during setting data.
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.
21	Indication	Failed to save the data. Please try again.
	Condition to be displayed	When an error occurs during adding or editing diagnosis data.
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.
22	Indication	Failed to delete the data. Please try again.
	Condition to be displayed	When an error occurs during deleting diagnosis data.
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.

4.5.3 Message Outputs on the Machine Information Edit Screen

This section explains messages displayed while operating on the machine information edit screen.

No.	Item	Details
1	Indication	Save failed.
	Condition to be displayed	When an error occurs during update of the data.
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.

4.5.4 Message Outputs on the Scheduled Operation Time Setting Dialog

This section explains messages displayed while operating on the scheduled operation time setting dialog.

No.	Item	Details
1	Indication	Please enter between 0:00 and 24:00.
	Condition to be displayed	When the setting time is 24:01 or longer when [OK] button is pressed.
	Remedy	Set the time within 0:00 to 24:00.

4.5.5 Message Outputs on the Alarm screen

This section explains messages displayed while operating on the Alarm screen.

No.	Item	Details
1	Indication	Could not acquire data. Please check the communication environment and refresh the screen.
	Condition to be displayed	When an error occurs while acquiring data from a server.
	Remedy	The connection with the server might be incorrect. Take some time, and operate it again.
2	Indication	There is no alarm history.
	Condition to be displayed	When an alarm history does not exist.
	Remedy	Remedy is not required.

4.5.6 Message Outputs on the "Device" Screen

This section explains messages displayed while operating on the "Device" screen.

No.	Item	Details
1	Indication	Please enter the target period within 7 days.
	Condition to be displayed	When [Custom] is selected for the specified period and the period between the the target date (start) and the target date (end) exceeds 7 days
	Remedy	Input the period between the the target date (start) and the target date (end) within 7 days.
2	Indication	Please enter a date after the target date (start) for the target date (end).
	Condition to be displayed	When a date before the target date (start) was input for the target date (end)
	Remedy	Please enter a date after the target date (start) for the target date (end).

4.6 Troubleshooting and FAQ

No.	Item	Details
1	Problem	The message like as "Access to the site is being denied" is displayed.
	Remedy	The wrong URL may have been input. In this case, input the correct URL.
2	Problem	Cannot log into the service.
	Remedy	The wrong user ID or password may have been input. In this case, input the correct information.
3	Problem	The message "Communication Error. Failed to connect to the server." is displayed.
	Remedy	Unexpected error may have occurred on the server. Wait for a while, or close the browser once, and restart the browser to access again.
4	Problem	Other common problems
	Remedy	Close the browser once, and restart the browser to access again. If the problem is not solved, close the browser once after clearing the cache. Then restart the browser to access again.
5	Problem	The message "Could not acquire data. Please check the communication environment and refresh the screen." is displayed.
	Remedy	Check the communication environment being used. If the error does not clear, check the setting values of the NC to confirm if the data can be acquired from the NC or not.

5

Appendix 1: EMC Installation Guidelines

For details of the drive section (servo/spindle drive unit), refer to the "EMC Installation Guidelines" of instruction manuals for each drive unit.

5.1 Introduction

EMC Directives became mandatory in EU (European Union) as of January 1, 1996. The subject products must have a CE mark attached indicating that the product complies with the Directives.
In United Kingdom, the subject products require the EMC Directives and will need to have a UKCA marking as of January 1, 2023.
As the NC unit is a component designed to control machine tools, it is believed that it is not a direct EMC Directives subject. However, we would like to introduce the following measure plans to back up EMC Directives compliance of the machine tool as the NC unit is a major component of the machine tools.

(1) Methods of installation in control/operation panel
(2) Methods of wiring cables to outside of panel
(3) Introduction of members for measures

Mitsubishi Electric is carrying out tests to confirm the compliance to the EMC Directives under the environment described in this manual. However, the level of the noise will differ according to the equipment type and layout, control panel structure and wiring lead-in, etc.
Thus, we ask that the final noise level be confirmed by the machine manufacturer.

5.2 EMC Directives

The EMC Directives largely regulate the following two items.
- Emission: Capacity to prevent output of interference noise that adversely affects external devices
- Immunity: Capacity to not malfunction due to interference noise from external source

The details of each level are classified in the table below.
It is assumed that the standards and test details required for a machine tool are the same as these.

Class	Name	Details	CE marking/UKCA marking	
Emission				
	Radiated noise	Restriction of electromagnetic noise radiated through the air	EN61000-6-4 (General industrial machine) EN61800-3 (Motor control unit)	EN55011 (CLASS: A)
	Conductive noise	Restriction of electromagnetic noise discharged from power supply line		
Immunity				
	Static electricity electrical discharge	(Example) Regulation of withstand level of static electricity electrical discharge accumulated in human body	EN61000-6-2 (General industrial machine) EN61800-3 (Motor control unit)	EN61000-4-2
	Radiated noise immunity	(Example) Simulation of immunity from digital wireless telephones		EN61000-4-3
	Burst immunity	(Example) Regulation of withstand level of noise from relay or plug and play		EN61000-4-4
	Conductive immunity	(Example) Regulation of withstand level of noise flowed from power supply wires, etc.		EN61000-4-6
	Power supply frequency magnetic field	(Example) Regulation of electromagnetic noise of 50/60Hz power supply frequency		EN61000-4-8
	Power supply dip (fluctuation)	(Example) Regulation of power voltage drop withstand level		EN61000-4-11
	Surge	(Example) Regulation of withstand level of noise caused by lightning		EN61000-4-5

5.3 EMC Measures

The following items mainly need to be taken into account as a countermeasure for EMC.

(1) Store the device in a sealed metal panel.
(2) Ground all conductors that are floating electrically. Decrease the impedance.
(3) Increase the distance between the drive line and signal wire.
(4) Use shielded cables for wiring outside of the panel.
(5) Install a noise filter.

Pay attention to the following items to suppress the noise radiated outside of the panel.

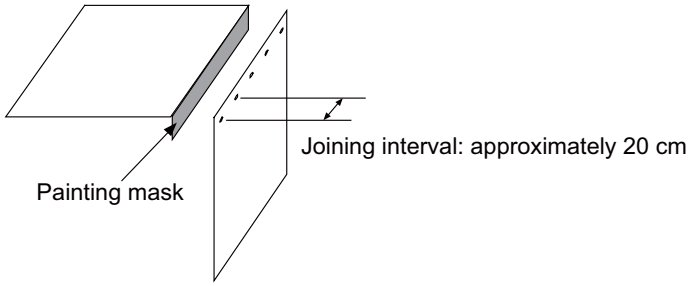
(1) Accurately ground the devices.
(2) Use shielded cables.
(3) Increase the electrical seal of the panel. Reduce the gaps and holes.

5.4 Panel Structure

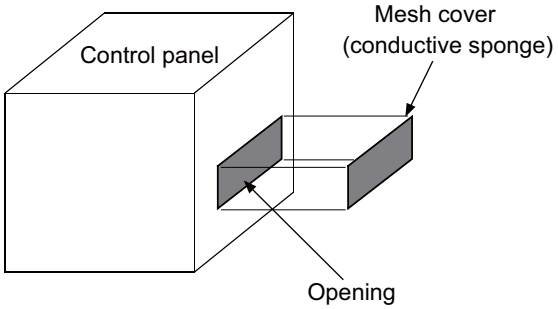
The design of the panel is a very important factor for the EMC measures. Take the following measures sufficiently into consideration when creating a panel.

5.4.1 Measures for Control Panel Body

(1) Use metal for all members configuring the panel.
(2) When joining the metal plate, treat the welded or contacting sections so that the impedance is reduced, and then fix with screws.



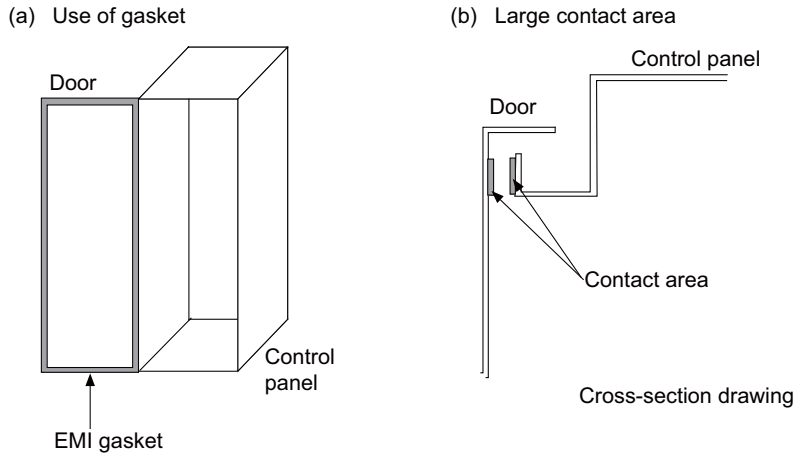
(3) Be careful not to bend the plate by such as screwing work. If there is a gap, noise leaks out from that part.
(4) Plate (nickel tin) the metal plate surface at the grounding plate, and connect the connection parts with the low impedance.
(5) If there is a large opening, such as ventilation holes, make sure to close the hole.



(Note 1) Using screws to fix the plates that have been painted is the same as an insulated state. Remove the paint and fix the screws.

5.4.2 Measures for Door

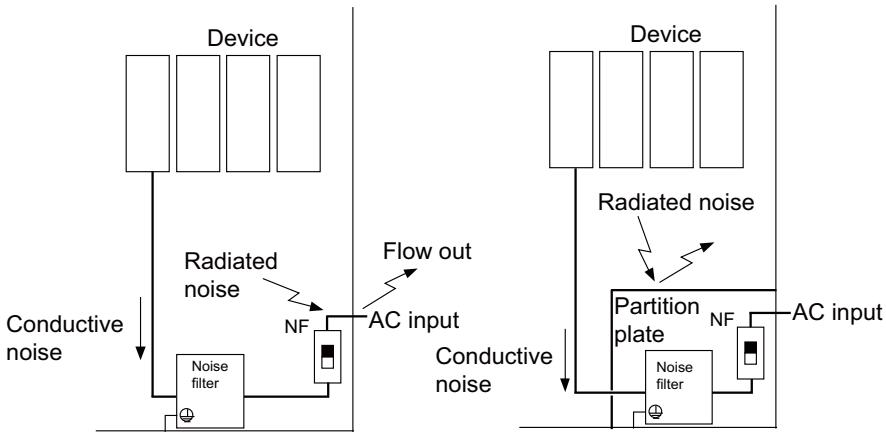
(1) Use metal for all members configuring the panel.
(2) When joining the door, use a gasket to lower the impedance of the contacting sections, or use a structure with a large contact area as shown below.
(3) The EMI gasket or conductive packing must contact the metal surface uniformly and at the correct position.



(Note 1) When not using a gasket, ground the control panel grounding with a grounding wire to lower the door's impedance.
(Note 2) Using screws to fix the plates that have been painted (attachment of packing) is the same as an insulated state. Remove the paint and fix the screws.

5.4.3 Measures for Power Supply

(1) Shield the power supply section and insert a filter to prevent the noise from flowing in or out. Selection of the noise filter capacity varies depending on the drive unit and devices to be used.



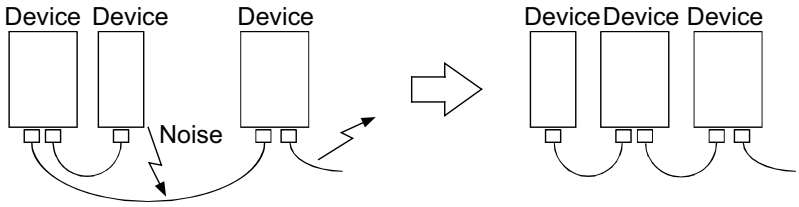
(Note 1) The conductive noise can be suppressed by inserting a noise filter, but the radiated noise will flow out.
(Note 2) The conductive and radiated noise can both be suppressed by adding a partition plate to the noise filter.

5.5 Measures for Wiring in Panel

Cables act as antennas to propagate unnecessary noise, and thus must be appropriately shielded and treated. The following measures must be sufficiently taken into consideration to install cables that carry out high-speed communication (J210/J303).

5.5.1 Precautions for Wiring in Panel

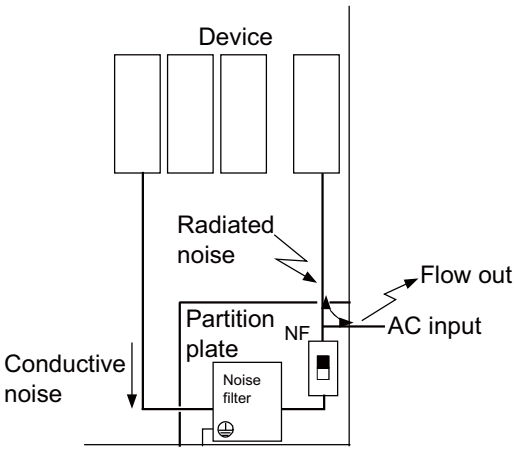
(1) If the cables are led unnecessarily in the panel, they easily pick up noise. Pay attention to the device layout and wire length so that the wiring length is as short as possible.



(2) Always connect the grounding wire to the FG terminal indicated on the device.

(3) Keep the distance between the drive line and encoder cable to the drive section motor as much as possible when wiring.

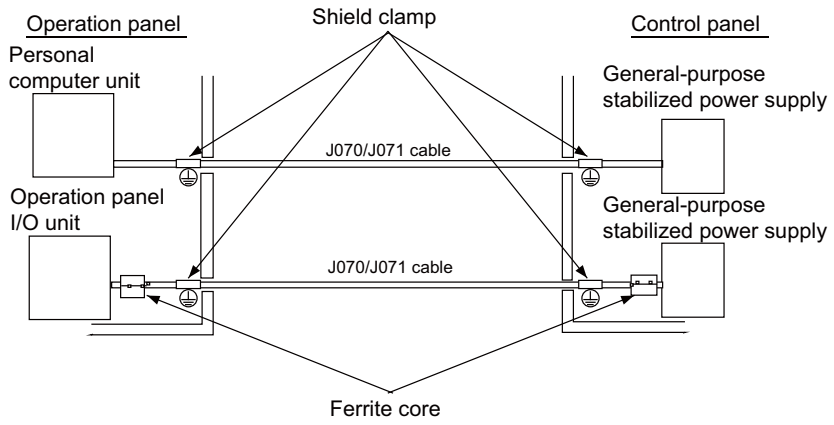
(4) Do not lead the power supply wire around the panel without using a filter.



5.5.2 Shield Treatment of Cables

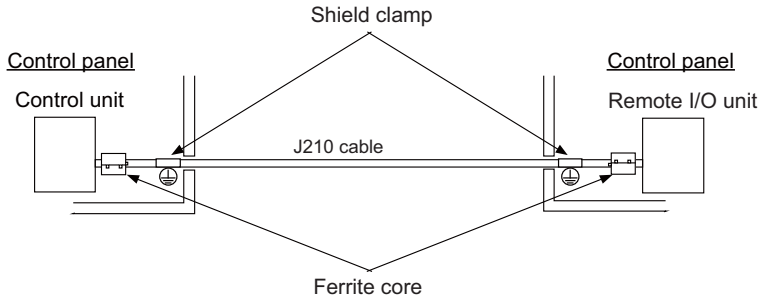
Use shielded cables for wiring outside the panel.
Use a shield clamp within 10 cm of the lead-out port from the panel. (Refer to "EMC Countermeasure Parts: Shield Clamp Fitting".)

(1) DC power supply cable [J070/J071 cable]



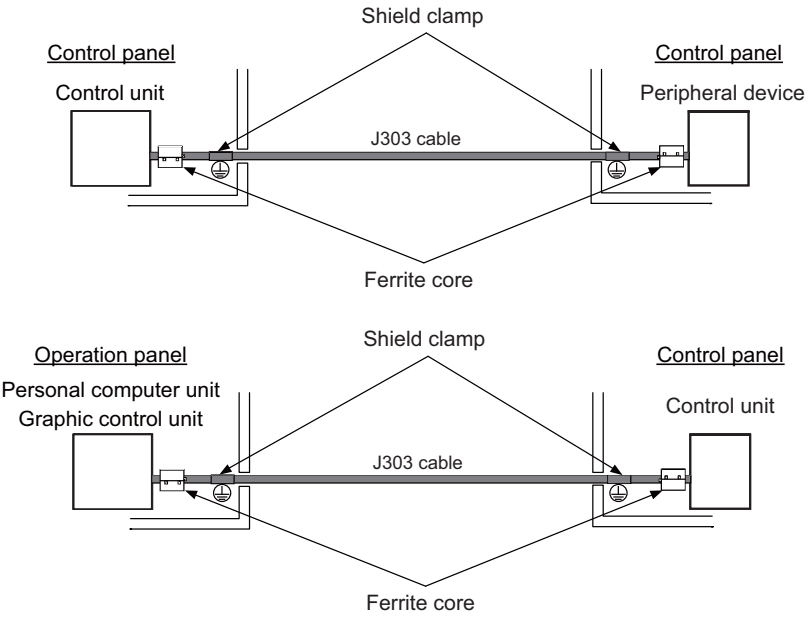
- Use a shield clamp within 10 cm from the panel's inlet/outlet.
- When using a ferrite core, install it on both ends of the connected units.
- Always install a ferrite core (refer to "EMC Countermeasure Parts: Ferrite Core") on the general-purpose stabilized power supply. The ferrite core may not be required depending on the selected power supply.

(2) Remote I/O cable [J210 cable]



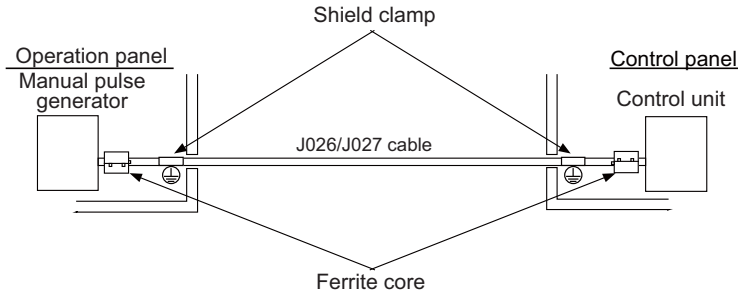
- Use a shield clamp within 10 cm from the panel's inlet/outlet.
- When using a ferrite core, install it on both ends of the connected units.

(3) LAN cable [J303 cable]



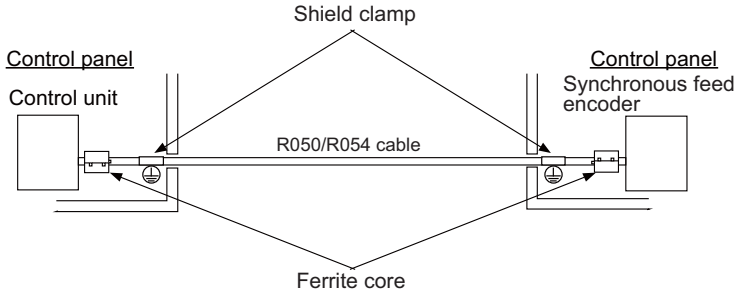
- Use a shielded cable. Use a shield clamp within 10 cm from the panel's inlet/outlet.
- When using a ferrite core, install it on both ends of the connected units.

(4) Manual pulse generator cable (5V) [J026/J027 cable]



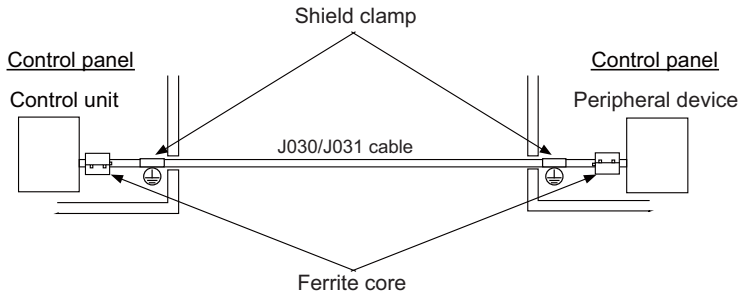
- Use a shield clamp within 10 cm from the panel's inlet/outlet.
- When using a ferrite core, install it on both ends of the connected units.

(5) Cable between synchronous feed encoder and control unit [R050/R054 cable]



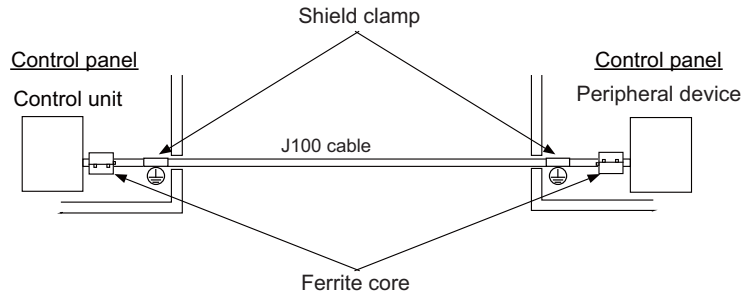
- Use a shield clamp within 10 cm from the panel's inlet/outlet.
- When using a ferrite core, install it on both ends of the connected units.

(6) RS-232C I/F cable [J030/J031 cable]



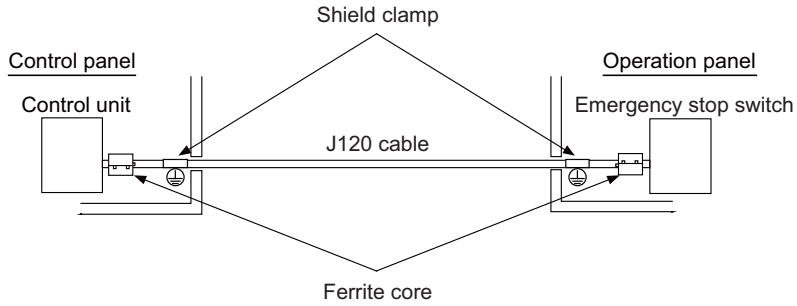
- Use a shield clamp within 10 cm from the panel's inlet/outlet.
- When using a ferrite core, install it on both ends of the connected units.

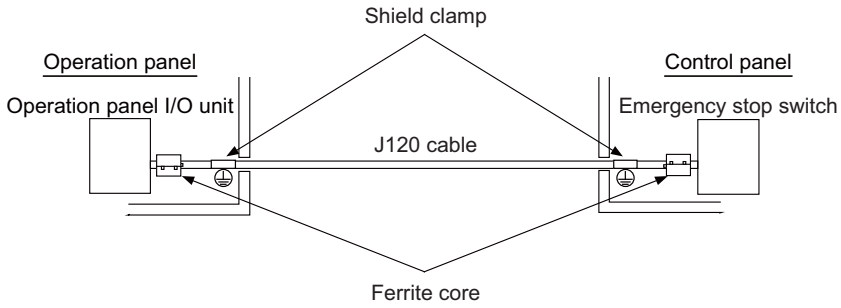
(7) SKIP input cable [J100 cable]



- Use a shield clamp within 10 cm from the panel's inlet/outlet.
- When using a ferrite core, install it on both ends of the connected units.

(8) Emergency stop cable [J120 cable]





- Use a shield clamp within 10 cm from the panel's inlet/outlet.
- When using a ferrite core, install it on both ends of the connected units.

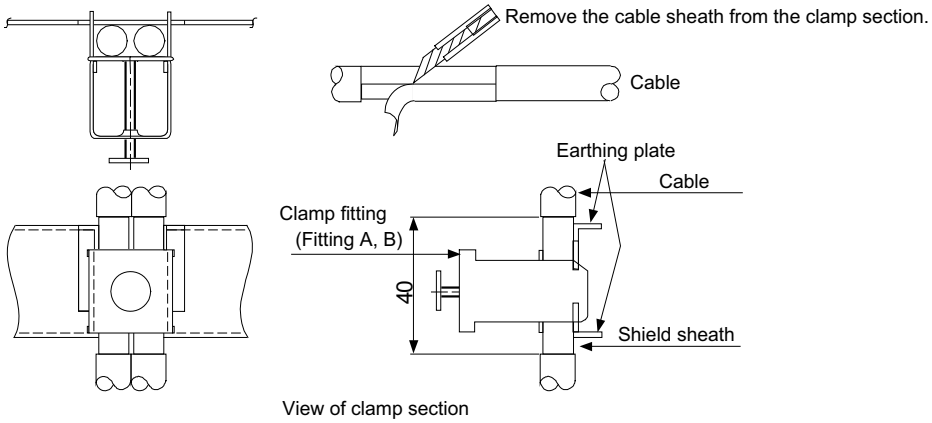
5.6 EMC Countermeasure Parts

5.6.1 Shield Clamp Fitting

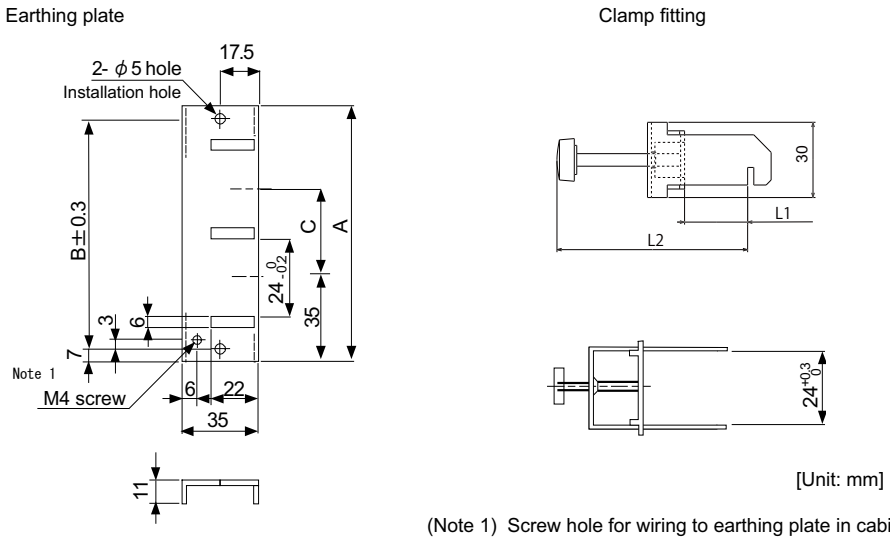
The effect can be improved by directly connecting the cable's shield sheath to the grounding plate as shown below.
Install the grounding plate near the outlet (within 10 cm) of each panel, and press against the grounding plate with the clamp fitting.
If the cables are thin, several can be bundled and clamped together.
To provide sufficient frame ground, install the grounding plate directly on the cabinet or connect with a grounding wire.

	A	B	C	Enclosed fittings
Ground Plate #D	100	86	30	Clamp fitting A×2
Ground Plate #E	70	56	-	Clamp fitting B×1

	L1 (maximum dimension when it is open)	L2 (reference dimension)
Clamp fitting A	25	(77)
Clamp fitting B	12	(54)



・Outline drawing

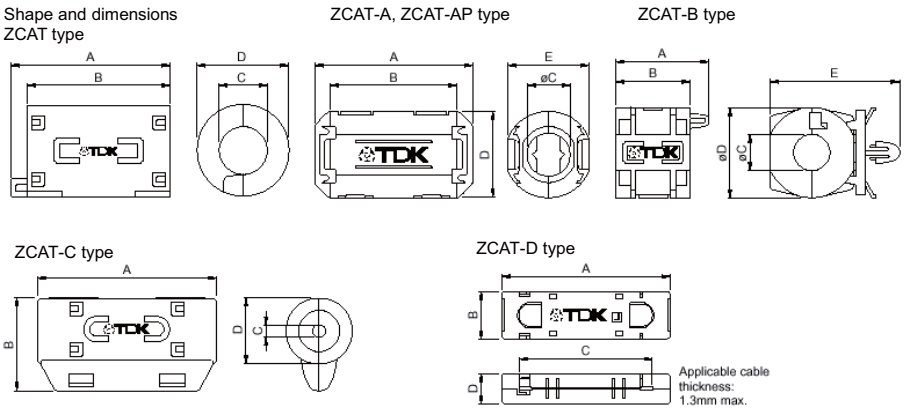


[Unit: mm]

(Note 1) Screw hole for wiring to earthing plate in cabinet.
(Note 2) The earthing plate thickness is 1.6mm.

5.6.2 Ferrite Core

The ferrite core is mounted integrally with the plastic case.
This can be installed with one touch without cutting the interface cable or power supply cable.
This ferrite core is effective for common mode noise, and countermeasures for noise can be taken without affecting the quality of the signal.



Recommended ferrite core: TDK ZCAT Series

Unit: mm

Part Name	A	B	φC	φD	E	Applicable cable outer diameter	Mass (g)
ZCAT1518-0730-M(-BK) (*1)	22±1	18±1	7±1	15±1	-	7 maximum	6
ZCAT1518-0730(BK) (*2)	22±1	18±1	7±1	15±1	-	7 maximum	6
ZCAT2017-0930-M(-BK)	21±1	17±1	9±1	20±1	-	9 maximum	11
ZCAT2032-0930-M(-BK) (*1)	36±1	32±1	9±1	19.5±1	-	9 maximum	22
ZCAT2032-0930(-BK) (*2)	36±1	32±1	9±1	19.5±1	-	9 maximum	22
ZCAT2132-1130-M(-BK) (*1)	36±1	32±1	11±1	20.5±1	-	11 maximum	22
ZCAT2132-1130(-BK) (*2)	36±1	32±1	11±1	20.5±1	-	11 maximum	22
ZCAT3035-1330-M(-BK) (*1)	39±1	34±1	13±1	30±1	-	13 maximum	63
ZCAT3035-1330(-BK) (*2)	39±1	34±1	13±1	30±1	-	13 maximum	63
ZCAT1525-0430AP-M(-BK)	25±1	20±1	4±1	15±1	11.5±1	2.5 to 4 (USB)	7
ZCAT1325-0530A-M(-BK) (*1)	25±1	20±1	5±1	12.8±1	11.2±1	3 to 5 (USB)	7
ZCAT1325-0530A(-BK)	25±1	20±1	5±1	12.8±1	11.2±1	3 to 5 (USB)	7
ZCAT1730-0730A-M(-BK)	30±1	23±1	7±1	16.5±1	15±1	4 to 7 (USB)	12
ZCAT2035-0930A-M(-BK) (*1)	35±1	28±1	9±1	19.5±1	17.4±1	6 to 9	22
ZCAT2035-0930A(-BK)	35±1	28±1	9±1	19.5±1	17.4±1	6 to 9	22
ZCAT2235-1030A-M(-BK)	35±1	28±1	10±1	21.5±1	20±1	8 to 10	27
ZCAT2436-1330A-M(-BK)	36±1	29±1	13±1	23.5±1	22±1	10 to 13	29
ZCAT2017-0930B-M(-BK)	21±1	17±1	9±1	20±1	28.5±1	9 maximum	12
ZCAT2749-0430C-M(-BK)	49±1	27±1	4.5±1	19.5±1	-	4.5 maximum	26
ZCAT4625-3430D(-BK)	45.5±1	24.5±1	34±1	12±1	-	26 For core flat cable	32
ZCAT4625-3430DT(-BK) (*3)	45.5±1	24.5±1	34±1	13±1	-	26 For core flat cable	32
ZCAT6819-5230D(-BK)	67.5±1	18.5±1	52±1	16±1	-	40 For core flat cable	58
ZCAT6819-5230DT(-BK) (*3)	67.5±1	18.5±1	52±1	17±1	-	40 For core flat cable	58

(*1) The M stamp is attached.
(*2) A fixing band is attached at shipment.
(*3) The core is fixed with double-sided tape. (The tape is enclosed with the part.)
●ZCAT-B type: Cabinet fixing type installation hole φ4.8 to 4.9 mm, plate thickness 0.5 to 2 mm
●ZCAT-AP, ZCAT-C type: Structure that prevents easy opening after case is closed.

5.6.3 Surge Absorber

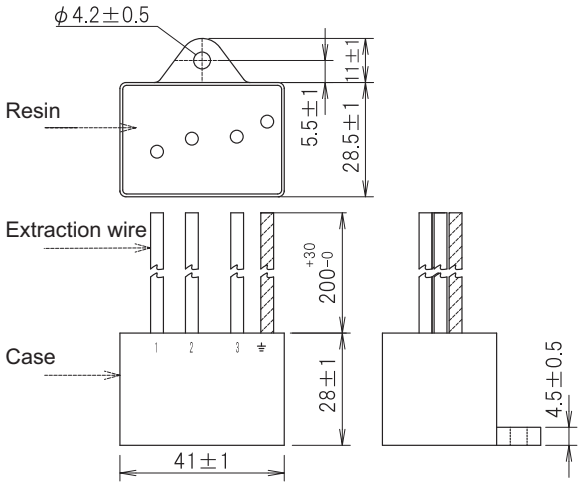
Make sure that the surge does not directly enter the AC line of the general-purpose stabilized power supply (user-prepared) supplying power to the control unit and DIO. Select a product equivalent to or higher than the following products for the surge absorber. Refer to the manufacturer catalog for detailed characteristics, outline and connection methods of the surge absorber.

(1) Part name: RSPD-250-U4

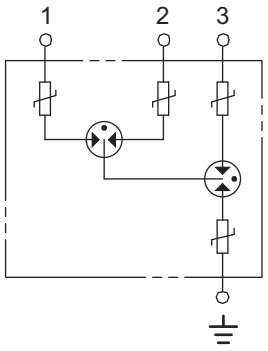
Manufacturer: OKAYA ELECTRIC INDUSTRIES

Rated Voltage (50/60Hz)	DC Breakdown voltage	Voltage protection level	Normal discharge current	Maximum discharge current	Surge current life
250VAC (Three phase)	700V±25%	1.3kV	8/20μs 2.5kA	8/20μs 5kA	Approximately 300 times 8/20μs-1kA

Outline drawing

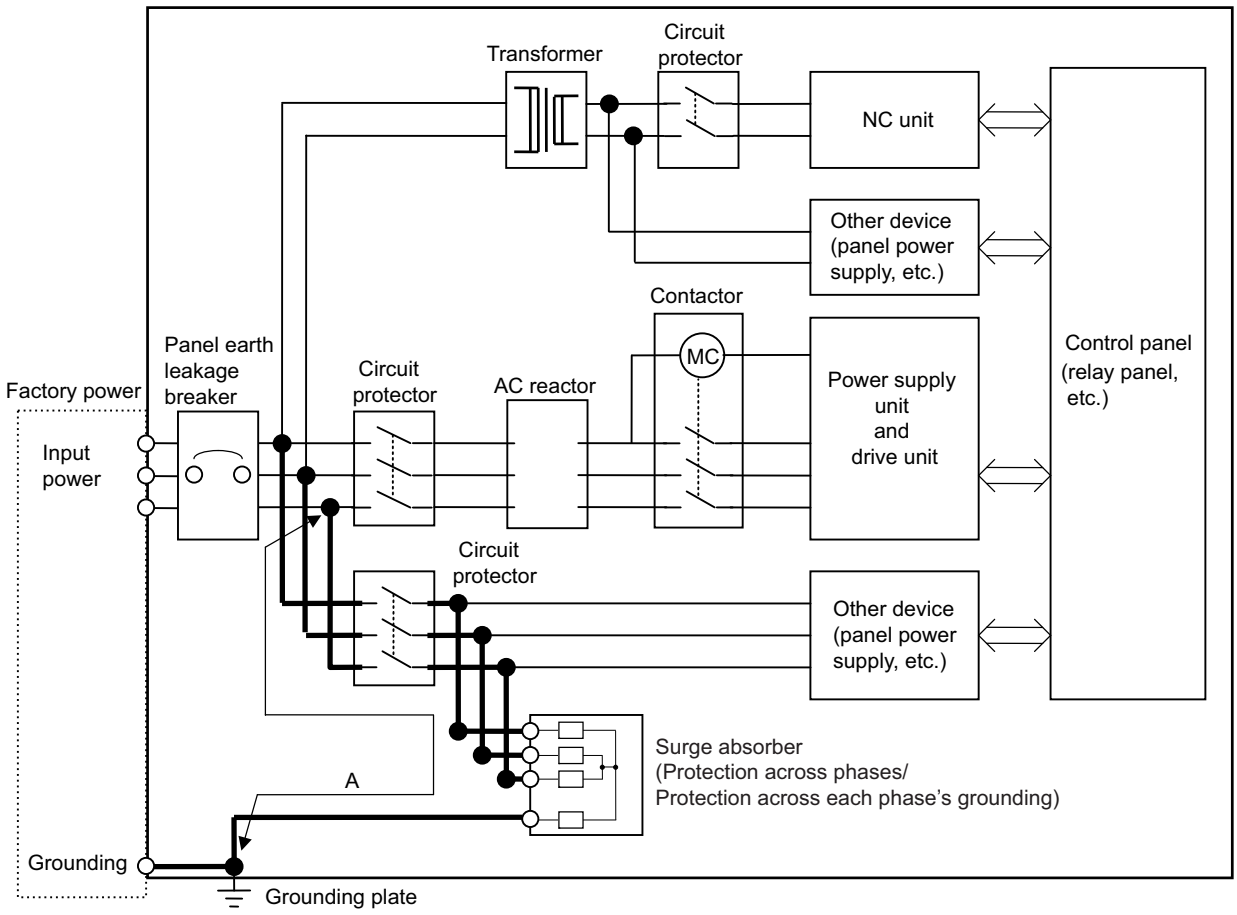


Circuit drawing



(2) Example of surge absorber installation

An example of installing the surge absorber in the machine control panel is shown below.
A short-circuit fault will occur in the surge absorber if a surge exceeding the tolerance is applied. Thus, install a circuit protection breaker in the stage before the surge absorber. Note that almost no current flows to the surge absorber during normal use. Therefore, a breaker installed as the circuit protection for another device can be used with the surge absorber.



Surge absorber installation

⚠ CAUTION

1. The wires from the surge absorber should be connected without extensions.

2. If the surge absorber cannot be installed just with the enclosed wires, keep the wiring length of A to 2m or less. If the wires are long, the surge absorber's performance may drop and inhibit protection of the devices in the panel.

3. Surge absorber to be selected varies depending on input power voltage.

4. Do not insert the surge absorber in the place with a lot of harmonic components.

5.6.4 Selection of Stabilized Power Supply

Consider the following characteristics when selecting the stabilized power supply (prepared by machine manufacturer). Use a power supply that complies with CE Marking or that follows the safety standards given below.

Stabilized power supply selection items

Item		Standard setting	Remarks
Output	Voltage fluctuation	±5%	±5% or less of 24VDC output
	Ripple noise	120 mV (maximum)	
	Spike noise	500 mV (maximum)	
Output current		——	Refer to the maximum current consumption of the unit in use and calculate.
Output holding time		20 ms (min)	Instantaneous power failure time (AC side)

Standards

Safety Standards	UL1950, CSA C22.2 No. 234 approved, IEC950 compliant
Noise Terminal Voltage	FCC Class A, VCCI Class A
High Harmonics Current Restrictions	IEC61000-3-2

6

Appendix 2: Precautions for Compliance to UL/c-UL Standards

(1) Selection of external 24VDC power supply unit (The unit shall be prepared by the machine tool builder.)

This NC system complies with the UL Standards on the condition that the stabilized power supply unit supplying 24VDC to each unit is a UL-approved part of SELV/limited power LPS or Class 2.

Use a UL-approved part for the stabilized power supply unit supplying 24VDC to each unit.

(2) Unit ambient temperature

This NC system complies with the UL Standards on the condition that the unit is used at a temperature less than the maximum ambient temperature given in "Environment Conditions" section. Make sure that the maximum ambient temperature of each unit does not exceed the temperature given in "Environment Conditions" section.

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Appendix 3: Parameter List

The list of parameters is as follows.

PR: Restart the NC

UR: Restart the remote service gateway unit

No.	BIT	Function group	Type for clearing error		Name	Description	Setting range
			PR	UR			
#0005		General	—	○	Network Setting		
	BIT0				DHCP valid	Enable DHCP function.	0: invalid 1: valid
	BIT2				G IP filter valid	Enable IP address filter for global network.	0: invalid 1: valid
	BIT3				G IP filter type	Select IP address filter type for global network. 0: Transmission - Permit access from the specified address. 1: Block - Deny access from the specified address.	0: transmission 1: block
	BIT4				L IP filter valid	Enable IP address filter for local network.	0: invalid 1: valid
	BIT5				L IP filter type	Select IP address filter type for local network. 0: Transmission - Permit access from the specified address. 1: Block - Deny access from the specified address.	0: transmission 1: block
#0402		General	○	○	SNTP time lag (h)	Time difference from UTC to current location (hour)	-23 to 23
#0403		General	○	○	SNTP time lag (m)	Time difference from UTC to current location (minute)	0 to 59
#0404		Remote service	—	○	Proxy port	Set the proxy server port number.	0 to 65535
#0407		General	○	○	SNTP Timeout	Set the timeout period for acquiring the time information from the SNTP server.	0 to 30 (sec) 0: 5 (sec) (Default value)
#1007		General	—	○	Global network IP address	Set the IP address for global network.	0.0.0.0 to 255.255.255.255
#1008		General	—	○	Global network sub-net mask	Set the sub-net mask for global network.	0.0.0.0 to 255.255.255.255
#1009		General	—	○	Default gateway	Set the default gateway.	0.0.0.0 to 255.255.255.255
#1010		General	—	○	Local network IP address	Set the IP address for local network.	0.0.0.0 to 255.255.255.255
#1011		General	—	○	Local network sub-net mask	Set the sub-net mask for local network.	0.0.0.0 to 255.255.255.255
#1012		General	—	—	Preferred DNS server	Set the IP address of preferred DNS server. (Note) When DHCP function is enabled, this parameter is disabled.	0.0.0.0 to 255.255.255.255 0.0.0.0: DNS disabled (Default value) 255.255.255.255 : DNS disabled
#1013		General	—	—	Alternate DNS server	Set the IP address of alternate DNS server. (Note) When DHCP function is enabled, this parameter is disabled.	0.0.0.0 to 255.255.255.255 0.0.0.0: Alternate DNS disabled (Default value) 255.255.255.255 : Alternate DNS disabled
#1015		General	—	○	IP address filter 1 range top (global)	Set the top IP address of IP address filter range 1 for global network.	0.0.0.0 to 255.255.255.255
#1016		General	—	○	IP address filter 1 range end (global)	Set the end IP address of IP address filter range 1 for global network.	0.0.0.0 to 255.255.255.255
#1017		General	—	○	IP address filter 2 range top (global)	Set the top IP address of IP address filter range 2 for global network.	0.0.0.0 to 255.255.255.255
#1018		General	—	○	IP address filter 2 range end (global)	Set the end IP address of IP address filter range 2 for global network.	0.0.0.0 to 255.255.255.255

No.	BIT	Function group	Type for clearing error		Name	Description	Setting range
			PR	UR			
#1019		General	—	○	IP address filter 3 range top (global)	Set the top IP address of IP address filter range 3 for global network.	0.0.0.0 to 255.255.255.255
#1020		General	—	○	IP address filter 3 range end (global)	Set the end IP address of IP address filter range 3 for global network.	0.0.0.0 to 255.255.255.255
#1021		General	—	○	IP address filter 4 range top (global)	Set the top IP address of IP address filter range 4 for global network.	0.0.0.0 to 255.255.255.255
#1022		General	—	○	IP address filter 4 range end (global)	Set the end IP address of IP address filter range 4 for global network.	0.0.0.0 to 255.255.255.255
#1023		General	—	○	IP address filter 5 range top (global)	Set the top IP address of IP address filter range 5 for global network.	0.0.0.0 to 255.255.255.255
#1024		General	—	○	IP address filter 5 range end (global)	Set the end IP address of IP address filter range 5 for global network.	0.0.0.0 to 255.255.255.255
#1025		General	—	○	IP address filter 6 range top (global)	Set the top IP address of IP address filter range 6 for global network.	0.0.0.0 to 255.255.255.255
#1026		General	—	○	IP address filter 6 range end (global)	Set the end IP address of IP address filter range 6 for global network.	0.0.0.0 to 255.255.255.255
#1027		General	—	○	IP address filter 7 range top (global)	Set the top IP address of IP address filter range 7 for global network.	0.0.0.0 to 255.255.255.255
#1028		General	—	○	IP address filter 7 range end (global)	Set the end IP address of IP address filter range 7 for global network.	0.0.0.0 to 255.255.255.255
#1029		General	—	○	IP address filter 8 range top (global)	Set the top IP address of IP address filter range 8 for global network.	0.0.0.0 to 255.255.255.255
#1030		General	—	○	IP address filter 8 range end (global)	Set the end IP address of IP address filter range 8 for global network.	0.0.0.0 to 255.255.255.255
#1031		General	—	○	IP address filter 1 range top (local)	Set the top IP address of IP address filter range 1 for local network.	0.0.0.0 to 255.255.255.255
#1032		General	—	○	IP address filter 1 range end (local)	Set the end IP address of IP address filter range 1 for local network.	0.0.0.0 to 255.255.255.255
#1033		General	—	○	IP address filter 2 range top (local)	Set the top IP address of IP address filter range 2 for local network.	0.0.0.0 to 255.255.255.255
#1034		General	—	○	IP address filter 2 range end (local)	Set the end IP address of IP address filter range 2 for local network.	0.0.0.0 to 255.255.255.255
#1035		General	—	○	IP address filter 3 range top (local)	Set the top IP address of IP address filter range 3 for local network.	0.0.0.0 to 255.255.255.255
#1036		General	—	○	IP address filter 3 range end (local)	Set the end IP address of IP address filter range 3 for local network.	0.0.0.0 to 255.255.255.255
#1037		General	—	○	IP address filter 4 range top (local)	Set the top IP address of IP address filter range 4 for local network.	0.0.0.0 to 255.255.255.255
#1038		General	—	○	IP address filter 4 range end (local)	Set the end IP address of IP address filter range 4 for local network.	0.0.0.0 to 255.255.255.255
#1039		General	—	○	IP address filter 5 range top (local)	Set the top IP address of IP address filter range 5 for local network.	0.0.0.0 to 255.255.255.255
#1040		General	—	○	IP address filter 5 range end (local)	Set the end IP address of IP address filter range 5 for local network.	0.0.0.0 to 255.255.255.255
#1041		General	—	○	IP address filter 6 range top (local)	Set the top IP address of IP address filter range 6 for local network.	0.0.0.0 to 255.255.255.255
#1042		General	—	○	IP address filter 6 range end (local)	Set the end IP address of IP address filter range 6 for local network.	0.0.0.0 to 255.255.255.255
#1043		General	—	○	IP address filter 7 range top (local)	Set the top IP address of IP address filter range 7 for local network.	0.0.0.0 to 255.255.255.255
#1044		General	—	○	IP address filter 7 range end (local)	Set the end IP address of IP address filter range 7 for local network.	0.0.0.0 to 255.255.255.255
#1045		General	—	○	IP address filter 8 range top (local)	Set the top IP address of IP address filter range 8 for local network.	0.0.0.0 to 255.255.255.255
#1046		General	—	○	IP address filter 8 range end (local)	Set the end IP address of IP address filter range 8 for local network.	0.0.0.0 to 255.255.255.255
#1047		Remote service	—	○	NC1 IP Address	Set the IP address of NC to be connected.	0.0.0.0 to 255.255.255.255

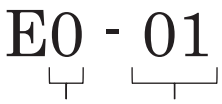
No.	BIT	Function group	Type for clearing error		Name	Description	Setting range
			PR	UR			
#1601		Remote service	—	○	NC1 Serial No.	Set the serial number of NC to be connected.	String
#1605		Remote service	—	○	Cloud URL	Set the URL of the cloud.	String
#1606		Remote service	—	—	Proxy Address	Set the proxy server address.	String
#1607		General	—	○	SNTP Server	Set the name of SNTP (Time synchronization) server.	String

8

Appendix 4: Error List

An error code consists of "E" and 3-digit code. The first digit next to "E" is called "Error group code". Errors are classified into groups. An error is figured out by a combination of the "Error group code" and "Detailed error code" which is represented by the second digit and the third digit.

[Error example]



The classification of error groups and the list of errors are as follows.

The classification of error groups

Error group No.	Classification
E0	Error related system, HW, SD or optical communication
E1	Error related RIO, AI, DI, SIO
E2	Network error
E3 (*1)	Analyzing process error

(*1) Contact our service center when an E3 error occurs.

Error list

PR: Restart the NC

UR: Restart the remote service gateway unit

Error code		Type for clearing error		Name	Details	Remedy
Group code	Detailed code	PR	UR			
E0	01	—	—	Num of simul errors 20 over	The number of simultaneous errors exceeded 20. The 21st error and subsequent errors are not displayed. However, errors of 21st and subsequent errors are recorded in the error history. This error is not recorded in the error history.	Cancel the displayed 20 errors.
E0	02	—	○	S/W error	An error occurred in the S/W process inside the unit.	Contact our service center.
E0	03	—	○	System SD error	An error occurred in the system SD.	Contact our service center.
E0	04	—	○	SD error	An error occurred in the SD.	Replace the SD card inserted in the unit.
E0	08	—	○	Overvoltage	Power supply voltage is abnormal. (Overvoltage)	Correct the power supply environment.
E0	09	—	○	Undervoltage	Power supply voltage is abnormal. (Undervoltage)	Correct the power supply environment.
E0	10	—	—	Overheat	The unit temperature has risen above the designated value.	Cooling measures are required. Turn OFF the unit power, or lower the temperature with a cooler, etc.
E0	11	—	—	Heat notice	The unit temperature has risen above the designated value.	Cooling measures are required. Turn OFF the unit power, or lower the temperature with a cooler, etc.
E0	14	—	○	Internal voltage fault 1	Internal voltage fault 1	Contact our service center.
E0	15	—	○	Internal voltage fault 2	Internal voltage fault 2	Contact our service center.
E0	16	—	○	Internal voltage fault 3	Internal voltage fault 3	Contact our service center.
E0	17	—	○	Internal voltage fault 4	Internal voltage fault 4	Contact our service center.
E0	18	—	○	Internal voltage fault 5	Internal voltage fault 5	Contact our service center.

Error code		Type for clearing error		Name	Details	Remedy
Group code	Detailed code	PR	UR			
E0	19	—	○	Internal voltage fault 6	Internal voltage fault 6	Contact our service center.
E0	20	—	○	Internal voltage fault 7	Internal voltage fault 7	Contact our service center.
E0	21	—	○	Internal voltage fault 8	Internal voltage fault 8	Contact our service center.
E0	22	—	○	Internal voltage fault 9	Internal voltage fault 9	Contact our service center.
E0	23	—	○	Internal voltage fault 10	Internal voltage fault 10	Contact our service center.
E0	24	—	○	Internal voltage fault 11	Internal voltage fault 11	Contact our service center.
E0	25	—	○	Internal voltage fault 12	Internal voltage fault 12	Contact our service center.
E0	26	—	○	Internal voltage fault 13	Internal voltage fault 13	Contact our service center.
E0	27	—	○	Internal voltage fault 14	Internal voltage fault 14	Contact our service center.
E0	28	—	○	Internal voltage fault 15	Internal voltage fault 15	Contact our service center.
E0	29	—	○	Internal voltage fault 16	Internal voltage fault 16	Contact our service center.
E0	30	—	○	H/W error 1	H/W error 1	Contact our service center.
E0	34	—	○	Machining log setting error	The setting for machining log is incorrect.	Correct the setting for machining log.
E0	35	—	○	Additional data setting error	The setting for additional data is incorrect.	Correct the setting for additional data.
E1	05	—	—	SIO framing error	Baud rate parameter,data bit length parameter,parity bit parameter setting error.	Set the parameter of the baud rate,data bit length,parity bit correctly.
E1	06	—	—	SIO buffer overrun error	Buffer is full.	Stop the transmission. Restart the communication after canceling buffer overrun error.
E1	07	—	—	SIO parity error	Error bit is in the received data.	Set the parameter of the baud rate,stop bit, data bit length, parity bit correctly. Restart the communication.
E1	08	—	—	SIO H/W error	Two or more errors occurred.Cause of the error is framing error,buffer overrun error,parity error.	Set the parameter of the baud rate, stop bit, data bit length, parity bit correctly. Restart the communication.
E1	09	—	—	SIO parity H error	Error bit is in the received data.	Set the parameter of the baud rate,stop bit, data bit length, parity bit correctly. Restart the communication.
E1	10	—	—	SIO code translation error	Code translation error from EIA code to ISO code.	Send the EIA code that can be converted into ISO code.
E2	01	—	○	IP address acquisition failure	Failed to acquire IP address from DHCP.	Check communication to the DHCP server. Restart the unit.
E2	02	—	○	Time synchronization failure	Time synchronization with the SNTP server failed.	Check communication to the SNTP server. Correct "#1607 SNTP server address". Correct "#0407 SNTP server timeout period". Restart the unit.
E2	03	—	○	IP addr. filter disabled	The IP address filter is disabled, the IP address filter range setting is all 0.	Set "#1015-#1046 IP address filter range".
E2	04	—	—	IP addr. filter range abnormal	The IP address filter range setting is all 0.	Set "#1015-#1046 IP address filter range".

Function Compatibility

Details	Version
First version	A0
Diagnosis report function	A2
Utilization rate calculation customization function	A3
C80 supported	
NC file data function	A4
Email notification function	A7
Alarm diagnosis function	
Function restrictions depending on the license type DI connection models	AB
License expiration information Service call function	AC

Revision History

Date of revision	Manual No.	Revision details
Oct. 2019	IB(NA)1501552-C	First edition created.
Jul. 2020	IB(NA)1501552-D	Corresponded to Remote Service iQ Care Remote4U software version A4. The following chapters were revised. - Introduction - 1.3 Characteristics - 2.2.2 Connection Example: Remote Service Gateway Unit and M800S/M80/E80 Series - 2.5.1 Heat Radiation Countermeasures - 2.7.1 General Connection System Drawing - 2.7.3 Connecting with Control Unit - 2.7.4 Connecting with Host Device (Cloud Server) - 3.1 Setup Procedures - 3.2 Connecting with Remote Service Gateway Unit (RGU) - 3.3 Setting Parameters - 4.1 Remote Service Screen - 4.2 Basic Operations - 4.3 Details of Each Function - 4.4 Restrictions - 4.5 Message Outputs - 4.6 Troubleshooting and FAQ - 7 Appendix 3: Parameter List - 8 Appendix 4: Error List The following chapters were added. - 3.2.1 Network Connecting Method - 4.2.7 Scheduled Operation Time Setting - 4.3.7.3 NC File Data - 4.5.4 Message Outputs on the Scheduled Operation Time Setting Dialog - Function Compatibility The following chapters were deleted. - 3.2.1 To connect the NC control unit to the NC-LAN connector of the RGU - 3.2.2 To connect the RGU and the NC Control Unit to the Device for Internet Connection Respectively using a Hub Due to adding and deleting of the chapters as above, the existing chapter numbers were corrected. Mistakes were corrected.
Oct. 2020	IB(NA)1501552-E	The following chapter was revised. - Introduction
May. 2021	IB(NA)1501552-F	Corresponded to Remote Service iQ Care Remote4U software version A7. The following chapters were revised. - 1.3 Characteristics - 1.4 Operation Environment - 2.2 General Connection Diagram - 2.3 List of Configuration - 2.7.1 General Connection System Drawing - 2.7.3 Connecting with Control Unit - 3 Initial Setup - 4.1 Remote Service Screen - 4.2.6 Changing Screens - 4.3.7 Utilities Screen - 4.3.7.1.3 Machining Result List - 4.5.2 Message Outputs on the "Utilities" Screen - 5.1 Introduction - 5.2 EMC Directives/EMC Regulations

Date of revision	Manual No.	Revision details
May. 2021	IB(NA)1501552-F	The following chapters were added. - 4.3.7.4 Alarm Diagnosis - 4.3.7.5 Email Notification Settings Mistakes were corrected.
Sep. 2021	IB(NA)1501552-G	Corresponded to Remote Service iQ Care Remote4U software version A9. The following chapters were revised. - 4.3.5 Alarm Screen - 4.3.7.1.3 Machining Result List - 4.3.7.4 Alarm Diagnosis - 4.3.7.5.1 Edit Email Notification Condition Screen - 4.5.2 Message Outputs on the "Utilities" Screen - 5.1 Introduction - 5.2 EMC Directives
Jan. 2022	IB(NA)1501552-H	Corresponded to Remote Service iQ Care Remote4U software version AA. The following chapters were revised. - Introduction - 1 Outline - 3 Initial Setup - 3.1 Setup Procedures - 3.2 Connecting with Remote Service Gateway Unit (RGU) - 4.3.3 Operation Screen - 4.3.7 Utilities Screen - 4.5 Message Outputs The following chapters were added. - Manual List (M800V/M80V Series) - 3.3 When Using NC Direct Connection - 3.4 Applicable Models Due to adding and deleting of the chapters as above, the existing chapter numbers were corrected. Mistakes were corrected.
May. 2022	IB(NA)1501552-J	Corresponded to Remote Service iQ Care Remote4U software version AB. The following chapters were revised. - 1 Outline - 1.1.1 RGU Connection - 1.2 Characteristics - 2.7.1 Connecting Remote Service Gateway Unit - 2.7.3 Connecting with Control Unit - 3 Initial Setup - 3.1 Setup Procedures - 3.1.1 When Using RGU Connection - 3.2.1 Connecting with Remote Service Gateway Unit (RGU) - 3.2.1.1 Network Connecting Method - 3.2.2.4 Parameters for Remote Service Connection of the RGU - 3.2.2.5 Setting Example - 3.3.3.3 Precautions - 3.4 Applicable Models - 4.1 Remote Service Screen - 4.2.7 Scheduled Operation Time Setting - 4.3.3 Operation Screen - 4.3.7 Utilities Screen - 4.3.7.3 NC File Data - 4.3.7.4 Alarm Diagnosis - 4.3.7.5 Email Notification Settings - 4.3.7.5.1 Edit Email Notification Condition Screen - 4.5.2 Message Outputs on the "Utilities" Screen - Function Compatibility

Date of revision	Manual No.	Revision details
May. 2022	IB(NA)1501552-J	The following chapters were added. - 2.2.3 Connection Example: Remote Service Gateway Unit and M800VW/ M80VW Series - 2.2.4 Connection Example: Remote Service Gateway Unit and M800VS/M80V Series - 3.5 NC Versions whose Operation Has Been Confirmed - 4.3.7.3.1 Online Storage Screen - 4.3.7.3.2 Auto Backup Setup - 4.3.7.3.3 Edit Auto Backup Setup Screen - 4.3.7.3.4 Automatic Backup Setup Method - 4.5.5 Message Outputs on the Alarm screen Due to adding and deleting of the chapters as above, the existing chapter numbers were corrected. Mistakes were corrected
Feb. 2023	IB(NA)1501552-K	Corresponded to Remote Service iQ Care Remote4U software version AC. The following chapters were revised. - Introduction - 1 Outline - 1.1.1 RGU Connection - 1.2 Characteristics - 2.2.1 Connection Example: Remote Service Gateway Unit and 800W/M80W Series - 2.2.2 Connection Example: Remote Service Gateway Unit and M800S/M80/E80 Series - 2.2.3 Connection Example: Remote Service Gateway Unit and M800VW/ M80VW Series - 2.2.4 Connection Example: Remote Service Gateway Unit and M800VS/M80V Series - 3 Initial Setup - 3.1 Setup Procedures - 3.1.1 When Using RGU Connection - 3.1.2 When Using NC Direct Connection - 3.2.1.1 Network Connecting Method - 3.2.2.4 Parameters for Remote Service Connection of the RGU - 3.2.4.2 Checking on the Setting Screen - 3.3.2.2 Parameters for Remote Service Connection - 3.3.4.1 Checking on the Self Diagnosis Screen of the NC Control Unit - 3.3.4.3 Precautions - 4.1 Remote Service Screen - 4.2.3 Logging in to Remote Service - 4.2.4 Device Selection - 4.2.5 Changing Password - 4.2.6 Changing Screens - 4.2.8 Logging Out of Remote Service - 4.3.2 Device Screen - 4.3.4 Use Screen - 4.3.7 Utilities Screen - 4.3.7.1 Operation Status Acquisition - 4.3.7.1.1 Daily Operation Detail - 4.3.7.1.2 Monthly Operation Total - 4.3.7.1.3 Machining Result List - 4.3.7.2 History Data Acquisition - 4.3.10 Information Display - 6 Appendix 2: Precautions for Compliance to UL/c-UL Standards - Function Compatibility

Date of revision	Manual No.	Revision details
Feb. 2023	IB(NA)1501552-K	The following chapters were added. - 3.2.3 Setting the Current Date and Time of the NC Control Unit - 3.3.3 Setting the Current Date and Time of the NC Control Unit - 4.3.7.1.4 Monthly Machining Total - 4.3.11 License expiration information - 4.3.12 Service call function - 4.5.6 Message Outputs on the "Device" Screen Mistakes were corrected.

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Notice

Every effort has been made to keep up with software and hardware revisions in the contents described in this manual. However, please understand that in some unavoidable cases simultaneous revision is not possible. Please contact your Mitsubishi Electric dealer with any questions or comments regarding the use of this product.

MITSUBISHI ELECTRIC CORPORATION

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MODEL	Remote Service iQ Care Remote4U
MODEL CODE	100-683
Manual No.	IB-1501552

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