CONTROLLER
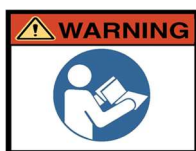## for
UCX-AF Electric Oil Pulse Tools
UCX-AF600L, UCX-AF600, UCX-AF700, UCX-AF900

UECP-4900E

Instruction Manual

⚠ **WARNING**

-Read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on or working near the UECP-4900E Torque Controller.
Failure to follow the warnings and instructions in this manual can result in serious bodily injury.
-Do not discard the safety and operating instructions.
Give them to the operator.
Save these instructions for future reference.

V1.1 Edition

URYU SEISAKU, LTD.

Table of Contents

Read Before Use

Read through this instruction manual and familiarise yourself with the system before installation, operation, maintenance and inspection. Save this instruction manual for quick reference at the time of need. This instruction manual has classified cautions WARNING and CAUTION for personal injuries and damages caused by operations in disregard of safety instructions.

⚠ WARNING : A fatality and/or heavy personal injury is highly possible by improper operation.　Urgent warning is essential in the event of accident.

⚠ CAUTION : A dangerous situation accompanying mid-slight personal injury and/or property damage is possible by improper operation.

⚠ CAUTION sign also warns the risk of serious consequences depending on the situation.　So, follow all instructions given in this instruction manual always.

◆Installation and surroundings

⚠ CAUTION

- ●Place on a metal or other incombustible component to prevent fire.
- ●Keep away from the combustibles to prevent fire.
- ●Avoid foreign material intrusion to prevent fire.
- ●Set UECP-4900E on a site that can bear its weight to avoid personal injury from accidental falling.
- ●Keep the workplace well lighted and clean to avoid personal injury.
- ●Never wear loose-fitting clothes or dangling jewelry when using this sytem, and always wear the proper clothes for your job.　In addition, be careful not to get your hair caught in tools, tie long hair with a rubber ribbon or the similar, and wear a protective helmet to prevent personal injury.
- ●Securely install and fix this system to avoid personal injury in case of an emergency like an earthquake.

◆Wiring

⚠ WARNING

- ●Be sure to turn off UECP-4900E prior to wiring to avoid electric shock or fire.
- ●Make sure the ground wire is properly grounded to avoid electric shock or fire.
- ●Carry out wiring after you installed UECP-4900E to avoid electric shock or fire.
- ●Expert electricians shall conduct wiring to avoid electric shock or fire.
- ●Always use Y-shape crimp contact or round shape crimp contact when wiring UECP-4900E rear terminals to avoid electric shock or fire.

⚠ CAUTION

- Make sure the rated voltage o UECP-4900E is the same as power supply from the socket to avoid electric shock or fire.
- Make sure to carry out correct wiring to avoid electric shock or fire.

◆Handling and operation

⚠ WARNING

- Assurance of workplace safety by operators themselves before switching UECP-4900E is essential to prevent personal injury.
- Never touch switching devices with wet hands to avoid electric shock.
- Never touch current-carrying UECP-4900E rear terminals even if the tool is not in operation to avoid electric shock.
- Neither damage, stress, load up, nor pinch power cord to avoid electric shock.
- Never connect and disconnect UECP-4900E and tool while UECP-4900E is in operation to avoid electric shock and tool damages.

⚠ CAUTION

- Carry out the operation under setup within the instructed range to avoid personal injury and burn.
- Operate UECP-4900E under good footing and environment.   Operation by awkward posture is dangerous.
- Carry out the operation with greatest care.   Avoid careless and unreasonable action, operation under fatigued state and long time operation without break because doing so causes sick and personal injury.

◆Maintenance and inspection

⚠ WARNING

- Never forget to switch off UECP-4900E first for check or the replacement.   Disconnect power cord from the socket to prevent electric shock.
- Only authorized persons do maintenance and inspection.   Take off metal products first such as wristwatch, rings, and use insulated tools to prevent electric shock or personal injury.   Inspect the cord periodically and repair it by authorized persons when damage is observed.
- Only URYU or its authorized distributors repair UECP-4900E to avoid electric shock, personal injury or fire.

◆Disposal

⚠ CAUTION

- Dispose of UECP-4900E as an industrial waste.

◆Others

⚠ CAUTION

- Never modify UECP-4900E to avoid electric shock, personal injury or fire.
- Immediately stop the operation, turn off UECP-4900E and disconnect power cord from the socket when facing emergencies or feeling abnormalities.

General Precautions

- Note that all graphic explanatios in this manual can show some components unmasked form to explain the interior details which are covered by safety masking always. Be sure to put the masking back to the original position as specified in this manual before operation and run it as intended.
- Keep any unauthorized persons away from UECP-4900E and its system.
- UECP-4900E and its system are not waterproof. Protect them from exposure to water to avoid short circuit creating causes of fire or electric shock.

Disclaimer

2 Software license

Software Licenses Used in This Controller

The software embedded in this controller consists of several independent software components, each of which has a copyright of us or a third party.

Among the software components of this controller, the software we develop or create and the associated documents contain our copyright and are protected by copyright laws, international treaties and other relevant laws.

The instrument also uses software components that are distributed as open source software under the license provisions set by a third party.

Some open source software requires that you make the source code available when you distribute executable software components in its license terms. Such open source software is provided by CD-R.

Please refrain from contacting us about the contents of the open source software source code.

Also, software components for which we have copyrights are not covered by the source code.

3 Outline

3.1 Overview dimensions

3.1.1 UECP-4900E

Front

Side

Setting PC server

HUB

LAN CABLE

UECP-4900E FRONT

UECP-4900E REAR

Power Cord

Outlet

RS232 CABLE

Setting PC

Joint Cable Assembly

UCX-AF Tool

Pokayoke Sequencer
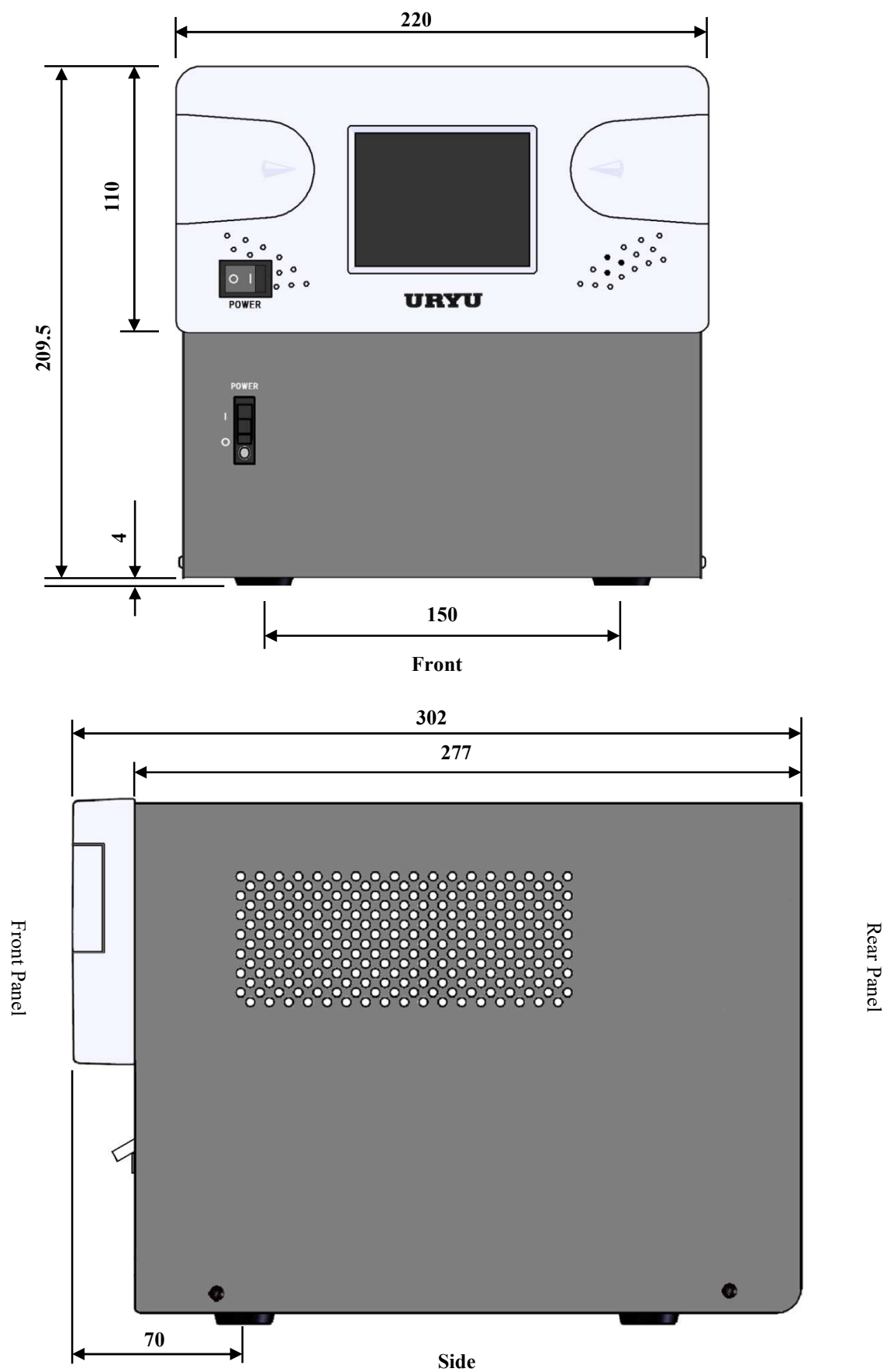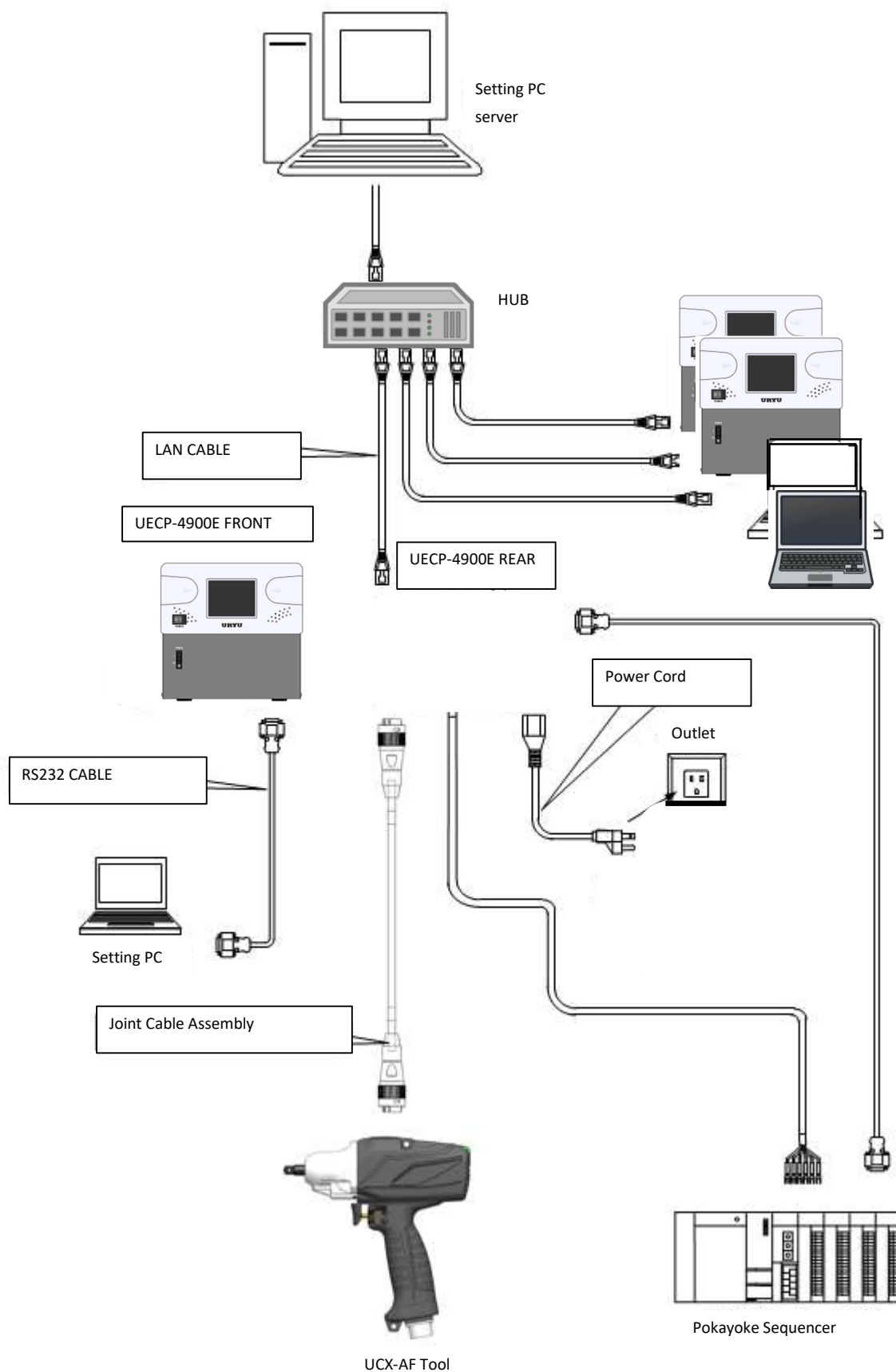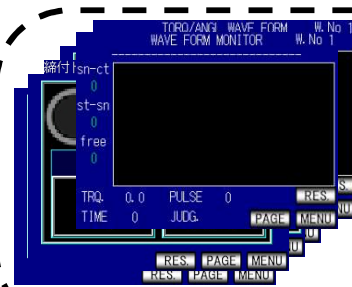
・Torque value display screen
・Work count display screen
・Tightening torque monitor screen
・Tightening data display screen
・Waveform Monitor Screen
・Torque/Angle Waveform Monitor Screen

Main Screen
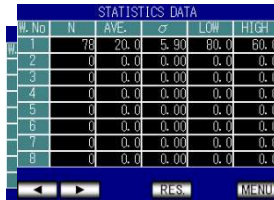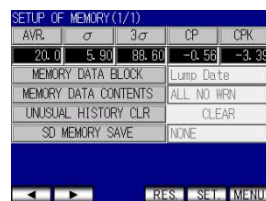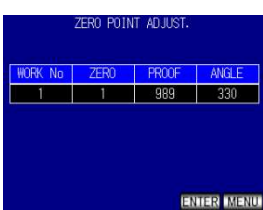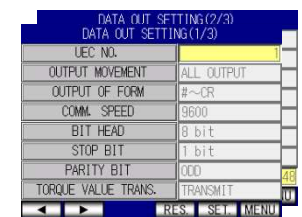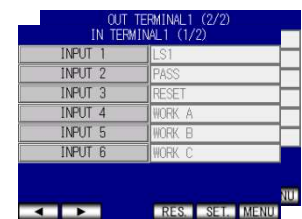
3.4 Features

①Self-diagnosis function

　　When the power is turned on, ROM → RAM → A/D → filters are checked for self-diagnosis.

②Various tightening detection functions and tightening number control functions are provided.

③Supports tools using AD torque sensors.

④Tool management by total number of tightening and total number of pulses is possible.

⑤The tool can be operated by input from the I/O terminal.

⑥The input terminal can be switched between the NPN method and the PNP method.

⑦I/O checks and error indications can be checked on the display or sound of the touch panel on the PC or the front.

⑧Settings can be changed or monitored by inputting from a PC or by operation from the touch panel on the front.

⑨Functions of the touch panel

　　・Display of various tightening data

　　・Changing and monitoring various set values

　　・Various check functions

⑩Functions of the dedicated PC software

　　・Sending and receiving set values

　　・Receiving and Saving Statistical Data

　　・Reading SD card data

⑪Ethernet (TCP/IP) is supported.

　　・Connected to the setting software, sending/receiving the set value, and sending the tightening result/waveform data.

　　・Connection to the data management system made by Uryu and transmission of the tightening result/waveform data

　　・Connects to the server and sends the result data of receiving and tightening the tightening instruction data.

　　・In order to support each user's own network system, the software must be adapted to the specifications.

⑫Supports SD cards

　　・Saving Tightening Data, Statistical Data, and Waveform Data

　　・Saving/reading of set value

　　※It supports card capacity of up to 32GB.

⑬3-step tightening

　　・When tightening, the motor output is switched in three stages to increase the tightening accuracy and stabilize the axial force.

●The software may be upgraded without prior notice for functional improvement.

●The software version of the main unit can be checked by the sticker next to the power switch or by the screen display when the power is turned on.

3.5 How to install

Be sure to observe the following precautions when installing and installing the product.

3.5.1 Installation location

1)Indoors not exposed to rainwater or direct sunlight. The products are not waterproof.
2)Location that is not exposed to corrosive gas, flammable gas, grinding fluid, oil mist, iron powder, chips, etc.
3) A well-ventilated place free from humidity, dirt, and dust.
4) Vibration-free place.
5)Location where the power cord can be unplugged immediately if an abnormality occurs in the controller.
6)When using the product in a pollution degree 3 (*) environment, install the product inside the enclosure.

3.5.2 Environmental conditions

Item	Conditions
Location of use	Indoor use
Ambient temperature	0.C to 50.C (no freezing)
Ambient humidity	85%RH or less (no condensation)
Storage temperature	-10 to 70 pC (no freezing)
Storage humidity	90% RH or less (no condensation)
Vibration	5.6 m/s^2 or less (10 to 60Hz)
Altitude	1000 m or less
Overvoltage category	Overvoltage category II *
Pollution degree	Pollution degree2 ※

※・・・ The overvoltage category (I, II, III) and pollution degree (1, 2, 3) of the individual components according to IEC664
are classified.
As shown above, this system is overvoltage category II and pollution degree level 2.
(NOTE)IEC・・・ International Electrotechnical Commission

4 Specifications

4.1 UECP-4900E

Item	Content
Power supply voltage	AC 230 [V]
Power frequency	50 / 60 [Hz]
Input	10A, 230V, 50/60Hz
Output	7A, 100V
IP Rating	IP3X
Electrical protection	Class I
Insulation resistance	DC 500 [V] 10 [MΩ] or more
Power consumption	18 〜 710[VA]
Mass	Approx. 11.0 [kg]
External Dimensions	220(W) × 213.5(H) × 303(D)
Main function	Torque Control/Monitoring, Angle Control/Monitoring, Tightening Quantity Management
Setting method	Operation and setting software via touch panel
Display	3.5-inch liquid crystal (320 × 240 dots) Touch Panel TFT Color LCD
Terminal — Input signal	Operating voltage/current: DC24V/approx. 10mA (NPN/PNP switchable) 6 points (free format) * Input should be done by contact input.
Terminal — Output signal	Contact capacity :DC 30 V、1 A 6 points (free format)
Key	Displayed on the touch panel: (ENTER ENTER), (RESET RES.), (PAGE PAGE), 10 keys, etc.
Option	Part Name: Setting PC Cable URYU Part code: 910-219-0 Specifications: Straight cable for RS232C Pin Female-D-sub9 Pin Female
Option	Part Name: Joint cable Assembly(5m) URYU Part code: 910-727-0 Part Name: Joint cable Assembly (10m) URYU Part code: 910-728-0 Part Name: Joint cable Assembly (20m) URYU Part code: 910-729-0 Specifications: Joint cable for UCX-AF tool
Applicable Standard	EN61800-5-1

5 Part Names and Functions

5.1 Front Panel

UECP-4900E

① **Rocker switch**

This is ON/OFF switch for the controller.

② **Buzzer**

This buzzer is activated for various abnormalities.

When an error occurs, touch the screen to stop the buzzer.

③ **PC-connector (D-sub male 9-pin)**

This is a RS232C for connecting to a computer for configurations.

Use a straight cable for the communication cable.

④ **SD card slot**

This is a slot for SD cards. Up to 32GB is supported.

⑤ **Touch panel**

Tightening data and waveform data is displayed.   The setting value is displayed/entered.

If the screen is touched while the buzzer is ON when an error occurs, the buzzer can be stopped without clearing the error.

⑥ **Earth leakage breaker**

Breaker for power supply. The switch is turned OFF in the event of an electric leakage.

UECP-4900E
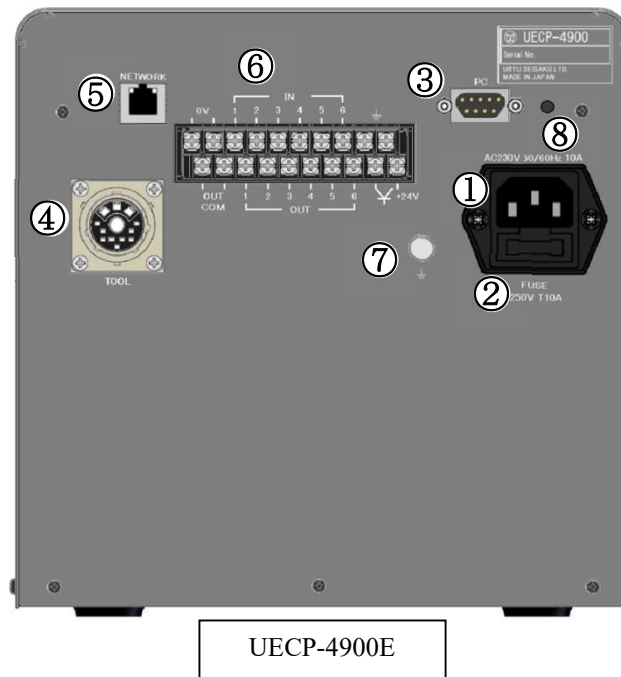
① **Power cord terminal**
　Connect the power cord.
　Be sure to ground the power plug.

② **Fuse holder**
　Protective fuse (T10A) for controllers.

③ **RS-232C connector (D-sub male 9-pin)**
　RS-232C for data input/output.
　Connect the programmable controller, PC, etc.
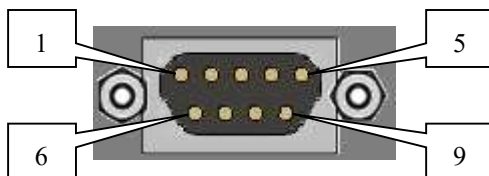
④ **Connector for AD torque sensor cable**
　Connect the sensor cable from the AD tool.

⑤ **NET WORK connectors**
　Connector for Ethernet connection.
　Connect to Quality Server, etc.

Wiring details	
Pin number	Signal Content
1	
2	TXD (data transmission line)
3	RXD (receive line of data)
4	
5	SG (signal ground)
6	
7	
8	
9	
Frame	FG (Frame ground)

⑥ Terminal block for Input/Output

The assignment of terminal block signal contents is free format. Signals of IN 1 to 6 and OUT 1 to 6 can be changed by I/O assignment setting.
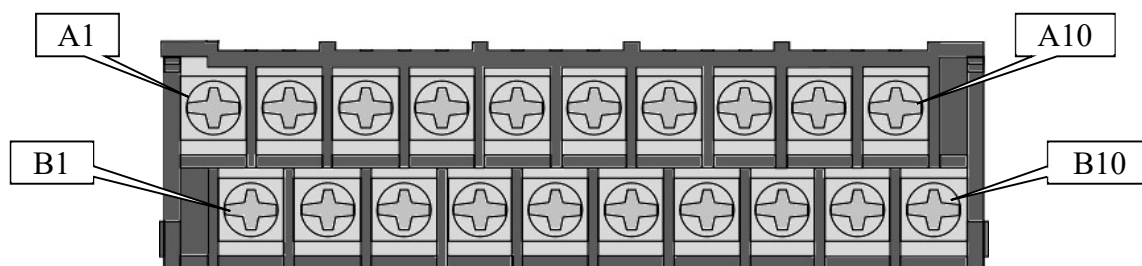
Terminal Number	Signal Content	Terminal Number	Signal Content
A1	IN COM: Common for input terminals (0V or 24V)	B1	OUT COM: Common for output terminals
A2		B2	
A3	IN 1 to 6: Input terminals	B3	OUT 1 to 6: Output terminals
A4		B4	
A5		B5	
A6		B6	
A7		B7	
A8		B8	
A9	GND: Signal GND (0V)	B9	※Not used
A10	FG: Frame GND	B10	DC+24V: Power output

※**Input to input terminals A1 and A2 to A6 should be done by contact input.**

※**Output terminals B1 and B2 to B6 are non-voltage outputs. The wiring must be DC24V or less.**

※**For wiring to the terminal block, use Y type crimp terminal or round type crimp terminal.**

※**When the controller is shipped from the factory, the input terminal is set to the NPN method. Refer to 14.6 NPN/PNP Switching (Link) when using the PNP method. When using the PNP-type, the voltage at IN COM terminal changes from 0V to 24V.**

⑦ Earth terminal

Grounding terminal. If the power plug cannot be grounded, be sure to ground it at the ground terminal.

⑧ Maintenance button

※**Not used**

6 How to use

6.1 Operation Preparation

Preparation for operation

①Connect the power cord, joint cable and a UCX-AF Tool.

②When the rocker switch and earth leakage breaker are turned on and the power to the controller is turned on, self-diagnosis operation is performed.

③The torque display screen appears when the self-diagnosis is completed.

④Perform the setting according to the measurement target.

6.2 Main Screen Description

The tightening data display screen consists of the following six screens.

②Work count display screen

④Tightening data display screen

⑤Waveform Monitor Screen

⑥Torque/Angle Waveform Monitor Screen

・The count judgment lamp (left) and the tightening judgment lamp (right) are located at the top of the torque value display screen and the work count display screen. The count judgment lamp lights green when the count is OK, and lights red when the count is NOK. In addition, "COUNT" characters are displayed in the judgment lights.

・The tightening judgment lamp indicates "OK" when the tightening is OK. If a tightening NOK outside the upper and lower limit ranges is reached, the tightening judgment lamp indicates the type of tightening data that has fallen outside the upper and lower limit ranges. In the case of torque, "TRQ" In the case of the number of pulses, "PLS" In the case of tightening time, "TIME" In the case of coasting angle, "FREE" In the case of tightening angle, "ANG" is displayed. Lights up yellow when the tightening judgment is LOW NOK, red when it is HIGH NOK, and green when it is OK.

・At the top of the tightening torque monitor screen, there are a count judgment lamp (left) and a torque judgment lamp (right). The count judgment lamp lights green when the count is OK, and lights red when the count is NOK. In addition, the letters "OK" and "NOK" are displayed in the judgment lamp. TORQUE indicator indicates "OK" when the tightening is OK.

・The waveform monitor screen displays the waveform data of the last tightening.
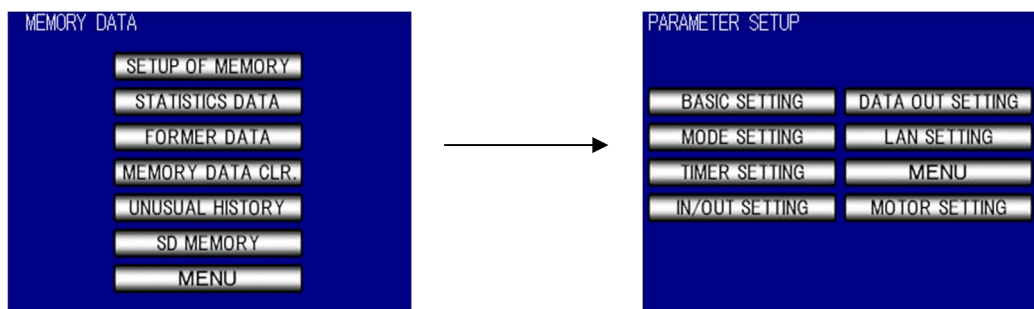
※It takes several seconds to display the waveform data.

6.3 Settings

The setting value can be changed using the touch panel operation.
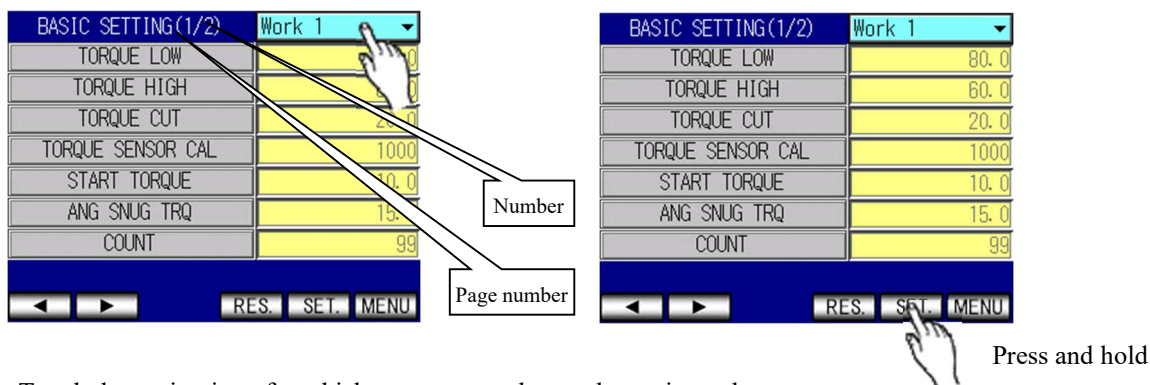
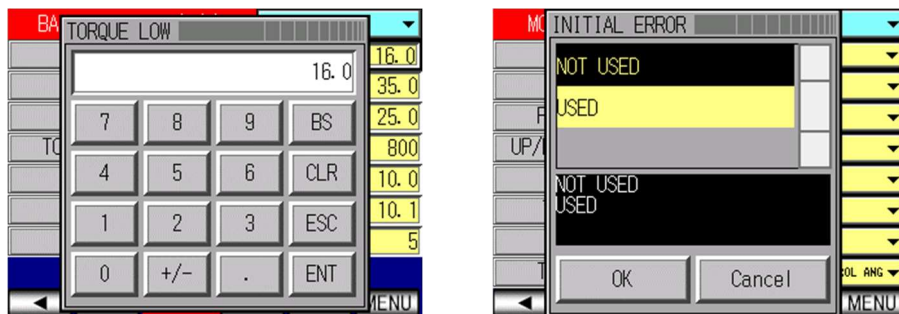① On the main screen, touch [MENU] to go to the mode selection screen.

②Select the setting item to change the setting value on the mode selection screen.

MEMORY DATA

- SETUP OF MEMORY
- STATISTICS DATA
- FORMER DATA
- MEMORY DATA CLR.
- UNUSUAL HISTORY
- SD MEMORY
- MENU

PARAMETER SETUP

- BASIC SETTING / DATA OUT SETTING
- MODE SETTING / LAN SETTING
- TIMER SETTING / MENU
- IN/OUT SETTING / MOTOR SETTING

② On the setting screen, each setting item is displayed. Touch [▶] to select the next page, touch [◀] to select the previous page, and touch to select the work number to be set by touching the work number on the upper right of the screen. Be located at the bottom of the screen. Press and hold [SET] to enter the setting mode. The setting value can be changed.

BASIC SETTING(1/2)	Work 1	
TORQUE LOW		
TORQUE HIGH		
TORQUE CUT		
TORQUE SENSOR CAL		1000
START TORQUE		
ANG SNUG TRQ		
COUNT		99

Number
Page number

BASIC SETTING(1/2)	Work 1	
TORQUE LOW		80.0
TORQUE HIGH		60.0
TORQUE CUT		20.0
TORQUE SENSOR CAL		1000
START TORQUE		10.0
ANG SNUG TRQ		15.0
COUNT		99

Press and hold

③ Touch the setting item for which you want to change the setting value.
Touch to display the numeric entry screen.
The numeric keypad is displayed for the value to be entered. Otherwise, the choices are displayed.

TORQUE LOW   16.0

7	8	9	BS
4	5	6	CLR
1	2	3	ESC
0	+/-	.	ENT

16.0 / 35.0 / 25.0 / 800 / 10.0 / 10.1 / 5

INITIAL ERROR

NOT USED
USED

NOT USED
USED

OK   Cancel

④ Enter the setting value or touch [OK] or [ENT] confirm the content you want to change. If it is possible to change the entered setting, the setting is written.

If you enter a setting that cannot be changed, the buzzer sounds and the setting value is not written. Enter the setting again.

※ **If the power is turned OFF immediately after changing the setting, the setting may not be changed. After changing the setting, wait for about 10 seconds before turning the power OFF.**

7 Menu

This screen is used to select various functions.

7.1 Basic Setting

The basic setting screen consists of two screens.

・**TORQUE LOW**

Default	80.0 [N・m]
Range	0.0 ～ 999.5 [N・m]
Condition	TORQUE LOW< TORQUE CUT
Description	・This is the setting value for the lower judgement of the measured torque value.

・**TORQUE HIGH**

Default	60.0 [N・m]
Range	0.4 ～ 999.9 [N・m]
Condition	TORQUE CUT < TORQUE HIGH
Description	・This is the set value for the upper judgement of the measured torque value.

・**TORQUE CUT**

Default	20.0 [N・m]
Range	0.3 ～ 999.8 [N・m]
Condition	TORQUE LOW < TORQUE CUT < TORQUE HIGH START TORQUE < SNUG TORQUE < TORQUE CUT
Description	・This is the set value of the tightening stop torque for torque control.

・**TORQUE SENSOR CAL**

Default	1000
Range	100 ～ 9999
Description	・Set the CAL value described in the tool.

・ **START TORQUE**

Default	10.0 [N・m]
Range	0.1 ～ 999.6 [N・m]
Condition	START TORQUE < SNUG TORQUE< TORQUE CUT

Description	・Torque measurement starts when a torque signal input greater than or equal to the start torque is detected.
	・Use of the setting value
	    a, Judgment delay timer activation start point
	    b, Initial error detection timer operation start point
	    c, Cycle error timer operation start point
	    d, Torque measurement delay timer activation start point
	    e, Free-run angle measurement end point
	※**Set the start torque to 1/50 or more of the calibration value (CAL value × calibration ratio × tool ratio). If the starting torque is too low, the OK/NOK judgement will not be possible after tightening, and the next tightening operation may not be possible.**

・ **ANG SNG TRQ (Angle Snug Torque)**

Default	15.0 [N・m]
Range	0.0 ～ 999.7
Condition	START TORQUE < ANG SNG TRQ < TORQUE CUT
Description	・Sets the torque value at which the angle measurement starts. ・When the start torque value is set to a value equal to or greater than the angle snug torque, the value of the angle snug torque is automatically set to the value of the start torque value "+0.1N·m".

・ **COUNT**

Default	99
Range	1 ～ 99
Description	・This is the number of tightening times for one workpiece when the tightening number control function is used. ・This setting is used to determine COUNT OK/NOK.

・ **PROOFREADING RATIO**

Default	1.00
Range	0.01 ～ 9.99
Description	・Correction value used to match the displayed torque and breakaway torque. ※To match the displayed torque and breakaway torque, calculate the value using the following formula. Current Proofreading Ratio × Breakaway Torque ÷ Display Torque = New Proofreading Ratio

・ **TOOL RATIO**

Default	1.00
Range	0.01 ～ 9.99
Description	・Reduction ratio of reduction gear. ・Enter the tool ratio when using a tool with a gear on the tip of the torque sensor, such as a geared type tool of pulse-tool.

・ **PROOFREADING VALUE**

Default	1000
Description	・Proofreading value = Proofreading ratio × Tool ratio × CAL value ・The torque is displayed according to this value and the ratio of the torque signal voltage from the sensor rating.

・ **CHANGE TORQUE LEVEL**

Default	90
Range	55 ～ 95 [%]
Description	※Displayed when the "3 STEP MODE" setting on MODE setting is "Used". ・With the measured torque for 3 STEP tightening 　[TORQUE CUT × CHANGE TORQUE LEVEL] 　　When it is reached, the motor output switches to the setting of the FINAL CURRENT and FINAL SPEED.

7.2 MODE Settings

MODE SETTING(1/6)	Work 1
INITIAL ERROR	NOT USED
CYCLE ERROR	NOT USED
FASTENING ERROR	USED
UP/LOWER LIMIT ERROR	USED
INCOMPLETE JOB	USED
TIME CONT. ST.	NOT USED
BUZZER VOLUME	5
TIGHTENING MODE	AD TORQUE CONTROL ANG

◀ ▶　RES.　SET.　MENU

MODE SETTING(2/6)	Work 1
日本語	ENGLISH
LINE CNT. SELECT	LS1
ALARM BUZZER	USED
PULSE LOW	0
PULSE HIGH	9999
TORQUE CUT CONP.	PEAK DATA
ADDITION. PULSE	0

◀ ▶　RES.　SET.　MENU

MODE SETTING(3/6)	Work 1
UNIT CHANGE	N・m
WORK SIG. SEL.	A～C
LAN OUTPUT SEL.	Setup PC
ANG LOW LMT	0
ANG UPP LMT	9999
ANG CUT	9998
SNUG TORQUE ERROR	Not detected

◀ ▶　RES.　SET.　MENU

MODE SETTING(4/6)	Work 1
SNUG ANG JUDG SEL	Not detected
SNUG ANG LOW LMT	0
SNUG ANG UPP LMT	9999
FREE RUN ANG SEL	Not detected
ANG JUDG SELLECT	Not detected
FREE RUN ANG LOW LMT	0
WAVE DATA CNTNT SLCT	2ms

◀ ▶　RES.　SET.　MENU

MODE SETTING(5/6)	Work 1
PC PORT COMM. SPEED	115200
WAVE DATA MEM SLCT	Function 3
CONFIG. CHANGE HISTORY	NOT USED
INVALID PULSE	3
ENCODER PULSE	1079
ENCODER ANGLE	360
COUNT OK STOP	NOT STOP
AIR/MOTOR	MOTOR

◀ ▶　RES.　SET.　MENU

MODE SETTING(6/6)	Work 1
TOOL STOP SET	NOT STOP
FIRST PICTURE	TORQUE INDECATION
MOTOR OUT SW	START TRQ
3 STEP MODE	USED

◀ ▶　RES.　SET.　MENU

・ **INITIAL ERROR (Initial Error Detection)**

Default	"Not used"
Range	"Not used" ・The initial error detection function is not used. "Used" ・The initial error detection function is used.
Display & Error Reset	・Touch panel display: " INT ERR " and the measured torque value is displayed alternately. ・Judgment LED: Yellow, "TIME" is displayed ・ RES. Or input terminal "RESET"
Description	・The initial error is detected when the tightening time (from start torque to torque CUT) is within the initial error detection timer. ・This setting is used when you want to perform detection such as double-tightening.

・CYCLE ERROR

Default	"Not used"
Range	"Not used" ・The cycle error is not used. "Used" ・The cycle error is used.
Display & Error Reset	・Touch panel display: "CYCLE ERR" and measured torque value is displayed alternatively. Judgment LED: RED, "TIME" is displayed ・ RES. or input terminal "RESET" input
Description	・The cycle error is detected when the tightening time (from start torque to torque CUT) exceeds the cycle error timer. ・This setting is used to regulate the tightening time.

FASTENING ERROR

Default	"Used"
Range	"Not used" ・The tool stops operating until the error is cleared. "Used" ・While the tool is still usable, perform the following tightening operation to reset the error.
Description	・Select the action to be taken when a fastening abnormality other than TORQUE HIGH/TORQUE LOW (initial error, cycle error, or fastening interruption error) occurs.

・UP/LOWER LIMIT ERROR

Default	"Used"
Range	"Not used" ・The tool stops operating until the error is cleared. "Used" ・While the tool is still usable, perform the following tightening operation to reset the error.
Description	・Select the action when the measured value of the tightening data (torque, pulse number, angle) is outside the set upper/lower limits and upper/lower limit errors are detected.

・INCOMPLETE JOB

Default	"Used"
Range	"Not used" ・INCOMPLETE JOB is not used. "Used" ・INCOMPLETE JOB is used.
Display & Error Reset	・Touch panel display: " TIGHT.CUT" and measured torque value is displayed alternatively. ・Judgment LED: RED, "TIME" is displayed ・ RES. or input terminal
Description	・UECP-4900 detects and provides INCOMPLETE JOB error if the tool goes over START torque but stops fastening before CUT torque due to halfway finger off the trigger. ※If the torque at the judgment has not reached the torque CUT value even if it is within the range of the torque lower limit to the torque upper limit, INCOMPLETE JOB error occurs. ※If the number of pulses is within the value set by INVALID PULSE, the measurement will be canceled without occurring INCOMPLETE JOB error.

・ **TIME CONT. ST. (Compulsory stop due to CYCLE TIMER)**

Default	"Not used"
Range	"Used" ・TIME CONT. ST. is used. "Not used" ・TIME CONT. ST. is not used.
Description	※**Available only when Cycle error is set to "not used".** ・This function regulates the tightening time. ・If the cycle error timer starts when the measured torque exceeds the start torque and the measured torque has not reached the torque CUT value before time-up, the tool is forcibly stopped and a judgment is made.

・ **BUZZER VOLUME**

Default	5 (Maximum)
Range	1-5
Description	・Set the buzzer volume in 5 levels.

・ **TIGHTENING MODE**

Default	"AD Torque Control/Angle Monitoring"
Range	"AD Torque Control" ・AD torque tool is used to judge and control the measured torque value. "AD Torque Control/Angle Monitoring" ・AD torque tool is used to judge and control the measured torque value and monitor the rotation angle . "Angle control/AD torque monitoring" ・AD torque tool is used to judge the measured angle value and monitor the control and measured torque value.
Description	※**Setting is required for each work.** ・Select whether torque or angle for tool control. ・For "AD Torque Control" and "AD Torque Control/Angle Monitoring", the tool stops when the torque value reaches the CUT value. ・When "angle control/torque monitoring" is selected, the tool stops when the measured angle reaches the angle CUT value or the measured torque reaches the CUT value.

・ **ENGLISH**

Default	"ENGLISH"
Range	"Japanese" ・Set the controller display to Japanese. "English" ・Set the controller display to English.
Description	・The item name changes according to the displayed language. "ENGLISH" is displayed for Japanese display, "日本語" is displayed for English display.

・ **LINE. CNT.SELECT (Line Control Selection)**

Default	「LS1」
Range	「LS1」 ・The number of fastening can be counted at all times. Counting is judged by inputting LS1. 「LS1,LS2」 ・Counting is started by inputting LS1, and counting is judged by inputting LS2. "LINE CONTROL TIMER BY LS1" ・When LS1 is entered, counting down of the number of counts and the line-management timer starts. The count is judged by the time-up of the line management timer.

"LINE CONTROL TIMER BY TR"

The number of fastening can be counted at all times. The line management timer starts counting down from the point when the tightening judgment is made. Count judgment is made when the time is up.

"WORK CONTROL"

・Counting is started by inputting WORK1～WORK5, and counting is judged by inputting OFF.

"SOCKET CHANGER"

・Counting is started by inputting WORK1～WORK5, and counting is judged by inputting OFF.
The tool will not operate until WORK1～WORK5 is entered and counting of the number of devices starts.

Description	・For more information, see 14.6 Line Control Selection (Link).

・ALARM BUZZER

Initial	"USED"
Range	"NOT USED" ・The buzzer does not sound when tightening is judged. "USED" ・The buzzer sounds when the tightening is judged.
Description	・1 pulse (1sec) of buzzer is output when tightening is OK. 2 pulses of buzzer are output when COUNT OK.

・PULSE LOW

Initial	0
Range	0 ～ 9998
Condition	Pulse Low Limit < Pulse High Limit
When an error is detected Operation of	・Touch Panel Display: "PULSE LOW" and "Torque Measurement Value" are alternately displayed. ・Judgment lamp: Solid yellow, "PLS" is displayed. ・Terminal block:　FASTENING NOK is output. ・Press RES. or input RESET signal from terminal block to release the error.
Description	・Set the lower limit of the pulse count measurement value. ・When the measured pulse number falls below the pulse low limit value during start torque to the end of torque measurement, PULSE LOW NOK is judged and an error is displayed.

・PULSE HIGH

Initial	9999
Range	1 ～ 9999
Setting Con.	Pulse Low Limit < Pulse High Limit
When an error is detected Operation of	・Touch panel display: "PULSE HIGH" and "Torque measurement Value" are displayed alternately. ・Judgment lamp: Red, "PLS" is displayed. ・Terminal block: FASTENING NOK is output. ・ RES. or, reset the error by inputting the input terminal "RESET".
Description	・Set the upper limit of the pulse count measurement value. ・When the measured pulse number exceeds the pulse high limit during start torque to the end of torque measurement, PULSE HIGH NOK is judged and an error is displayed.

・TORQUE CUT CONP. (Torque Cut Compensation Select)

Initial	"Peak Data"
Range	"Peak Data" ・When additional pulses are performed after reaching the torque CUT value, the peak value of the tightening torque is displayed on the controller.

	"Pulse which reached CUT"
	・Displays the torque value of the pulse that first reached the torque CUT value.
Description	・Set the torque value to be displayed on the controller after the measured torque value reaches the torque CUT value.

・ADDITION. PULSE (Additional Pulse)

Initial	0
Range	0 〜 99
Description	・After the measured torque value reaches the torque CUT value, pulses are performed by adding the specified number of times. ※**Set to "0" when this function is not used.**

・UNIT CHANGE

Default	「N・m」
Range	「kgf・cm」　「kgf・m」　「ft・lbf」　「dN・m」
Description	・The unit of torque value is switched displayed on the measurement screen. ※**This function can be changed only for export type.**

・WORK. SIG. SEL. (Work Signal Selection)

Default	「A〜C」
Range	「A〜C」 ・Switch between WORK 1 and 8 by combining "WORK A"〜"WORK C". 「1〜5」 ・Switch between WORK 1 and 5 by combining "WORK 1"〜"WORK 5".
Description	・The combination shown in the table below is used to change the workpiece. Select the workpiece switching method. （table below） ・Setting "1 to 5" is used only when the setting of line-management operation selection is "WORK CONTROL" or "SOCKET CHANGER".

Input signal to the terminal block		Selected workpiece No.
Workpiece selection combination For A to C	Workpiece selection combination For 1 to 5	
No input	WORK 1	WORK 1
WORK A	WORK 2	WORK 2
WORK B	WORK 3	WORK 3
WORK A B	WORK 4	WORK 4
WORK C	WORK 5	WORK 5
WORK A C		WORK 6
WORK B C		WORK 7
WORK A B C		WORK 8

・LAN OUTPUT SEL. (Lan Output Selection)

Default	"NOT USED"
Range	"NOT USED" ・No communication is performed on the LAN. "Setup PC" ・Connect to the configuration software or host system by LAN. "Quality server" ・When the data method selection in the data output setting is set to "Global", tightening data is

	transmitted to Global quality server.
Description	・Select the LAN connection destination.
	・When using the front-panel RS232C port to communicate with the configuration software, set this setting to "NOT USED".
	※**If a setting other than "NOT USED" is selected, you will not be able to connect to the setting software using the front-panel RS232C.**

・ **ANG. LOW LMT (Angle Lower Limit)**

Default	0
Range	0 ～ 9997
Condition	Angle Lower Limit < Angle CUT < Angle Upper Limit
Description	・Lower judgement of measured angle value.
	・When the angle judgement function is "Used", ANGLE LOW NOK is made if the measured angle at the time of judgement (angle from snug torque to 10msec after the last pulse) has not reached the angle lower limit.
	・If it is set to "0", the judgement of the lower angle limit is not performed.

・ **ANG. UPPER LMT (Angle Upper Limit)**

Default	9999
Range	2 ～ 9999
Condition	Angle Low Limit < Angle CUT < Angle Upper Limit
Description	・Upper judgement of angle measurement value.
	・When the angle judgment function is "Used", ANGLE HIGH NOK is obtained when the measurement angle at the time of judgment (angle from snug torque to 10msec after the last pulse) exceeds the angle upper limit. The tool also stops when an angle value greater than or equal to the upper angle limit is detected.

・ **ANG CUT (Angle Cut)**

Default	9998
Range	1 ～ 9998
Condition	Angle Low Limit < Angle CUT < Angle Upper Limit
Description	・This is the set value of the tightening stop angle for angle control.
	※**This is enabled when the control method is "Angle control/AD torque monitor"**

・ **SNUG TORQUE ERROR**

Default	"Not detected"
Range	"Not detected"
	・Snug torque error is not detected.
	"Detected"
	・Snug torque error is detected.
	・Touch Panel Display: "SNUG TORQUE ERROR"
	・Judgment lamp: Solid yellow, "TRQ" is displayed.
	・Terminal block: FASTENING NOK is output.
	・Press RES. or input RESET terminal from terminal block to release the error.
Description	・Snug torque error is detected when the measured torque has not reached the snug torque before TIME UP of the snug torque error detection timer.
	※**When using this function, set "Angle Judgment Selection" to "Used".**

・SNUG ANG JUDG SEL (Snug Angle Judgement Selection)

Initial	"Not detected"
Range	"Not detected" ・Snug angle judgment is not performed. "Detected" ・The snug angle is judged.
	・Touch Panel Display: " SNUG ANG LOW/HIGH ERR ・Judgment lamp: When LOW (Yellow, "ANG" is displayed), When HIGH (Red, "ANG" is displayed) ・Terminal block: FASTENING NOK is output. ・ Press ⬛RES. or input RESET terminal from terminal block to release the error.
Description	・Select whether to perform upper/lower judgement of the snug angle measurement value (measured angle value from when the torque measurement value reaches the start torque until the snug torque is reached). ※**When using this function, set "Angle judgment selection" to "Used".**

・SNUG ANG LOW LMT (Snug Angle Low Limit)

Initial	0
Range	0 ～ 9998
Condition	Snug Angle Low Limit < Snug Angle Upper Limit
Description	・Set the low limit to the snug angular measurement value (the Angle Measurement Value from when the Torque Measurement Value reaches the Start Torque to reaching the Snug Torque). ・If the snug angle judgment selection is "Used", an error is detected when the snug angle falls below the lower limit.

・SNUG ANG. UPP LMT (Snug Angle Upper Limit)

Initial	9999
Range	1 ～ 9999
Condition	Snug angle lower limit < Snug angle upper limit
Description	・Set an upper limit to the snug angle measurement value (the angle measurement value from when the torque measurement value reaches the start torque until the snug torque is reached). ・If the snug angle judgment selection is set to "Used", an error is detected when the snug angle exceeds the upper limit.

・FREE RUN ANG SEL (Free Run Angle Selection)

Initial	"Not detected"
Range	"Not detected" ・Free-run angle judgment is not performed. "Detected" ・Free-run angle judgment is performed.
	・Touch panel display: " FREE RUN ANG ERR " ・Judgment LED: Solid yellow, "FREE" is displayed ・Terminal block: FASTENING NOK is output. ・ Press ⬛RES. or input RESET terminal from terminal block to release the error.
Description	・Choose whether to make a lower limit determination of the free-run angle (the angle before 400msec of start torque detection until start torque is detected.) ・When the free-run angle selection is set to "Detected", free-run angle error is detected if the free-run angle is lower than the free-run angle lower limit.

· **ANG. JUDG SELECT (Angle Judge Selection)**

Default	"Not detected"
Range	"Not detected" ・Tightening angle judgment is not performed. "Detected" ・The tightening angle is judged.
	・Touch Panel Display: "Torque LOW/Torque HIGH" ・Judgment lamp: When LOW (Yellow, "ANG" is displayed), When HIGH (Red, "ANG" is displayed) ・Terminal block: FASTENING NOK is output. ・Press 「RES.」 or input RESET terminal from terminal block to release the error.
Description	・Select whether to judge the tightening angle (angle from snug torque detection to 10 msec after CUT torque detection). ・Angle error is detected when the angle judgment selection is "Detected" and the tightening angle is out of range of the angle upper limit value and angle lower limit value. ・When "Snug torque error selection" and "Snug angle judgment selection" are set to "Used", "Angle judgment selection" should also be set to "Used".

· **FREE RUN ANG LOW LMT**

Default	0
Range	0 ～ 9999
Description	・Free-run angle (angle from 400msec before START torque to START torque detection) This is the angle lower limit of the measured value. ・This is used when free-run angle detection selection is set to "Detected".

· **WAVE DATA CNTNT SLCT (Wave Data Content Selection)**

Default	「2ms」
Range	「100μ」 ・ 「1ms」 ・ 「2ms」 ・ 「5ms」
Description	・The measured torque waveform is converted into data at 100 μsec per 1msec/2msec/5msec interval, and the torque waveform is output. ・When reception is performed on the waveform data reception screen of the setting software, if it is set to "100μ", the number of waveform data buffers is up to 5, and if it is set to anything else, the number of buffers is 50.

· **PC PORT COMM. SPEED (PC Port Communication Speed)**

Default	「115200」
Range	「9600」 ・ 「19200」 ・ 「38400」 ・ 「57600」 ・ 「115200」
Description	・Select the communication speed of the front panel PC-port from the 9600bps/19200bps/ 38400bps/57600bps/115200bps. ※**Set the communication speed with the programming PC using the PC connector on the front panel. This is not for the communication rate of RS232C connector for data outputting on the rear panel.**

· **WAVE DATA MEM SLCT (Wave Data Memory Selection)**

Default	"Function 3"
Range	"Function 1" ・Waveform data is not stored. "Function 2" ・Waveform data is stored. When the buffer becomes full, a warning is displayed and the buzzer is turned ON. "Function 3" ・Waveform data is stored. When the buffer becomes full, a warning is displayed and the buzzer is not

	turned ON.
	"Function 4"
	・Waveform data is stored, and warning display and buzzer do not turn ON.
Description	・Display "Buffer Full" and "Server Communication Error" and select buzzer operation.

・CONFIG. CHANGE HISTORY (Configuration Change History)

Default	"Not used"
Range	"Not used"
	・The password function/setting change history function is not used.
	"Used"
	・Use the password function/setting change history function.
Description	・This function performs password authentication when entering the setting mode to change the setting value, and keeps all changed setting items and setting contents in the history.
	・Saved history can be received by the setting software.
	・For details on how to register passwords and how to delete the change history and the function, see "13. Password Function (Link)".

・INVALID PULSE

Default	3
Range	0 ～ 10
Description	・When the torque input is interrupted until the measured torque exceeds the start torque and reaches the CUT torque, this function disables the tightening without making a judgment when the number of pulses at the time of interruption is less than the set value of the invalid pulse.
	※**Do not change the set value.**

・ENCODER PULSE

Default	1079
Range	0 ～ 9999
Description	・Set the number of encoder pulses of the angle sensor used for the tool.
	※**Do not change the set value.**

・ENCODER ANGLE

Default	360
Range	0 ～ 9999
Description	・Set the encoder angle of the angle sensor used for the tool.
	※**Do not change the set value.**

・**COUNT OK STOP**

Default	"NOT STOP"
Range	"NOT STOP" ・You also run COUNT OK.
	"STOP" ・COUNT OK stops working.
Description	・Select how the toolbar behaves while COUNT OK is displayed.

・**AIR/MOTOR**

Default	"MOTOR"
Range	"AIR" ・Use an air tool
	"MOTOR" ・Use an electric tool.
Description	※**Do not change the default settings.**

・**TOOL STOP SET**

Default	"NOT STOP"
Range	"NOT STOP" ・Run the tool even if keep-alive error occurs during connection using URYU standard communication specification.
	"STOP" ・Stop the tool when keep-alive error occurs during connection using URYU standard communication specification.
Description	・Select whether to stop the tool when keep-alive error occurs during connection using URYU standard communication specification. ・When the Tool Rotation Stop setting is "Stop" and TIMER Setting of "Custody Timeout" is used, the tool will be stopped until a reset is entered if an alive check error occurs. ※**If a communication error other than keep-alive error occurs during communication using URYU standard communication specification, the tool will be stopped regardless of this setting.**

・**FIRST PICTURE**

Default	"TORQUE INDICATION"
Range	"TORQUE INDICATION" ・Set the first screen to be displayed on the torque display screen.
	"WORK COUNT MONITOR" ・Set the first screen to be displayed on the work count display screen.
	"TORQUE MONITOR" ・Set the first screen to be displayed on the tightening torque monitor screen.
Description	・Select the first screen to be displayed when the power is turned on or when a reset is input on the menu screen.

・**MOTOR OUT SW (Motor Out Switch)**

Default	"START TRQ (start torque)"
Description	・Set the condition for switching the motor output to the second level. ※**Do not change the set value**.

・**3 STEP MODE**

Default	"USED"

Range	"NOT USED"
	・Use the motor power in 2-step without using the 3-step (zoomed step) mode.
	"USED"
	・3-step mode is used switching the motor power in 3-step.
Description	・Select whether to use 3-step tightening.
	・When this function is set to "ON", the following settings are displayed, and the motor output is switched in three stages during tightening. Also, since the waveform screen will not be displayed, use PC setup software to receive the waveform data when checking.
	・When "Not used" is set, the following items are hidden, and the motor output is switched in two stages during tightening.
	・3 Items to be displayed/hidden in the step mode setting
	[Basic Settings]
	・Second torque level
	[Motor Settings]
	・Motor Power
	・Second duty ratio
	・Second current
	・Second rotation speed

7.3 TIMER Settings

TIMER SETTING(1/3)	Work 1	
JUDG. DELAY BEFORE	1000	
JUDGEMENT DELAY	300	
INITIAL ERROR	500	
CYCLE ERROR	5000	
FASTENING OK	9999	
COUNT OK	9999	
TORQUE MEAS. DELAY	20	
SNUG TORQUE ERR	1	
◄ ►	RES. SET. MENU	

TIMER SETTING(2/3)	Work 1	
VALVE RETURN	300	
PIN ADJUSTMENT	0	
LINE CONTROL	100	
URYU STANDARD TIMEOUT	0	
YEAR/MONTH/DAY	22/ 03/ 16	
HOUR/MIN. /SEC.	16: 09: 16	
	UPDATE	
◄ ►	RES. SET. MENU	

TIMER SETTING(3/3)	Work 1
UPDATE DATE TIME	
2022 / 3 / 16 16 : 11 : 17	
	CANCEL APPLY
◄ ►	RES. SET. MENU

・JUD. DELAY BEFORE

Default	1000 [msec]
Range	100 〜 9999 [msec]
Description	・If the tightening is interrupted after reaching the start torque before reaching the CUT torque, the judgment output is performed after the set time has elapsed from the point when the torque input is finished.
	・If the number of pulses at the time of judgment is less than or equal to the invalid pulse, no judgment is made and the data in the middle of tightening is discarded.
	※**When the torque CUT value is reached, "Judgment delay" functions.**

・JUDGEMENT DELAY

Default	300 [msec]
Range	100 〜 9999 [msec]
Description	・Delay timer from completion of tightening (after reaching CUT) to output of judgment.
	・Used as the torque measurement end point during control operation.
	※**"Pre-CUT Judgment Delay Timer" functions before the torque CUT value is reached.**

・INITIAL ERROR

Default	500 [msec]
Range	100 〜 9999 [msec]

Description	・The initial error is detected when the tightening time from the start torque to the reaching of the CUT torque is within the set time. ・The timer start point starts when the torque reaches the starting torque. ・This function is enabled by setting "Enable" for the default error detection in MODE window.

・ **CYCLE ERROR**

Default	5000 [msec]
Range	100 〜 9999 [msec]
Description	・A cycle error is detected when the torque measurement value has not reached the torque CUT value even after the time set by this timer has elapsed since the measured tightening torque reaches the start torque. ・The timer start point starts when the torque reaches the starting torque. ・This setting is required when Cycle Error in MODE setting is set to "Used" or Forced stop selection is set to "Used".

・ **FASTENING OK**

Default	9999 [msec]
Range	0 〜 9999 [msec]
Description	・This timer setting is used to set FASTENING OK signaloutput time from the terminal block. ・If the next torque measurement is started even within the timer set period, FASTENING OK is turned OFF. ・Set only when the output time affects the external sequence, etc. ・When the timer is set to "0", the output is held until the next tightening start.

・ **COUNT OK**

Default	9999 [msec]
Range	0 〜 9999 [msec]
Description	・Timer setting to set COUNT OK pin output ON-time. ・When the timer is set to "0", the output is retained until the reset input or the resetting of the number of counts of LS1, etc. ・Common setting for all workpieces.

・ **TORQUE MEAS. DELAY (Torque Measurement Delay)**

Default	20 [msec]
Range	1 〜 9999 [msec]
Description	・When the measured torque reaches the starting torque, the timer starts, and torque measurement starts from TIME UP. (When the external start is used, the timer starts when START pin is turned on.) ・This is used when the torque value jumps when the bolt/nut is seated.

・ **SNUG TORQUE ERR (Snug Torque Error)**

Default	1 [msec]
Range	0 〜 9999 [msec]
Description	・The timers start when the measured value reaches the starting Torque, and if the measured Torque value does not reach the snug Torque setting value by TIME UP, snug Torque abnormality will be detected.

・**VALVE RETURN**

Default	300 [msec]
Range	0 ～ 9999 [msec]
Description	・Stop the tool operation from the time-up of the judgment delay timer to the time-up of the valve output timer.

・**PIN ADJUSTMENT**

Default	0 [msec]
Range	0 ～ 9999 [msec]
Description	・Used to align bolt pins, etc. ・The timer starts when the torque is judged, and the torque is not measured until TIME UP, so adjust the position of the pin by following the torque. ※**Set to "0" when this function is not used.**

・**LINE CONTROL**

Default	100 [sec]
Range	1 ～ 9999 [sec]
Description	・Used when the line-management operation selection in MODE window is "LS1" or "Tightening." This timer is used to perform line management according to time. ・When the timer starts at the start of the work process and the timer becomes 0, a judgment is made. ・When the count judgment is OK, the count number is reset when the time set by the count OK timer has elapsed after the count is OK. ・Common setting for all workpieces.

・**URYU STANDARD TIMEOUT**

Default	0 [sec]
Range	0 ～ 99 [sec]
Description	・Set the reception interval of keep-alive command when using URYU standard communication specification. ・If the next keep-alive command or other command is not received within the setting time after receiving keep-alive command , keep-alive error will occur. ・If keep-alive error occurs when the tool rotation stop setting in MODE setting is "STOP", the tool stops until a reset signal is input.

・**YEAR/MONTH/DAY**

Description	・Press "UPDATE" button to change the date.

・**HOUR/MIN./SEC.**

Description	・ Press "UPDATE" button to change the time.

The input and output contents of the terminal block are free-format, and the I/O contents assigned can be changed according to the setting.

・**Input terminal selection 1**

```
       IN TERMINAL1 (1/2)
   INPUT 1    LS1
   INPUT 2    PASS
   INPUT 3    RESET
   INPUT 4    WORK A
   INPUT 5    WORK B
   INPUT 6    WORK C


   ◄  ►          RES. SET. MENU
```

Default	Input1: "LS1" Input2: "PASS" Input3: "RESET" Input4: "WORK A" Input5: "WORK B" Input6: "WORK C"
Description	・Inputs 1 to 6 correspond to the rear-panel I/O terminal IN 1 〜 IN 6 . **Signals / Contents table**

・Inputs 1 to 6 correspond to the rear-panel I/O terminal IN 1 〜 IN 6 .

Signals	Contents
LS 1	Judgement when line-management operation selection is "LS1" If "LS1,LS2" or "LS1" is selected, the tightening process starts.
START	※ This function is not used.
RESET	Clear NOK, COUNT and LINE MANAGEMENT.
LS 2	Judgment (used when the line management operation selection is "LS1,LS2")
PASS	The switch is forcibly turned COUNT OK even if there is a residual tightening quantity.
QL	For QL wrench, counting down the number of pulses.
WORK A WORK B WORK C	Input for workpiece selection Select WORK No. 1 to 5 according to the combination of WORK A to C. Used when "Workpiece selection combination" of MODE setting is "A to C".
WORK 1 〜 WORK 5	Input for workpiece selection Enter WORK 1 to 5 to select WORK Nos. 1 to 5. Used when "Workpiece selection combination" of MODE setting is "1 to 5".
CUT	Input to stop the tightening operation (tool).
TOOL SW	※ This function is not used.
TOOL LEVER ON	※ This function is not used.
RES	※ This function is not used.
FORWORD(LOW)	Rotates the tool while it is ON. The rotation speed is fixed at 500rpm.
FORWORD(MID)	Rotates the tool while it is ON. The rotation speed is fixed at 1000rpm.
FORWORD(HIGH)	The tool rotates while it is ON. The rotation speed depends on the motor setting and performs the same operation as when the tool lever is ON.
REVERSE	The tool rotates in reverse while it is ON. The rotational speed depends on the motor setting.

・**Output terminal selection 1**

```
        OUT TERMINAL1 (2/2)
   OUTPUT 1  | COUNT OK
   OUTPUT 2  | COUNT NOK
   OUTPUT 3  | FASTENING OK
   OUTPUT 4  | FASTENING NOK
   OUTPUT 5  | TORQUE LOW NOK
   OUTPUT 6  | TORQUE HIGH NOK


   ◄   ►         RES. SET. MENU
```

Default	Output1: "COUNT OK" Output2: "COUNT NOK" Output3: "FASTENING OK" Output4: "FASTENING NOK" Output5: "TORQUE LOW NOK" Output6: "TORQUE HIGH NOK"

Description

・Outputs 1 to 6 correspond to the rear-panel I/O terminal OUT 1 ～ OUT 6 .

Signals	Contents
COUNT OK	Count OK The output time is set by "COUNT OK" in TIMER setting.
COUNT NOK	Count NOK It is output until the count NOK is cleared.
FASTENING OK	Tightening OK The output time is set by "FASTENING OK" in TIMER setting.
FASTENING NOK	Tightening NOK The signal is output until the NOK indication is cleared.
SV	It is output when the start torque is reached.
TORQUE LOW NOK	It is output when the torque judgement is LOW NOK.
TORQUE HIGH NOK	It is outputs when the torque judgement is HIGH NOK.
OPERATION RANGE	Light on only in the work process (available state to count down the number of fastening).
CPU RUN	It is output when controller in operation Turn OFF when the tool cannot be controlled, such as while the setting value is being written.
CAUTION	Warning is output. It is output when the number of fastenings/pulses reaches the setting numbers of Warning Count/Repair Count/Warning Pulse.
WORK A answer	The corresponding answer signal is output while WORK A to C are input.
WORK B answer	
WORK C answer	
WORK 1 COUNT OK	A COUNT OK signal is output for each WORK number.
WORK 2 COUNT OK	
WORK 3 COUNT OK	
WORK 4 COUNT OK	
WORK 5 COUNT OK	
SV2	It is output when the measured torque reaches the snug torque.

Communications using RS232C connector (RS232C port) on the rear panel and communication settings of the data management system (hereinafter referred to as "data management") and communication using NET WORK connector (LAN port) according to the communication specifications of Uryu Standard.

DATA OUT SETTING(1/3)	
UEC NO.	1
OUTPUT MOVEMENT	ALL OUTPUT
OUTPUT OF FORM	#〜CR
COMM. SPEED	9600
BIT HEAD	8 bit
STOP BIT	1 bit
PARITY BIT	ODD
TORQUE VALUE TRANS.	TRANSMIT
◀ ▶	RES. SET. MENU

DATA OUT SETTING(2/3)	
PULSE NUMB.	TRANSMIT
FASTENED TIME	TRANSMIT
DECISION	TRANSMIT
WAVE DATA CNTNT SLCT	TRANSMIT
ANG DATA TRNSM SLCT	TRANSMIT
FREERUN ANGL TRNSM SLCT	TRANSMIT
ID DATA SLCT	TRANSMIT
ID DATA NUMB.	48
◀ ▶	RES. SET. MENU

DATA OUT SETTING(3/3)	
DATA COMM. OF FORM SLCT	SET AND RESUL'
INIT. SPLICING SLCT	FROM UEC
DATA CLR.	DATA OUT
◀ ▶	RES. SET. MENU

・UEC NO.

Default	1
Range	1 〜 9999
Description	・Set the number to be assigned to each controller when multiple controllers are connected by URYU standard communication specification and URYU data management.

・OUTPUT MOVEMENT

Default	"ALL OUTPUT"
Range	"ALL OUTPUT" ・All tightening data are RS232C output regardless of whether the tightening is OK/NOK. "UNUSUALLY OUTPUT" ・RS232C is output nly when torque/pulse number/angle upper/lower limit/various tightening abnormalities are detected. "NOT OUTPUT" ・No RS232C is output.
Description	・Set the output conditions of the tightening data output from the rear panel PC connector.

・OUTPUT OF FORM

Default	「#〜CR」
Range	「#〜CR」 ・Put [CR] at the end of the output tightening data. 「#〜LF」 ・Finally put [LF] on the output tightening data. 「Global」 ・Communication is performed with communication specifications compatible with global Pokayoke. When "Global" is set, the setting is automatically changed to the optimal setting. 「UEC4500 Type」 ・The tightening data is output with the same communication specification as UEC-4500. 「UEC4100 Type」 ・The tightening data is output with the same communication specification as UEC-4100.
Description	・Select the output operation from the rear panel PC connector. ・When "Communication" or "Communication ProgramNo" is selected as the program selection setting, set this setting to "# to CR".

・COMM. SPEED

Default	「9600」

Range	「4800」 ・ 「9600」 ・ 「19200」 ・ 「38400」 ・ 「57600」 ・ 「115200」
Description	・Select the communication speed of the rear panel PC port from 4800 bps/9600 bps/19200 bps/38400 bps/57600 bps/115200 bps. ※**It is not the communication speed setting of the front panel PC connector.**

・**BIT HEAD**

Default	「8bit」
Range	「7bit」 ・ 「8bit」
Description	・Select the bit length of the output data from the rear panel PC connector.

・**STOP BIT**

Default	「1bit」
Range	「1bit」 ・ 「2bit」
Description	・Select the stop bit for output data from the rear panel PC connector.

・**PARITY BIT**

Default	"ODD"
Range	"ODD" ・Performs parity check (odd number) of output data "EVEN" ・Performs parity check (even number) of output data "NOT" ・The parity of output data is not checked.
Description	・Select the parity check of output data from the rear panel PC connector.

・**TORQUE VALUE TRANS.**

Default	"TRANSMIT"
Range	"NOT TRANSMIT" ・Torque measurement is not included in the data to be output. "TRANSMIT" ・The measured torque value is included in the data to be output.
Description	・Select whether the torque value is included in the output data from the rear panel PC connector.

・**PULSE NUMB.**

Default	"TRANSMIT"
Range	"NOT TRANSMIT" ・The output data does not include the number of pulses. "TRANSMIT" ・The number of pulses is included in the data to be output.
Description	・Select whether the output data from the rear panel PC connector includes the number of pulses.

・**FASTENED TIME**

Default	"TRANSMIT"
Range	"NOT TRANSMIT" ・The data to be output does not include the tightening time.
	"TRANSMIT" ・Including the tightening time in the data to be output
Description	・Select whether the tightening time (elapsed time from the arrival of the start torque value to the arrival of the torque CUT value) is included in the output data content from the rear panel PC connector.

・**DECISION**

Default	"TRANSMIT"
Range	"NOT TRANSMIT" ・The data to be output does not include tightening judgment.
	"TRANSMIT" ・Including tightening determination in the data to be output
Description	・Select whether to include a tightening judgment in the output data content from the rear panel PC connector.

・**WAVE DATA CNTNT SLCT (Wave Data Content Selection)**

Default	"TRANSMIT"
Range	"NOT TRANSMIT" ・Waveform data is not included when communicating with the data management system.
	"TRANSMIT" ・Includes waveform data when communicating with the data management system "TRANSMIT NOK" 確認
Description	・When communicating with data management using the LAN port, select whether waveform data is included in the fastening result data to be sent to the host.

・**ANG DATA TRNSM SLCT (Angle Data Transmission Selection)**

Default	"TRANSMIT"
Range	"NOT TRANSMIT" ・The data to be output does not include the tightening angle.
	"TRANSMIT" ・Including the tightening angle in the data to be output
Description	・Select whether the tightening angle is included in the output data content from the rear panel PC connector.

・**FREERUN ANGL TRNSM SLCT**

Default	"TRANSMIT"
Range	"NOT TRANSMIT" ・The data to be output does not include the free-run angle.
	"TRANSMIT" ・Including the free-run angle in the data to be output
Description	・Select whether the free-run angle is included in the output data content from the rear panel PC connector.

・ ID DATA SLCT (ID Data Selection)

Default	"TRANSMIT"
Range	"NOT TRANSMIT" ・The ID is not included in the data to be output. "TRANSMIT" ・The data to be output contains an ID.
Description	・Set whether ID data is included in the data output from the rear panel PC connector.

・ ID DATA NUMB. (ID Data Number)

Default	48
Range	1 〜 48
Description	・Set the number of digits of ID data. ・Set 32 and 48 when "Communication" and "Communication ProgramNo" are selected.

・ DATA COMM. OF FORM SLCT

Default	"SET AND RESULT DATA"
Range	"SET AND RESULT DATA" ・Use the setting value received from the upper level in the Uryu standard communication specification. "RESULT DATA" ・Do not use the setting value received from the upper level in the Uryu standard communication specification.
Description	・Select whether to use the setting value received from the host when communicating with the host system using the Uryu Standard Communication Specification. ・When "Setting + result data" is set, tightening is performed using "Work No," "ID," and "Set value" received from the host PC or PLC...etc. ・When "Result data" is set, the "Work No" and "Set value" received from the host are ignored, and only the transmission of tightening data to the host is performed. In addition, the workpiece No. is switched by the input from the I/O terminal.

・ INIT. SPLCING SLCT (Initial Splicing Selection)

Default	"FROM UEC"
Range	"FROM UEC" ・Default connection is made from UECP-4900E. "FROM PC" ・Initial connection is performed from the host side.
Description	・This bit is used to select whether to send the initial-connection command from UECP-4900E or the host when performing communication using the Uryu-standard communication specification.

・ DATA CLR. (Data Clear)

Default	"DATA OUT"
Range	"DATA OUT" ・Outputs the fastening data that is temporarily stored when communication is established with the Ukisha standard communication specification. "DATA CLEAR" ・The fastening data stored temporarily when the communication is established by the URYU standard communication specification is not output and discarded.
	・Select whether to delete the tightening data that cannot be transmitted to the host when communicating with the URYU standard communication specification when communication is established.

The IP address, subnet mask, and default gateway cannot be changed from the setting software, and can be changed on the third page of this setting. After the change, the configuration is applied by rebooting the controller.

LAN SETTING(1/3)		LAN SETTING(2/3)		LAN SETTING(3/3)	
IP ADDRESS 192 168 13 15		LAN RETRY NUM. 3		IP ADDRESS 192.168.13.15	
SUBNET MASK 255 255 255 0		Comm.-less time 10		SUBNET MASK 255.255.255.0	
DEFAULT GATEWAY 0 0 0 0				DEFAULT GATEWAY 0.0.0.0	
TCP PORT (PERSONAL) 2101					
CONNECT MODE CLIENT MODE					
HOST IP ADDRESS 192 168 13 110					
REMOTE TCP PORT (PARTNE) 2101					
◄ ► RES. SET. MENU		◄ ► RES. SET. MENU		◄ ► RES. SET. MENU	

・**IP ADDRESS**

Default	192.168.0.1
Range	0.0.0.0 ～ 255.255.255.255
Description	・The IP address set for the controller. ※You can only change the settings on the third page of the LAN settings screen. ※ Restart the controller after changing the IP address.

・**SUBNET MASK**

Default	255.255.255.0
Range	0.0.0.0 ～ 255.255.255.255
Description	・The subnet mask set for the controller. ※You can only change the settings on the third page of the LAN settings screen.

・**DEFAULT GATEWAY**

Default	0.0.0.0
Range	0.0.0.0 ～ 255.255.255.255
Description	・The default gateway configured on the controller. ・Set this when connecting the PC and the controller via a router. ※You can only change the settings on the third page of the LAN settings screen.

・**TCP PORT (PERSONAL)**

Default	2101
Range	0 ～ 9999
Description	・Sets the TCP port of the controller.

・**CONNECT MODE**

Default	"CLIENT MODE"
Range	"HOST" ・Set the controller side to host "CLIENT MODE" ・Configure the controller side to the client
Description	・When using the setting software, set it to "Client".

・**HOST IP ADDRESS**

Default	120.0.100.2
Range	0.0.0.0 ～ 255.255.255.255
Description	・Set the IP address of the access point (setting software, etc.).

・**REMOTE TCP PORT (PARTNER)**

Default	2101
Range	0 ～ 9999
Description	・Sets the TCP port of the access point (setting software, etc.).

・**LAN RETRY NUM. (LAN Retry Number)**

Default	3
Range	0 ～ 10
Description	・Set the number of retries to be performed when an error occurs in LAN communication.

・**Com.-less time (Communication less Time)**

Default	10(sec)
Range	0 ～ 10
Description	・Set the time to wait when there is no response in LAN communication.

7.7 Motor Setting

This setting is used only when the "Air/Motor Switch" setting in MODE setting is set to "Motor".

When "Air" is set, the "Motor setting" item is not displayed. In addition, some settings can be displayed or hidden depending on the 3-step mode setting of MODE setting.

MOTOR SETTING(1/2)	Work 1 ▼
MOTOR POWER	S-HIGH
DUTY RATIO	100%
FINAL DUTY RATIO	100%
INITIAL SPEED(×100)	20
INITIAL CURRENT	CURRENT3
SPEED(×100)	48
CURRENT	CURRENT4
FINAL SPEED(×100)	48
◀ ▶	RES. SET. MENU

MOTOR SETTING(2/2)	Work 1 ▼
FINAL CURRENT	CURRENT4
REVERSE SPEED(×100)	48
TOOL BUZZER	ON
◀ ▶	RES. SET. MENU

・MOTOR POWER

Default	「S-HIGH」
Range	「CUSTOM」 ・Manually enter the settings in the various motor setting items. 「LOW」 ・Enter low output preset values for various motor setting items. 「MIDLLE」 ・Enter the preset value of the medium output in the various motor setting items. 「HIGH」 ・Input high-output preset values to various motor setting items. 「S-HIGH」 ・Enter the preset value of the maximum output in the various motor setting items.
Description	・Enter the preset values in the table below to the various motor settings according to the setting. ・When the setting is changed from the preset value, it is automatically changed to "CUSTOM".

Setting name	LOW	MIDLLE	HIGH	S-HIGH
Initial rotation speed	15	20	20	25
Initial current	2	2	3	3
Rotational speed	17	30	40	48
Current	3	3	4	4
Second rotation speed	17	25	35	48
Second current	2	2	3	4

・DUTY RATIO

Default	100 [%]
Range	55 ～ 100 [%]
Description	・Set the duty ratio after the measured torque value has reached "Torque CUT value × Second Torque Level." ・Set the input voltage to the motor and adjust the output power.

・**SECOND DUTY RATIO**

Default	100 [%]
Range	55 ～ 100 [%]
Description	・Set the duty ratio after the measured torque value has reached "Torque CUT value ✕ Second Torque Level." ・Set the input voltage to the motor and adjust the output power.

・**INITIAL SPEED (×100)**

Default	25
Range	10 ～ 48
Description	・This is the rotation speed setting of the tool until the measured torque reaches START torque. ・The setting is in 100rpm increments. (4800rpm when input "48")

・**INITIAL CURRENT**

Default	3
Range	1 ～ 4
Description	・Set the amount of current flowing through the motor until the measured torque reaches START torque.

・**SPEED (×100)**

Default	35
Range	13 ～ 48
Description	・This is the rotation speed after the measured torque reaches START torque. ・The setting is in 100rpm increments. (4800rpm for setpoint 48) ・The lower limit varies depending on the "Current" setting. 　　　「1」: 13 ～ 　　　「2」: 17 ～ 　　　「3」: 21 ～ 　　　「4」: 25 ～ ・When the "3-step mode" setting of MODE setting is "Used", the lower limit is 15 regardless of the "CURRENT" setting.

・**CURRENT**

Default	4
Range	1 ～ 4
Description	・Set the amount of current flowing to the motor after the measured torque reaches START torque. 　The lower limit of "Rotational speed" changes according to the set value. 　　When the current value is "1", the lower limit of "rotation speed" is 1300rpm. 　　When the current value is "2", the lower limit of "rotation speed" is 1700rpm. 　　The lower limit of "rotation speed" is 2100rpm when the current value is "3". 　　When the current value is "4", the lower limit of "rotation speed" is 2500rpm. ・When the "3-step mode" setting of MODE setting is "Used", the lower limit is 15 regardless of the "CURRENT" setting.

・ **FINAL SPEED (×100)**

Default	35
Range	15 〜 48
Description	・This is the rotation speed after the measured torque value has reached "Torque CUT value ✕ Second Torque Level". ・The setting is in 100rpm increments. (4800rpm when input 48)

・ **FINAL CURRENT**

Default	4
Range	1 〜 4
Description	・Set the amount of current flowing to the motor after the measured torque has reached "Torque CUT value ✕ Second Torque Level". The lower limit of "Rotational speed" changes according to the set value.

・ **REVERSE SPEED (×100)**

Default	48
Range	10 〜 48
Description	・Set the rotation speed when the tool is reversed. ・The setting is in 100rpm increments. (4800rpm when input 48)

・ **TOOL BUZZER**

Default	「ON」
Range	「ON」 ・ 「OFF」
Description	・Switch ON/OFF of the tool buzzer. ・The tool buzzer is output continuously for 1 pulse (1sec) when the tightening is OK, and continuously when the tightening is NOK.

PROGRAM No CHOICE (1/2)	PROGRAM 1 ▼
PRG. CHANGE SLCT	NOT USED
PRG. CHANGE SWIT	OK ONLY

1st	FINISH	6th	FINISH
2nd	FINISH	7th	FINISH
3rd	FINISH	8th	FINISH
4th	FINISH	9th	FINISH
5th	FINISH	10th	FINISH

◄ ► RES. SET. MENU

PROGRAM No CHOICE (2/2)	PROGRAM 1 ▼

11th	FINISH	16th	FINISH
12th	FINISH	17th	FINISH
13th	FINISH	18th	FINISH
14th	FINISH	19th	FINISH
15th	FINISH	20th	FINISH

◄ ► RES. SET. MENU

・PRG. CHANGE SLCT (Program Change Selection)

Default	"NOT USED"
Range	"NOT USED" ・Program No. change is not used. "OUTSIDE" ・Switches the program to be used by input from the terminal block. 　Switching is done by "WORK A"～"WORK C" and "WORK 1"～"WORK 5". "COMM." ・Select the program number to be used by receiving data (32 byte) from the rear panel PC connector. "COMM. ProgNo" ・Select the program number to be used by receiving data (48 Byte) from the rear panel PC connector.
Description	・Set whether to use the program No. switching and how to change the program No. ・When the setting is changed from "NOT USED" to another setting or from another setting to "NOT USED", the memory data is cleared to record a new program number. ※When the setting is "COMM." or "COMM. ProgNo", set "OUTPUT OF FORM" in the Data Output Setting to "# to CR", "ID data output selection" to "Send", and "ID data digit number" to "32". Refer to the separate "RS232C Communication Specification" for the switching data specifications.

・Program switching transition

Default	"OK ONLY"
Range	"OK ONLY" ・Only when the tightening is OK, the operation proceeds to the next tightening setting. "OK/NOK" ・In addition to the tightening OK, even when the tightening NOK is selected, the tightening setting will shift to the next one. "OK/HIGH NOK" ・When torque HIGH is used in addition to tightening OK, the following tightening setting will be entered.
Description	・Set the condition under which the workpiece switches when the program No. schange is used.

・1st tightening to 20th tightening

Range	「WORK 1」 ～ 「WORK 8」 ・Use WORK 1 ～ WORK 8 settings. "FINISH" ・End the workpiece switching by the program No. switching function.
Description	・Set the workpiece No. to be tightened in each program. ・Automatically switches in the order of the entered workpiece number each time tightening is performed. ・When tightening is finished with less than 20 bolts, input the required work No. and set the remaining set value to "FINISH".

8 Check

Make sure that the function of the controller main unit is working properly. Perform self-diagnosis check and I/O check to

check for any abnormality in the main unit.

8.1 Self-diagnosis Check

The controller main unit is checked, and after the check is finished, the touch panel is checked. During the touch panel check, touch the screen to change the color of the screen and check for missing cells. Finish the self-test with the MENU button at the bottom right of the screen and return to the menu screen.


8.2 In/Out Check

Check the I/O output of the I/O terminal block on the rear panel.

On the input check screen, items that are ON change to yellow while the input signal is ON.

Be careful not to confuse NPN/PNP method when checking the input terminals.

On the Output Check screen, you can switch the output ON/OFF by touching the item you want to perform an output check. Output terminals 1 to 6 on the left, TOOL OK and TOOL NOK on the right are the built-in tool lamps, and "TOOL. VALVE" is the check of the valve output. Items whose output is ON change color to red, and when touched, the output turns OFF and changes to white.
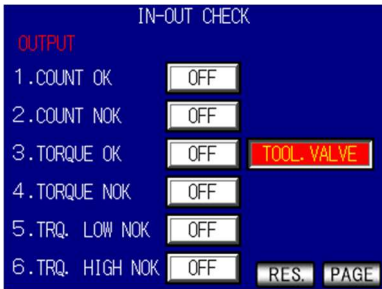
9 Memory Data

Settings related to memory data and checking and deleting recorded data are performed.

9.1 Setup of Memory

Set the settings related to the fastening data to be saved in the memory of the controller main unit.
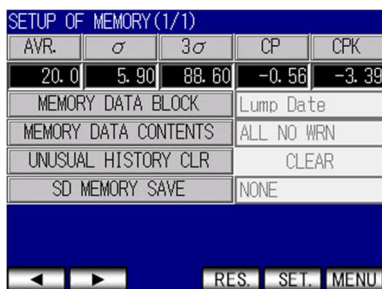
・**AVR. (Average Value)**

Description	・Display the average value of the data of the memory contents. $$\overline{x} = \frac{x_1 + x_2 + \sim + x_n}{n}$$ $\overline{x}$: Average Value n: Number of data

・**σ**

Description	・The σ value (standard deviation) of the data in memory is displayed. $$\sigma = \sqrt{\left[\frac{1}{n-1} \sum (x_n - \overline{x})^2 \right]}$$ σ: Standard deviation

・**3σ**

Description	・The 3σ/average value (variation) of the data of memory contents is displayed. $$3\sigma = \frac{3\sigma}{\overline{x}} \times 100\%$$ 3σ value: Rate of variation
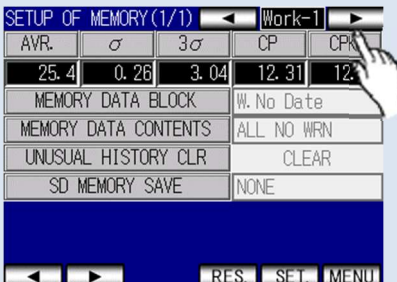
・CP

Description	・Displays the CP value (Process Capability Index) of the data in the memory. ・Calculated based on the set value (torque LOW/torque HIGH) of the selected WORK No. $$CP = \frac{\text{Upper Limit} - \text{Lower Limit}}{6\sigma}$$ Cp :process capability factor

・CPK

Description	・Display the CPK value (single-sided process capability index) of the memory contents data. ・Calculated based on the set value (torque LOW/torque HIGH) of the selected WORK No. $$CPK = \frac{B}{3\sigma}$$ B_1 : Upper Limit-Average B_2: Average-Lower Limit B_3 : The smaller value of B or B CPK : Process Capacity Index (including deviation in average value)

・MEMORY DATA BLOCK

Default	"Lump Date"
Range	"Lump" ・Memory, with date and time, and without ID in all work batches. 「W.No」 ・Memory, no date/time, no ID for each work No. "Lump Date" ・Memory, with date and time, and without ID in all work batches. "Work No. Date" ・Memory, date and time exist for each work No. and no ID. "Lump Date + ID" ・Memory, with date and time, and ID in all work batches. "Work No Date + ID" ・Memory, date and time exist and ID exist for each work No.
Description	・It is possible to select whether to perform memory of measurement data collectively up to workpiece No.1 to 8, to execute in the block for each workpiece No., or to execute the date and time data for which tightening was performed, or to execute the memory for ID. ・The maximum number of saved items is 12,000 for batch saving. ・When memory is performed for each work number, the maximum number of data items that can be stored in memory is 1500 per work. ・If fastening is done more than the maximum number of data, it will be updated from the old data. ・When setting to save tightening data for each workpiece No., calculation of average value, CPK, etc. is performed for each block, and the workpiece No. to be displayed can be switched by touching the switch button ◄ ► at the top left of the screen. ![screen]

・**MEMORY DATA CONTENTS**

Default	"ALL NO WRN (All, No Warning)"
Range	"NOT MEMORY" ・Tightening data is not stored in memory. "ALL WORNING" ・All the tightened data are stored in memory. The buzzer is turned on and a warning is displayed when the remaining 10 free data are available. The indication disappears when RESET terminal or RESET button is pressed, but the buzzer turns ON and the warning indication is displayed when tightening is performed again. "ALL NO WRN" ・The buzzer does not sound when there is 10 remaining free data with the same content as "All warnings found". "OK WARNING" ・When tightening is performed, the data when tightening is OK will be stored. The buzzer turns ON and a warning is displayed when there are 10 remaining data. "OK NO WARNING" ・The buzzer will not turn ON and the warning will not be displayed when there are 10 remaining free data in the same way as "OK warning found".
Description	・You can select whether or not to display a warning when the memory contents and available memory data become the remaining 10. ・When the set value is changed, all data stored in the memory is cleared.

・**UNUSUAL HISOTRY CLR**

Description	・Touch the clear button in the setting mode to delete all the alarm history stored in the controller.

・**SD MEMORY SAVE**

Default	"NONE"
Range	"NONE" ・Tightening data is not saved on the SD card. "RESULT AND WAVE" ・Save the tightening result data and waveform data to the SD card. "RESULT ONLY" ・Save the tightening result data to the SD card. "WAVE ONLY" ・Save waveform data to SD card.
Description	・If you insert an SD card and set it to other than "Do not save", you can store the tightening data in the SD card. ・Up to 32 GB of SD card can be used. ・If the setting value is changed from "Do not save" to any other setting, the waveform data of the tightening performed after the setting is changed will be saved. ・The saved data can be read by UECP-4900E setting software.

9.2 Statistics Data

"N" (number of data)/"average value"/"σ value"/"torque lower limit value"/"torque upper limit value"/"3σ value" (3σ/average value variation)/"CP value" (process capability index)/"CPK value" (single-sided process capability index)

When the "Memory data block" setting in MODE setting is set to "WOOC," "WOOB date and time," or "WOOB date and time + ID," the tightening data is individually stored for each tightened work number. When "Memory data block" is set to "Batch", "Batch date/time", "Batch date/time + ID", all tightening data is saved without distinction of work.

9.3 Former Data

Displays "Torque", "Angle", "Pulse", "Time" and "Judgment" of the tightening data stored in the controller body.

When the "Memory Data Block" setting is "W.No.", "W.No. Date/Time", "W.No. Date/Time+ID", the work No. is displayed in the upper right of the screen. The workpiece to be displayed can be switched by the key ◀ ▶ next to the workpiece No.

Workpiece switching

9.4 Memory Data Clear

Select Y on the right of the screen in the Memory Data Clear screen to delete all the stored tightening data. Do not turn off the power while the memory data is being cleared.

In addition to deleting data on this screen, the memory data is automatically cleared when the memory data block is changed or the program number selection setting is changed.

Memory data can also be cleared from the setting software.

9.5 Unsual History

The history of the last 50 errors is displayed. "Error details", "data" (detected torque when an error occurs) "date and time of occurrence" are displayed. If there are more than 10 records, the screen can be forwarded with the scroll bar at the right of the screen. Error logs can be deleted by "Error log clear" of the memory relationship setting. The setting software can also receive and delete error logs.

9.6 SD Memory Information

・ **SAVE**

Description	・Saves all the current settings of the controller to the SD card. If the settings that have already been saved are on the SD card, they will be overwritten.

・ **READ**

Description	・Reads the settings saved on the SD card and rewrites the controller settings.

・ **SAFETY REMOVE**

Description	・Remove the SD card safely. Make sure that the indicated capacity is "0.0" before removing.

・ **FORMAT**
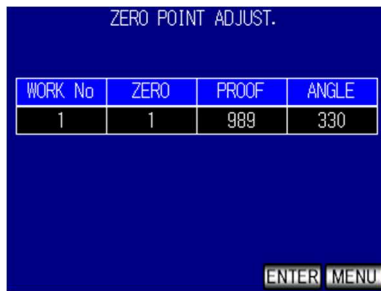
Description	・Format the SD card. All data on the SD card are delated a folder to save various data is created.

10 Zero Point Adjustment

The value for ZERO check of the torque sensor and the value for CAL check.

The display is an absolute value display.

"ZERO" shows the value of the present zero point, and "PROOF" shows the value of [CAL × Calibration Ratio × Tool Ratio].

If the zero point deviates from the vicinity of "0", the deviation of ZERO point is corrected by pressing the ENTER button.

11 Tool Control

Set the tool maintenance timing. The cumulative number of tightening and and the cumulative number of pulses judged by the controller are displayed.

・**TIGHTENING COUNT**

Range	0 to 99999 [Unit: ten thousand fasteners]
Description	・The total number of all fasteners judged by the controller is displayed. ・The minimum number that can be displayed is 10000 . ・It can be displayed in 1-fastening unit by receiving with URYU programming software. ・It is recommended to perform tool maintenance every 0.4 million fastenings. ※**This is not a setting.** ※**The recommended number of tool maintenance varies depending on the operating environment.**

・**TIGHTENING PULSE**

Range	0 to 99999 [Unit: ten thousand pulses]
Description	・The cumulative number of pulses for all tightening judged by the controller is displayed. ・The minimum number that can be displayed is 10000 pulses. ・It can be displayed in 1-pulse unit by receiving with the setting software. ・It is recommended to change the oil every 5 million pulses or half year. ・It is recommended to request overhaul at 10 million pulses or every year. ※**This is not a setting.** ※**The number of pulses recommended for tool maintenance varies depending on the operating environment.**

・**WARNING COUNT**

Range	0 to 9998 [Unit: ten thousand fasteners]
Description	・A warning is displayed when the total number of fasteners reaches the set value. ・Screen display: "WARNING COUNT ERROR" ・The buzzer remains OFF.

・**WARNING PULSE**

Range	0 to 9998 [Unit: ten thousand pulses]
Description	・A warning is displayed when the total number of fasteners reaches the set value. ・Screen display: "WARNING PULSE ERROR" ・The buzzer remains OFF.

・**REPAIR COUNT**

| Range	0 to 9999 [Unit: ten thousand fasteners]
Description	・A warning is displayed when the total number of fasteners reaches the set value. ・Screen display: "Number of units to be repaired abnormal" ・The buzzer turns on.

・**REPAIR PULSE**

Range	0 to 9999 [Unit: ten thousand pulses]
Description	・A warning is displayed when the total number of tightening pulses reaches the set value. ・Screen display: "Pulse count for repair abnormal" ・The buzzer turns on.

・**TOOL DATA CLEAR**

Description	・The stored cumulative number of tightening and the number of pulses are deleted. ・Deletion is also possible from the configuration software.

12 Version Information

The version of the controller is displayed.
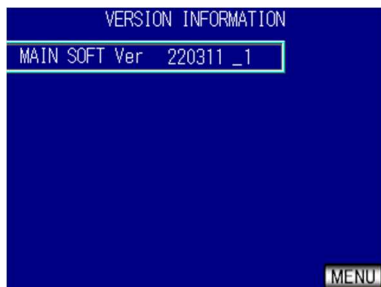
13 Password Function

This function requires a password when entering the setting mode to change the setting value, and retains the change history (item name, setting value before change, and setting value after change) when the setting is changed.

To use the password function, the user ID + password must be registered. User IDs and passwords can be set as 4-digit integers (0000 to 9999), and up to 16 pairs can be registered.

If the setting value is changed while the password function is set to "Enable", the user name entered when entering the setting mode, the name of the changed setting item, the date and time before and after the change, and the date and time of the change are retained in the history.

The change history can be checked with the setting software.

Registration procedure

Example) When registering the user ID and password with "1234"

When " CONFIG. CHANGE HISTORY " of MODE Setting is set to "NOT USED", "User Registration" is displayed on the screen. Select the "User Registration" item to proceed to the user ID list. If you have already registered the user, you must enter the user ID and password to proceed to the user ID list. If you have not registered the user, do not enter anything and select "OK".

The description of each item on the user registration screen is shown below.
"ADD." ・・・Register a new user and password.
"CHANG." ・・・ Change the password of an already registered user.
"DEL." ・・・Delete the registered information of the selected user.
"ALL DEL" ・・・Delete all registered users/passwords.
"CHNG. HISTORY DEL." ・・・Delete all the change history of the recorded setting value.

To register a user/password, select "ADD." on the right of the screen to display the user/password registration screen. You can register by entering the user ID and password to be registered on this screen and pressing OK. When registration is completed, the user ID registered in the user ID list is displayed.

14 Feature Description

Three types of tightening control specifications are available.

1)AD Torque control
   Executes torque control by the AD torque sensor. Measurement starts after a torque equal to or greater than the start torque value is input. When the measured torque reaches the torque CUT value, a VALVE is output and the tool is stopped. The judgement output is TIME UP of the judgement delay timer after the measured torque falls below the start torque value.
   When the torque measurement start delay timer is set, the torque measurement delay timer starts when a torque higher than the start torque value is input, and torque measurement starts after TIME UP of the torque measurement start delay timer to ignore the jump of the torque display value when the bolt is seated.
   When the tightening is stopped with 3 pulses or less from the start torque, the "invalid pulse" function is activated to terminate the measurement without judging OK/NOK, etc. "Inactive Pulse" can be changed from MODE setting.
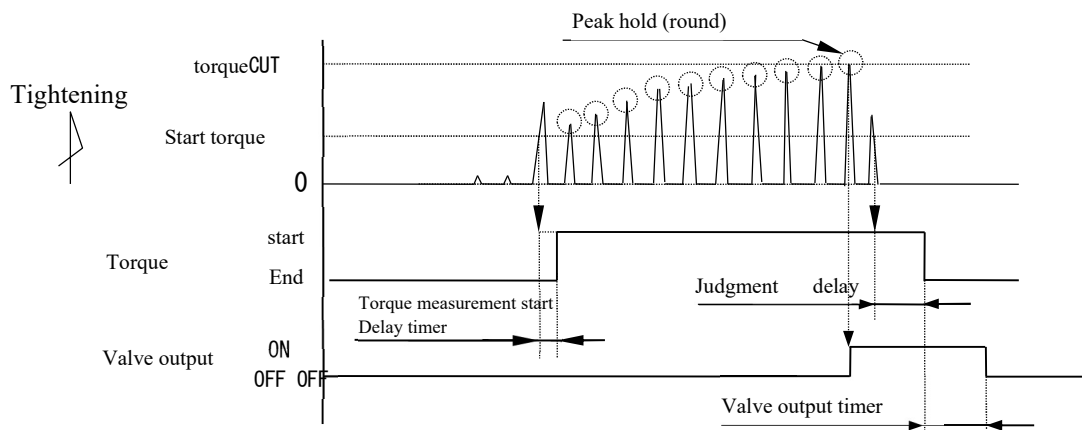
2)AD Torque Control/Angle Monitor

Torque control/angle measurement value monitor is performed. Starts measurement after a torque equal to or greater than the start torque value is input, stops the tool when the measured torque reaches the torque CUT value, and stops measurement of the rotation angle in 10msec after it stops. Judgment output is made after the measured torque falls below the start torque value and the judgment delay timer is up. Judgment output is performed after the time of the judgment delay timer is up after the measured torque falls below the start torque. When the judgment delay timer is set, the angle is measured even while the timer is operating.

※Only the free-run angle waveform within the tightening waveform is displayed in the vertical axis range of one tenth.
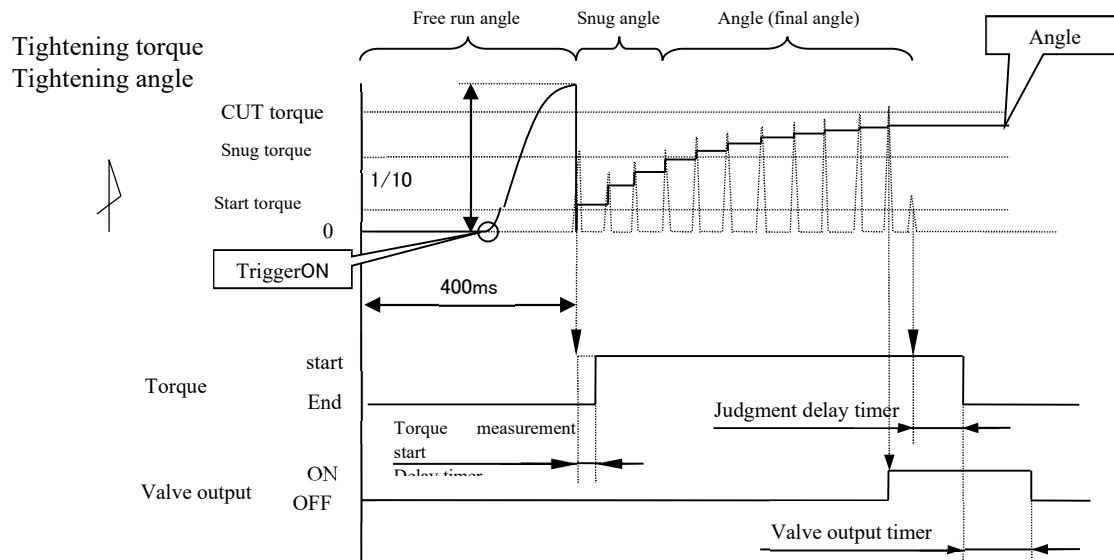
Free-run angle: Angle from 400msec before start torque detection to start torque detection.

Snug angle: The angle from the start torque detection to the snug torque detection.

Angle (final angle): Measured angle from snug torque to 10msec after CUT.

3)Angle control/AD torque monitor

Conducts angle control and torque measurement value monitoring. Measurement starts after a torque equal to or greater than the start torque value is input. When the measured torque reaches the torque CUT value or the tightening angle after the torque exceeds the snug torque reaches the angle CUT value, the tool stops and judgement is made. The determination output is performed after the determination delay timer is timed up after the measured torque value falls below the start torque value. At the time of judgement, as in the case of Torque Control, Torque Upper/Lower Limit, Pulse Upper/Lower Limit, Upper/Lower Angle, Free Run Angle Lower Limit, and Various Tightening Abnormal Conditions shall be Tightened NOK. When the judgment delay timer is set, the tightening angle is measured even while the timer is operating.

※Only use the product in an environment where the angle can be measured stably, such as when the tool or workpiece is fixed.
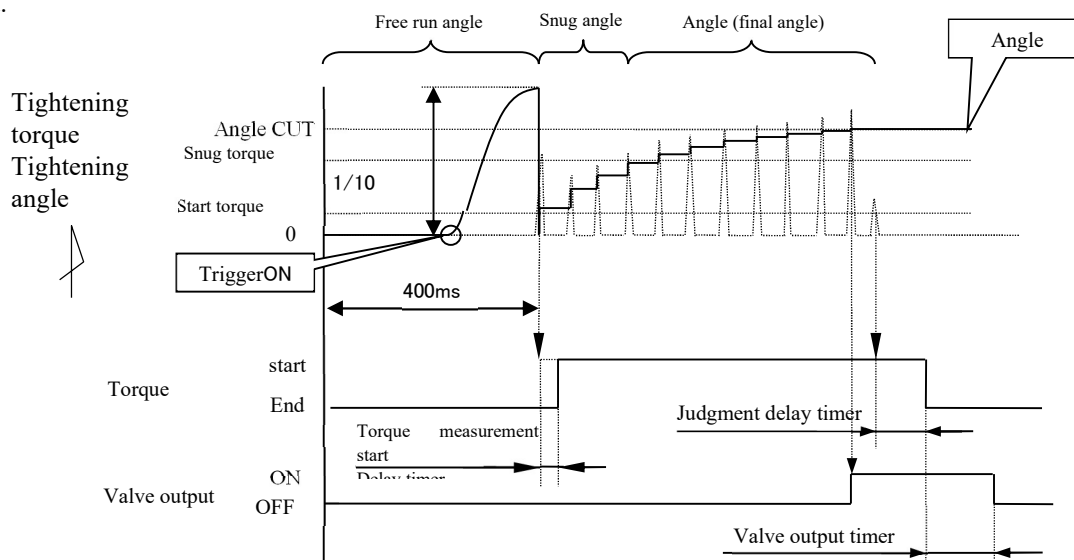
UECP-4900E can determine whether the measured values of torque/pulse number/angle/free-run angle are within the upper and lower limits.

The upper/lower limit judgement is made by the measured value of the torque and pulse number from when the start torque is reached to when the tightening is finished.

The upper and lower limit ranges of the measured torque values are set by setting the "Lower Torque Limit" and "Upper Torque Limit" on the "Basic Settings" screen.

The upper and lower limit ranges of pulse number measurement values are set by "Lower limit value of pulse number" and "Upper limit value of pulse number" on the "MODE setting" window.

The upper and lower limits of the angle measurement value are set by "Angle lower limit value" and "Angle upper limit value" in the "MODE setting" window.

The lower limit of the measured free-run angle is set by the "Free-run angle lower limit" in the "MODE setting" window.

[Judgment]

(1)Judgment when the measured value is within the upper/lower limit range (OK)
- ・The judgment lamp on the touch panel lights in green and "OK" is displayed.
- ・The tool LED lights green.
- ・FASTENING OK terminal is turned on.
- ・When the tightening confirmation buzzer is set to "Used", one pulse of the buzzer output turns ON. (2-pulse ON when COUNT OK)

(2)Judgment when the measured torque is outside the upper and lower limits (torque HIGH NOK, LOW NOK)
- ・The judgment lamp on the touch panel lights up and "TRQ" is displayed (HIGH: Red ON LOW: Yellow ON).
- ・The tool LED lights in red.
- ・The buzzer output turns ON.
- ・HIGH : FASTENING NOK・TORQUE HIGH NOK terminal outputs.
- ・LOW : FASTENING NOK・TORQUE LOW NOK terminal is outputted.

(3)Judgment when the measured pulse count is outside the upper/lower limit (pulse HIGH NOK, LOW NOK)
- ・The judgment lamp on the touch panel lights up and "PLS" is displayed (HIGH: Red ON LOW: Yellow ON).
- ・The tool LED lights in red.
- ・The buzzer output turns ON.
- ・FASTENING NOK terminal outputs.

(4)Judgment when the measured angle is outside the upper and lower limits (angle HIGH NOK, LOW NOK)
- ・The judgment lamp on the touch panel lights up and "ANG" is displayed (HIGH: Red ON LOW: Yellow ON).
- ・The tool LED lights in red.
- ・The buzzer output turns ON.
- ・FASTENING NOK terminal outputs.

(5)Judgment when the measured free-run angle is less than or equal to the lower limit (free-run error)
- ・The judgment lamp on the touch panel lights up in yellow and "free" is displayed.
- ・The buzzer output turns ON.
- ・FASTENING NOK terminal outputs.

UECP-4900E can be used to determine whether the measured angular value is within the upper and lower limits.

The upper and lower limit judgement is based on the angle at the time of free-running, the angle from the reaching of the start to the reaching of the Snug Torque, and the measured value of the angle from the Snug Torque to the end of tightening. The upper and lower limits of the angle measurement value are set by the "Free Run Angle Lower Limit," "Snug Angle Lower Limit," "Snug Angle Upper Limit," "Angle Lower Limit," and "Angle Upper Limit" on the "MODE Settings" window. The vertical axis range of the free-run angle measurement displayed on the waveform screen is one tenth of the vertical axis range of the angle measurement value.
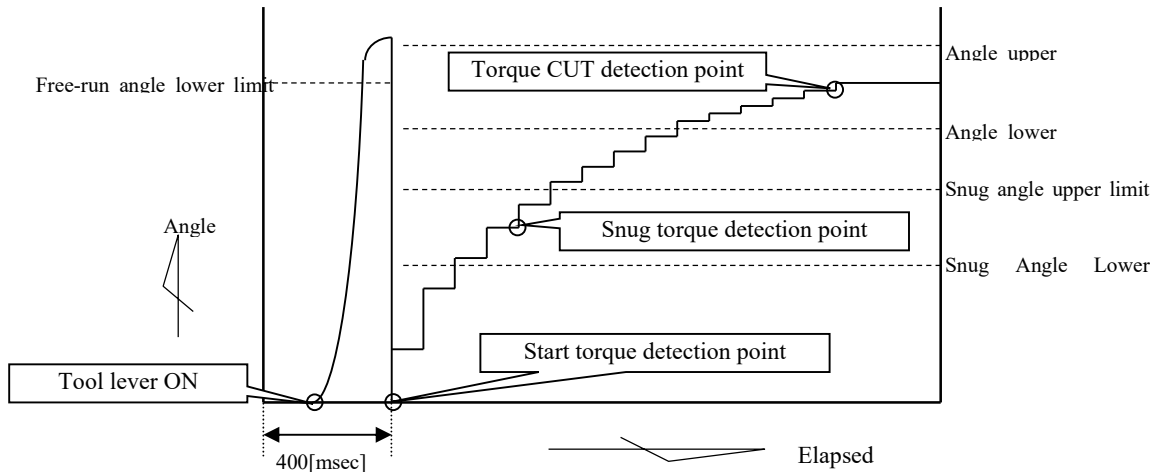
[Judgment]

(1)Determination when the measured free-run angle is less than the free-run angle lower limit
・Free-run angle error (When Free-run angle detection selection is "Detected")

(2)Judgment when the angle from the start torque to the snug torque exceeds the upper limit of the snug angle
・Snug angle HIGH error (When Snug angle judgment selection and Angle judgment selection are "Detected")

(3)Judgment when the angle from the start torque to the snug torque is less than the lower limit of the snug angle
・Snug angle LOW error (When Snug angle judgment selection and Angle judgment selection are "Detected")

(4)Judgment when the measured angle value exceeds the upper limit
・Tightening angle HIGH (When the angle determination selection is "Detected")

(5)Judgment when the measured angle from the snug torque to the end of tightening is less than the lower limit value
・Tightening angle LOW (When the angle judgment selection is "Detected")
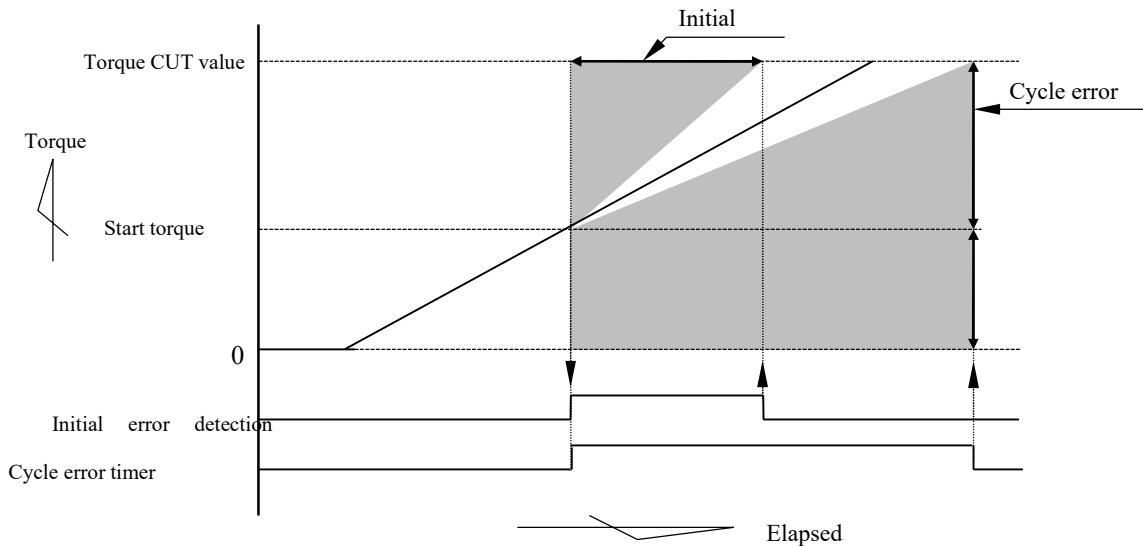
NOTE)For linear torque change.

1)Initial Error

An error is detected when the elapsed time from when the measured tightening torque reaches the starting torque value to when the measured tightening torque reaches the torque CUT value is shorter than the specified time (initial error detection timer setting).

[Setting]

・Initial error detection selection: "Detect"

・Default error detection timer: 1 to 9999 [msec]

[Setting Method]

・Determine the set value by referring to the tightening time from the starting torque value at normal tightening to the torque CUT value.

2)Cycle Error

An abnormality is detected when the elapsed time from the start torque value until the torque reaches the torque CUT value exceeds the specified time (cycle error timer).

[Set Value]

・Cycle error selection: "Detect"

・Cycle error timer: 1 to 9999 [msec]

[Setting Method]

・Determine the set value by referring to the tightening time from the starting torque value at normal tightening to the torque CUT value.

When "3-step mode" of MODE setting is "Used", switching of motor output is operated in 3 stages, and output is dropped in the stage just before tightening completion, and retightening torque is stabilized by increasing the number of pulses. "Initial speed," "Initial current," →, "Rotational speed," "Current," →, "Second speed," and "Second current." Switches in the order shown below.

※The value of the second torque in the figure below is "second torque level × torque CUT value".
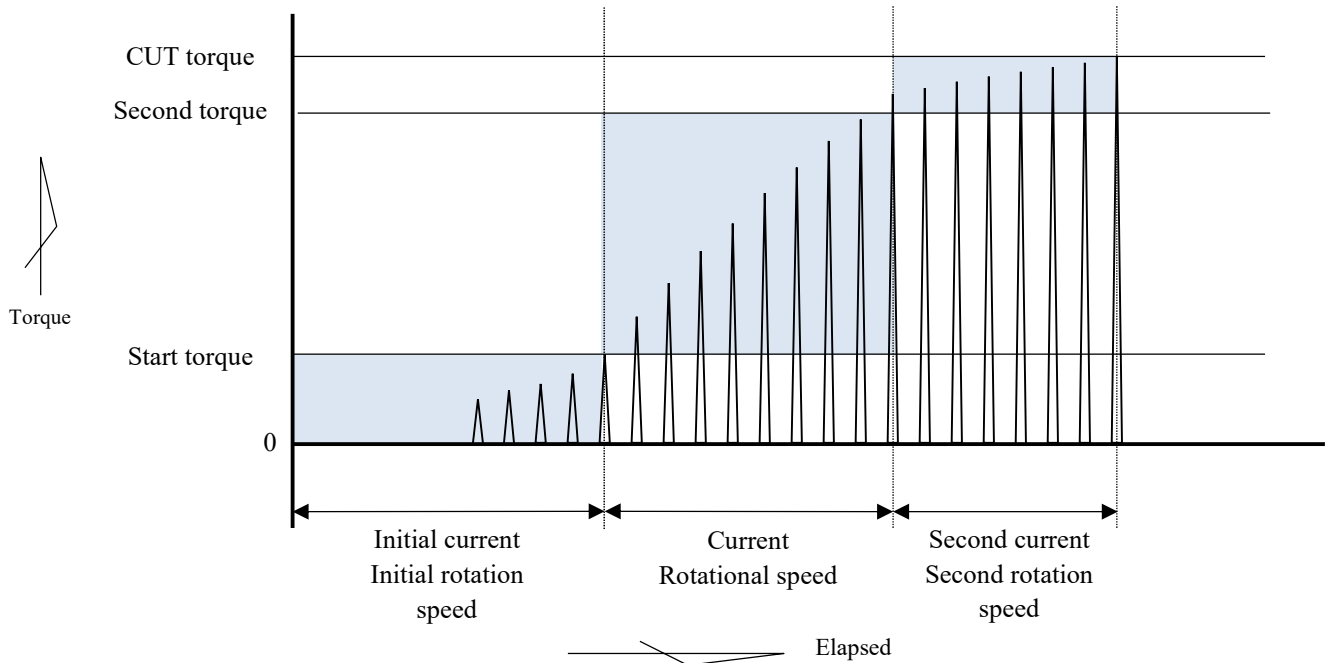
0-Start Torque	: Operates at "Initial current"/"Initial rotation speed".
Start Torque to Second Torque	: Operates with "current"/"rotation speed".
Second Torque to CUT Torque	: Operates with "Second current" • "Second speed".

※If the object to be tightened is a soft body, the CUT torque may not be reached if the "Second Current" and "Second Speed" are set low. In this case, set the above setting value to the same or higher than the setting of "Current" and "Rotational speed".

The controller operation can be changed with the setting of "Line management operation selection" in "MODE setting". Fastening counts can be reset by inputting RESET in addition to line judgment.

Setting: LS1

The count is judged by the input of the limit switch while the tightening countdown is possible at all times. After completing the tightening of the set number of bolts, a COUNT OK occurs. When the LS (limit switch) 1 terminal is inputted, the number of bolts to be tightened is cleared and the next workpiece can be tightened. If LS1 is not fully tightened for the set number of screws, a COUNT NOK will occur, and insufficient tightening will cause COUNT OK.

※ **When COUNT NOK is → OK, COUNT OK output is one pulse (1sec).**
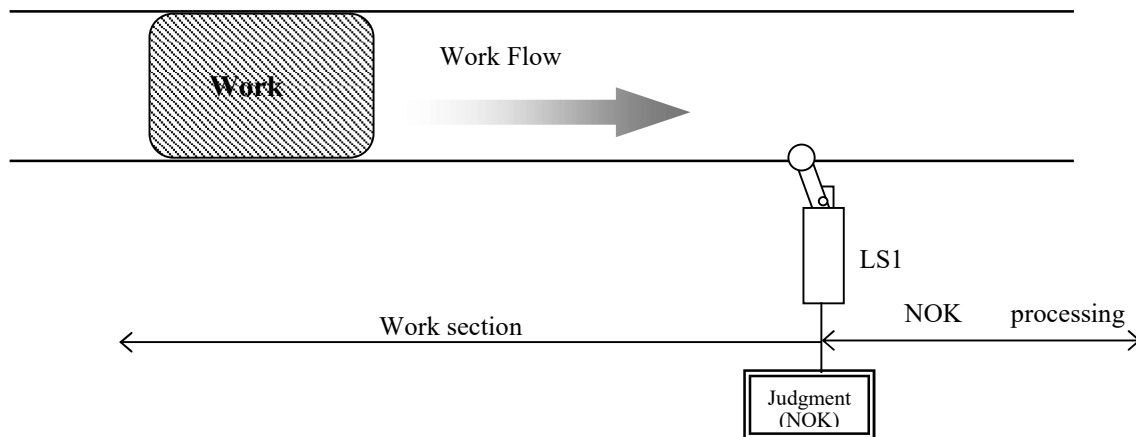
Setting: LS1, LS2

Provide a tightening work range. The work is started by inputting LS 1 terminal, and the work is finished when the tightening of the set number is completed before inputting LS 2 terminal. When inputting LS2 terminal, if the tightening of the set number is not completed, a COUNT NOK occurs, and when it becomes COUNT OK due to NOK-treatment, the work is finished. Even if tightening is performed outside the work range, the number of tightening bolts will not be counted down.

※ **When COUNT NOK is → OK, COUNT OK output is one pulse (1sec).**
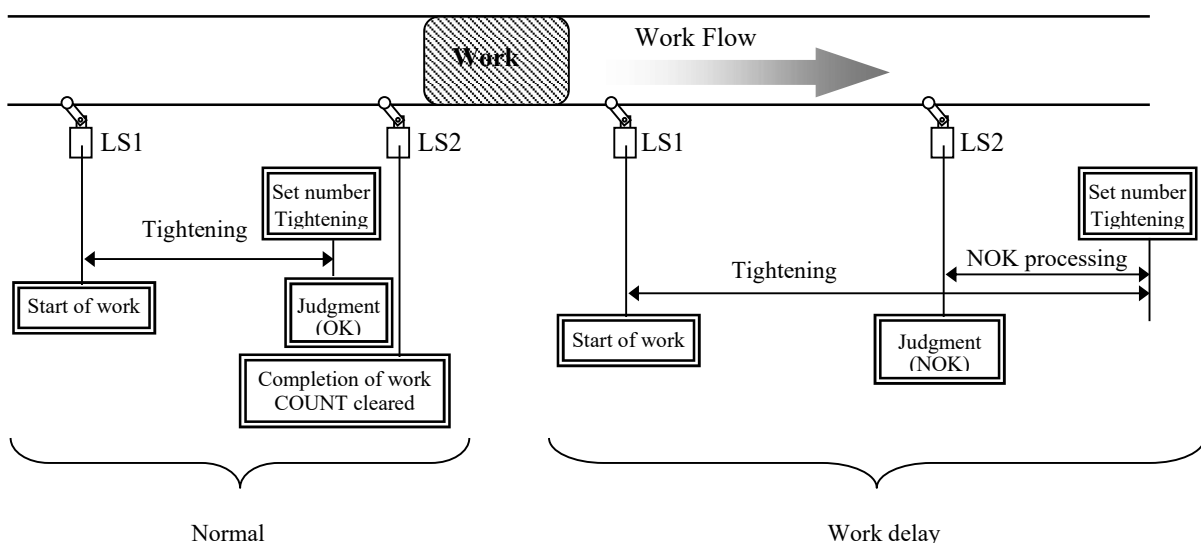
Settings: by LS1

A tightening work range is provided and judgement is made by a timer.

When LS 1 terminal is entered, the tightening operation starts and the line-control timer starts. If the line-management timer turns TIME UP prior to the completion of the tightening of the set number, a COUNT NOK occurs.

※ **When COUNT NOK → is enabled, COUNT OK is 1-pulse (1sec).**
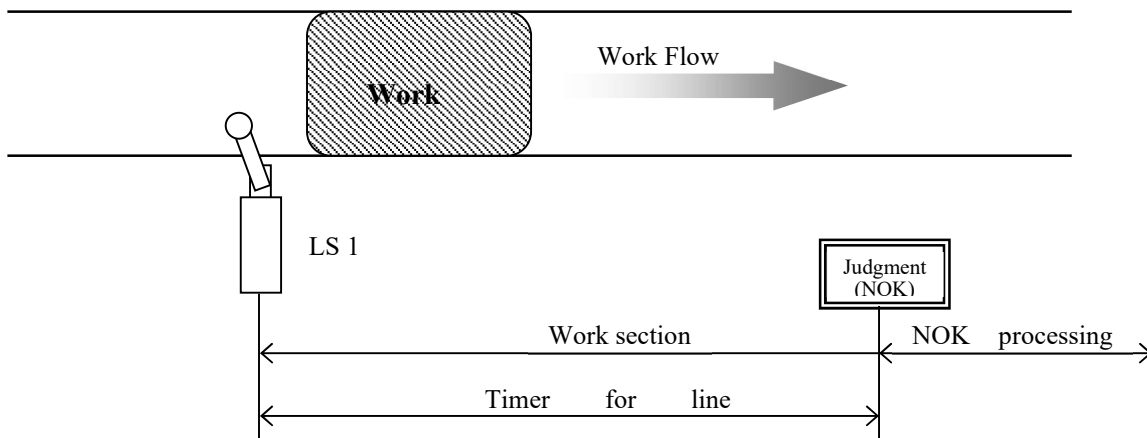
Setting: Tightening

Start the timer for judgment by the first tightening without setting the limit switch.

The line management timer starts from the first tightening judgment or the input of the QL wrench. After the set number of tightening operations is completed, COUNT OK occurs and RESET process is automatically performed when COUNT OK output (the output time is set by COUNT OK terminal output timer) is turned OFF. Then, the next work piece can be tightened. If the line-management timer turns TIME UP prior to the completion of the tightening of the set number, a COUNT NOK occurs.

※ **When the line-management operation selection is set to "by tightening", the output holding of COUNT OK (COUNT OK output timer: 0) cannot be set.**

※ **When COUNT NOK is → OK, COUNT OK output is one pulse (1sec).**
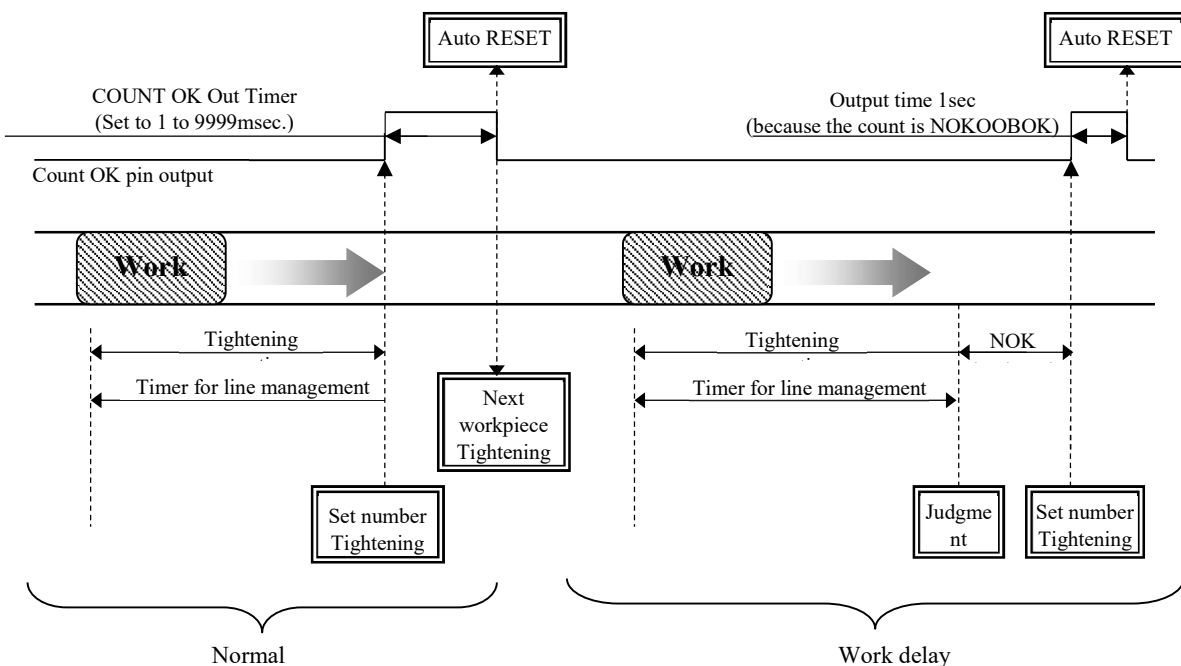
Setting: WORK No Change judgment

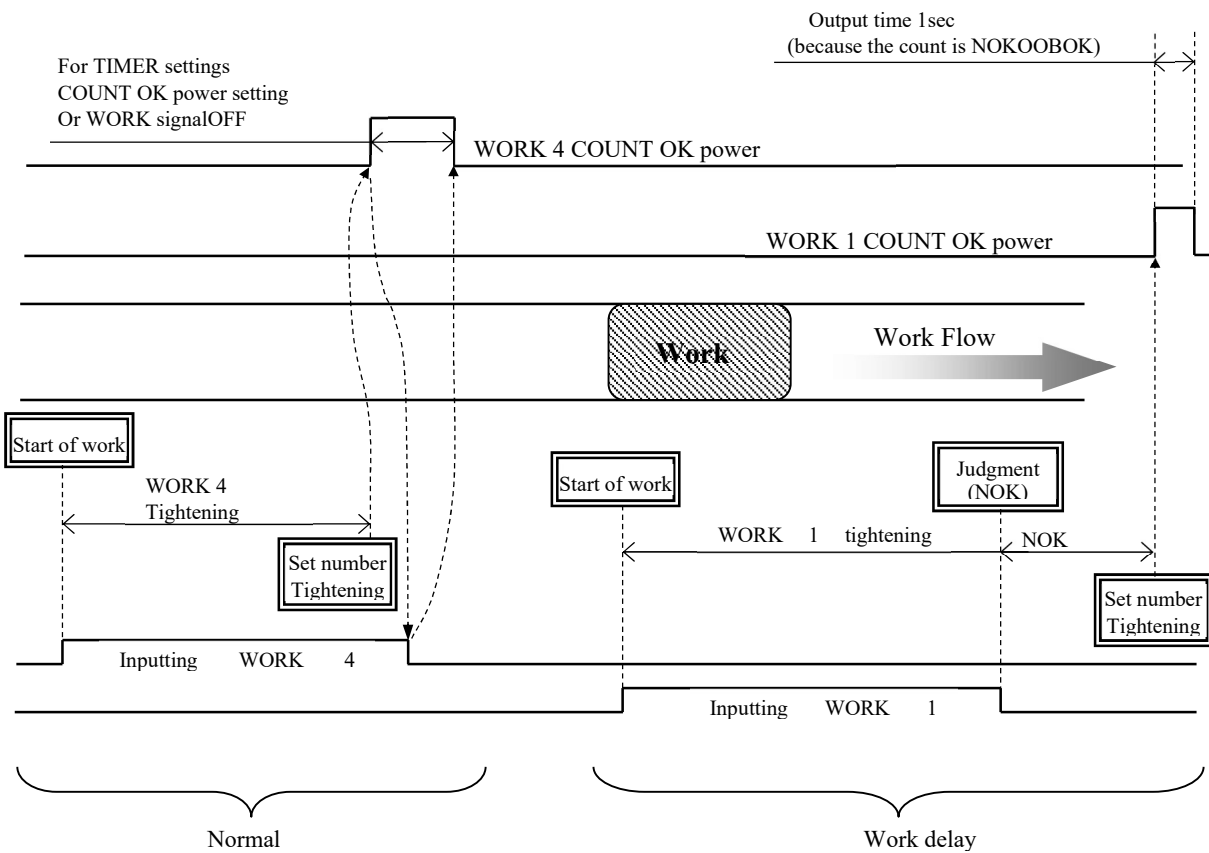Enter WORK 1 to 5 to switch WORK No. and begin tightening. (Set the workpiece selection combination to "1 to 5")

When the set number of screws is tightened, COUNT OK terminals corresponding to the respective WORK numbers turn ON. ("WORK 2 COUNT OK" pin is turned ON when it is turned COUNT OK by WORK No.2.)

COUNT OK output time is set for each TIMER number in WORK setting COUNT OK output.

When NOK treatment (tightening the remaining count or inputting PASS terminal) is COUNT OK from COUNT NOK, COUNT OK output is 1sec.

Turn off WORK SELECT when COUNT OK is turned on. When the input of WORK SELECT is turned OFF, COUNT OK output is turned OFF.

Turns COUNT NOK when inputting WORK 1 to 5 is turned OFF prior to completion of tightening for the set number of bolts.

Output time 1sec
(because the count is NOKOOBOK)

For TIMER settings
COUNT OK power setting
Or WORK signalOFF

WORK 4 COUNT OK power

WORK 1 COUNT OK power

Work Flow

Work

Start of work

WORK 4
Tightening

Set number
Tightening

Start of work

Judgment
(NOK)

WORK   1   tightening   NOK

Set number
Tightening

Inputting   WORK   4

Inputting   WORK   1

Normal

Work delay

Setting: Socket changer

Perform line management using a socket changer. When WORK1 to 5 are input from the socket changer, ZERO/CAL of the torque sensor is checked and operation starts. (Set the workpiece selection combination to "1 to 5")

When the set number of screws is tightened, COUNT OK terminals corresponding to the respective WORK numbers turn ON. ("WORK 2 COUNT OK" pin outputturns ON when it is turned COUNT OK by WORK No. 2.)

COUNT OK output time is set in TIMER setting COUNT OK output.

When NOK treatment (tightening the remaining count or inputting PASS terminal) is COUNT OK from COUNT NOK, COUNT OK output is 1sec.

Turn off WORK SELECT when COUNT OK is turned on. When the input of WORK SELECT is turned OFF, COUNT OK output is turned OFF.

Turns COUNT NOK when inputting WORK 1 to 5 is turned OFF prior to completion of tightening for the set number of bolts. Turn ON the work instruction again and tighten it to turn it COUNT OK, or clear NOK by inputting the touch panel key [RES.] minal block RESET on the front.

Outside the work process, the tool cannot be rotated.
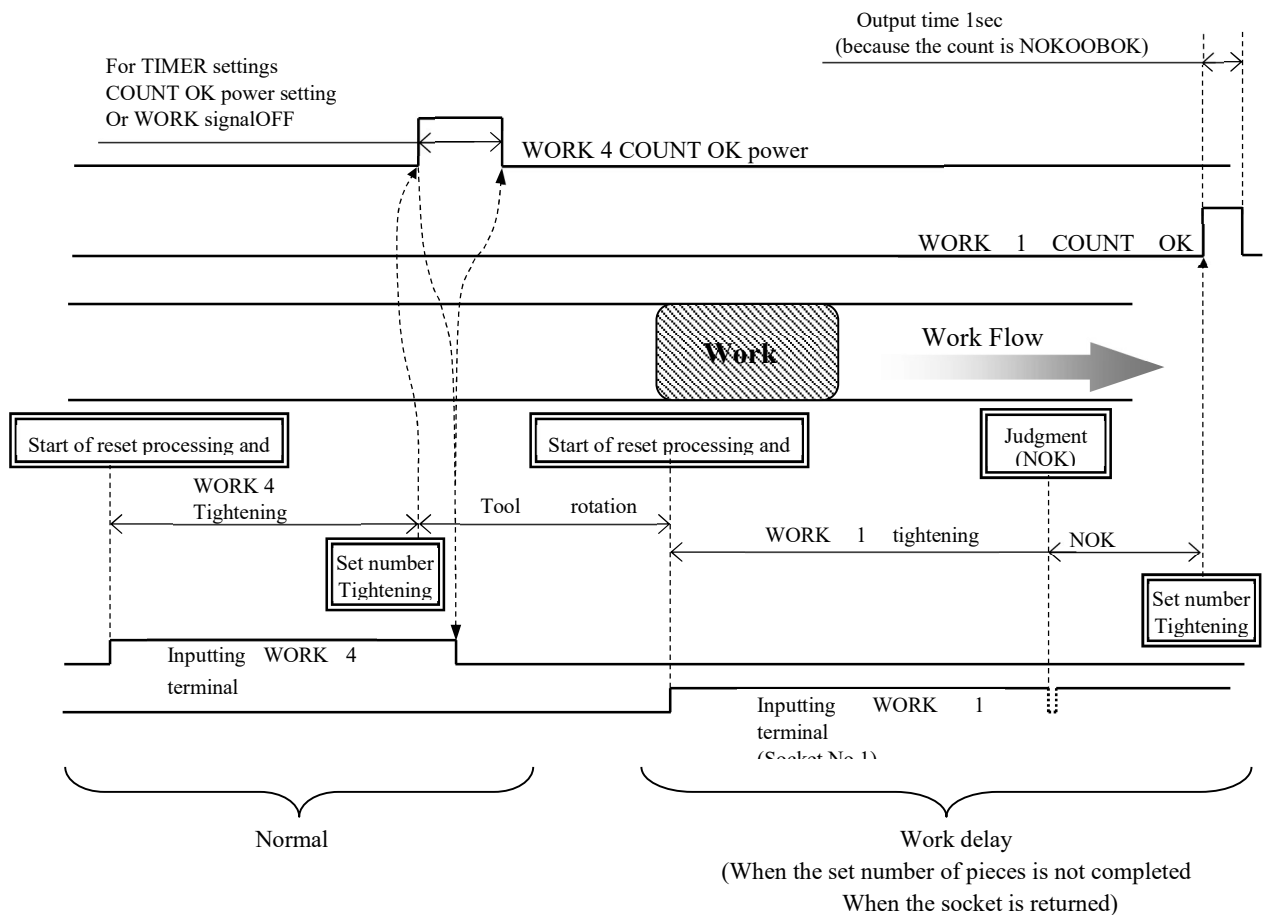
This function uses various communication ports to communicate with the host system. It is possible to output the measured tightening data, change the set value of the controller by communication, and set the ID. Some setting values need to be changed according to the function to be used.

1)Data-out (RS232C)

This function outputs the tightening data from the PC connector on the rear panel. The content of the tightening data to be output can be changed by the setting of "DATA OUT", and the tightening data is output every time the tightening is OK. Refer to the separate sheet "Data output RS232C communication specifications sheet" for the details of communication such as the output format of the tightening data output from the controller.
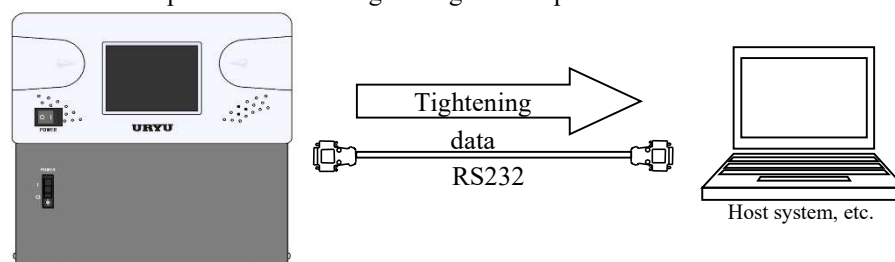
[Items requiring setting]

Data Output Setting screen (all three pages)

・Output operation selection, data method selection (setting: # to CR, # to LF), "Communication speed selection," "Bit length selection," "Stop bit selection," "Parity bit selection," and "Torque value transmission selection"

・・・ 1/3

・"Pulse Number Transmission Selection", "Tightening Time Transmission Selection", "Tightening Judgment Transmission Selection", "Tightening Angle Transmission Selection", "Free-run Angle Transmission Selection"

・・・ 2/3

2)TCP/IP standard

This function communicates with the host system from NETWORK connector on the rear panel. The host system partially changes the set value, sets the ID, and cuts off the axis (tool stop), and the controller outputs the tightening data every time the tightening is OK. For details, refer to Attachment "4900 Ethernet Data Communication Specification Sheet, 1.1 Edition."
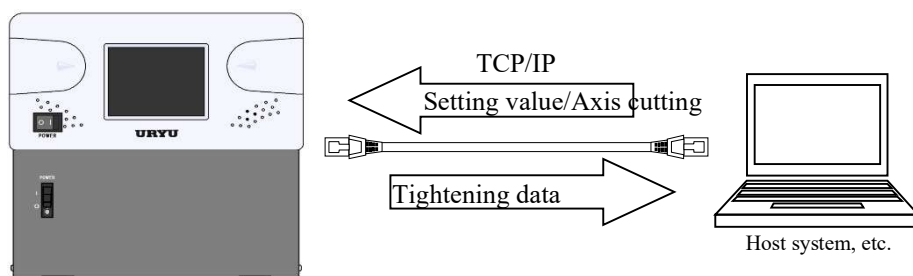
[Items requiring setting]

MODE Settings window (all 6 pages)

・"LAN output destination selection (setting: "setting PC")" ・・・ 3/6
・"Tool rotation stop setting"   ・・・ 6/6
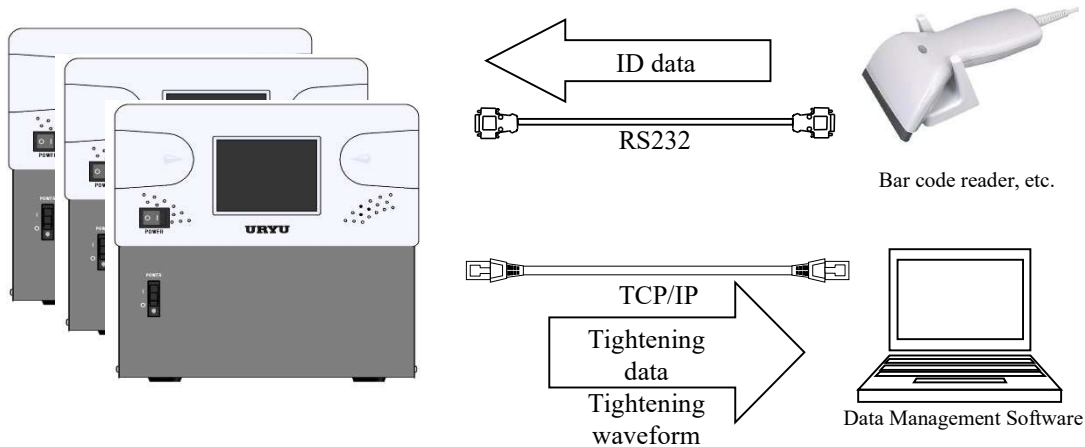
Data Output Setting screen (all three pages)

・"UEC No. SETTING"   ・・・ 1/3
・Data communication format selection "Initial connection selection" "Data clear"   ・・・ 3/3

LAN Settings window (all 1-page)

・"IP address" "Subnet mask" "TCP port" "Connection mode" "Host IP address" "Remote TCP Port"

3)Data-Management (TCP/IP)

This function outputs the tightening data from NETWORK connector on the rear panel. Outputs various measurement data and tightening waveform data to the upper side. The data can be received by using the data management software made by Olympus, and the tightening data can be managed by connecting to multiple controllers. ID can be added to the tightening data output by receiving ID from the rear panel PC connector with a bar code reader, etc. When using a bar code reader, connect the wires with cross-wired RS232C cables. For details on the communication specifications of data management, refer to the separate "4900 Data Management Specifications".

[Items requiring setting]
MODE Settings window (all 6 pages)
・"LAN output destination selection (setting: "Setting PC")"...3/6

Data Output Setting screen (all three pages)
・"UEC No setting" "Data method selection (setting: "# to CR")"　　　・・・ 1/3
・"Waveform data transmission selection"　　　　　　　　　　　・・・ 2/3

LAN Settings window (all 1-page)
・"IP address" "Subnet mask" "TCP port" "Connection mode (setting: "Client") "Host IP address" "Remote TCP port"

The default input terminal is NPN. NPN/PNP method can be switched by opening the main unit lid and using the DI-circuit method selector switch on the board.
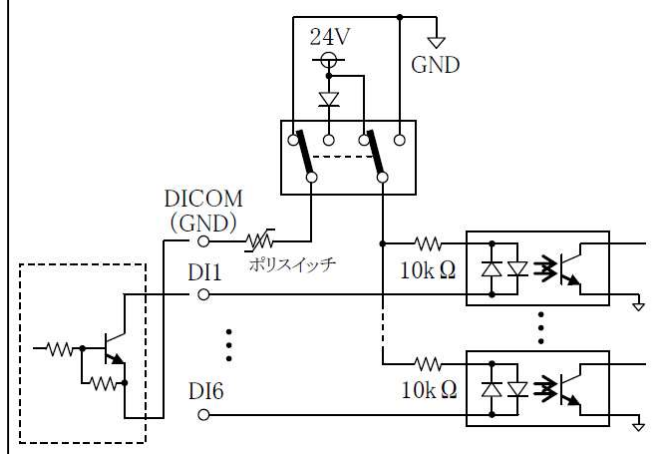
※ **When using the PNP-type, IN COM terminal voltage changes from 0V to 24V. In both cases of NPN/PNP, IN COM terminal and IN1～IN6 can be shorted.**
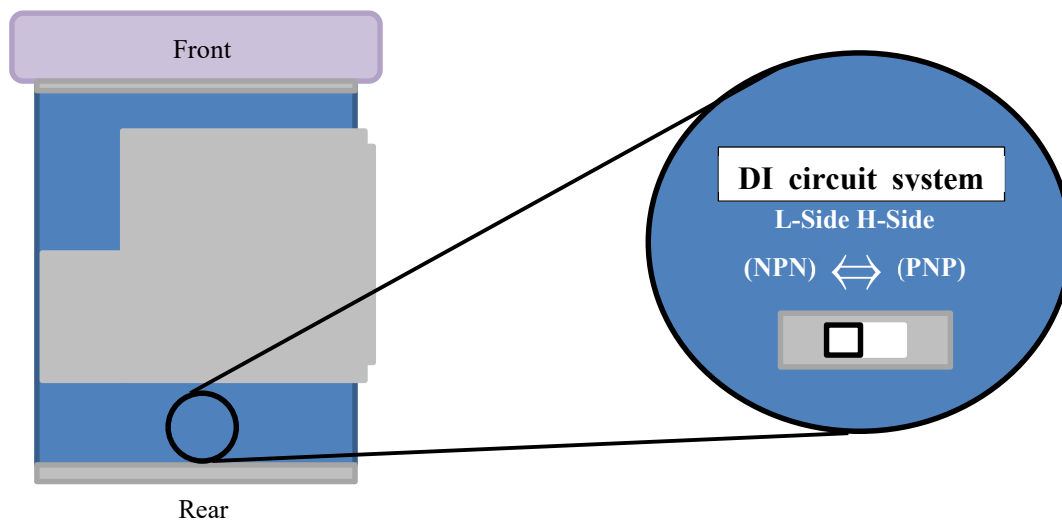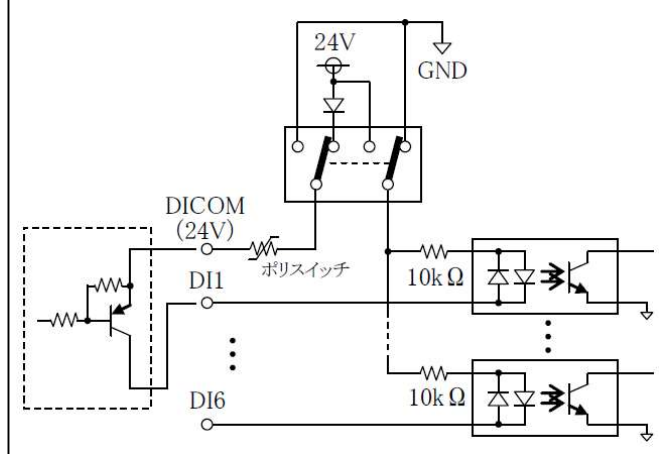

・Circuit diagram

15 Errors

15.1 Errors and Contents

◎**ZERO ERR**
・When there is a difference of ±6% or more of the rating at the time of ZERO checking.

◎**CAL ERR**
・When there is an error of 100±6% or more of the rating at the time of CAL check.

◎**BUFFER FULL**
・Displayed when the buffer for waveform data output becomes full. The number of buffers depends on the setting of waveform-data selection in MODE setting. Not displayed when the waveform memory function selection setting in MODE setting is 1 or 4.

◎**PULSE LOW**
・The measured pulse count value has fallen below the lower limit of the pulse count.

◎**PULSE HIGH**
・The measured pulse count exceeded the upper limit of the pulse count.

◎**TORQUE LOW**
・The measured angle value has fallen below the lower angle limit.

◎**TORQUE HIGH**
・The measured angle exceeded the upper angle limit.

◎**INT ERR**
・When the tightening torque reaches the torque CUT-value before TIME UP of the early abnormality detecting timer.

◎**CYCLE ERR**
・When the tightening torque does not reach the torque CUT value even if the cycle error timer turns TIME UP.

◎**TIGHT. CUT**
・When tightening is interrupted until the measured torque value reaches the torque CUT value.

◎**SNUG TORQUE ERR**
・When the snap-torque abnormality detection timer is turned TIME UP but the snap-torque is not reached.

◎**SNUG ANG LOW ERR**
・The measured angle from the start torque to the snug torque fell below the lower limit of the snug angle.

◎**SNUG ANG HIGH ERR**
・The measured angle from the start torque to the snug torque exceeded the upper limit of the snug angle.

◎**FREE RUN ANG ERR**
・The free-run angle has fallen below the free-run angle lower limit.

◎**URYU STANDARD ERROR**
・Communication with the host side cannot be performed normally using the standard communication specifications.

◎**URYU STANDARD TIMEOUT**
・Keep-alive command cannot be received from the host within the intervals set in " URYU STANDARD TIMEOUT" of TIMER setting.

◎**GP COMM. ERR**
・Communication with Global Pokayoke was disconnected.

◎**QUALITY SERVER COMM. ERR**
・Data cannot be output to the server.

◎**REST NUM. WRONG POINT ERR**
・The completion notification from GP was received even though the tightening of the specified number of bolts was not completed.

◎**PROGRAM NUM. ERR**
・The tightening result was transmitted in the program No. different from the instruction. (Error code received from GP)

◎**WARNING COUNT ERROR**
・The total number of fasteners reached the number set for the number of warnings.

◎**WARNING PULSE ERR**
・The total number of tightening pulses has reached the number set for the number of warning pulses.

◎**REPAIR COUNT ERR**
・The total number of tightening reaches the number set for the number of repairs.

◎**REPAIR PULSE ERR**
・The total number of tightening pulses has reached the number set for the number of repair-compatible pulses.

◎**MEMORY ERROR**
・The remaining amount of memory data is "-10" or less from the maximum number of data that can be stored in memory.

◎**MEMORY ERR**
・The ROM in the board fails or operates abnormally for some reason.

◎**MEMORY ERR**
・The RAM in the board fails or operates abnormally for some reason.

◎**FILTER ERR**
・Failure of the filter IC on the board.
◎**REMAINING MEMORY WRN**
・The remaining capacity of the SD card is insufficient.
◎**NO MEMORY INVALID DATA STORAGE**
・The SD card is set to write data, but the SD card is not inserted.
◎**WRITE PROTECT**
・The card is in LOCK and cannot be written to.
◎**A/D ERR**
・Defective AD torque sensor.
◎**MOTOR NO RESPONSE**
・No response from motor in tool.
◎**MOTOR NACK**
・There was a NAK-response from the tool (motor) for the survival check from UECP-4900E.
◎**MOTOR NAKB ERR**
・There was a NAK-response from the tool (motor) for sending the setpoint from UECP-4900E.
◎**MOTOR NAKC ERR**
・There was a NAK-response from the tool (motor) for various command-sending from UECP-4900E.
◎**Fuse Blown**
・If the fuse for AC (5.2 on the rear panel ②) is blown, the power will not be turned on.

15.2 Error countermeasures

Error description	Error countermeasures
ZERO ERR	・Turn off the power to the controller and replace the tool and sensor cable.
	・Check if the tool rotates during ZERO/CAL checking, etc.
CAL ERR	・Check that no RESET is input during tightening.
BUFFER FULL	・Check the communication cable
	・Set "Waveform memory function selection" in "MODE setting" to "Function 4".
INT/CYCLE ERR	・Tighten twice and check for galling. ・Check tool capacity/workpiece and bolt. ・Check the start torque value/torque CUT value. ・Check the initial/cycle error timer set value. ・Pulse count upper/lower limit setting value, angle upper/lower limit setting value check. ※Examine the tightening time (elapsed time from the start torque value to the torque CUT value), the number of pulses, and the tightening angle during normal tightening, and use them as a reference for the set value.
PULSE LOW/HIGH	・Tighten twice and check for galling. ・Check tool capacity/workpiece and bolt.
TORQUE LOW/HIGH	・Check the start torque value/torque CUT value. ・Check the initial/cycle error timer set value. ・Pulse count upper/lower limit setting value, angle upper/lower limit setting value check.
TIGHT. CUT	※Examine the tightening time (elapsed time from the start torque value to the torque CUT value), the number of pulses, and the tightening angle during normal tightening, and use them as a reference for the set value. ・Has the tool lever been released before reaching the CUT setting value? ・Checking tool capabilities. ・Is the judgment delay timer too short? ・Increase the set value of the pre-CUT judgment delay timer. ・Check the start torque setting.
SNUG TORQUE ERR	・Check tool capacity/workpiece and bolt. ・Check start torque value and snug torque value.
SNUG ANG LOW ERRORr	・Check for 2-degree tightening galling. ・Checking the Snug Angle Lower Limit, Start Torque Value, and Snug Torque Value.
SNUG ANGLE HIGH ERROR	・Check of tool capacity, workpiece and bolt. ・Check for galling. ・Check the Snug Angle Upper Limit, Start Torque Value, and Snug Torque Value.
FREE RUN ANG ERR	・Check for 2-degree tightening galling and temporary tightening. ・Check the start torque value.

COMMUNICATION ERROR	・Checking the host side, checking and replacing the LAN cable ・Checking the setting of TIMER setting "Padding time-out"
GP COMM. ERR	・Checking the Global Pokayoke Side (Power Supply, etc.) ・Checking and replacing the communication cable with Global Pokayoke.
QUALITY SERVER COMM. ERR	・Check that the LAN settings (IP address, etc.) are set correctly. ・Check the LAN cable. ・When data output to the quality server is not used, the setting of "LAN output destination selection" is changed to "Disable".
REST NUM. WRONG POINT ERR	・Completed forcibly or canceled with the key. RES.
PROGRAM NUM. ERR	・Completed forcibly or canceled with the key. RES. ・Confirm settings. Check by monitoring the communication contents.
WARNING COUNT (PULSE) ERROR	・Perform maintenance such as tool oil change/replenishment and O-ring replacement, and set the number of warnings (pulses) to the number of pulses to be maintained next time.
REPAIR COUNT (PULSE) ERROR	・Repair/replace the tool and clear the total number of pulses to be tightened.
MEMORY ERROR	・Receive and save the memory data and clear the memory. ・When the remaining amount warning is not required, the setting value of the memory data content is revised.
MEMORY(ROM/RAM) ERR	・Replace the main unit of the controller.
FILTER ERR	・Replace the controller.
REMAININ MEMORY WRN	・The remaining capacity is insufficient. Replace the SD card or format it.
NO MEMORY INVALID DATA STORAGE	・Check that the SD card is installed. If it is not used, check the setting value of SD memory saving.
WRITE PROTECT	・Remove the SD-Card and release LOCK status.
A/D ERR	・Replace the tool.
MOTOR NO RESONSE	・Replace the tool sensor cable.
MOTOR NAKA ERROR (MOTOR NACK)	・Replace the tool sensor cable. ・Check that the product is properly grounded.
MOTOR NAKB ERROR (MOTOR NACK)	
MOTOR NAKC ERROR (MOTOR NACK)	
Tool does not rotate	・Check that the work instruction is input. ・Check the set number of tightening bolts and the actual number of tightening bolts.