G Series Nutrunner

Touch Panel Display Unit Manual

Version 1.0

URYU SEISAKU , LTD.

Supported software version

Date	Document No.	Supported software version	
		Unit	Touch panel
2023/07/31	Version1.0	V1.100～	V1.000～

Revision History

Revision Date	Revision	What has been updated
2023/07/31	Version 1.0	1st Edition

Table of Contents

Chapter 1 Introduction

Chapter 1 Introduction

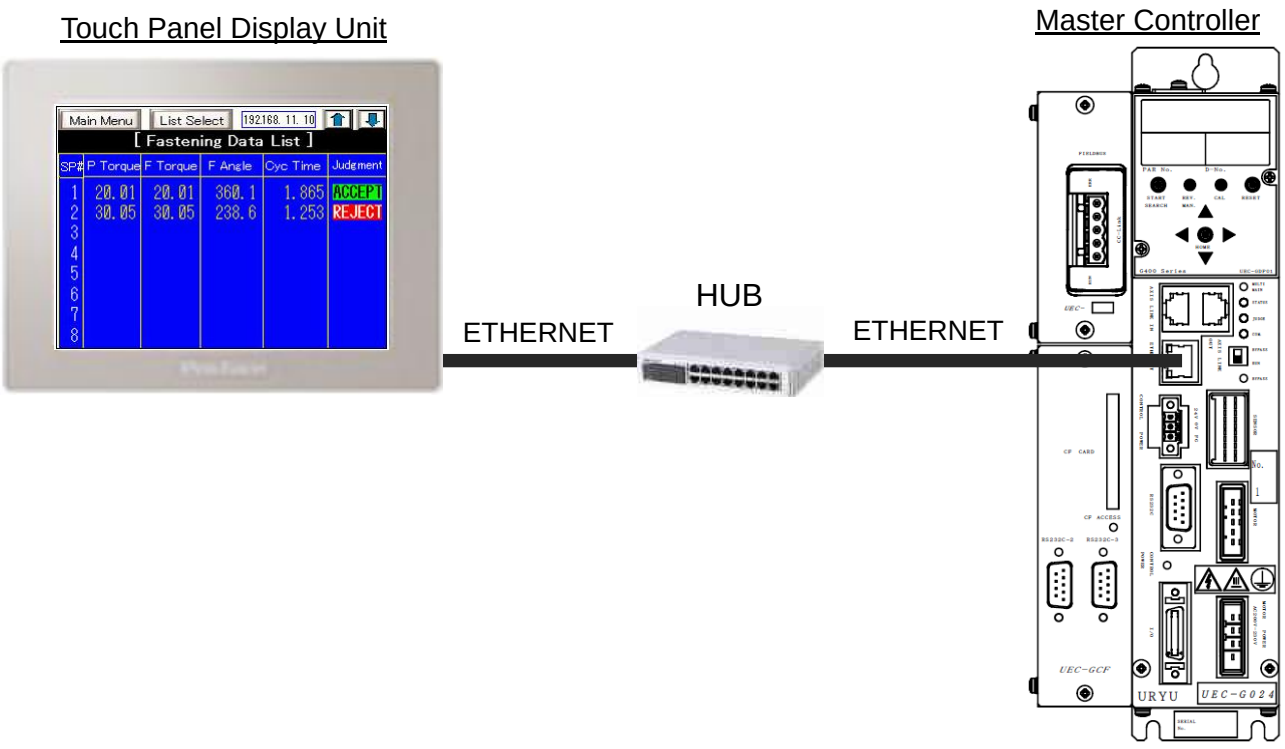
1-1.Function Overview

The table below shows the functions of the touch panel display.
Refer to the related chapter for details of each function.

Function	Related Chapter
Fastening Data can be monitored.	4-3
	4-4
	4-5
Statistic Result can be monitored.	4-6
Parameter can be edited.	4-7
Fastening Curve can be monitored.	4-8
Fastening Judgment can be monitored by lamp.	4-9
Check Cal voltage for connected tool.	4-10

1-2.System Configuration

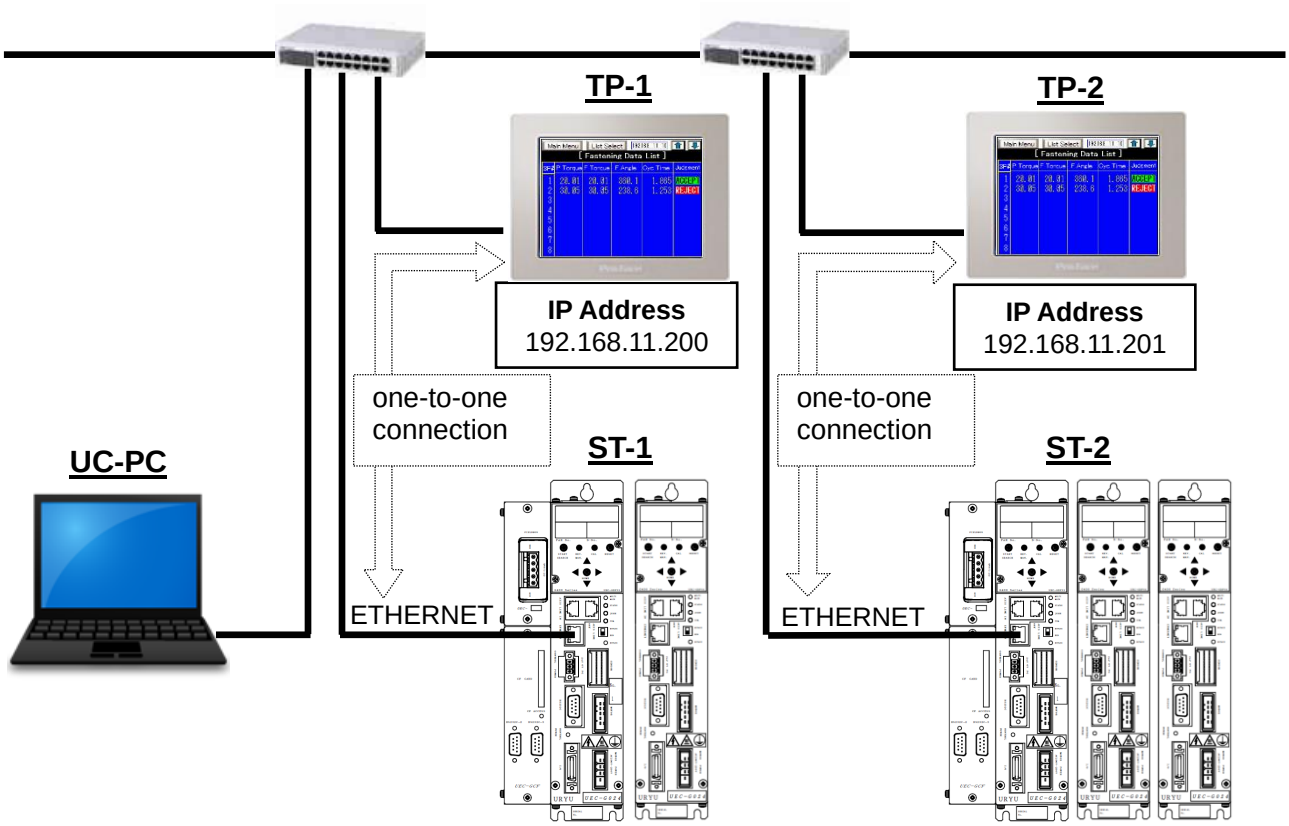
You can use the touch panel display by Master controller of G Series Nutrunner system through ETHERNET connection.



Warning

- **HUB is indispensable.**
- **One Touch Panel Display Unit can't connect with multiple Master Controller.**

When using multiple touch panel displays, it is necessary to make settings so that the IP address of each touch panel display is not duplicated.



1-3.Specification

1-3-1.Manufacturer・model

Digital Electronics Corp.　Pro-face GP-4301TM

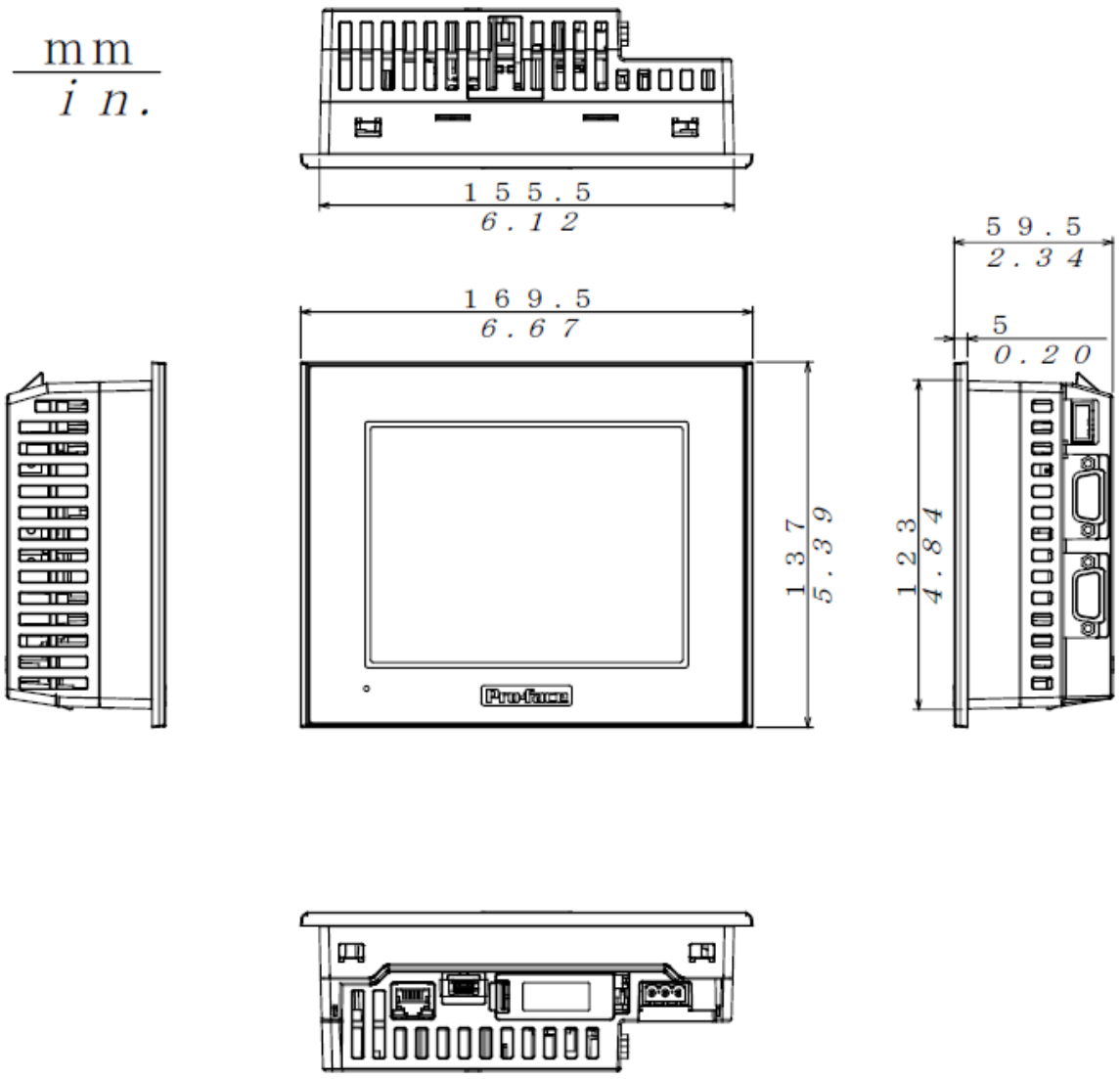
1-3-2.Environment・Structure

Rated supply voltage	24V DC
Voltage tolerance range	19.2V~ 28.8V DC
Power consumption	10.5W or less
Allowable time of instantaneous stop	5ms or less
Dielectric strength	1000V AC 20mA for 1 minute (Between live part terminal and FG terminal)
Dielectric resistance	500V DC 10MΩ or more (Between live part terminal andFG terminal)
Operating ambient temperature	0 - 50°C (32 - 122 °F)
Storage ambient temperature	-20 - 60°C (-4 - 140 °F)
Operating ambient humidity	10~90%RH (However, wet-bulb temperature 39°C (102.2 °F) or less - no condensation)
Storage ambient humidity	
Vibration resistance	JIS B 3052、IEC/EN61131-2 compliant 5...9 Hz Single amplitude 3.5 mm (0.14 in.) 9...150 Hz Fixed acceleration: 9.8 m/s2 X, Y, Z directions for 10 cycles (approx. 100 min)
Noise Immunity	Noise Voltage: 1,000 Vp-p Pulse Width: 1 μs Rise Time: 1 ns (measured by noise simulator)
Electrostatic discharge resistance	6kV (IEC/EN61000-4-2 Level 3)
Corrosive gas	No corrosive gas is allowed.
Ground	D class grounding
Protection structure	IP65f equivalent, NEMA#250 TYPE 4X/13
External dimensions	W169.5 × H137 × D59.5mm
Weight	0.8 kg or less (main unit only)
Cooling system	Natural cooling

1-3-3.Interface

Serial （COM1）	Asynchronous: RS-232C, Data length: 7/8 bits, Stop bit: 1/2 bits, Parity: None/Even/Odd, Communication speed: 2,400～115,200bps, Connector: D-Sub 9 pin plug
Serial （COM2）	Asynchronous: RS-422/485, Data length: 7/8 bits, Stop bit: 1/2 bits, Parity: None/Even/Odd, Communication speed: 2,400～115,200bps, 187,500bps(MPI), Connector: D-Sub 9 pin plug
USB Type A	USB 2.0(Type A)x 1, supply voltage: 5Vdc ± 5%, Max. output current: 500mA, Max. communication range: < 5m
USB mini B	USB 2.0(mini-B) x 1, Max. communication range: 5m
ETHERNET	Supported standards: IEEE802.3i/IEEE802.3u, 10BASE-T/100BASE-TX, Connector: Modular jack (RJ-45) x 1)

1-3-4.Dimension



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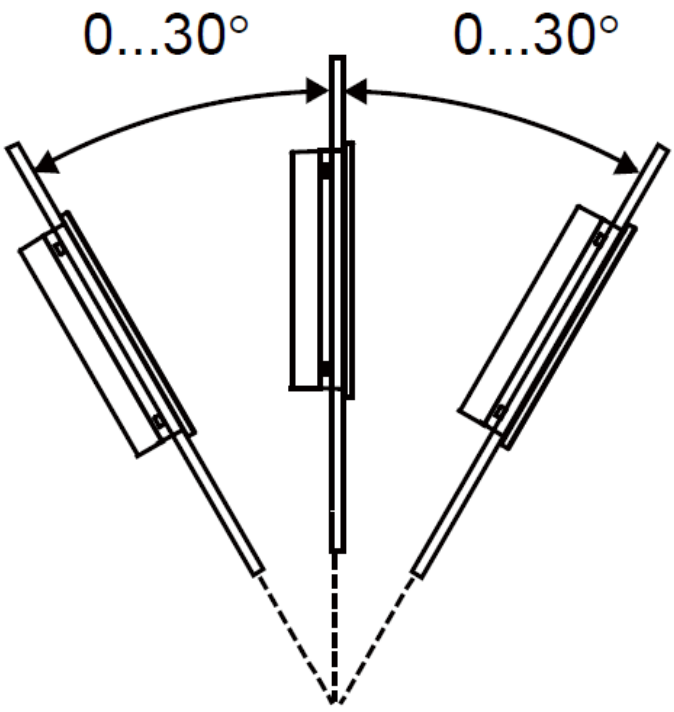
Chapter 2 Installation and Wiring

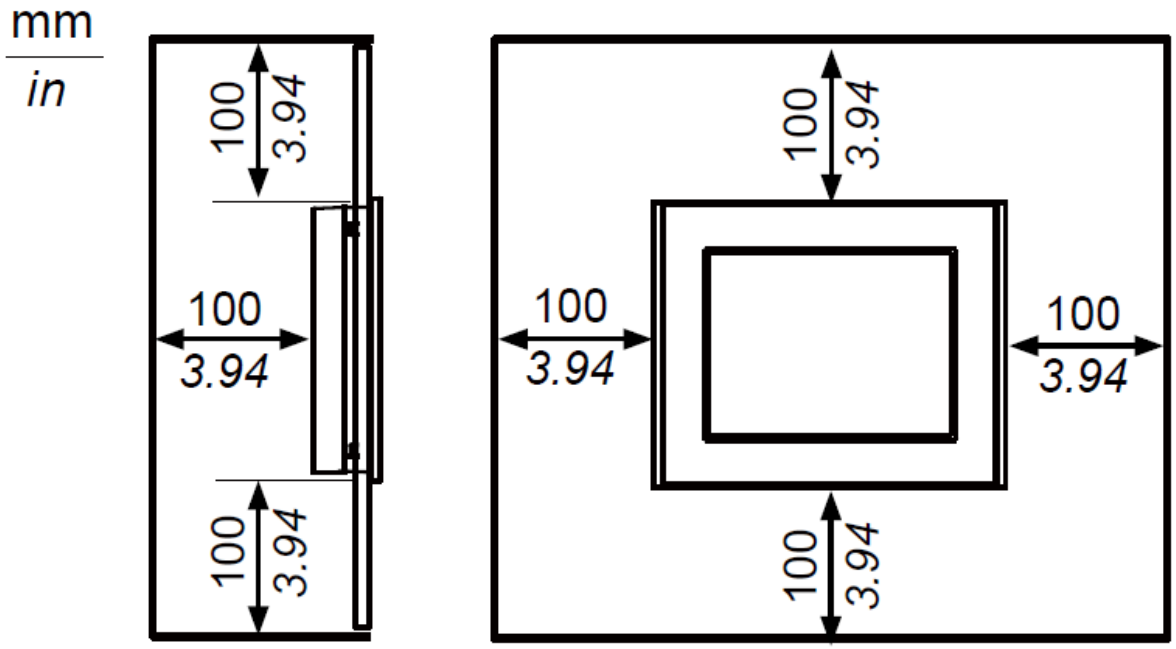
Chapter 2 Installation and Wiring

2-1.Requirements of Installation

- The panel face is not inclined more than 30° when installing the unit in slanted panel:

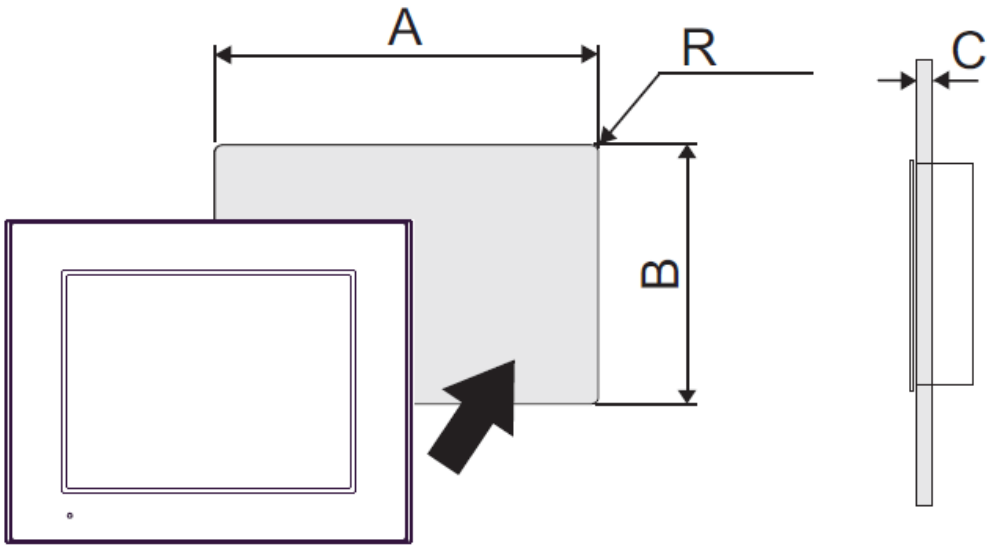


- The unit is at least 100 mm (3.94 in.) away from adjacent structure and other equipment for maintenancability, operation and improved ventilation:



2-2.Panel Cut-out Dimension

Drill mounting holes in the panel and install the display module through the front of the panel.
Drill the mounting holes as shown below.



A (mm) Steel plate	B (mm) Steel plate	C(mm) Plate thickness	R(mm) Square face
+1 156mm −0	+1 123.5mm −0	1.6～5mm	Max 3mm

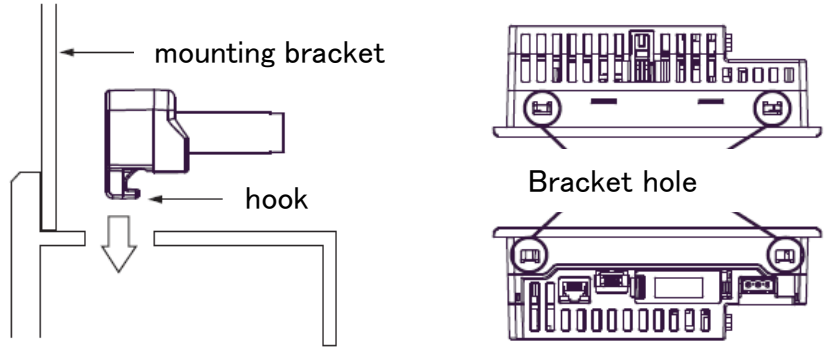
2-3.Installation

1．Place the touch panel on a clean, level surface with the screen facing down.

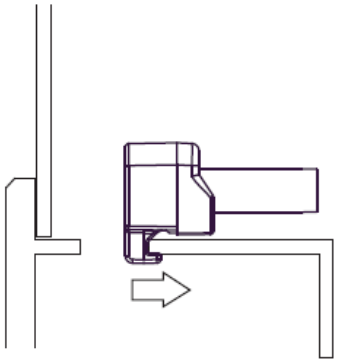
2．Check that the drip-proof packing is installed on the touch panel.

3．Create a panel cut and insert the touch panel from the front of the panel.

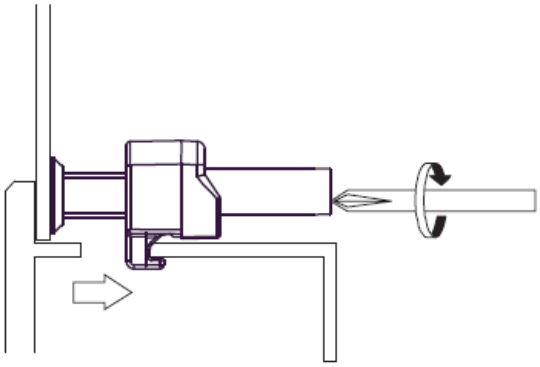
4．Insert the hook of the mounting bracket into the bracket holes at the top and bottom of the touch panel. If the metal fittings are not attached properly, the touch panel may slip off or fall off.



5．Slide the mounting bracket to the rear side.

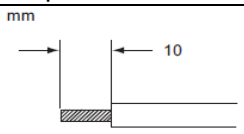


6．Use a Phillips screwdriver to tighten the mounting bracket screws in order to secure the touch panel in place. The proper tightening is 0.5Nm.

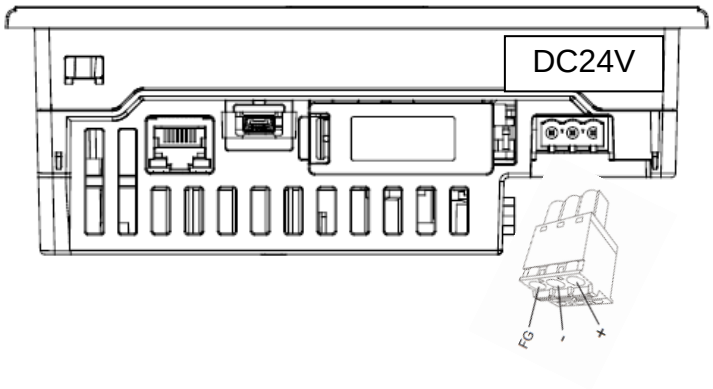


2-4.Wiring

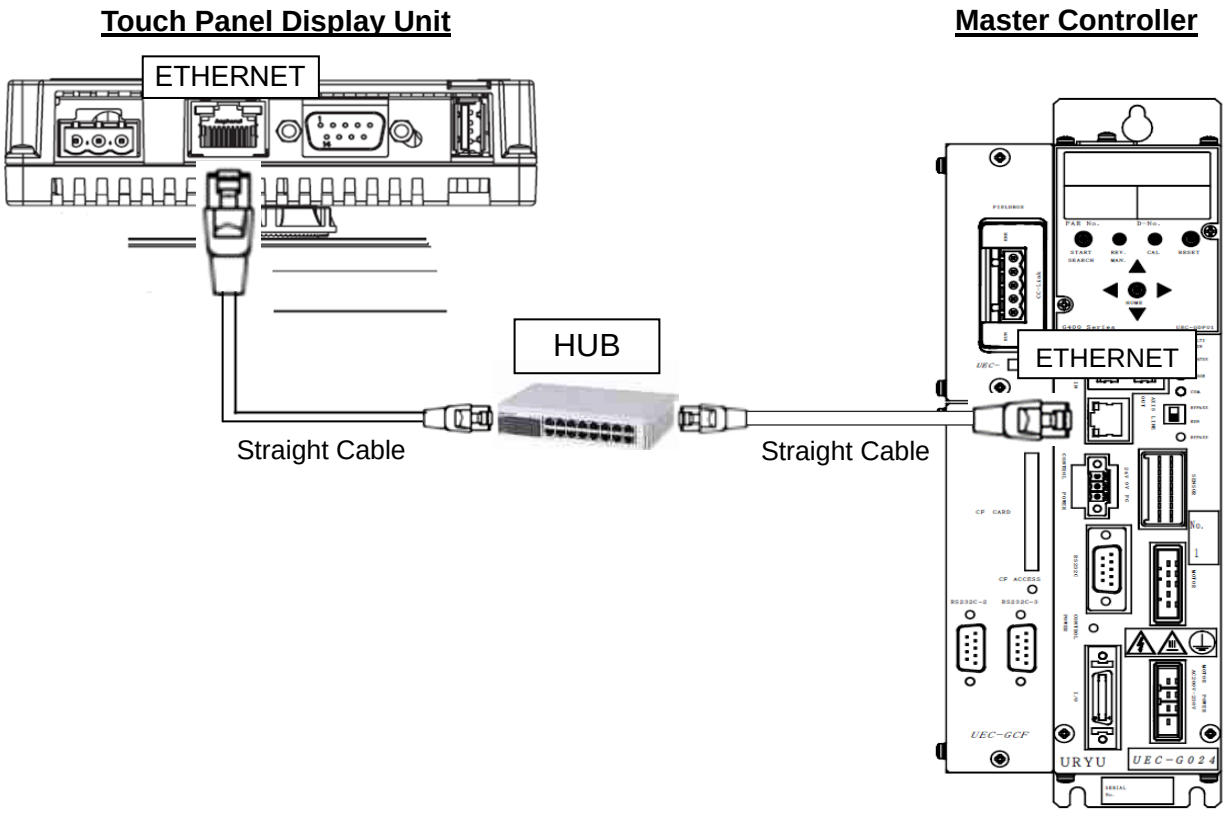
2-4-1.Power Cable

Power Cable Diameter	0.75 to 2.5mm2 (18 - 13AWG)
Conductor Material	Copper
Conductor type	Simple or Stranded Wire
Conductor Length	

Connection	Wire
+	24 V
-	0 V
FG	Grounded terminal connected to the unit chassis.



2-4-2.Ethernet (LAN) Cable



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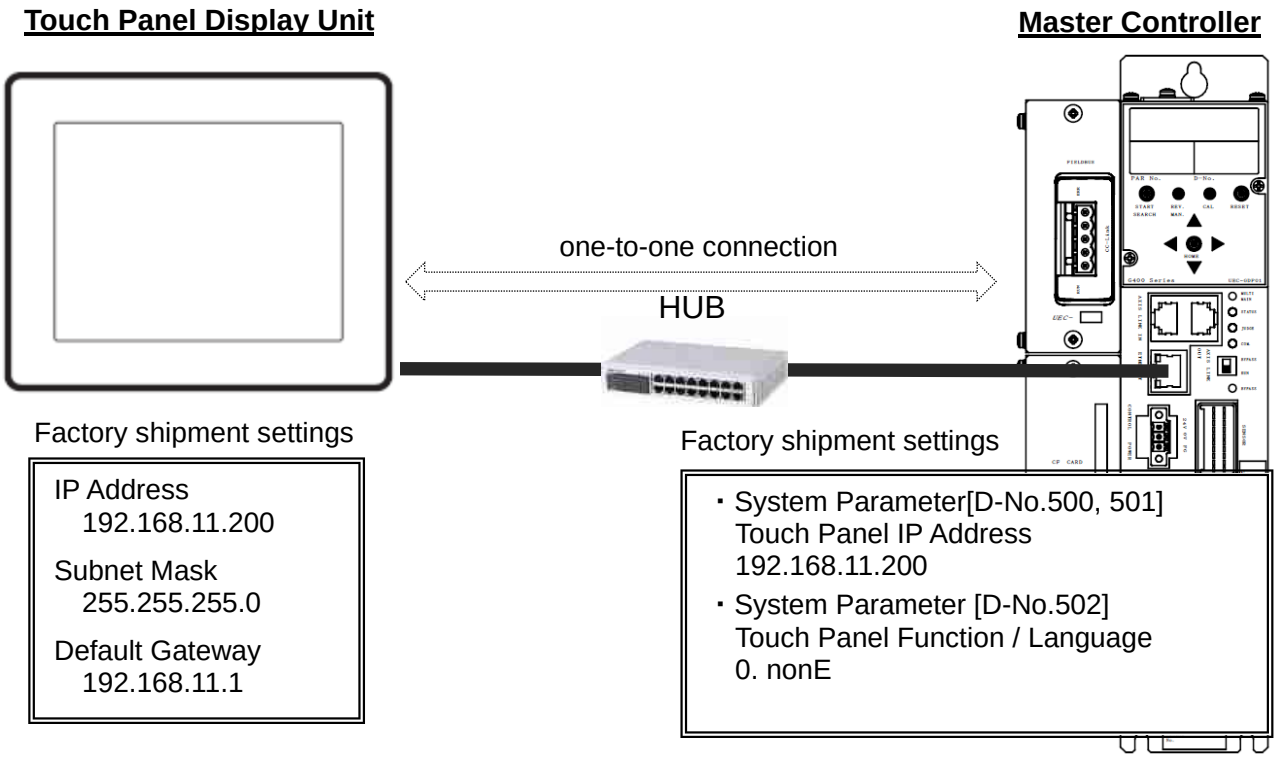
3

Chapter 3 Ethernet Settings

Chapter3 Ethernet Settings

In order to connect this touch panel display to the MASTER Controller for G Series Nutrunner system via ETHERNET connection, the "touch panel display" and "MASTER Controller" settings are required.

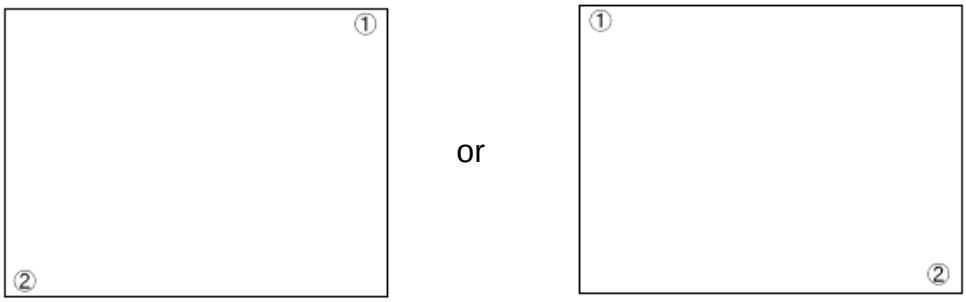
※Touch panel function/language setting of MASTER spindle unit is set by "Touch panel function disabled" in the default setting. To enable the touch panel function, refer to "Changing the settings of 3-2. Setting Change of Master Controller" and "3-3. 3-3.Language change".



3-1.Settings Change of Touch Panel Display Unit

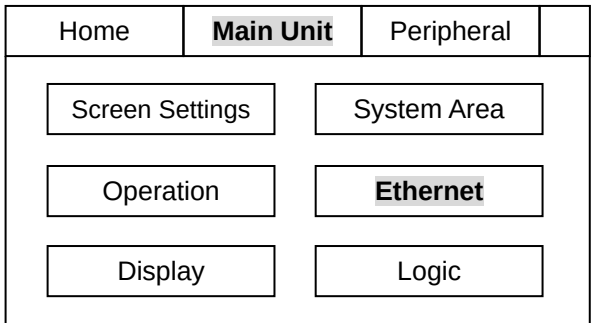
Switches to the system screen of the touch panel to change settings such as IP addressing.

(1) Touch and slide from the upper right to bottom left corner or from the upper left to bottom right corner on the panel (within 40 pixel area) in 0.5 seconds.

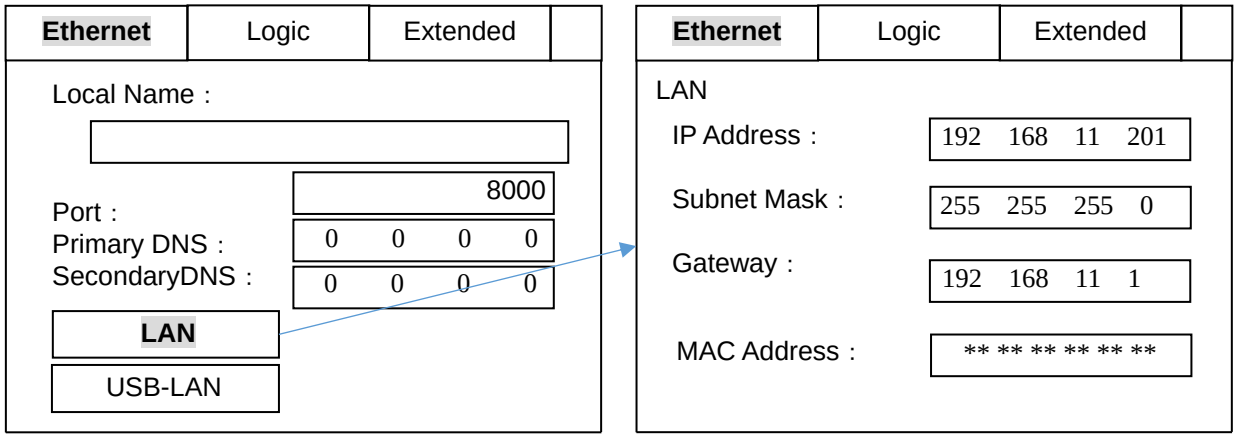


(2) Move to “Offline Mode” on touching [Offline] at System Menu.

(3) Touch [Ethernet] at “Main Unit”.



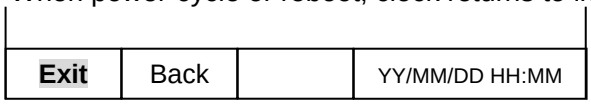
(4) Change Ethernet Setting. [IP Address] [Subnet Mask] [Gateway]

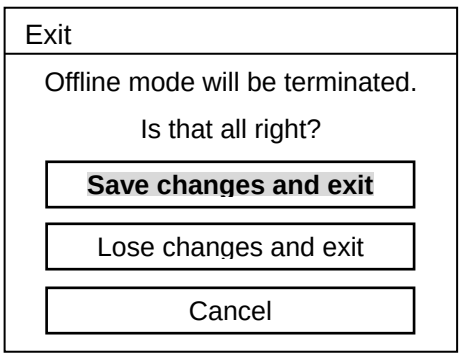


(*) When changing [Subnet Mask] or [Gateway], the same value as Master Controller System Parameter [D-No.013, 014: Subnet Mask] or [D-No.015, 016: Default Gateway] is set up, respectively.

(5) Touch [Exit] → [Save changes and exit]

* When power-cycle or reboot, clock returns to initial value (00/01/01 00:00).



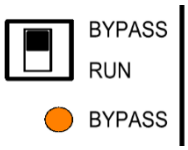


3-2.Setting Change of Master Controller

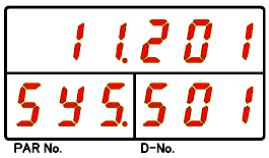
Input the same value changed by previous section 3-1.(4) process to System Parameter [D-No.500, 501:Touch Panel Display Unit IP Address] of Master Controller and power-cycle.

(Ex.) Change IP address from "192.168.11.200" to "192.168.11.201".

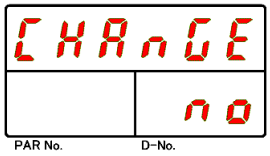
1 RUN ⇒ BYPASS



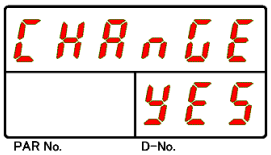
2 SYS.501 "11.201" Input



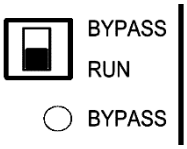
3 ◎ (SET)



4 ▲or▼ ⇒ ◎(SET)



5 BYPASS ⇒ RUN



6 Power-cycle after 10 second or more

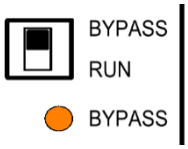
3-3.Language change

Language of Touch panel can change through System Parameter [D-No.502: Touch Panel Function / Language Setting] of Master Controller.

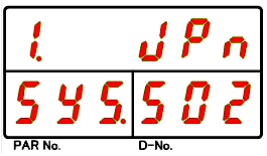
"0. nonE" : Touch Panel Function Disable
"1. JPn" : Japanese
"2. EnG" : English

(Ex.) Change Language : "English" ⇒ "Japanese"

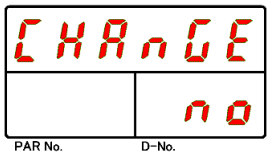
1 RUN ⇒ BYPASS



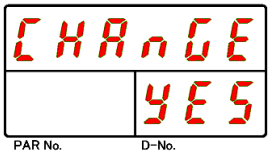
2 SYS.502 "1. JPn" Select



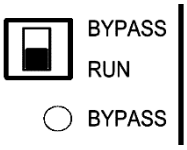
3 ◎ (SET)



4 ▲or▼ ⇒ ◎(SET)

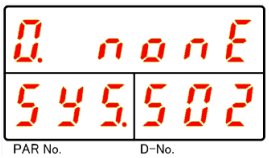


5 BYPASS ⇒ RUN



Warning

When setting "0. nonE", you can't be connected to the touch panel display



Chapter 4 Screen Instruction

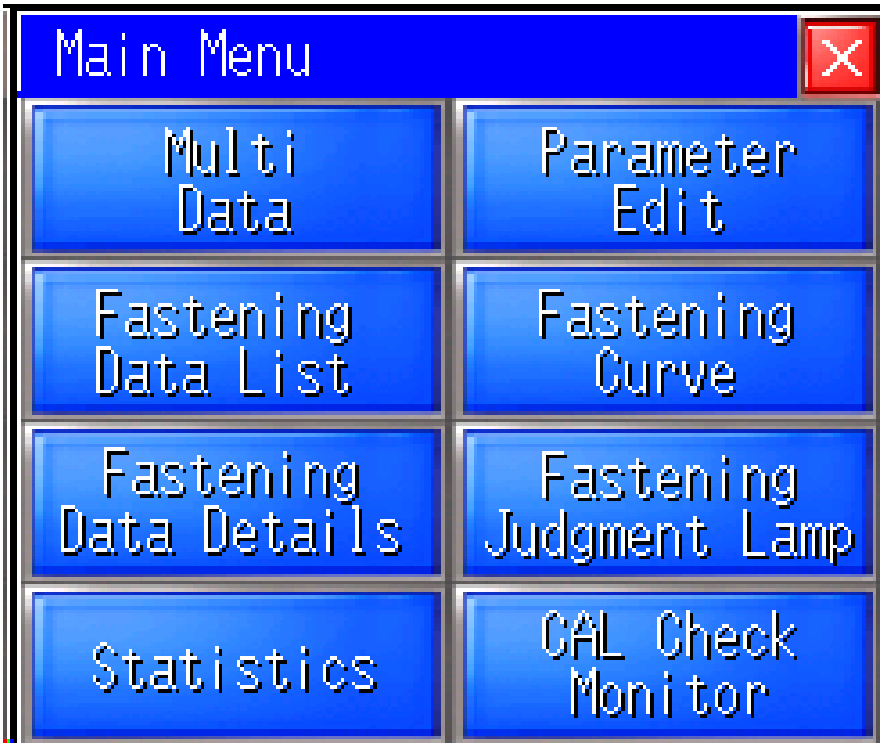
4-1.Screen List

The table below shows the screen list of the touch panel display.
Refer to the related chapter for details of each function.

Name	Function	Related Chapter
Multi Data	Fastening Multi Data can be monitored.	4-3
Fastening Data List	Main fastening result data (Spindle) in list format can be displayed	4-4
Fastening Data Details	All fastening result data (Spindle) can be displayed	4-5
Statistic Result	Statistical calculation results of Fastening history data can be displayed.	4-6
Parameter Edit	Parameter can be edited.	4-7
Fastening Curve	Fastening Curve can be monitored.	4-8
Fastening Judgment Lamp	Fastening Judgment can be monitored by lamp.	4-9
CAL check Monitor	Check Cal voltage for connected tool.	4-10

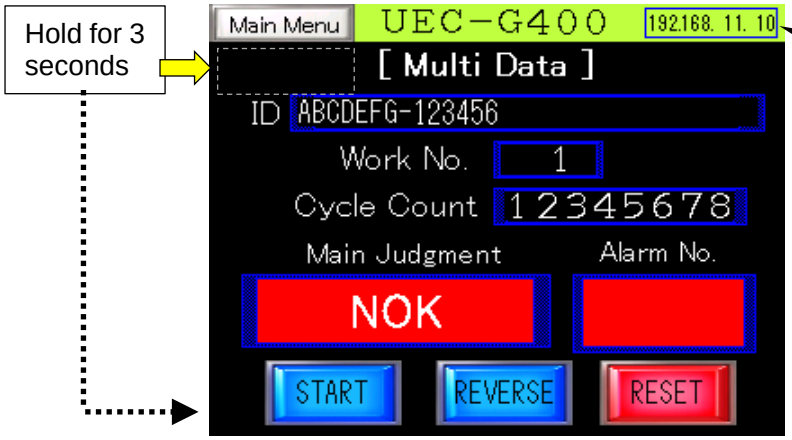
4-2.Main Menu

To change the contents of the screen, touch [Main Menu] switch at the top left of each screen.
Display「Main Menu Window」to touch [Main Menu] switch.
Move to each screen on touching each switch.



4-3.Multi Data

Display Multi data on work operation.
This is the initial screen when power is on.
If you press and hold the bottom (blank) of the main menu for 3 seconds, the [START], [REVERSE], and [RESET] switches will be displayed at the bottom of the screen.



Connection master controller IP address

Data Display Timing
End of work operation.

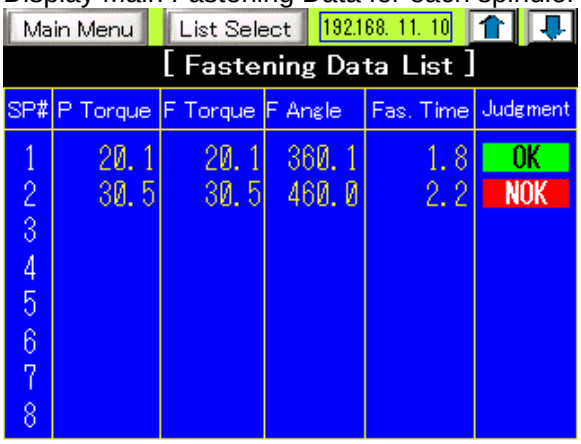
Blank Display Timing
Reset
Work Start

Item	Details	
ID	ID data input from external (Maximum 32 bytes)	
Work No.	Fastening Work No.	
Cycle Count	Fastening sequence cycle count	
Main Judgment	Display	Condition
	NOK	If fastening result judges out of range on work operation, cycle ends.
	OK	If fastening result judges within range on work operation, cycle stops.
	ALARM	Abnormal occurs during starting or operating on work.
	STOP	Emergency stop during operating on work .
	BYPASS	BYPASS stop during operating on work.
Alarm No.	Alarm No from Master controller during or on starting work operation. (Ex.) 10-06 (Work setting error)	

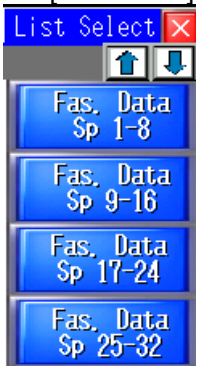
Switch	Function
START	Operate the selected work by touching it.
REVERSE	Reverse the spindle for the selected work during touching.
RESET	Check the original level for the connecting spindle and reset the system by touching it.

4-4.Fastening Data List

Display Main Fastening Data for each spindle.



To change the spindle unit that displays the Fastening Data, touch the List Select switch and select from the [List Select] window displayed, or touch the ⇧⇩ switch.

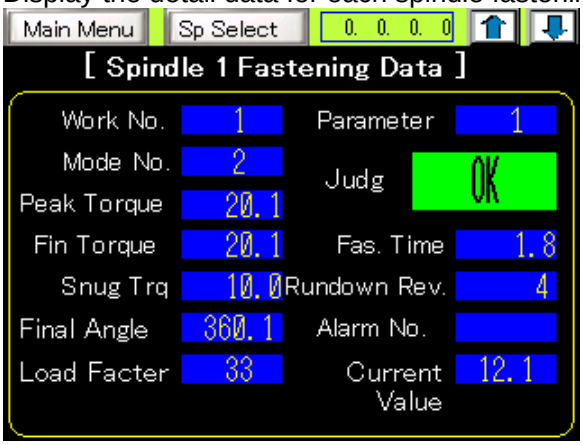


You can select up to 128 Fastening Data axes (virtual axis) by touching the ⇧⇩ switch in the [List Select] window.

Item	Details	
P Torque (Peak Torque)	Maximum torque value detected during fastening [Nm]	
F Torque (Final Torque)	Torque value detected on fastening end [Nm]	
F Angle (Final Angle)	Angle value on fastening end[deg]	
Fas. Time (Fastening Time)	Time from last step to fastening end[sec]	
Judgment	Display	Condition
	NOK	Fastening result judges out of range, cycle ends.
	OK	Fastening result judges ends within range,cycle ends.
	ALARM	Abnormal occurs during starting or operating on work operation.
	STOP	Emergency stop during fastening.
	BYPASS	BYPASS stop during fastening.

4-5.Fastening Data Details

Display the detail data for each spindle fastening result.



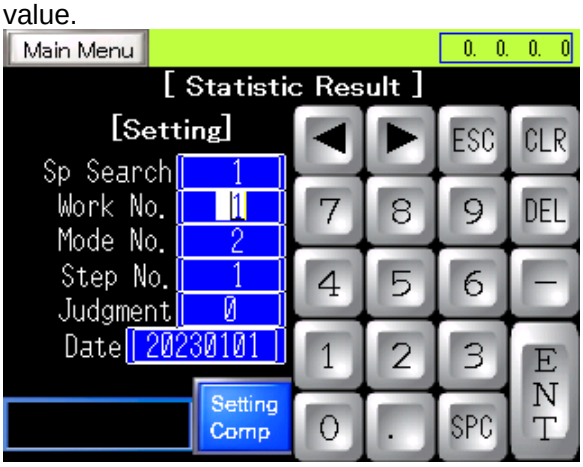
To change the spindle unit that displays the Fastening Data, touch the Sp Select switch and select from the [Spd Select] window displayed, or touch the ⇧ ⇩ switch.

You can select up to 128 Fastening Data spindles (virtual spindle) by touching the ⇧ ⇩ switch in the [Spd Select] window.

Item	Details	
Work No.	Fastening Work No	
Mode No.	Fastening Mode No	
Peak Torque	Maximum torque value detected during fastening[Nm]	
Fin Torque (Final Torque)	Torque value detected on fastening end[Nm]	
Snug Torque	Torque value when Snug torque is detected. [Nm]	
Final Angle	Angle value on fastening end[deg]	
Load Facter	Maximum load facter detected during fastening[%]	
Parameter	Fastening parameter number	
Judg (Judgment)	Display	Condition
	NOK	Fastening result judges out of range, cycle ends.
	OK	Fastening result judges ends within range,cycle ends.
	ALARM	Abnormal occurs during starting or operating on work operation.
	STOP	Emergency stop during fastening.
	BYPASS	BYPASS stop during fastening.
Fas. Time (Fastening Time)	Time from last step to the end [sec]	
Rundown Rev. (Rundown Revolutions	Revolutions from fastening start to the end [rev]	
Alarm No.	Abnormal code from Spindle controller during fastening (Ex.) 05-01 (Servo response error)	
Current Value	Current Value on fastening end [A]	

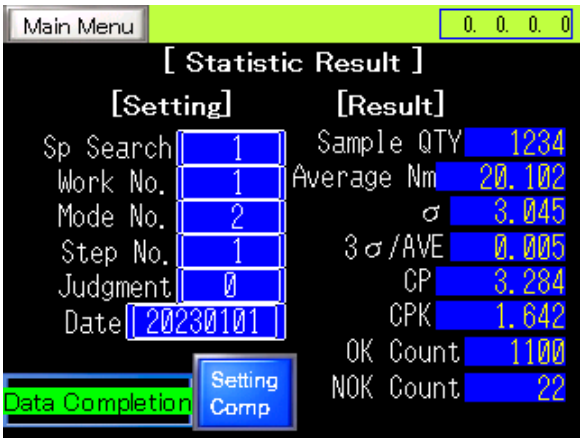
4-6.Statistic Result

Statistical calculation results of Fastening history data can be displayed.
By touching each setting in [Settings], the "keyboard" will be displayed and you can enter a numerical value.



"Keyboard" is closed by [ENT] (completion of input), [ESC], or screen change.

Item	Details	
Sp Search	Spindle number	
Work No.	Work number	
Mode No.	Mode number	
Step No.	Step number	
Judgment	Display	Condition
	0	Target all judgments
	1	Target only judgment OK
	2	Target only judgment NOK
Date	Time from fastening start to the end [sec]	

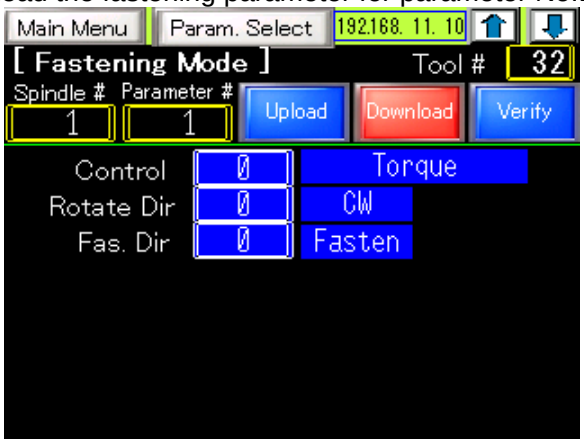


Statistical calculation processing is performed by touching the Setting Comp switch after entering each setting of [Setting]. At this time, the processing status is displayed in the message display area, and the statistical calculation result is displayed in [Result] at the timing of "Data collection completed".

Item	Details	
Sample QTY	Number of fastening history data	
Average Num	Average peak torque	
σ	σ of peak torque	
3σ/AVE	3σ of peak torque÷Average peak torque	
CP	CP of peak torque	
CPK	CPK of peak torque	
OK Count	Number of tightening results (OK) in fastening history data	
NOK Count	Number of tightening results (NOK) in fastening history data	
Message	Display	Condition
	Data Uploading	Collecting fastening history data
	No Statistic Data	No fastening history data
	Interrupted	Error occurred while collecting fastening history data
	Data Completion	Collection of fastening history data completed
	Setting Comp	Specified search spindle number does not exist

4-7.Parameter Edit

[Upload] [Download] [Verification] available for the selected spindle number(1～32) and parameter Number.
Password (1234) is required to [Download].
Read the fastening parameter for parameter No.1 and spindle No.1 automatically when power is on.

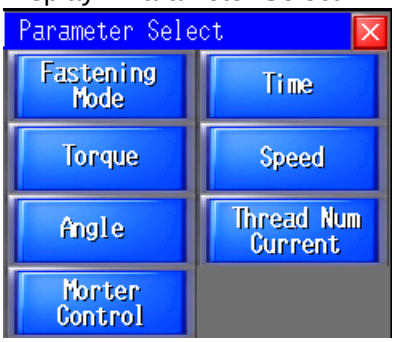


A number indicating the tool type is displayed in "Tool number". The table below shows the correspondence between tool numbers and tool types.

Tool number	Tool type	Tool number	Tool type
1	UNR-G613-50NT	42	UNR-G613-60NTC
3	UNR-G613-100NT	43	UNR-G613-200NT(S13)
4	UNR-G613-200NT	44	UNR-G613-400NT(S13)
5	UNR-G613-300NT	51	UNR-G640-110NTC
6	UNR-G613-400NT	52	UNR-G640-135NTC
11	UNR-G640-800NT	53	UNR-G640-195NTC
12	UNR-G640-1000NT	54	UNR-G640-800NT(S13)
13	UNR-G640-1300NT	55	UNR-G640-1000NT(S13)
21	UNR-G100-1900NT	56	UNR-G640-1300NT(S13)
22	UNR-G100-2500NT	61	UNR-G100-250NTC
23	UNR-G100-3700NT	62	UNR-G100-380NTC
24	UNR-G100-5400NT	63	UNR-G100-550NTC
25	UNR-G100-7000NT	64	UNR-G100-1900NT(S13)
26	UNR-G100-10000NT	65	UNR-G100-2500NT(S13)
41	UNR-G613-30NTC	66	UNR-G100-3700NT(S13)

Display“Keyboard” by touching each set up value and input the number.

"Keyboard" is closed by ENT (completion of input), ESC, or screen change.
Display「Parameter Select Window」by touching Main Menu switch.



Touch the ⇧⇩ switch to switch parameters.

⇧ → Switch to [Thread – Current (2/2)]

Fastening Mode

⇧⇩

Torque (1/2)

⇧⇩

Torque (2/2)

⇧⇩

Angle (1/2)

⇧⇩

Angle(2/2)

⇧⇩

Moter Control

⇧⇩

Time (1/2)

⇧⇩

Time (2/2)

⇧⇩

Speed

⇧⇩

Thread – Current (1/2)

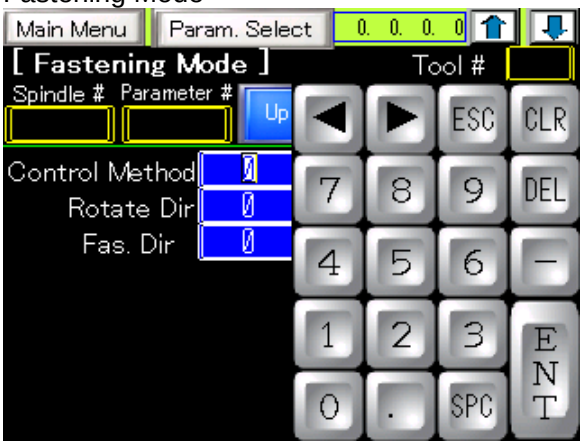
⇧⇩

Thread – Current (2/2)

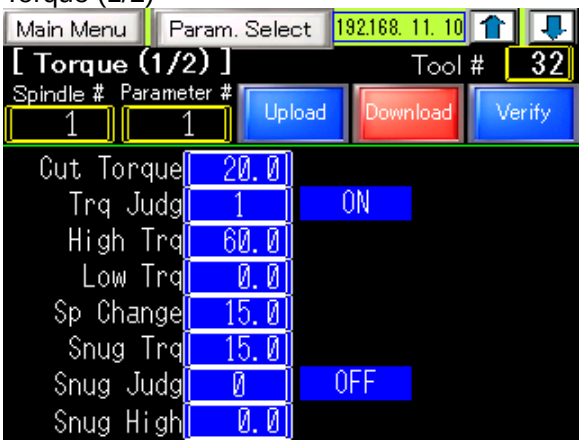
⇩ → Switch to [Fastening Mode]

●The fastening parameter list

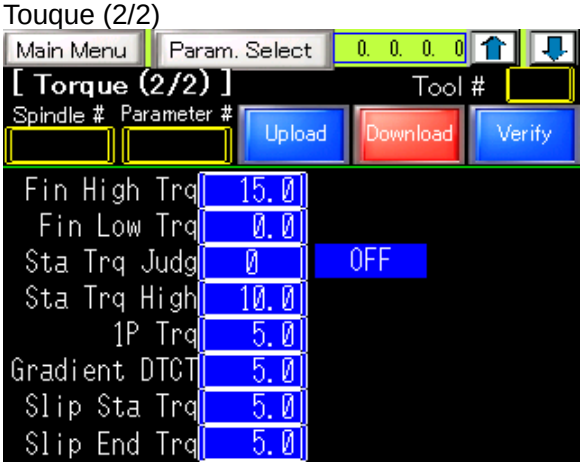
Fastening Mode



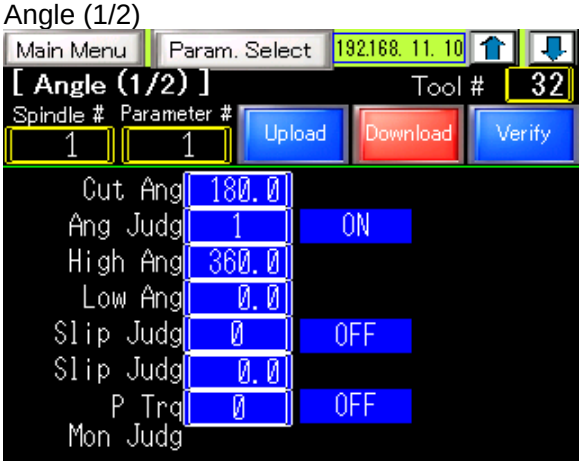
Torque (1/2)



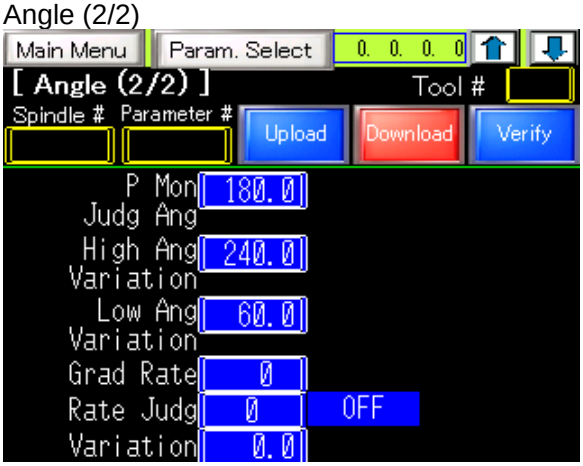
Touque (2/2)



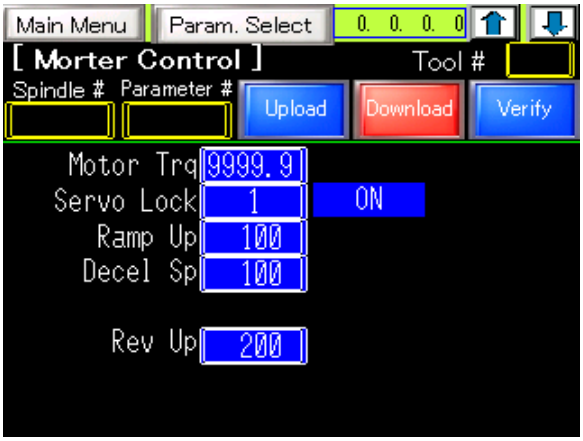
Angle (1/2)



Angle (2/2)



Motor Control



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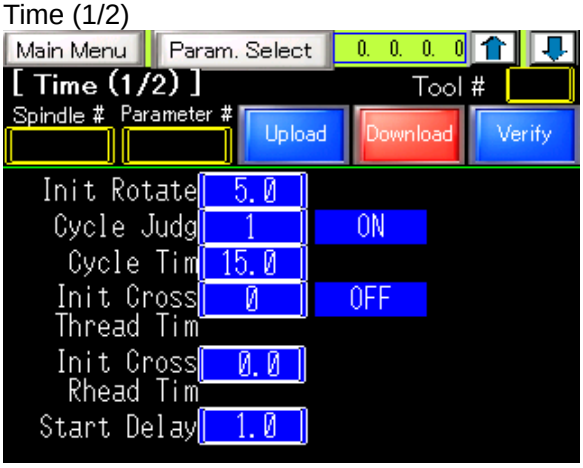
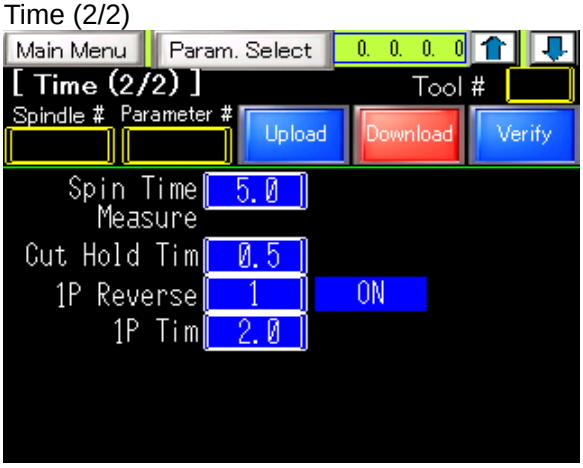
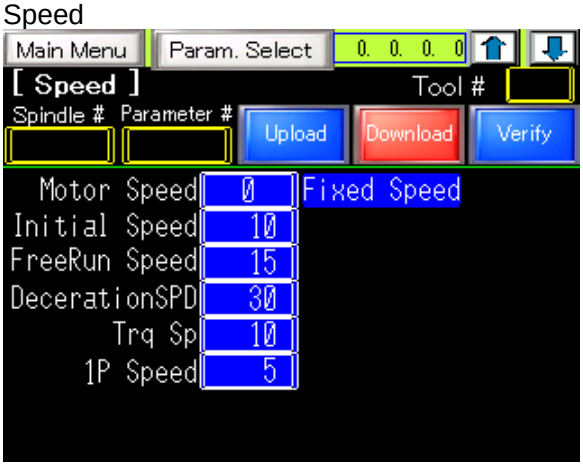
Time (1/2)



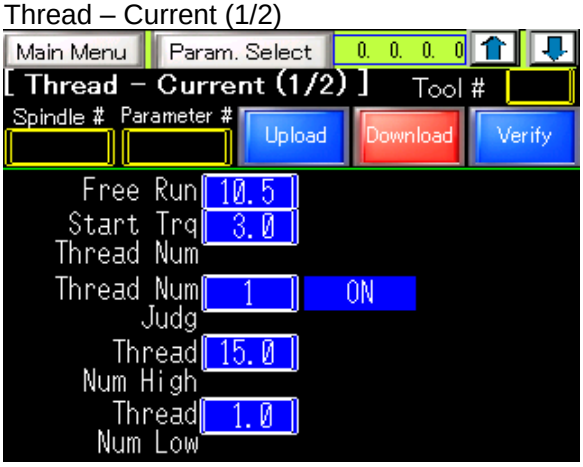
Time (2/2)



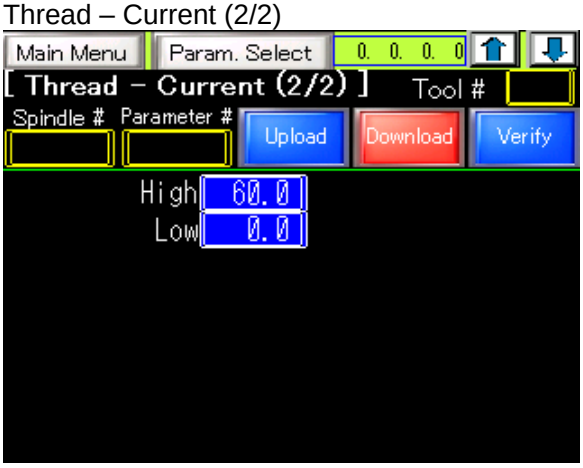
Speed



Thread – Current (1/2)



Thread – Current (2/2)

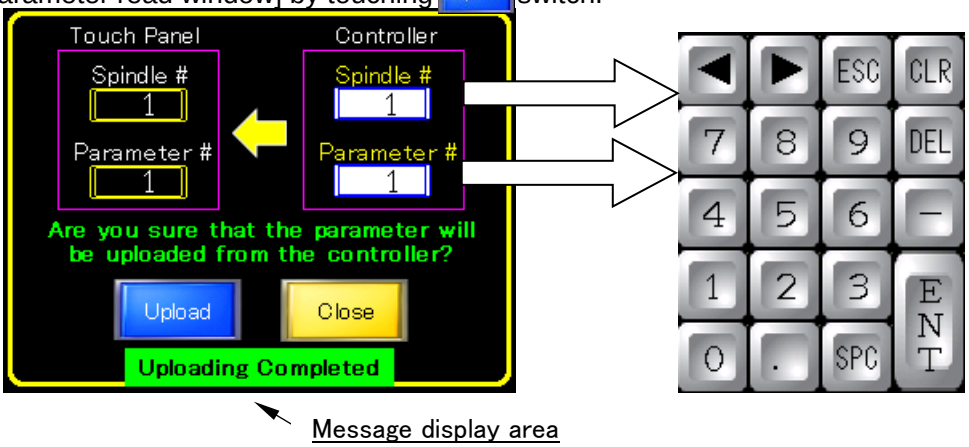


If you enter a numerical value for the following fastening parameters, the explanation of the parameter will be displayed on the right.

Parameter	Input	Display
Control	0	Torque
	1	Angle
	2	Plastic Area Ang
	3	Pre-Load
	4	Pin-Hole
	5	Spin Check
	6	Pos Align
Rotate Dir	0	CW
	1	CCW
Fas. Dir	0	Fasten
	1	Open
Judgments	0	OFF
	1	ON

4-7-1.Parameter Upload

Display [Parameter read window] by touching Upload switch.



Display “Keyboard” by touching the Controller value of [Spindle #] and [Parameter #].
“Keyboard” is closed by ENT (completion of input), ESC, or screen change.
Upload the fastening parameter from the controller to the touch panel by touching Upload switch after inputting [Spindle #] and [Parameter #].
At this time, the processing status is displayed in the message display area, and the fastening parameters are reflected on the touch panel at the timing of [Uploading Completed].

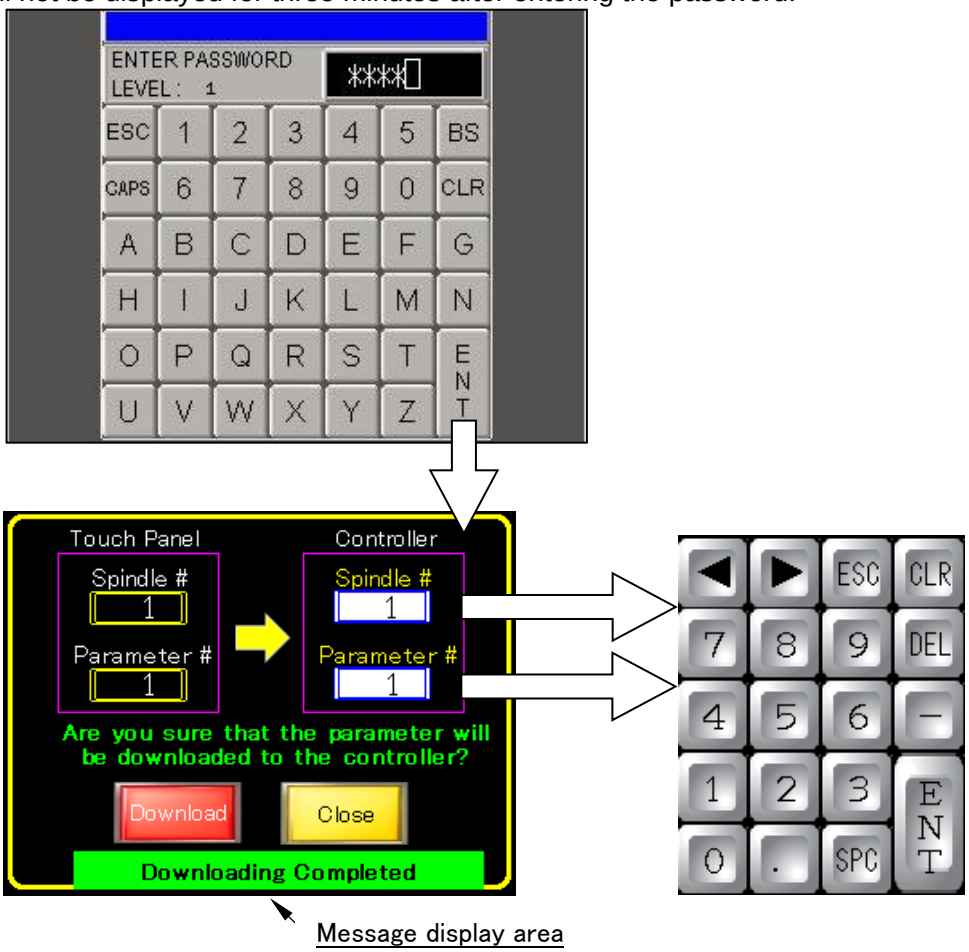
	Display	Condition
Message	Discon Spd No.	Not Exist spindle number
	Network Error	Network error occurred
	Uploading	Uploading fastening parameters
	Uploading Completed	Uploading of fastening parameters is completed

Touch the Close switch to return to the [Parameter Edit] screen.

4-7-2.Parameter Download

※ When writing parameters of other spindle unit number, confirm that the nutrunner is the same.
Writing in a state where the nutrunner is different will cause an alarm 3-2 Tool type error, preventing normal operation.
To return to the original state, write the setting value that was backed up in the user console.

Display「Password Window」by touching Download switch.
Display「Parameter Download Window」by inputing the password (1234). The "ENTER Password" window will not be displayed for three minutes after entering the password.



Display “Keyboard” by touching the Controller value of [Spindle #] and [Parameter #].
“Keyboard” is closed by ENT (completion of input), ESC, or screen change.
Download the fastening parameter from touch panel to the controller by touching Download switch after inputting [Spindle #] and [Parameter #].
At this time, the processing status is displayed in the message display area, and the fastening parameters are reflected in the unit at the timing of [Downloading Completed].

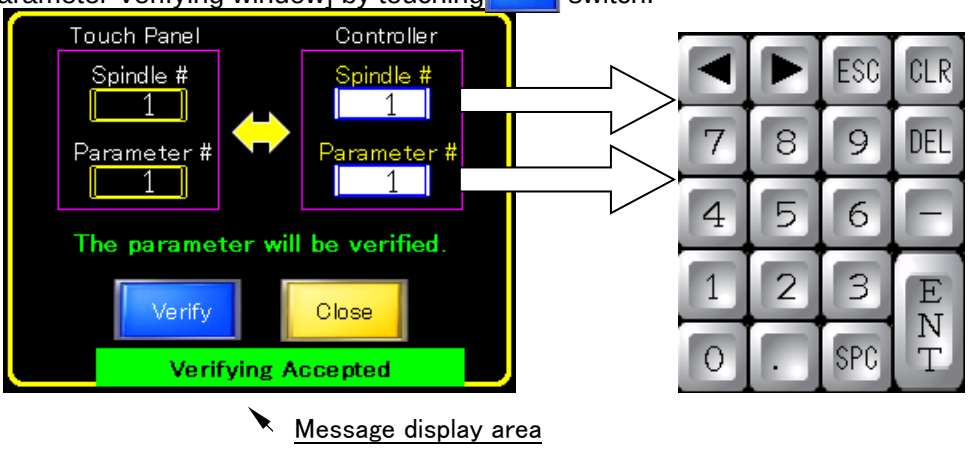
	Display	Condition
Message	Discon Spd No.	No spindle number does exist.
	Network Error	Network error occurred
	Un Upload	Loading of fastening parameters is incomplete
	Sys Busy	System busy or Resetting
	Downloading	Downloading fastening parameters
	Downloading Completed	Downloading of fastening parameters is completed
	No Match Tool No.	No Match Tool number
	Download Error [Fas. Mode]	Abnormal set value of fastening parameter [Fas. Mode]
	Download Error [Torque]	Abnormal set value of fastening parameter [Torque]
	Download Error [Angle]	Abnormal set value of fastening parameter [Angle]
	Download Error [Time]	Abnormal set value of fastening parameter [Time]
	Download Error [Speed]	Abnormal set value of fastening parameter [Speed]
	Download Error [Thread - Current]	Abnormal set value of fastening parameter [Thread - Current]
	Download Error [Morter Control]	Abnormal set value of fastening parameter [Moter Control]

Touch the 

switch to return to the [Parameter Edit] screen.

4-7-3.Parameter Verify

Display [Parameter Verifying window] by touching Verify switch.

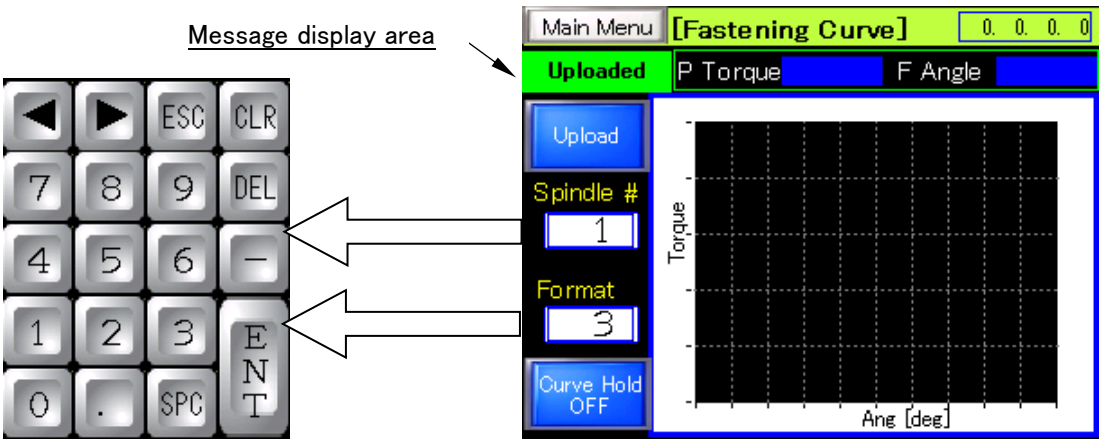


Display Keyboard by touching the Controller value of [Spindle #] and [Parameter #].
"Keyboard" is closed by [ENT] (completion of input), [ESC], or screen change.
Verify the fastening parameter for the controller and touch panel by touching Verify switch after inputting [Spindle #] and [Parameter #].
At this time, the processing status is displayed in the message display area, and the touch panel and the unit fastening parameters are compared at the timing of [Verifying Accepted].

	Display	Condition
Message	Discon Spd No.	No spindle number does exist.
	Network Error	Network error occurred
	Un Upload	Loading of fastening parameters is incomplete
	Verifying	Verifying fastening parameters
	Verifying Accepted	Verifying of fastening parameters is completed
	No Match Tool No.	No Match Tool number
	Verify Error [Fas. Mode]	Set value of the fastening parameter [Fas. Mode] does not match between the unit and the touch panel
	Verify Error [Torque]	Set value of the fastening parameter [Torque] does not match between the unit and the touch panel
	Verify Error [Angle]	Set value of the fastening parameter [Angle] does not match between the unit and the touch panel
	Verify Error [Time]	Set value of the fastening parameter [Time] does not match between the unit and the touch panel
	Verify Error [Speed]	Set value of the fastening parameter [Speed] does not match between the unit and the touch panel
	Verify Error [Thread - Current]	Set value of the fastening parameter [Thread - Current] does not match between the unit and the touch panel
	Verify Error [Morter Control]	Set value of the fastening parameter [Morter Control] does not match between the unit and the touch panel

4-8.Fastening Curve

A fastening curve is displayed.



Display Keyboard by touching the Controller value of [Spindle #] and [Format].
“Keyboard” is closed by [ENT] (completion of input), [ESC], or screen change.
Enter the type of fastening curve data to be load in "Format". The values that can be entered are as follows.

	Input	Type of fastening curve
Format	3	Torqu x Angle (Up to 512deg at 0.5deg intervals)
	23	Torqu x Time (Up to 10.2sec at 10msec intervals)
	33	Torqu x Time (Up to 5.1sec at 5msec intervals)
	43	Torqu x Time (Up to 2.0sec at 2msec intervals)
	53	Torqu x Time (Up to 1024msec at 1msec intervals)
	63	Torqu x Time (Up to 16.3sec at 20msec intervals)
	4	Current x Angle (Up to 512deg at 0.5deg intervals)
	24	Current x Time (Up to 10.2sec at 10msec intervals)
	34	Current x Time (Up to 5.1sec at 5msec intervals)
	44	Current x Time (Up to 2.0sec at 2msec intervals)
	54	Current x Time (Up to 1024msec at 1msec intervals)
	64	Current x Time (Up to 16.3sec at 20msec intervals)

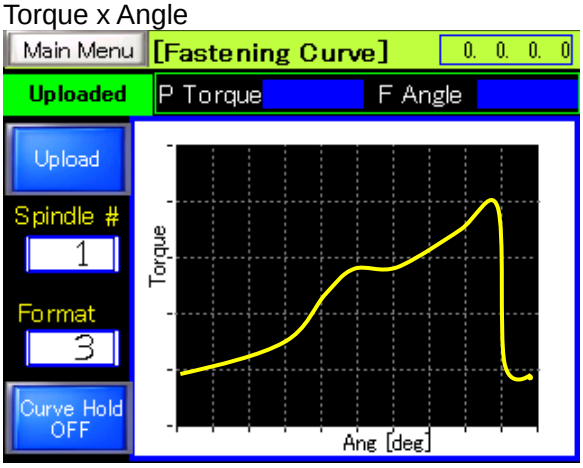
Input the "spindle #" (1 to 32) and "Format" and touch 

switch to read the fastening curve data from the unit.
At this time, the processing status is displayed in the message display area, and the fastening curve is displayed on the touch panel at the timing of [Uploaded].

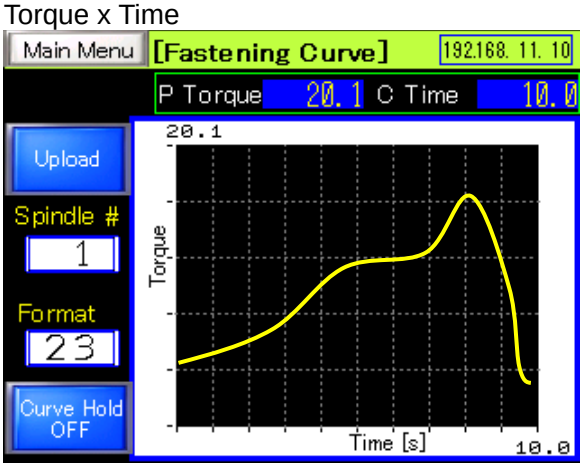
	Display	Condition
Message	Discon Sp No.	No spindle number does exist.
	No Curve Data	Not Exist fastening curve data
	Uploading	Uploading fastening curve data
	Uploaded	Uploading of fastening curve data is completed
	No Format No.	Invalid Format value
	Stop Upload	Error occurred while collecting fastening curve data

Fastening curve data is displayed as follows for each input "Format" value.

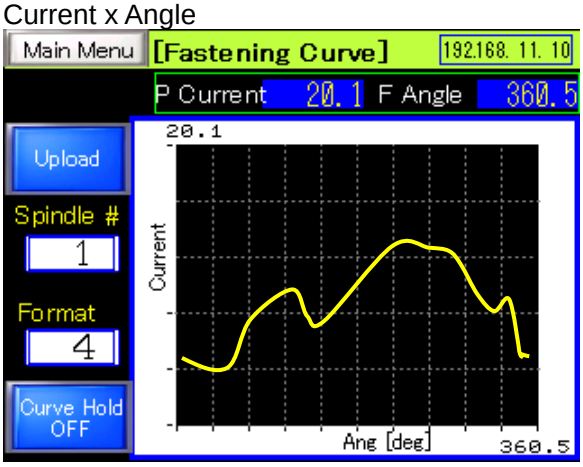
Torque x Angle



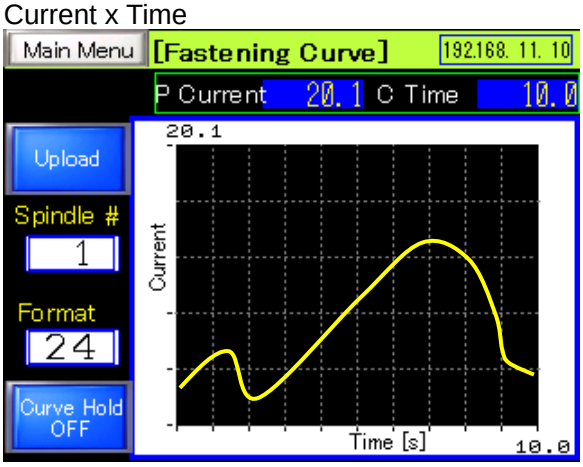
Torque x Time



Current x Angle



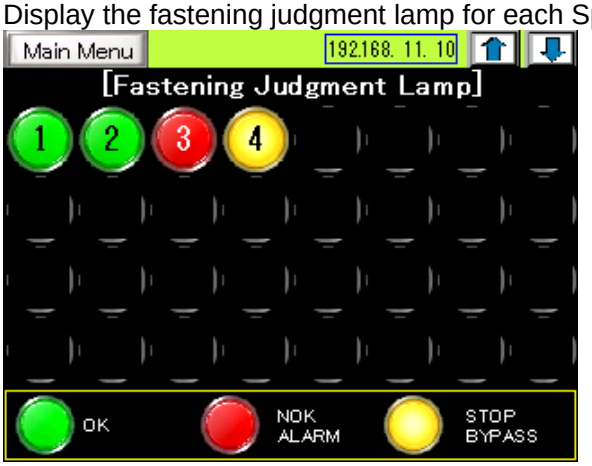
Current x Time



When the Curve Hold OFF switch is displayed, fastening is performed or the fastening curve display is updated when the Upload switch is touched.
When the Curve Hold OFF switch is touched, the switch display changes to Curve Hold ON, and the fastening curve display is updated only when the Upload switch is touched.
If you touch the Curve Hold ON switch again, the switch display will return to Curve Hold OFF.

4-9.Fastening Judgment Lamp

Display the fastening judgment lamp for each Spindle.

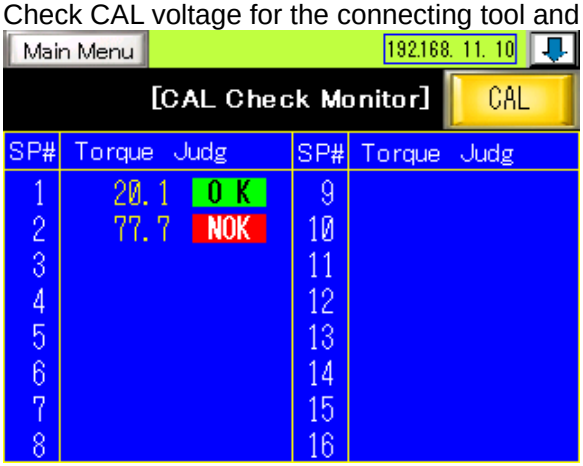


Touch  to change the axis that displays the fastening judgment.
Fastening judgment can be displayed for up to 128 axes (virtual axis).

Lamp Color	Judgment	Condition
Green	OK	Fastening result judges ends within range,cycle ends.
Red	NOK	Fastening result judges out of range, cycle ends.
	ALARM	Abnormal occurs during starting or operating on work operation.
Yellow	STOP	Emergency stop during fastening.
	BYPASS	BYPASS stop during fastening.

4-10.CAL Check Monitor

Check CAL voltage for the connecting tool and display [CAL Torque Value] and [Judgment].



Touch  to change the spindle unit that displays the CAL voltage.
Up to 32 axes of CAL voltage can be displayed.
Check CAL voltage of the connecting tool on touching 

switch.

Item	Condition	
Torque	Peak torque value detected during CAL voltage check [Nm]	
Judg (Judgment)	Dilplay	Condition
	OK	CAL voltage is within acceptable range
	NOK	CAL voltage out of acceptable range

Memo

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