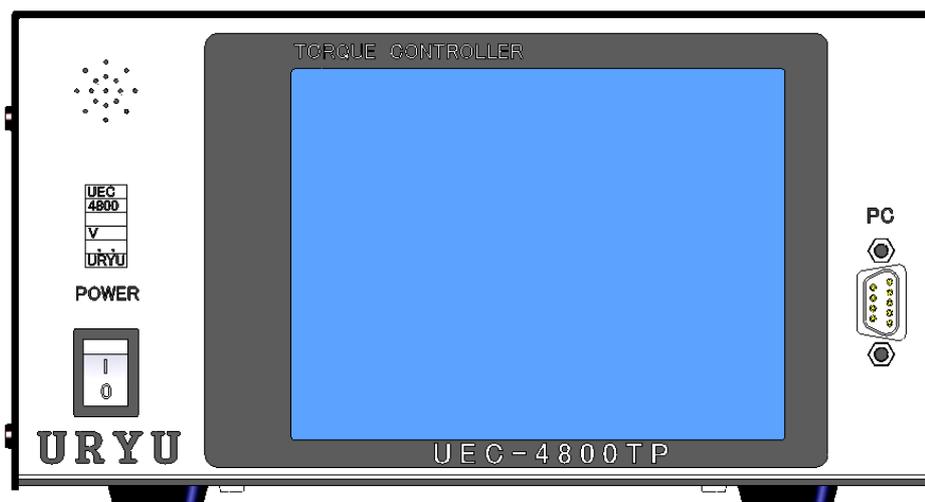


# Controller for Highly Reliable Fastening Tools UEC-4800TP(SD)

## Instruction Manual



**1.2 Edition**

**URYU SEISAKU, LTD.**

## Table of Contents

1. Safety Instructions.....	2
2. Outline.....	6
2.1. Configuration.....	6
2.2. Dimensions.....	7
2.3. Block Diagram.....	8
2.4. Features.....	9
2.5. Installation.....	11
2.5.1. Place for Installation.....	11
2.5.2. Environmental conditions.....	11
3. Specifications.....	12
4. Parts names and functions.....	13
4.1. Front Panel.....	13
4.2. Rear Panel.....	14
5. Operation.....	16
5.1. Preparation.....	16
5.2. Key operation.....	16
5.3. Setting.....	17
6. Check.....	18
6.1. Self-diagnosis check.....	18
6.2. Input and Output check (wiring diagnosis of the terminals and the tool).....	20
7. Zero point adjustment.....	21
8. WORK No. change.....	22
9. Torque polarity change.....	23
10. Setting.....	24
10.1. Basic setting.....	25
10.2. MODE Setting.....	28
10.3. TIMER Setting.....	44
10.4. Input and output setting.....	49
10.5. Data output setting.....	51
10.6. LAN setting.....	56
10.7. Program Number.....	59
11. Memory Data.....	61
11.1. Memory related setting.....	61
11.2. Statistics Data.....	65
11.3. Former data (raw data).....	66
11.4. Memory data clear.....	67
11.5. Unusual History.....	68
12. TOOL CONTROL.....	69
13. Functions.....	71
13.1. Fastening control.....	71
13.2. Upper and low limit judgment.....	74
13.3. Torque change degree zone monitor.....	76
14. Torque Sensor Wiring Check.....	78
14.1. Error detection.....	78
14.2. ZERO/CAL check perform timing.....	78
15. Auto ZERO.....	79
16. Torque waveform measuring procedure.....	80
17. ANALOG OUTPUT terminal.....	81
18. Error.....	82
18.1. Error message & contents.....	82
18.2. Error display screen.....	84
18.3. Trouble Shooting.....	85

## 1. Safety Instructions

Peruse this instruction manual before installation, operation, maintenance and inspection of this system, and then use this system properly. Use this System only after you master knowledge of this equipment, safety instruction and all instructions given in the safety instructions of this System.

Take note that this operation manual classifies the safety instructions into two signs; “DANGER” and “WARNING”, according to the degree of seriousness and urgency.



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



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

WARNING sign also warns the risk of serious consequences depending on the situation. So, always follow the instructions given in this Manual.

### ◆Installation & Surroundings

 <b>WARNING</b>
<ul style="list-style-type: none"><li>● Place on a metal or other incombustible component to prevent a fire.</li><li>● Keep away from the combustibles to prevent a fire.</li><li>● Avoid foreign material intrusion to prevent a fire.</li><li>● Set up Controller on a site that can bear its weight to avoid personal injury from accidental falling.</li><li>● Keep the workplace well lighted and clean to avoid personal injury.</li><li>● Never wear loose-fitting clothes or dangling jewelry when using this System, and always wear the proper clothes for your job. In addition, be careful not to get your hair caught in tools, and tie long hair with a rubber ribbon or the like and wear a protective helmet to prevent personal injury.</li><li>● Securely install and fix this System to avoid personal injury in case of an emergency like an earthquake.</li></ul>

## ◆Wiring



# DANGER

- Be sure to turn OFF the power switch prior to wiring to avoid an electric shock or a fire.
- Make sure that the cords and outlets are properly grounded to avoid an electric shock or a fire.
- Carry out wiring after you installed controller to avoid an electric shock or a fire.
- Wiring must be carried out by an expert electrician to avoid an electric shock or a fire.
- Always use Y-shape or round clip terminals when wiring Terminal Block to avoid an electric shock or fire.



# WARNING

- Be sure that Controller rated voltage agrees with AC power source to avoid personal injury and a possible fire.
- Wires must be routed and fixed properly and securely to avoid personal injury and a fire.
- Always use an original power cord.

## ◆Handling/Operations



# DANGER

- Assurance of work-site safety by operators themselves prior to power switching operation is essential to prevent personal injury.
- Never touch switching devices with wet hands to avoid an electric shock.
- Never touch the current-carrying controllers' terminals even if the tool is not in operation to avoid electric shock.
- Never damage, excessively stress, load the cords, and never tuck them between objects to avoid electric shock.
- Be sure to turn OFF the controllers after each use.



# WARNING

- Make settings within the instructed setting range to avoid personal injury and burns.
- Do operations in safe surroundings while keeping proper footing. Avoid poor postures to prevent danger.
- Do operations with extra care. Never do any operation and long-time continuous job due to careless and inappropriate manner to avoid personal injury or work-related diseases.

## ◆Maintenance & Service



# DANGER

- Turn off and unplug the power cords prior to inspection/replacement to avoid an electric shock.
- Maintenance/servicing works only by an expert is allowed. Be sure to take off metal articles (wrist-watch or ring) prior to operation. Inspect cords periodically for damage, and have an expert make repairs or exchange if signs of wear or damage are noticed. Always use insulating tools at the time of servicing to avoid an electric shock and personal injury.
- Always order us or our agent for overhaul to avoid electric shock, personal injury and fire.

## ◆Disposal



# DANGER

- Dispose your System as your industrial waste.

## ◆Others



# DANGER

- Never add modifications to your System to avoid an electric shock, injury or fire.
- Stop your System right away and cut off the power whenever something unusual occurs.

## General Precautions

- Some illustrations and diagrams in this Manual are shown without the safety shield materials in order to explain details. Put back the safety shield materials to the original place and operate this System in accordance to this Manual.
- Keep persons irrelevant to System operation away from work-site.
- This System is not the waterproof structure. Keep liquids away from the System. Any liquids can cause the short-out resulting in the fire or the electric shock.
- The magnet-strictive sensor is built into the MC tool. Never place any magnet near the MC tool to avoid any magnetic field effect. Otherwise, the tool may malfunction.

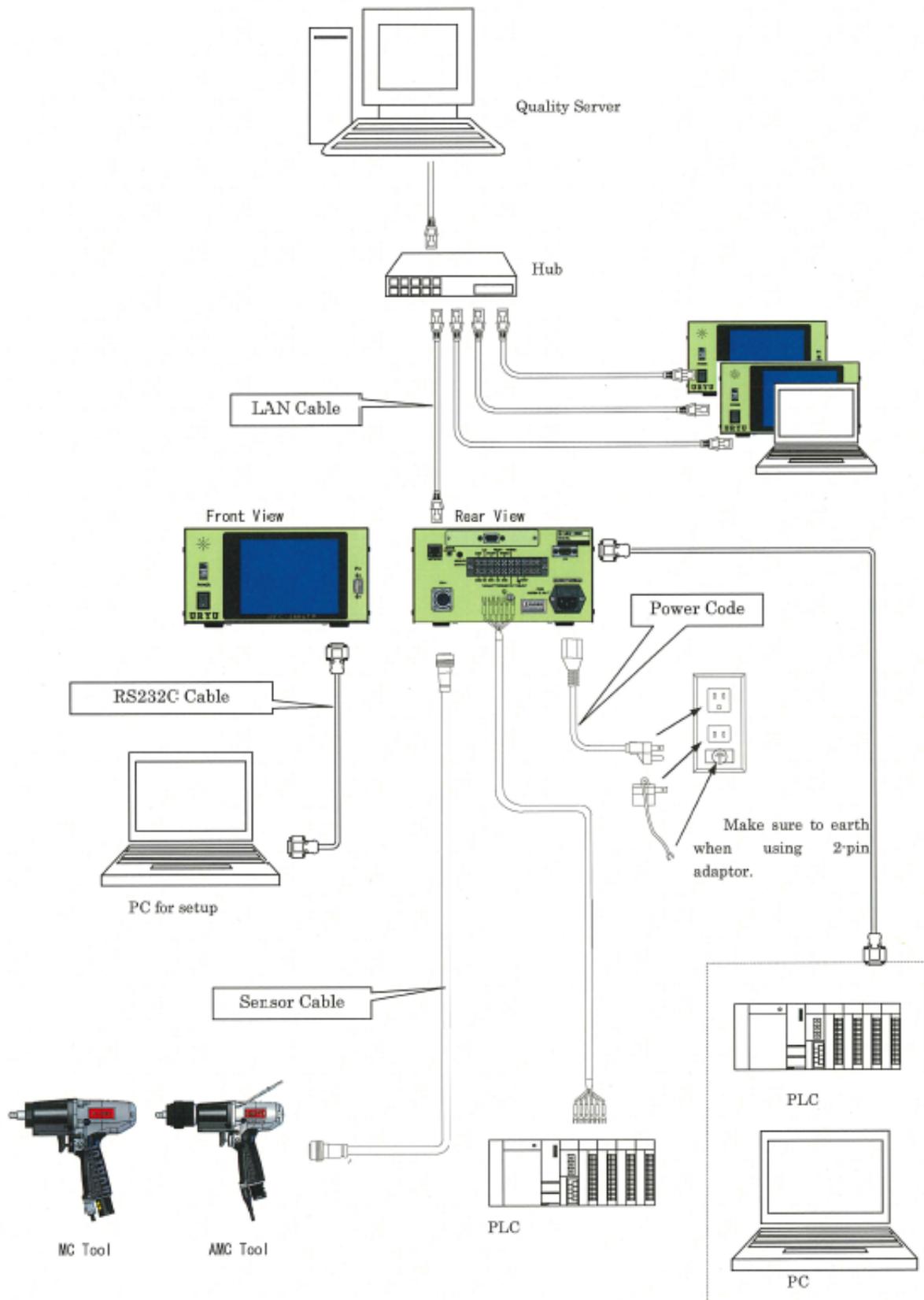


## Disclaimer

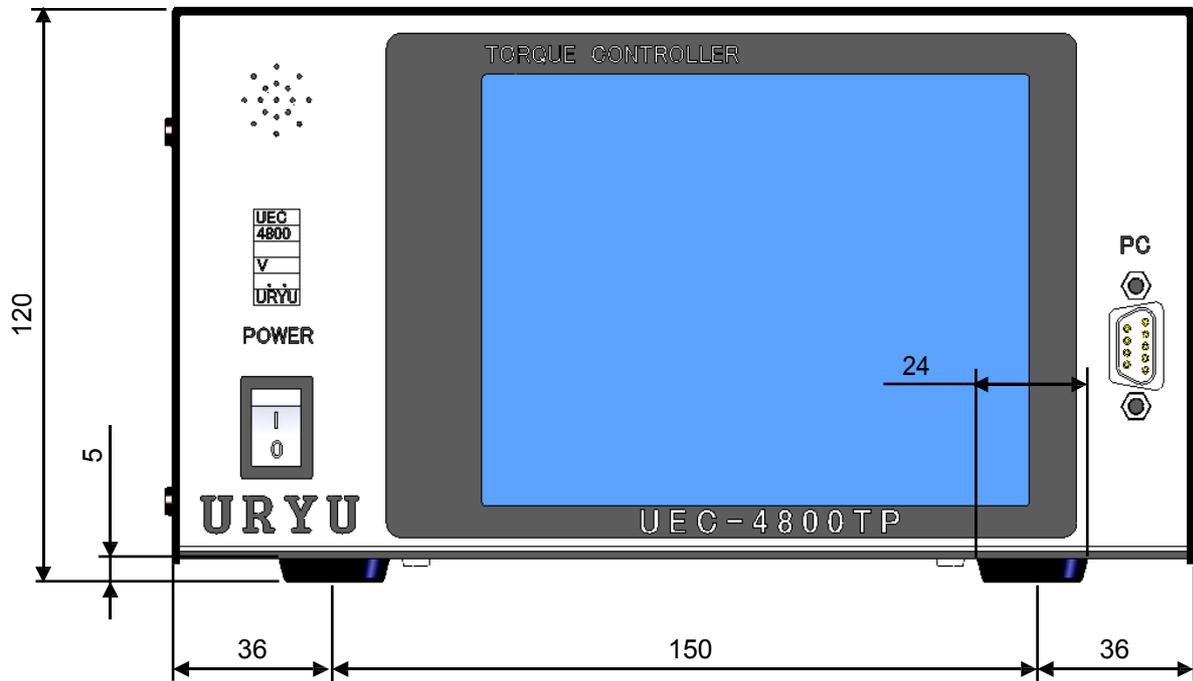
- Contents of this Manual may change without notice.

## 2. Outline

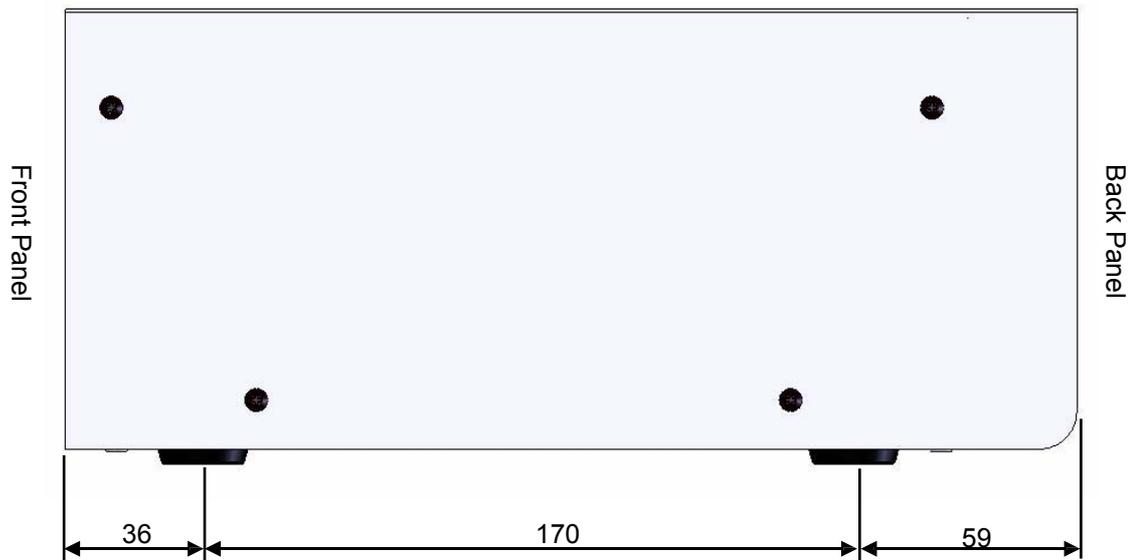
### 2.1. Configuration



## 2.2. Dimensions

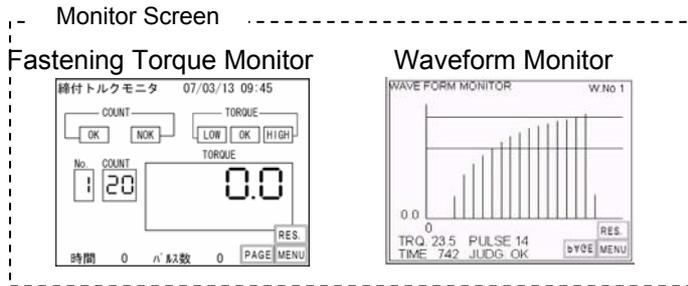


Front Panel

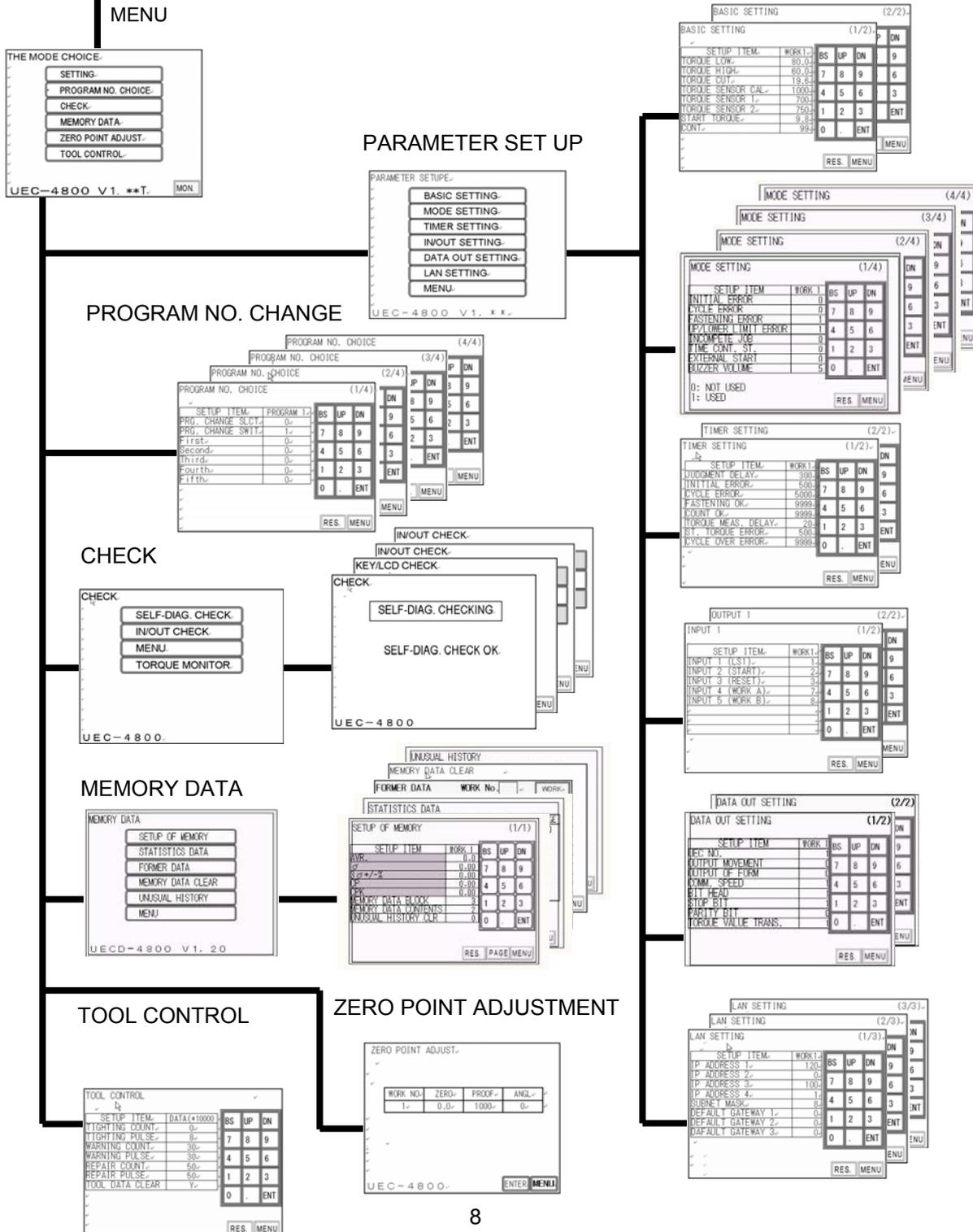
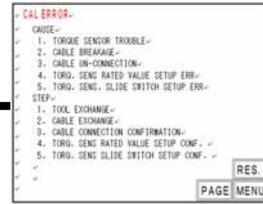


Side Panel

## 2.3. Block Diagram



Error Cause / Countermeasure when an error occurs



## 2.4. Features

1. Self-diagnosis Function: When UEC is switched on, it performs self-diagnosis by checking ROM → RAM → A/D → Filter Check → ZERO / CAL in sequence for 10 seconds.
  2. You have options for control method. Each system has functions of various fastening error detections and fastener number count down.
  3. Controls the transducerized tools such as EC wrenches, MC wrenches, Angle Nutrunners, Open Wrench, and Air nutrunners' torque sensors.
  4. Makes setup or changeover of fastening torque, fastener number count and other controls for maximum 8 different kinds (work 1 to 8). The program number choice enables you to change torque under the same work.
  5. Tool's maintenance is possible by counting both total cycle numbers (how many fasteners) and/or total pulse numbers.
  6. Displays in/output check and errors by front panel and buzzer sounding of UEC, or on your PC screen.
  7. Can monitor various control values and setting values either on the front panel or on your PC screen.
  8. Controls various types of torque sensors
    - SG (Strain gauge type sensor)
      - 350Ω
      - 480Ω
      - 700Ω
    - MS (URYU Magnetostrictive type sensor)
  9. Memorized maximum 12,000 pieces fastening data without the data of date and hour, and or maximum 5,400 pieces fastening data with the data of date and hour.
  10. Following functions are available through Uryu standard software on your PC. Please refer to the instruction manual of the UEC-4800 setup software for details.
    - Upload and download of the setting values
    - Fastening data receipt and automatic storage
    - Fastening waveform data receipt and automatic storage
    - Statistic data receipt
    - I/O Check
  11. Following functions are available from touch panel screens of UEC
    - Displays of the fastening result such as the torque values and the fastening waveform data
    - Change and monitor of the setting values
    - Statistic data verification
    - Various check functions
    - Tool control function
  12. Ethernet (TCP/IP) capable
    - Upload and receipt of the setting values
    - Upload of the fastening result and waveform data
  13. Valve Check
- This is to check the wiring of solenoid valve. Necessary to change the parameter on MODE setting.

#### 14. Mini-SD card

\*can save fastening and waveform data

\*can save and open setting parameters

\*mini-SD card up to 2GB can be used.

- The firmware is subject to be changed for improvement without prior notice.
- The firmware version can be seen on the sticker which is put next to power switch or start screen upon booting the UEC.

## 2.5. Installation

Install and fix controller firmly by paying attentions to the followings.

### 2.5.1. Place for Installation

- 1) Within a building where no water or direct rays of the sun enters because UEC is not the waterproof structure.
- 2) Place where UEC does not suffer from corrosives, flammable gas, grinding fluid, oil mist, metal powders, and etc.
- 3) Well-ventilated place with less moisture, dust or waste.
- 4) Less vibration place
- 5) Place where you can disconnect power cord from power socket immediately when anything unusual occurs to UEC.
- 6) Set in a dust-free box in case of use under environment of contamination degree 3.

### 2.5.2. Environmental conditions

<b>Item</b>	<b>Conditions</b>
Place	Indoors only
Operation temperature	0 – 50 degree (no freeze)
Humidity	90% RH or less (no dew)
Preservation Temperature	0 – 50 degree (no dew)
Preservation Humidity	90% RH or less (no dew)
Vibration	5.6 m/s <sup>2</sup> or less (10 – 60 Hz)
Altitude	Maximum 1,000 m above sea level
Over voltage Category	Category III * <sup>1</sup>
Contamination Degree	Degree 2

\*1: Above categorization is of the over voltage category (I, II or III), and contamination level (1, 2, 3) as per IEC664. UEC-4800 has been categorized as above mentioned over voltage category III and the contamination degree 2.

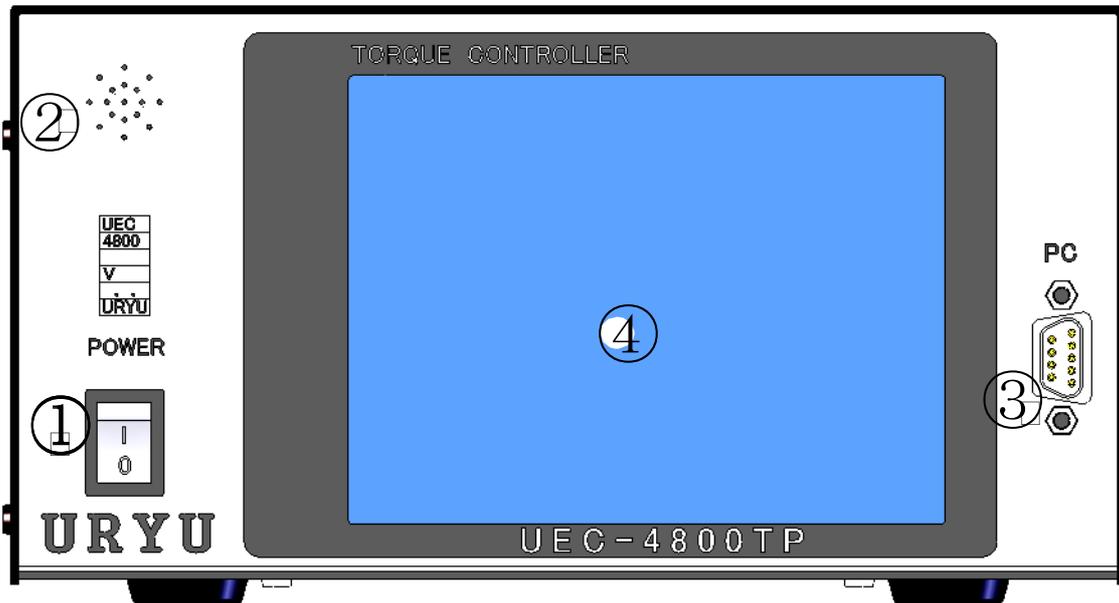
Note: IEC International Electric Standard Committee

### 3. Specifications

Item	Descriptions	
Power Source	AC 100 – 240V +/- 10%	
Frequency	50 / 60 Hz	
Anti-noise	1000V 1μS (by noise simulator)	
Insulation resistance	DC500V & greater than 10MΩ	
Consumption	about 30VA	
Weight	3.6 kgs	
Dimensions	265 (D) x 222 (W) x 120 (H)	
Main Features	Torque Control / Monitor Fastener Number Count Angle monitoring	
Setup	From Front Panel By PC (exclusive URYU setup software, common for UEC-4800/4800TP, necessary)	
Display	Torque Resolution +/- 2048 (12 Bit by A/D)	
	Touch Panel	LCD
	320 x 240 dot (25 letters x 15 lines – in case of Japanese two-byte character)	LCD (20 letters x 4 liners) Work number, Bolt Count number, Tightening Time, and Pulse Blow Number displayed 1-digit Digital Display (DPM) Work number displayed 4-digit Digital Display (DPM) Torque Reading displayed
Clock	Automatic Calendar, recognize leap year, military time, accuracy +/- 1 minute per month	
Lamp (display on screen)	TOTAL Lamp (for Count Judgment): OK (Green) / NOK (Red)	
	Torque Lamp (for Torque Judgment): LOW (yellow) / OK (green) / High (Red)	
Terminal Block	Input Operation Voltage / Current: DC24V / about 10mA 5 terminals available (free format) Note: Contact input necessary	
	Output Contact Capacity: DC30V, 1A 5 terminals available (free format), VALVE	
Oscillograph output	Plug Size: JIS C6560 single small head plug φ3.5 x 15 UEC outputs filter-processed torque waveform from analog jack Cable: UK-PLUG (Part Number: 909-483-0)	
Key	Display on the touch panel screen:  (ENTER) ,  (RESET) , & 10 key Display on the LCD type front panel 	
Option	Front Panel (touch panel type) Part Name: Touch Panel Assembly Part Number 910-073-0	
	Front Panel (LCD type) Part Name: UEC-LCD Panel Assembly Part Number: 910-072-0	
	Part Name: PC Cable Part Number: 910-219-0 Straight PC Cable for RS232C D-sub 9-pin female and D-sub 9-pin female	
	Torque Sensor Cable Part Name: Sensor Cable Assembly 3F5 Part Number: 910-263-0 Part Name: Sensor Cable Assembly 3F10 Part Number: 910-264-0	
	Part name: Angle Encoding Cable (used for angle monitoring). Part number: 911-023-0 Angle board: 910-080-0	

## 4. Parts names and functions

### 4.1. Front Panel



#### 1. Power Switch

Switch for power supply. Turn off when you do not use UEC.

#### 2. Buzzer

Sounds to announce every fastening, error, OK or NOK. Touch the screen and the buzzer sound stops when an error is detected.

#### 3. PC connector (D-sub 9-pin male)

Connector to connect to PC

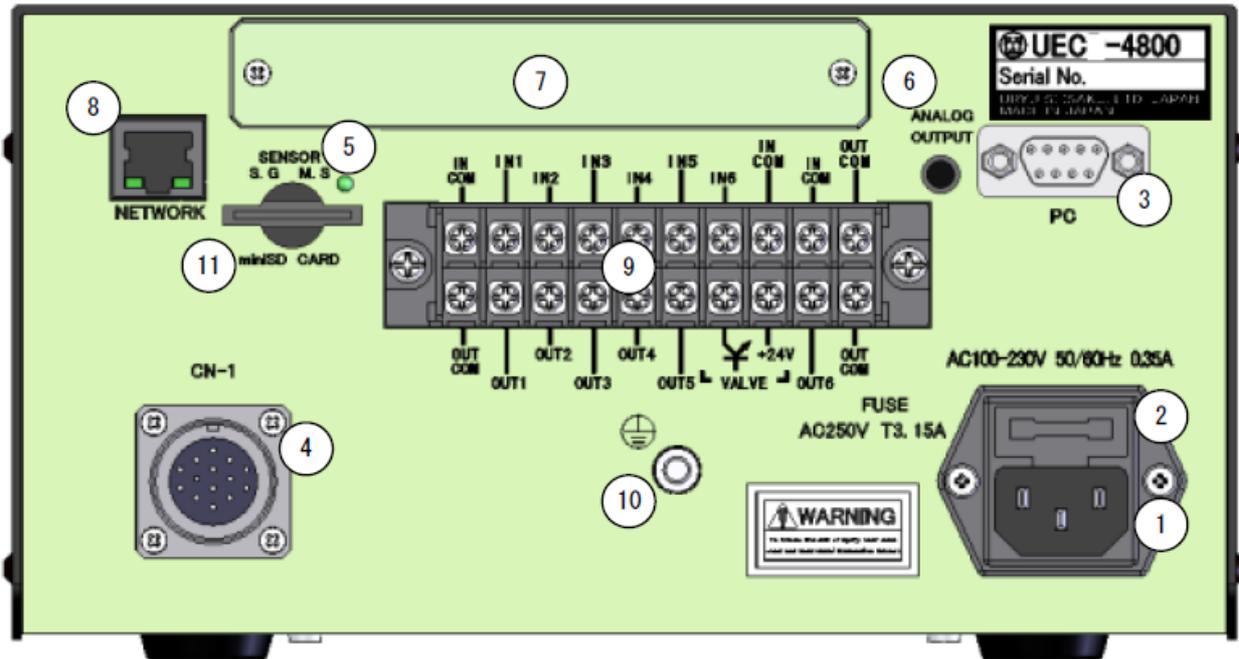
Use the straight cable.

#### 4. Touch panel

Display and input the fastening data such as the torque, angle, fastening time, pulse number and judgments, the fastener unfastened number, date and hour, torque wave form, errors, warnings and or the setting values.

Touch the screen when the buzzer sounds by detecting the error, and the buzzer stops without clearing the error.

## 4.2. Rear Panel



### ① Power cord box

Connect the power cord.

Make sure to ground the grounding wire of the power receptacle.

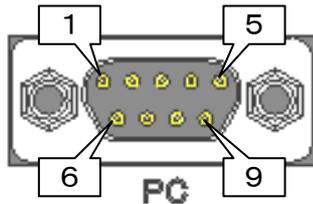
### ② Fuse holder

Protection fuse of UEC (3.15A)

### ③ PC connector (D-sub 9-pin female)

RS232C serial port for the data input and output.

Connect to the serial printer, PLC, PC, or the barcode reader.



Pin Purpose	
Pin No.	Signal
1	FG (frame ground)
2	TXD (Transmit Data)
3	RXD (Receive Data)
4	DSR (Data Set Ready)
5	SG (Signal Ground)
6	DTR (Data Terminal Ready)
7	CTS (Clear to Send)
8	RTS (Request to Send)
9	Not Used

### ④ Connector for sensor cable

Connect sensor cable from a tool.

### ⑤ Sensor select switch

Select switch of either MS (URYU original magnetstrictive type sensor) or SG (strain gauge type sensor).

### ⑥ Analog output terminal

Terminal for the torque waveform output. Please refer to [13. Torque Waveform Measuring Procedure](#) and [14. ANALOG output terminal](#) for details.

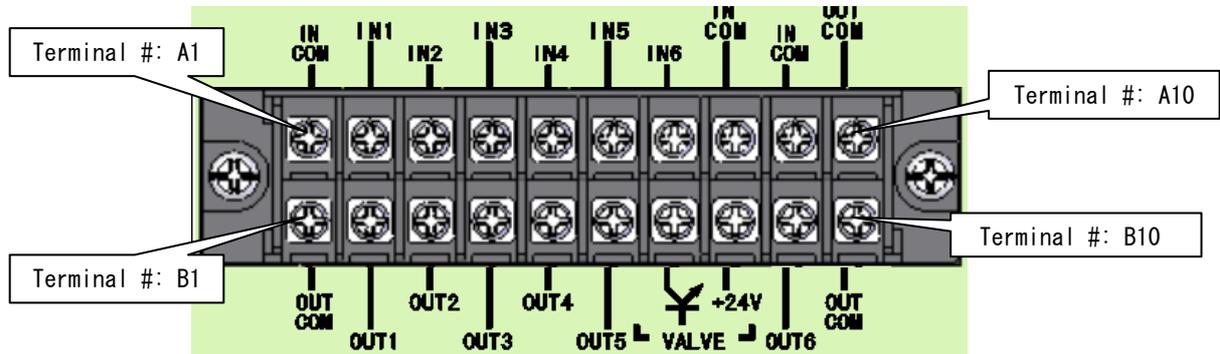
### ⑦ Space for the optional board

Space for the optional board.

### ⑧ Network connector

Connector for Ethernet to connect to the database

## 9. Input and Output Terminal (free-format)



Terminal #	Signal Allocations	Terminal #	Signal Allocations
A1	COM : Common Terminal for the input terminals. (—)	B1	COM : Common Terminal for the output terminals.
A2	IN 1~6 : Input Terminals	B2	OUT 1~5 : Output Terminals
A3		B3	
A4		B4	
A5		B5	
A6		B6	
A7		B7	
A8	IN COM : Common Terminal for the input terminals. (—)	B8	VALVE COM : +24
A9		B9	OUT 6 : Output Terminal
A10	OUT COM : Common Terminal for the output terminals.	B10	OUT COM : Common Terminal for the output terminals.

Allocation of terminal board is free format. You can change the signal allocations of A2 – A7 and B2 – B6, and B9 by IN/OUT SETTING. Make sure you establish the wiring to each terminal upon checking what signal is allocated to which terminal.

- Contact input is necessary for the input to the input terminals A1 and A2 - A7.
- Output terminals of B2 - B6, and B9 is the no-voltage output. Wiring should be made at DC24V or less.
- Use Y-shape crimp contact or round-shape contact for the wiring to terminals.

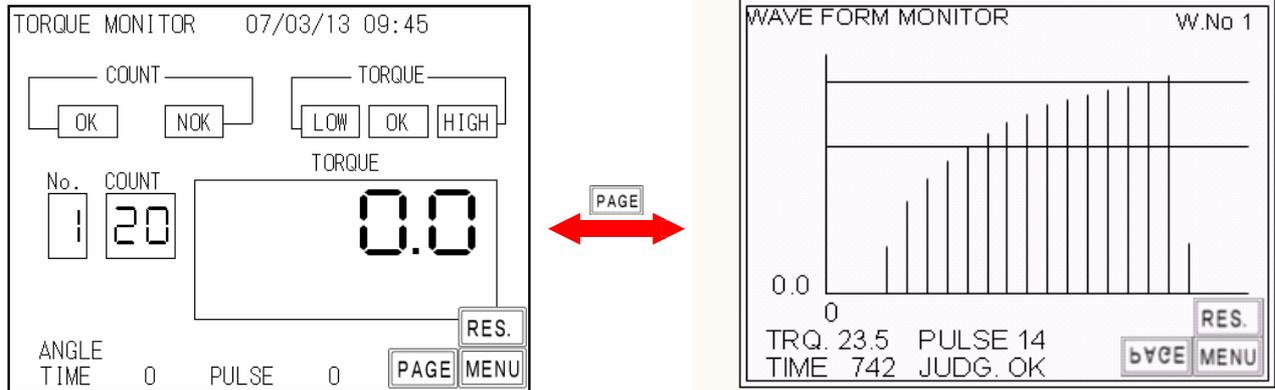
## 10. Grounding terminal

Terminal for grounding. Make sure to use this terminal if the power cord does not have a ground wire.

## 5. Operation

### 5.1. Preparation

- 1) Connect the power cable to the power receptacle.
- 2) Connect Sensor Cable to CN-1 Connector of UEC, and connect sensor cable to a tool.
- 3) Switch on UEC, and it makes the self-diagnosis check for 10 seconds.
- 4) The TORQUE MONITOR screen comes up after the self-diagnosis check is completed.



### 5.2. Key operation

- 1) Switch on UEC, and it makes the self-diagnosis check. After it is over, the TORQUE MONITOR screen comes up.
- 2) Touch **PAGE** on the TORQUE MONITOR screen to move to the WAVE FORM MONITOR screen. Touch **PAGE** on the WAVE FORM MONITOR screen to move back to the TORQUE MONITOR screen.
- 3) Touch **RES.** to cancel the fastening error display or to make the ZERO/CAL check on the TORQUE MONITOR screen.
- 4) Touch **MENU** in the TORQUE MONITOR screen to move to the MENU screen.
- 5) Touch the screen name in the MENU screen to move to the touched screen.
- 6) Touch **RES.** in the screen other than to move back to the TORQUE MONITOR screen
- 7) Touch the screen anywhere excepting **RES.** to stop the buzzer when UEC detects the error. Touch **RES.** to cancel the error display.
- 8) Touch **RES.** except for the error status to reset the UEC-4800TP including clearing the bolt counting.

### 5.3. Setting

There are two ways available, either by PC or by touch panel screen of UEC, to change the setting values.

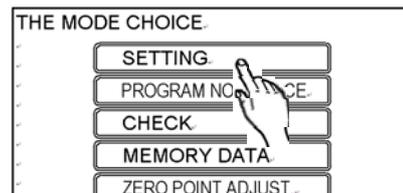
- (1) By PC (Please refer to the instruction manual of UEC-4800 setup software for details.)
  - 1) Connect the communication cable, straight cable, to [PC] connector in the front panel of UEC, and connect to PC through RS232C or Ethernet of NETWORK connector in the rear panel.
  - 2) Change the setting values through the setup software.
  - 3) Upload the setting values to UEC.

(2) From the touch panel screen

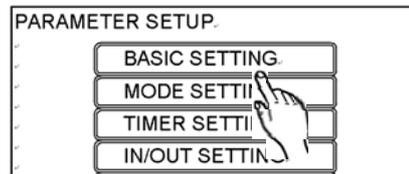
1) Touch **MENU** in either the TORQUE MONITOR screen or the WAVE FORM MONITOR screen to move to the THE MODE CHOICE screen.



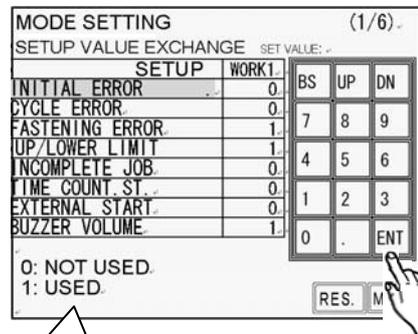
2) Touch **SETTING** in the THE MODE CHOICE screen to move to the PARAMETER SETUP screen.



3) Select in the PARAMETER SETUP screen the setting that you want to change the setting values.

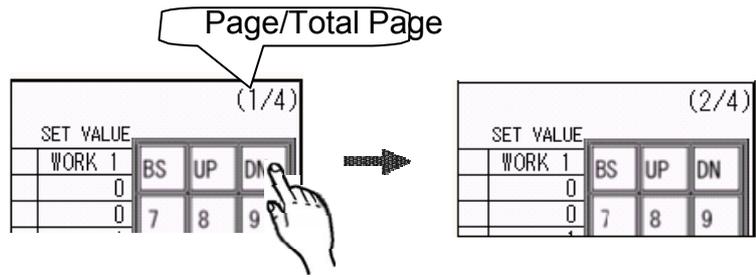


4) Numeric keypad comes up in the MODE SETTING screen. Touch **ENT** for over 3 seconds to enter the writing mode. Message [SETUP VALUE EXCHANGE] appears at the top of the screen while in the writing mode, and the contents of the setting value appears at the bottom.

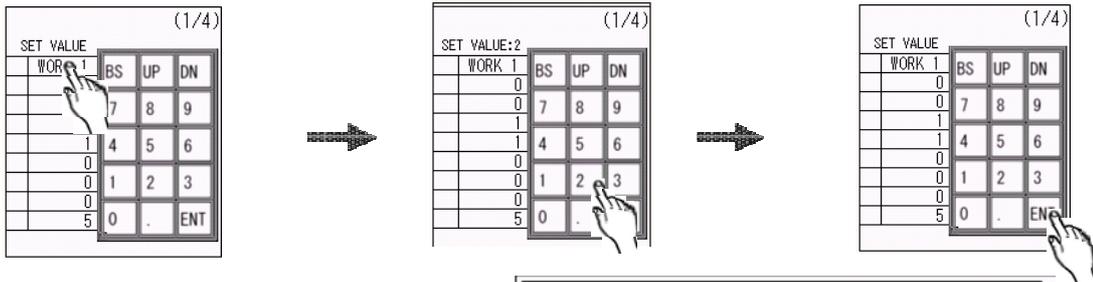


Setting range and condition appears.

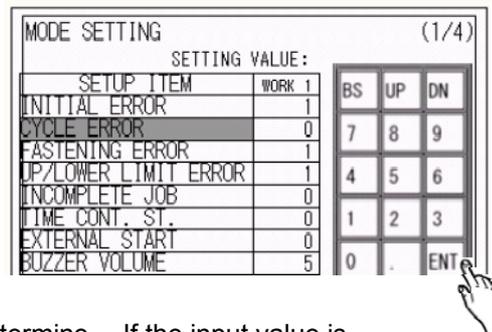
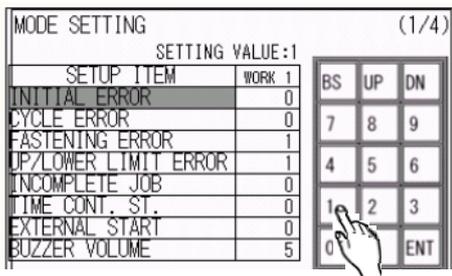
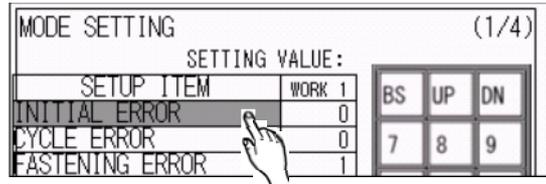
- 5) Touch **DN** to move to the next page and touch **UP** to move to the previous page.



- 6) Touch a cell of WORK 1 to select the work number that you want to set up the parameters and touch **ENT** to determine.

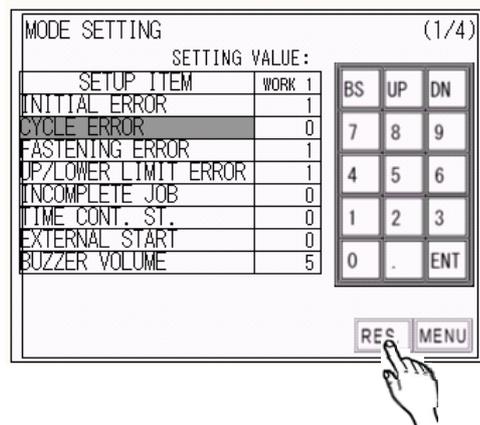


- 7) Touch the setup item that you want to change the parameters.



- 8) Input the numeric number and touch **ENT** to determine. If the input value is settable one, it is written. If the input value is out of the setting range or the interlocking value error such as the torque lower limit value < torque cut value happens, you need to input the settable value again.

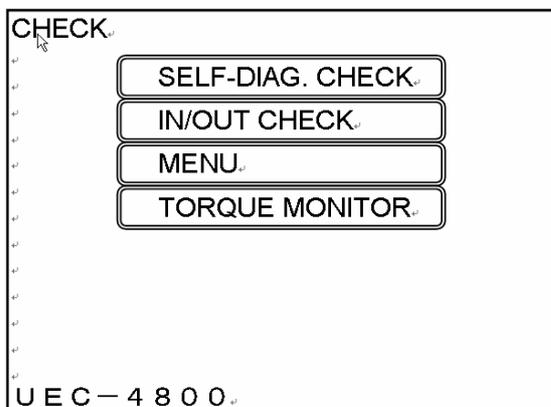
- 9) Touch **RES.** to escape from the writing mode to finish the parameter change, and move back to the TORQUE MONITOR screen. Parameters were changed, and you are ready to start the fastening.



## 6. Check

Touch **CHECK** on the MENU screen to move to the CHECK screen, and you can have UEC the self-diagnosis check and the input and output terminal signal check. Self-diagnosis check performs the check of the controller inside, touch panel display, and input.

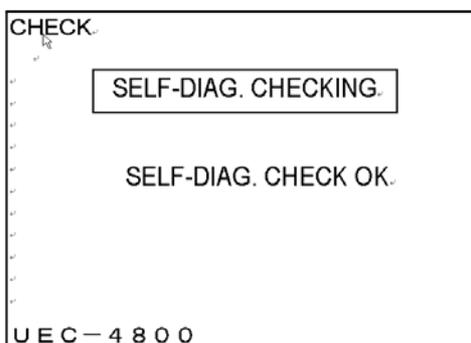
Input and output check performs the check of the input and output wires of the terminal block.



### 6.1. Self-diagnosis check

If you select SELF-DIAG.CHECK, UEC starts the self-diagnosis check of the controller inside.

A message **SELF-DIAG. CHECKING** appears on the screen. If the error is detected, UEC displays the error code like the cal check error. If there is no error detected, a message **SELF-DIAG. CHECK OK** appears.



[Contents of diagnosis]

#### 1) ROM IC operation check

It checks if the memory IC (ROM), which memorizes the control program of UEC, operates properly or not

#### 2) RAM IC operation check

It checks if the memory IC (RAM), which memorizes the setting values, measured data etc. of UEC, operates properly or not.

#### 3) A/D IC operation check

It checks if the analog-digital converter IC (A/D), which measures the torque data in analog value by CPU, operates properly or not.

#### 4) Setting value storage data check (SUM check)

It checks if there is no error in the setup data memorized in RAM IC

5) ZERO point change value check

It checks the deviation from the torque sensor output voltage 0V under no load condition.

UEC provides the zero error if the zero point deviation, either DPM display zero point value or PC display zero point adjusting screen value, is out of the range of from -6 to +6% of the rated value.

6) CAL check

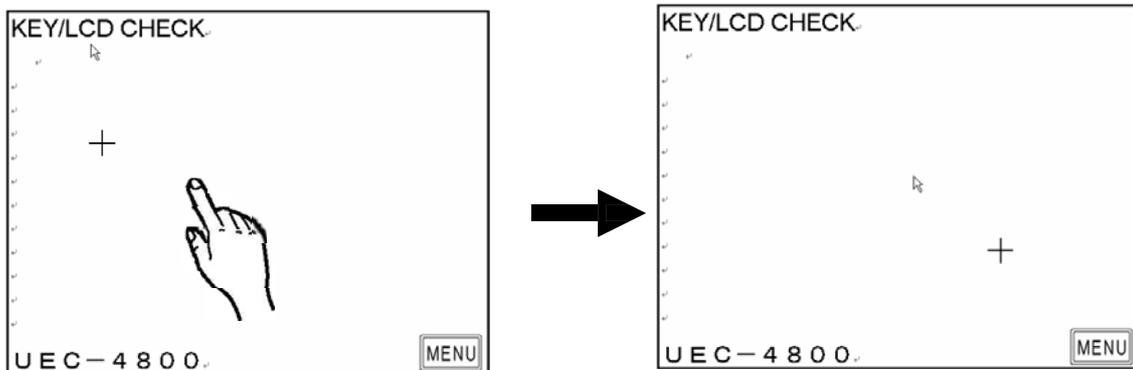
It checks if the torque sensor wiring and sensor specifications are appropriate to the sensor setting value.

UEC provides the cal error if the torque sensor output signal is out of the range from 94 to 106% of the rated value in condition that UEC applies simulative electric pressure to the torque sensor so as to put the torque sensor in the virtual condition under rated load strain.

7) Key/LCD check

Key/LCD check starts when the self-diagnosis is over.

[+] appears on screen where you touch. Screen color changes by your touch.

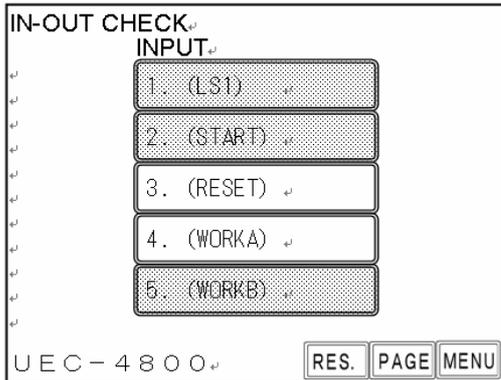


Press **MENU** to finish the key/LCD check, and move to the CHECK screen.

## 6.2. Input and Output check (wiring diagnosis of the terminals and the tool)

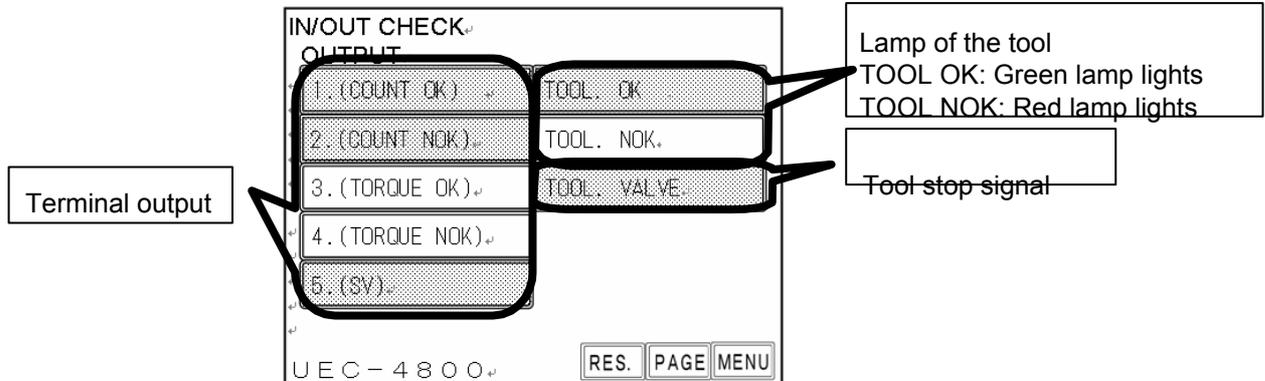
By monitoring the input condition to the terminal block and making the compulsory signal output to either the terminal block or the tool, UEC checks the incoming wirings of the terminals of UEC, the tool and the sensor cable connected.

If you enter the IN-OUT CHECK screen, UEC starts from the check of the input terminals.



Input terminals now been switched on are colored in blue.

Press **MENU** to move to the output check.



UEC can do signal output to the output terminals and the tool compulsory.

- Five items in the left of the screen are the signal outputs to the terminal.
- TOOL OK and TOOL NOK in the right of the screen are the output signals to the lamps integrated in the tool.
- TOOL VALVE in the right of the screen is the valve output signal to either the terminal or the valve integrated tool.

Touch the item name, and ON terminal becomes OFF and vice versa.

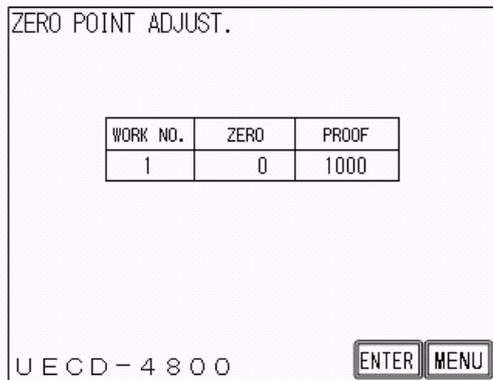
Item of output terminal now been switched on is colored in red.

Note: It is possible to do the same input and output check through PC with using the UEC-4800 setup software.

## 7. Zero point adjustment

UEC displays the values of the torque sensor's zero point and the cal number confirmed by the zero check and cal check.

Displayed values are of the absolute values.



[ZERO] shows the zero point value, and [PROOFREADING VALUE] shows the calculated value of  $CAL \times \text{Proofreading Ratio} \times \text{Tool Ratio}$ .

If the zero point deviates around [0], touch **ENTER** to have UEC correct the zero point deviation. A message **ZERO POINT ADJUSTING...** appears in the screen during that time.

## 8. WORK No. change

UEC makes the work number change by short-circuiting the input signal terminals and the common terminal. In accordance to the setting value of WORK SIG. SEL. of the MODE SETTING screen, the input signals to the terminals become different.

Input signal to the terminal		Work number to be selected
If 0 is set to WORK SIG. SEL.	If 1 is set to WORK SIG. SEL.	
No signal input	WORK 1	WORK 1
WORK A	WORK 2	WORK 2
WORK B	WORK 3	WORK 3
WORK A WORK B	WORK 4	WORK 4
WORK C	WORK 5	WORK 5
WORK A WORK C	/	WORK 6
WORK B WORK C	/	WORK 7
WORK A WORK B WORK C	/	WORK 8

**Note: If 1 is set to WORK SIG. SEL., you can use the work number from 1 up to 5.**

Following setups are necessary to activate the work number change.

(1) Determine the work number change method

If you want to change the work number by the combination of terminal WORK A, B and C, set 0 to WORK SIG. SEL. of the MODE SETTING screen. If you use the signal input of WORK 1, 2, 3, 4 and 5, set 1 to WORK SIG. SEL.

If 1 is set to WORK SIG. SEL., the work number can be changed maximum five only. If you use six or more work numbers, set 0 to WORK SIG. SEL.

(2) Allocate the input signal to the terminal block

Enter INPUT 1 screen of the IN/OUT SETTING screen.

1 If 0 is set to WORK SIG. SEL.

If the work number to be used is two or less, assign WORK A to any of the input terminal from A1 to A5.

If the work number to be used is four or less, assign WORK A and WORK B to any of the input terminals from A1 to A5.

If the work number to be used is five or more, assign WORK A, WORK B and WORK C to any of the input terminals from A1 to A5.

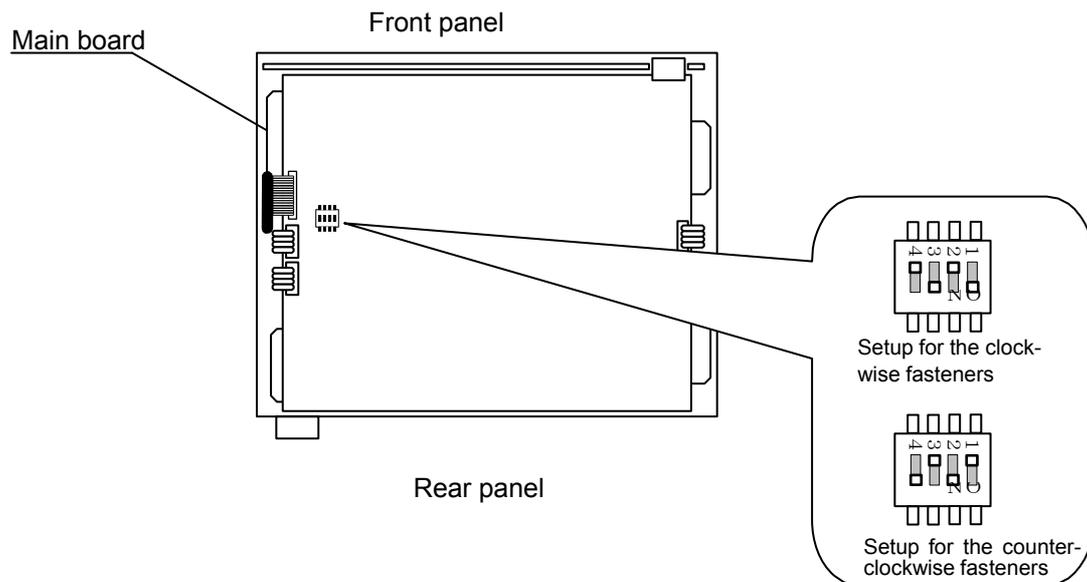
2 If 1 is set to WORK SIG. SEL.

Assign WORK 1, 2, 3, 4 and 5 to any of the input terminals A1, A2, A3, A4 and A5 in accordance to the work number to be used.

Ex) If the work number to be used is three, assign [Input terminal A3: WORK 1], [Input terminal A4: WORK 2] and [Input terminal A5: WORK 3]. You may assign with the input terminal A1, A2 and A3 to WORK 1, WORK 2 and WORK 3.

## 9. Torque polarity change

Unless torque polarity of UEC is changed over, UEC is unable to either measure the torque of the left-hand threaded fasteners or control the geared transducerized tools because the torque signal from the tool is input in the minus direction. You need to change over the UEC's torque polarity for left-hand threaded fasteners. Changeover is made by DIP switch in the board inside of UEC.



- Change the setting of DIP switch [SW3] in the main board in order to change the input polarity from torque sensor.
- For the right-hand threaded fastener, set DIP switch 1 and 3 to ON position and 2 and 4 to OFF position.
- For the left-hand threaded fastener, set DIP switch 1 and 3 to OFF position and 2 and 4 to the ON position.
- Even if the polarity change is made, the standard EC or MC wrenches for the right-hand threaded fasteners do not shut off because of its structure. Add the external solenoid valve, or use left-hand threaded tools.

## 10. Setting

Setting screen is sorted out as mentioned below.

### 【BASIC SETTING】

Basic setting for the fastening like CUT (target value), LOW (lower limit), HIGH (upper limit) etc

### 【MODE SETTING】

Setting for the line control method, use selection of various functions etc.

### 【TIMER SETTING】

Setting for the various timers

### 【IN/OUT SETTING】

Setting for the allocations of input and output signals to the terminal

### 【DATA OUT SETTING】

Setting for the data output from the RS-232C serial port in UEC's rear panel

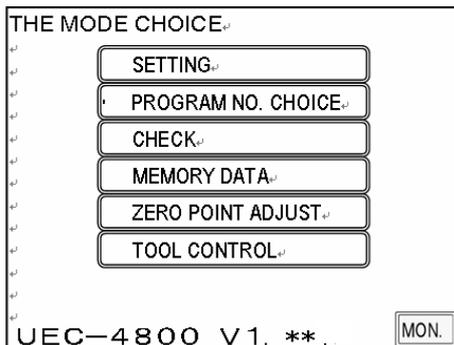
### 【LAN SETTING】

Setting for the Ethernet related items like IP address etc

### 【PROGRAM NO. CHANGE SETTING】

Setting for the Program Number Choice parameters

- (1) Touch **MENU** in the MONITOR screen to move to the THE MODE CHOICE screen.

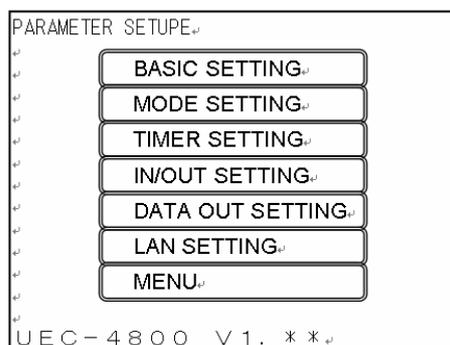


Touch **SETTING**, and the THE MODE CHOICE screen comes up.

When you set up the program number choice, don't move to the MODE setting screen, but touch

**PROGRAM NO. CHOICE** in the THE MODE CHOICE screen.

- (2) PARAMETER SETUP screen



Touch the screen name you want to set up parameters.

## 10.1. Basic setting

The BASIC SETTING screen consists of two pages.

First screen (1/2)

BASIC SETTING		(1/2)		
SETUP ITEM	WORK1	BS	UP	DN
TORQUE LOW	80.0	7	8	9
TORQUE HIGH	60.0	4	5	6
TORQUE CUT	19.6	1	2	3
TORQUE SENSOR CAL	1000	0	.	ENT
TORQUE SENSOR 1	700			
TORQUE SENSOR 2	750			
START TORQUE	9.8			
CONT	99			

RES. MENU

**TORQUE LOW** (Torque low limit value)

Default: 80.0 [Nm]

Setting range: 0.0 –999.7

Setting condition: Torque low limit value < Torque CUT value

**【Function】**

Value for the measured torque low limit judgment

**TORQUE HIGH** (Torque high limit value)

Default: 60.0 [Nm]

Setting range: 0.4 –999.9

Setting condition: Torque CUT value < Torque high limit value

**【Function】**

Value for the measured torque upper limit judgment

**TORQUE CUT** (Torque CUT value)

Default: 19.6 [Nm]

Setting range: 0.2 – 999.8

Setting condition: Torque low limit value }  
 Start torque value } < Torque CUT value < Torque upper limit value

**【Function】**

Fastening stops torque value under torque control

**CAL** (CAL value)

Default: 1000

Setting range: 100 - 9999

**【Function】**

Set the CAL value stamped on the tool

#### TORQUE SENSOR 1 (Torque sensor resistance value [ $\Omega$ ])

Default: 700

##### 【Function】

Resistance value consisting of torque sensor circuit

Choose from 480, 700 or 350, which agrees to the specifications of torque sensor connected.

Set [700] for EC wrenches

Do not enter any value for MC wrenches. Setting value is not displayed on the screen if the sensor select switch is set to MS.

#### TORQUE SENSOR 2 (Torque sensor rated strain value)

Default: 750

Setting range: 100 - 4400

##### 【Function】

This is the total strain value of four pieces integrated strain gauges in the torque sensor when it is stressed by rated load.

UEC calculates torque sensor output voltage by the applied stress from preset rated strain.

The ratio is output voltage 0.5[mV/V] by applied strain 1,000.

Example: Output voltage under strain 2,000 will be 1[mV/V].

Set 750 for EC wrench use.

Do not enter any figures for MC wrench use. Setting value is not displayed on the screen if the sensor select switch is set to MS.

#### START TORQUE (Start torque value)

Default: 9.8

Setting range: 0.1 – 999.7

Setting condition: Start torque value < Torque CUT value

##### 【Function】

What Start torque value is;

- a. Start point of the judgment delay timer
- b. Start point of the initial error detection timer
- c. Start point of the cycle error detection timer
- d. Start point of the torque measurement start delay timer
- e. Start point of the fastening time measurement

**Note: Enter 1/50 or greater value of the PROOFREADING VALUE. Too low start torque value fail to make both OK/NOK judgments and process to next cycle.**

Ex) UL60MC

CAL:  $400 \times \text{PROOFREADING RATIO} : 1.00 \times \text{TOOL RATIO} = \text{PROOFREADING VALUE} : 400$

$400 \times 1/50 = \text{Start Torque} : 8.8\text{Nm or more}$

#### COUNT (Fastening number count [fastener])

Default: 99

Setting value: 1 - 99

##### 【Function】

Fastening number per work when using the fastener count down function.

Not necessary to set up if you do not use the fastener number count control function.

UEC provides COUNT OK/NOK judgments by the setting value of COUNT.

## Second screen (2/2)

BASIC SETTING		(2/2)		
SETUP ITEM	WORK1	BS	UP	DN
PROOFREADING RATIO	1.00	7	8	9
TOOL RATIO	1.00	4	5	6
PROOFREADING VALUE	1000	1	2	3
		0	.	ENT

RES. MENU

### PROOFREADING RATIO

Default: 1.00

Setting range: 0.01 – 9.99

#### 【Function】

This is the proofreading ratio which makes the break-away torque agree to the UEC displayed torque.

### TOOL RATIO

Default: 1.00

Setting range: 0.01 – 9.99

#### 【Function】

This is the reduction ratio of the geared pulse tool.

### PROOFREADING VALUE

Default: 1000

Setting range: 0.01 – 9.99

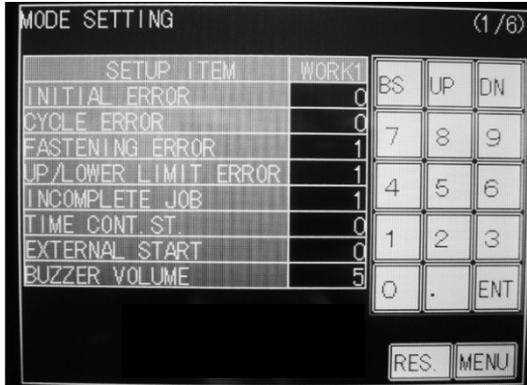
#### 【Function】

Proofreading ratio x Tool ratio x CAL value

This value enables the UEC-4800TP to display the torque readings calculated by the torque signal voltage from torque sensor and by the percentage of sensor rating based on the torque sensor values.

## 10.2. MODE Setting

MODE SETTING screen consists of four pages.  
First screen (1/6)



**INITIAL ERROR** (Initial error detection) (former name: MODE 1)

Default: 0

Setting 0: Not detect the initial error

Setting 1: Detect the initial error

**【Function】**

Use to detect the double-fitting or cross thread.

UEC detects the initial error if the consumed time from start torque level to torque cut value is less than time of the initial error detection timer.

**【When UEC detects the error】**

- Touch panel display message: [Initial error]
- Touch panel torque lamp does not light
- Buzzer sounds.
- Terminal: TORQUE NOK is switched on.

**【How to reset error】**

- If 1 is set to FASTENING ERROR, next operation will reset the last error.
- Touch **RES.** in the screen, or switch on reset terminal.

**CYCLE ERROR** (Cycle error detection) (former name: MODE 2)

Default: 0

Setting: 0 Note detect cycle error

Setting: 1 Detect cycle error

**【Function】**

Use to regulate fastening time

UEC provides cycle error judgment if measured torque passes torque start level, but does not reach torque cut level when the cycle error detect timer comes up.

**【When UEC detects the error】**

Touch panel display message: [Cycle error]

Touch panel TORQUE lamp does not light.

Buzzer sounds.

Terminal: TORWUE NOK terminal is switched on.

**【How to reset the error】**

- If 1 is set to FASTENING ERROR, next operation will reset the last error.
- Touch **RES.** in the screen, or switch on reset terminal.

## FASTENING ERROR

(After of post error detections LO.E/CYL.E/F.E) (Former name: MODE 3)

Default : 1

Setting : 0 UEC gets non-operative status unless  RES. is touched or reset terminal is switched on. Valve remains switched on.

Setting : 1 Next operation performs start-reset without touching  RES. or switching on reset terminal, and UEC gets operative status.  
If 0 is set to EXTERNAL START, the torque input (greater than start torque value) of next operation performs start-reset and UEC starts the torque measuring. If 1, 2 or 3 is set to EXTERNAL START, the external start signal input of next operation performs start-reset and UEC starts the torque measuring.

## FASTENING ERROR

(After post error detections LO.E/CYL.E/F.E) (former name: MODE 3)

Default : 1

Setting : 0 UEC gets non-operative status unless  RES is pressed or reset terminal is switched on. Valve remains switched on.

Setting : 1 Next operation performs start-reset without pressing  RES or switching on reset terminal, and UEC gets operative status.  
The torque input (greater than start torque value) of next operation performs start-reset and UEC starts the torque measuring.

## UP/LOWER LIMIT ERROR

(After of post upper or lower limit errors TORQUE/PULSE number/ANGLE) (Former name: MODE 4)

Default : 1

Setting : 0 UEC gets non-operative status unless  RES. is touched or reset terminal is switched on. Valve remains switched on.

Setting : 1 Next operation performs start-reset without touching  RES. or switching on reset terminal, and UEC gets operative status.  
If 0 is set to EXTERNAL START, torque input (greater than start torque value) performs start-reset and UEC starts torque measuring. If 1, 2 or 3 is set to EXTERNAL START, external start signal input performs start-reset and UEC starts torque measuring.

## IMCOMPLETE JOB (Incomplete job error detection) (former name: MODE 5)

Default : 0

Setting: 0 Not detect incomplete job error

Setting: 1 Detect incomplete job error

### 【Function】

UEC detects incomplete job error if the fastening is suspended before the torque reaches torque cut value after passing torque start value, like releasing finger from throttle lever due to mistake or socket dropping off.

### 【When UEC provides the error】

Touch panel display message: [Fastening suspended]

Buzzer sounds.

Terminal: TORQUE NOK terminal is switched on.

### 【How to reset】

- If 1 is set to FASTENING ERROR, next operation resets the last error.
- Touch  RES. in the screen, or switch on reset terminal.

This function gets activated if 3 is set to TIGHTENING MODE.

Note: UEC provides the error when the fastening is suspended before the torque reaches torque cut level, even if the final torque is within low and high torque limits.

TIME CONT. ST. (Compulsory judgment) (Former name: MODE 6)

Default: 0

Setting: 0 Do not make compulsory judgment

Setting: 1 Makes compulsory judgment and stops the tool when cycle error detection timer comes up.

**【Function】**

- Use when you want to control fastening time without cycle error detection.
- UEC compulsory switches on solenoid valve to stop the tool and provides judgment if the tool fails to reach torque cut value beyond start torque value after cycle error detection timer comes up.
- If 2 is set to TIGHTENING MODE, fastening judgment delay timer starts functioning when the cycle error detection timer comes up.
- If either 1 or 3 is set to TIGHTENING MODE, judgment delay timer starts functioning when the torque gets less than start value after the cycle error detection timer comes up.
- This function gets activated if 0 is set to CYCLE ERROR.

EXTERNAL START (External start specification) (former name: MODE 11)

Default: 0

Setting: 0 Not use the external start, but the measurement starts by the torque start.

Setting: 1 VALVE is switched on to start measurement, after ZERO/CAL check.

Setting: 2 VALVE is switched on to start measurement without doing ZERO/CAL check.

- Determine the operation when start terminal is switched on
- When 1 or 2 is set, the operation starts functioning when external start (start terminal) is switched on.

Buzzer volume

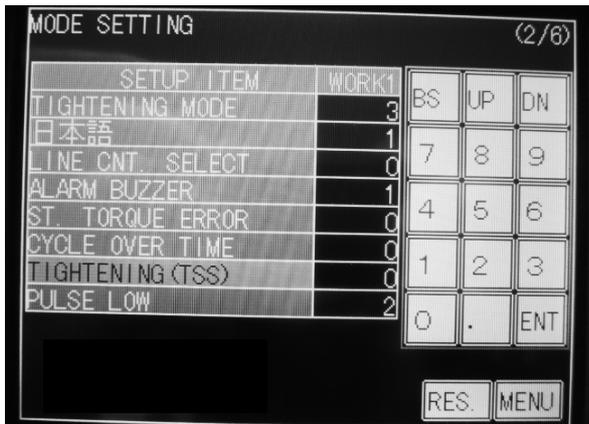
Default: 5

Setting range: 1 - 5

**【Function】**

- Determine the sound volume of buzzer
- The greater the number grows, the louder the buzzer sounds. 5 is the top volume, and 1 is the lowest volume.

## Second screen (2/6)



Tightening Mode (former name: MODE

9) Default: 3

Setting: 1 Torque monitor

Provides the judgment to the measured torque, but does not control the torque.  
Use to monitor the torque of the mechanical clutch type nutrunners etc.

Setting: 2 Torque control

Controls and provides the judgment to the measured torque  
Use mainly for the pneumatic nutrunners

Setting: 3 Torque control for MC wrenches and EC wrenches

Use mainly for the MC wrenches and EC wrenches. Controls and provides the judgment to the measured torque.

Setting: 9 Torque monitor of T type wrenches

Use for T type wrench test on UFT (Uryu joint simulator)

English

Default: 0

Setting: 0 Japanese indications

Setting: 1 English indication

**【Function】**

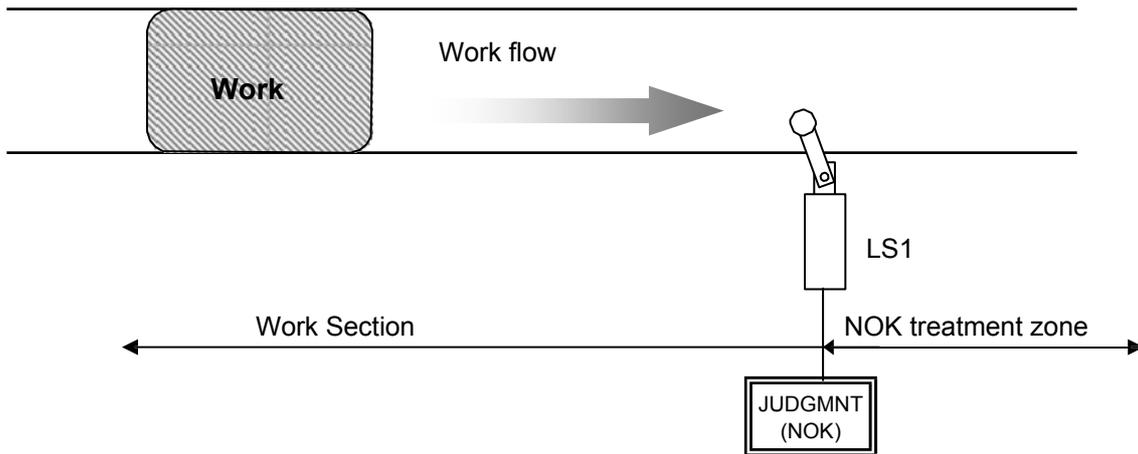
- Determine the indication language for touch panel.
- When 0 is set, setup item name becomes [ENGLISH], and when 1 is set, setup item name becomes [日本語] (Japanese).

LINE CNT. SELECT (Line control method select) (former name: MODE 14)

Default: 0

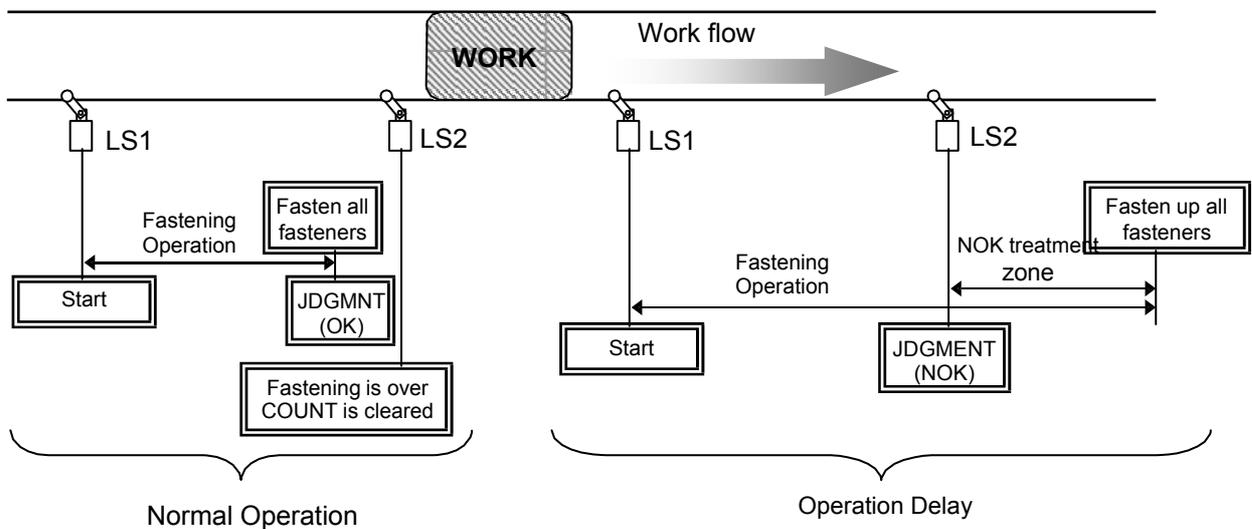
Setting: 0

UEC is always ready to count down the fasteners, and provides the judgment at the time of limit switch is switched on. UEC provides COUNT OK judgment if the preset number of fasteners is fastened up. When the LS (limit switch) 1 terminal is switched on, UEC is reset and ready for next operation. UEC provides COUNT NOK if any fasteners are left unfastened when LS1 is switched on. Tighten the unfastened fasteners, and UEC provides COUNT OK.



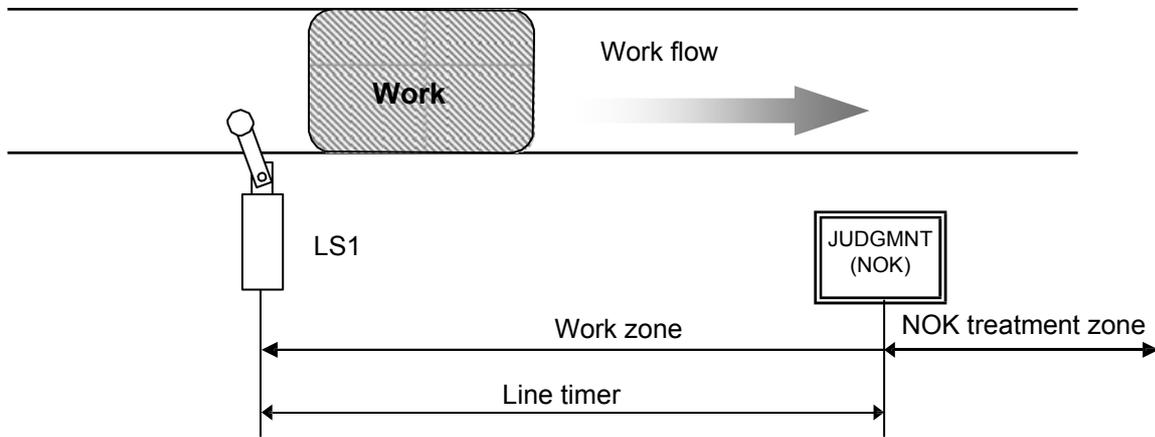
Setting: 1

Determine the work section. Switching on LS1 terminal becomes the start of the operation. Operation is over if the preset fasteners are fastened up until LS2 terminal is switched on. UEC provides COUNT NOK if any fasteners left unfastened when LS2 terminal is switched on. If the unfastened fasteners are fastened up in NOK treatment zone, UEC provides COUNT OK and the operation is over. Even if the unfastened fasteners are fastened up out of work section, UEC does not count down these fasteners.



Setting: 2

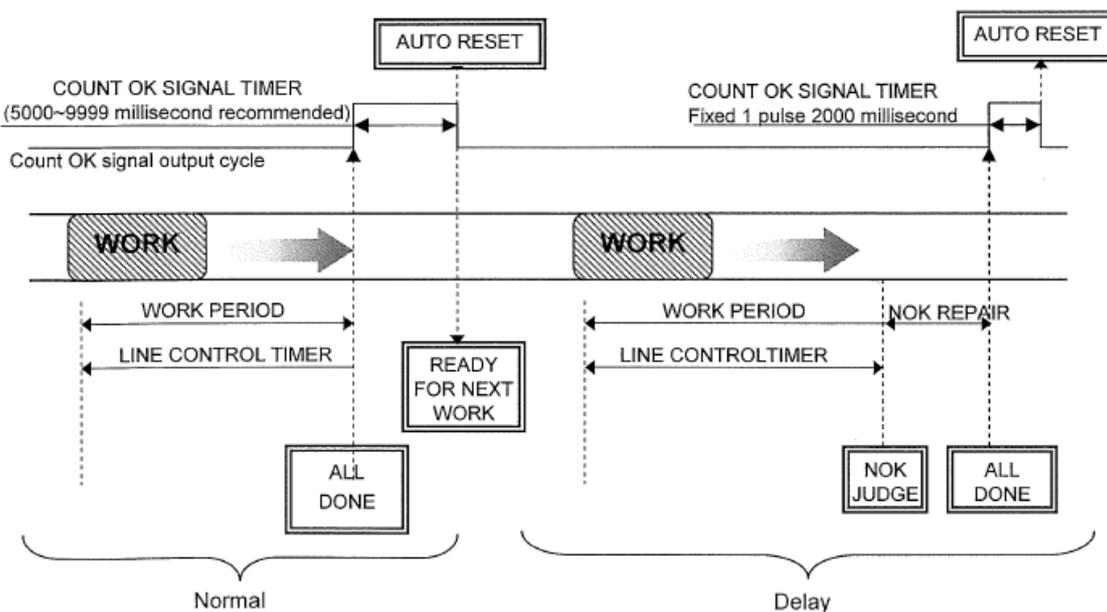
Switch on the limit switch, and the operation starts and UEC provides the judgment when the timer comes up. Operation starts by switching on LS1 terminal, and the line control timer starts functioning. UEC provides COUNT NOK if the line control timer comes up before the preset number of fasteners is fastened up.



Setting: 3

Limit switch is not used, but the line control timer starts functioning by the first fastening operation. Line control timer gets started by either the judgment input of the first fastening or the signal input of QL wrench. UEC provides COUNT OK if the preset fasteners are fastened up, and gets ready for next operation when COUNT OK output signal is switched off. COUNT OK signal output duration time is set up by COUNT OK of TIMER SETTING. UEC provides COUNT NOK if the line control timer comes up before the preset fasteners are fastened up.

Note: If 3 is set to LINE CNT. SELECT, you cannot set up the COUNT OK signal output duration time (COUNT OK: 0). When COUNT NOK is corrected, 1 pulse (2 seconds) of COUNT OK output is made.



**Setting 4**

By any of WORK 1 – 5 signal input, UEC gets ready to start fastening of the selected work number. Set 1 to WORK SIG. SEL.

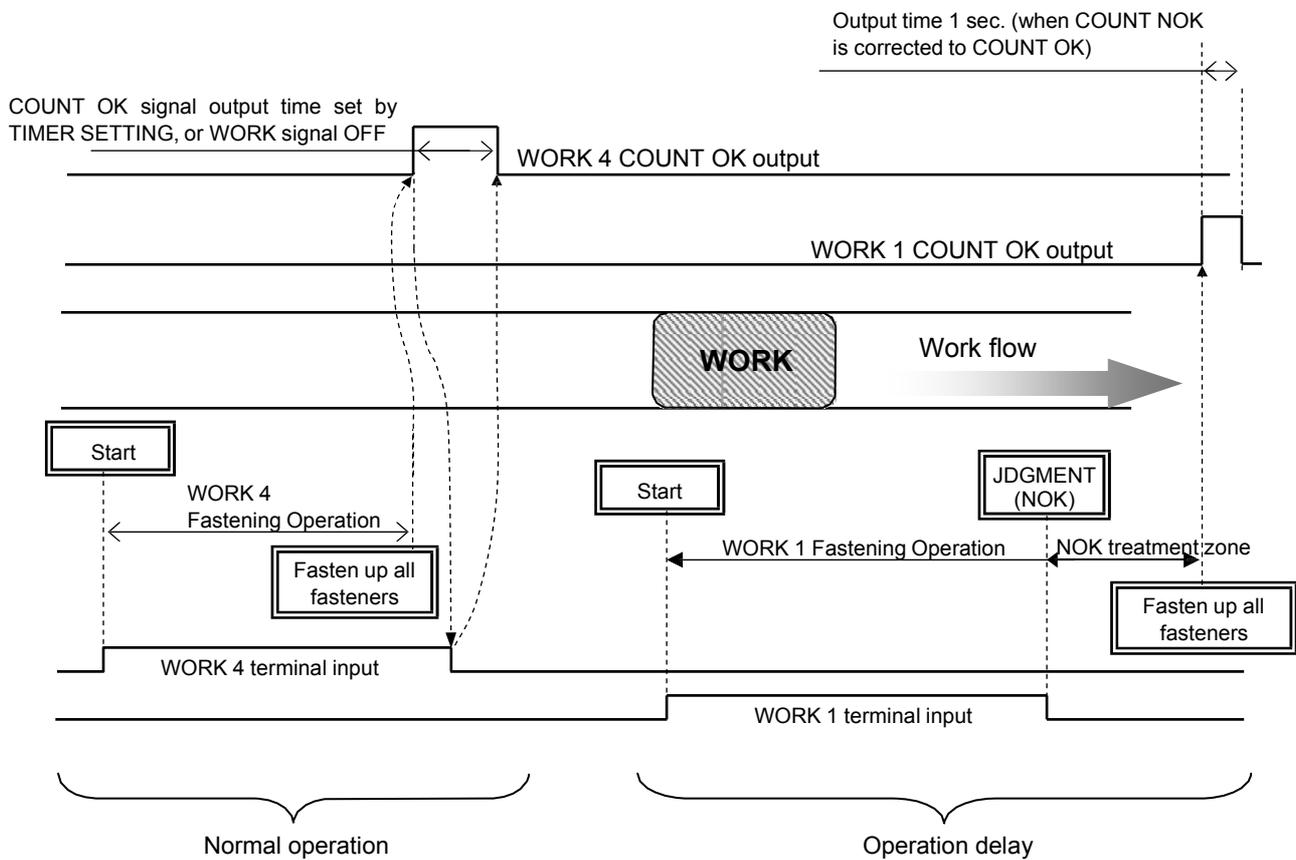
When the preset fasteners are fastened up, COUNT OK signal terminal is switched on corresponding to the selected work number. [WORK 2 COUNT OK] output terminal is switched on when UEC provides COUNT OK of work No. 2.

Set up the COUNT OK signal output duration time per work number in COUNT OK of TIMER SETTING.

UEC provides COUNT OK signal output for 1 second, if COUNT NOK is corrected in NOK treatment zone by fastening the unfastened fasteners or switching on pass terminal.

Make sure to switch off WORK SELECT signal input when COUNT OK signal output is switched on. Switch off WORK SELECT signal input, and COUNT OK signal output is switched off.

UEC provides COUNT NOK if any input signal of WORK 1 – 5 is switched off before the preset fasteners are fastened up.



ALARM BUZZER (Fastening confirmation buzzer output) (former name: MODE 15)

Default: 0

Setting: 0 Buzzer does not sound.

Setting: 1 Buzzer sounds for every OK fastener.

【Function】

- Buzzer gives 1 pulse sound for every OK fastener, and 2 pulses sound for fastener COUNT UP.

ST. TORQUE ERROR (Start torque error detection) (former name: MODE 16)

Default: 0

Setting: 0 Not detect the start torque error

Setting: 1 Detect the start torque error

【Function】

- UEC detects the start torque error if the time from the external start signal input to the start torque is shorter than the start torque error detect timer.

【When UEC detects the error】

Touch panel display message: [Start torque error]

Buzzer sounds.

Terminal: TORQUE NOK terminal is kept switched on until the error is reset.

【How to reset】

If 1 is set to FASTENING ERROR, next operation performs the start-reset.

Touch  in the screen, or switch on reset terminal.

CYCLE OVER TIME (Cycle over time error detection) (former name: MODE 17)

Default: 0

Setting: 0 Not detect the cycle over time error

Setting: 1 Detect the cycle over time error

【Function】

- Cycle over timer starts functioning when start terminal is switched on. UEC detects cycle over time error if the fastening is not completed when the cycle over error detect timer becomes up.

【When UEC detects the error】

Touch panel display message: [Cycle over error]

Buzzer sounds. Touch the screen to stop the buzzer, but the error remains.

Terminal: TORQUE NOK terminal is kept switched on until the error is reset.

【How to rest】

- If 1 is set to FASTENING ERROR, next operation performs the start reset.

- Touch  in the screen, or switch on reset terminal.

Fastening time display (TSS)

【Function】

- UEC display the time consumed from the external start signal input to the torque start level.

**Note: This is not the setting.**

PULSE LOW (Pulse number low limit value [pulse]) (former name: MODE

34) Default: 2

Setting range: 0 – 9998 (pulse number low limit value, maximum 9998, < pulse number upper limit value, maximum 9999)

**【Function】**

- Pulse number that UEC provides pulse number LOW NOK judgment. UEC provides pulse number LOW NOK if the total pulse number generated from the start torque until the cut torque is less than the pulse number low limit value.

**【When UEC detects the error】**

- Touch panel display message : [Pulse number LOW]
- Buzzer sounds.
- Terminal : TORQUE NOK is switched on.

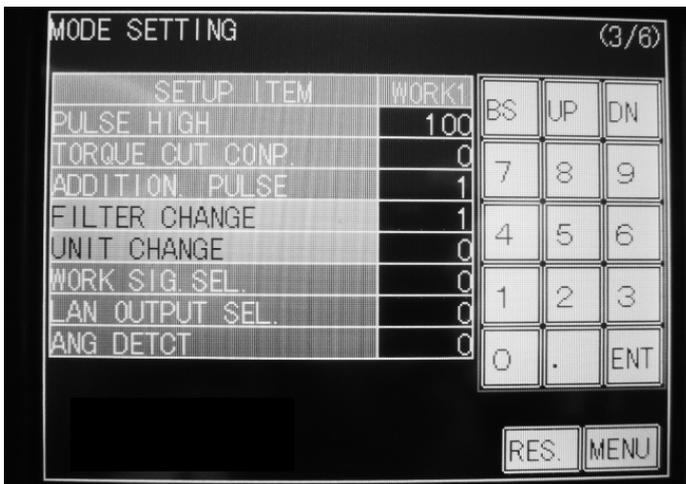
**【How to reset】**

If 1 is set to UP/LOWER LIMIT ERROR, next operation performs the start-reset.

Touch **RES.** in the screen, or switch on reset terminal.

**Note: This function gets activated when 3 is set to TIGHTENING MODE.**

**Third screen (3/6)**



PULSE HIGH (Pulse number upper limit value [pulse]) (former name: MODE

35) Default: 100

Setting range: 1 – 9999 (Pulse number low limit value, maximum 9998<pulse number upper limit value, maximum 9999)

**【Function】**

- Pulse numbers that UEC provides pulse number HIGH NOK judgment. UEC counts total pulse numbers generated from torque start level to cut level, and provides pulse number HIGH NOK judgment with solenoid valve closed to stop the tool and the error display if the total pulse number is more than the pulse number upper limit value.

**【When UEC detects the error】**

- Touch panel display message : [pulse number HIGH]
- Buzzer sounds.
- Terminal : TORWUE NOK is switched on.

**【How to reset】**

- If 1 is entered to UP/LOWER LIMIT ERROR, next operation performs the start-reset.

- Touch **RES.** in the screen, or switch on reset terminal.

**Note: This function gets activated if 3 is entered to TIGHTENING MODE.**

TORQUE CUT CONP. (Torque measurement during compensation pulsing post CUT level)

Default: 0

Setting: 0 UEC measures, controls and provides final judgment with the highest peak torque display of compensation pulsing under the pulse number counting.

Setting: 1 UEC gives judgment due to torque measurement of pulsing until torque cut level, but does not measure torque of pulsing post torque cut level.

ADDITION. PULSE (Compensation pulse numbers post CUT level) (former name: MODE 27)

Default: 1

Setting: 1 – 5

【Function】

- UEC switches on solenoid valve to stop the tool when preset additional pulse numbers have been counted after reaching the torque CUT level.
- This function gets activated if either 3 or 5 is entered to TIGHTENING MODE.
- Set 1 for the tools like angle nutrunner etc. whose torque is expressed in a continuous wave.

**Note: Set 1 if you do not use this function.**

Filter Change

Default: 1

**Not programmable**

Unit Change

Default: 0

Setting: 0 Nm

Setting: 1 kgf/cm

Setting: 2 kgf/m

Setting: 3 ft/lbf

WORK SIG. SEL. (Work select combination) (former name: MODE 29)

Default: 0

Setting: 0 UEC changes up to 8 work numbers by using the terminals of WORK A, WORK B and WORK C.

Setting: 1 UEC changes up to 5 work numbers by using the input terminals of WORK 1-1 to WORK 1-5.

**Refer to the WORK No. Change for more information. Setting 1 is used when LINE CNT. SELECT is set with 4.**

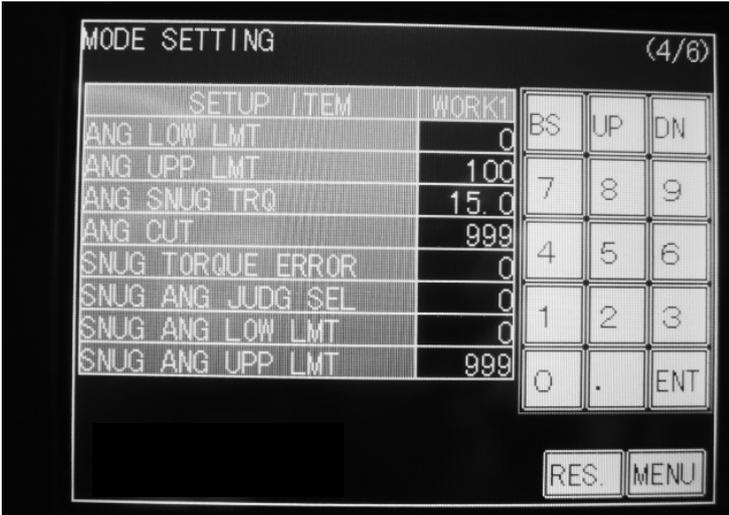
LAN OUT SEL. (LAN OUTPUT SELECT)

Default: 0

【Note!】  
Set "0".

ANGLE DETCT  
NOT USED.

**Fourth screen (4/6)**



**ANG LOW LMT (Angle low limit value [degree])**

Default: 0

Setting range: 0 - 999

**【Function】**

- This is angle low limit judgment value
- UEC provides angle LOW NOK if measured angle is smaller than preset angle low limit at the time of judgment.
- If 0 is set, UEC does not provide the angle low judgment.

**【When UEC detects the error】**

Touch panel display message: [Angle low]

Buzzer sounds.

Terminal: TORQUE NOK terminal is kept switched on until the error is reset.

**【How to reset】**

If 1 is set to UP/LOWER LIMIT ERROR, next operation performs the start-reset.

Touch **RES.** in the screen, or switch on reset terminal.

**ANG UPP LMT (Angle upper limit value [degree])**

Default: 100

Setting range: 0 - 999

**【Function】**

- This is angle high limit judgment value.
- If the setting value is 1 – 999, UEC provides angle HIGH NOK if the measured angle is greater than angle upper limit value.
- If 0 is set, UEC does not provide the angle upper judgment.

**【When UEC detects the error】**

UEC closes the solenoid valve to stop the tool.

Touch panel display message: [Angle HIGH]

Buzzer sounds.

Terminal: TORQUE NOK is kept switched on until the error is reset.

**【How to reset】**

If 1 is set to UP/LOWER LIMIT ERROR, next operation performs the start-reset.

Touch **RES.** in the screen, or switch on reset terminal.

#### ANG SNUG TRQ (Snug torque)

Default: 15

Setting range : 0.0 – 999.8

Setting condition: Start torque value < Snug torque value < CUT torque value

##### 【Function】

- This is the torque from when UEC started measuring the angle.

#### ANG CUT (Angle CUT value)

Default: 999

Setting range : 0 - 999

Setting condition: Angle lower limit value < angle CUT value < angle low limit value

##### 【Function】

This is the fastening stop angle judgment value when the angle control is effective.

Use this function when 6 is set to TIGHTENING MODE.

Not used now

#### SNUG TORQ. ERR

Default: 0

Setting 0: Not detect snug torque error.

Setting 1: Detect snug torque error.

##### 【Function】

UEC provides snug torque error if the torque does not reach snug torque until the the snug toque error timer ends.

If this is set to 1 and angle judgement select is set to 1, UEC provides fastening NOK when it detects an error.

##### 【When UEC detects the error】

Buzzer sounds.

Terminal: Output TORQUE NOK when detecting snug torque error.

##### 【How to reset the error】

When setting “1” on the UP/LOWER ERROR, press RESET or input reset signal.

#### SNUG ANG. JUDG (Snug Angle Judgement)

Default: 0

Setting 0: Not detect snug anlge error.

Setting 1: Detect snug angle error.

##### 【Function】

Select if the judgement of angle high and low limit is made at snug angle value (this is the angle between start torque and snug torque).

##### 【How to reset the error】

When setting “1” on the UP/LOWER ERROR, press RESET or input reset signal.

#### SNUG ANG. LOW (Snug Angle lower limit [deg] )

Default: 0

Setting range: 0~999

##### 【Function】

The lower limit for snug angle judgement.

“0” means that the snug judgement for lower limit is not detected.

“Snug Angle Low Error” is detected when the snug torque is under the value on this setting.

#### SNUG ANG. UPP (Snug Angle higher limit [deg] )

Default: 999

Setting range: 0~999

##### 【Function】

The higher limit for snug angle judgement.

“0” means that the snug judgement for higher limit is not detected.

“Snug Angle High Error” is detected when the snug torque is over the value on this setting.

### Fifth Screen(5/6)



#### ANG. DISP SEL (Angle Display Selection)

Default : 0

Setting 0 : Read only the final angle.

Setting 1 : Read snug angle and final angle.

Setting 2 : Read free running angle and final angle.

Setting 3 : Read free running angle, snug angle, and final angle.

##### 【Function】

• What to be read and shown for angle can be set up. This setting is also reflected on the angle waveform on the setup software.

• Set “5” for control method to activate this setting.

##### 【Display on screen】

• The following will be displayed according to the angle display selection.

Final Angle: Angle for Snug torque ~ 10msec after final pulse.

Snug Angle: Angle for Start torque ~ snug torque.

Free Running Angle: Angle for Trigger on ~ start torque

#### FREE RUN ANG (Free Running Angle Detection)

Default : 0

Setting 0 : Not detect free running angle.

Setting 1 : Detect free running angle.

##### 【Function】

• Choose if the detection for lower limit value for free running angle (from trigger on to start torque) is made or not.

• Make sure to set “1” for free running angle detection and UEC provides free running error if the free running angle is under the lower limit for free running angle.

• Set “2” or “3” on the Angle Display Select to use this function.

##### 【How to clear the error】

When setting “1” on the UP/LOWER ERROR, press or input reset signal.

#### ANG JUDG SELLECT (Angle judgment select)

Default: 0

Setting : 0 Not provide the angle judgment.

Setting : 1 Provides the angle judgment and detects the error.

Setting : 2 Provides the angle judgment and detects the WRN instead of the error.

##### 【Function】

• This is to select if UEC provides the angle high and low judgment and the snug angle high and low limit error judgment (or high and low limit warning).

FREE ANGLLOW LM (Free Running Angle Lower Limit)

Default : 0

Setting Range : 0~9999

【Function】

- Angle Lower Limit for Free Running (trigger on ~ start torque)
- Set "1" for Free Running Angle Detection to use this.
  
- If 1 is set, UEC provides fastening NOK when detecting the error.
- If 2 is set, UEC does not provide fastening OK/NOK judgment, but provides WARNING (WRN) and counts down the fasteners.

WAVE DATA CNTNT SLCT (Waveform data contents select)

Default: 2

Setting: 0 Through waveform

Setting: 1 Peak hold waveform per 1msec

Setting: 2 Peak hold waveform per 2msec

Setting: 3 Peak hold waveform per 5msec

【Function】

- When 0 is set, UEC displays the measured torque waveform without peak holding on the screen, and output the date to outside (100μsec sampling).
- When 1, 2 or 3 is set, the measured torque waveform is converted to the peak hold waveform per 1msec/2msec/5msec on the screen and UEC outputs the date to outside.
- When 0 is set to this mode, and when the waveform data is sent to the waveform data screen of the UEC-4800 setup software, the buffer of the waveform becomes 5. When 1, 2 or 3 is set, the buffer becomes 50.

UEC port communication speed (former name: MODE 46)

Default: 3

Setting: 1 9600 bps

Setting: 2 19200 bps

Setting: 3 38400 bps

【Function】

**Note: This is to determine the communication speed between UEC and PC. This is not the communication speed of the data output port in rear of UEC.**

**Note: Switch off UEC after you change the setting value of the PC port communication speed. Setting value will not be changed unless UEC is once switched off.**

Waveform memory function select

Default: 4

Setting: 1 Memorize

Setting: 2 Memorize and notice both with the display message and buzzer sound

Setting: 3 Memorize and notice with the display message, but not sound the buzzer

Setting: 4 Memorize the wave data, but not notice with neither the display message nor the buzzer sound.

【Function】

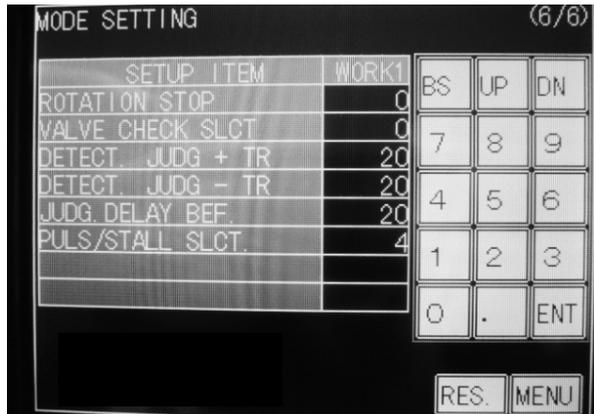
Determine if UEC memorize the wave data, and serve notice of either the display message or buzzer sound or both when the memory becomes full.

## PASSWORD USE CHOICE

Default: 0

Setting:       0       Not use this function.  
              1       Use password  
              2       Delete password

## Sixth Screen(6/6)



## ROTAT STOP

Default : 0

Setting 0: Not use this function.

Setting 1: Fastening is available only in the working process. (when receiving fastening command from external device.

### 【Function】

Tool does not operate unless the UEC receives the fastening command. After fastening is finished and UEC provides the count OK, tool does not operate until the next command is received.

## VALVE CHECK

Default : 0

Setting 1: Check for the disconnection on the wiring of external solenoid valve.

Setting 0: Not use this function.

When disconnection is detected, the screen shows [disconnection error] and the buzzer is on.

## JUDG.DELAY BEF

Default : 5

Setting Range: 0~20% (against rated torque)

### 【Function】

This is the threshold level for detection of fluctuation right before fastening judgment.

When disconnection error is detected, the screen shows [disconnection error] , and the buzzer is on. It does not output TORQUE NOK via terminal.

**【How to reset the error】**

“0” or “2” on “Pulse/Stall” : Reboot the controller.

“1” or “3” on “Pulse/Stall” : Press `RESET` or input `RESET` signal via terminal.

**DETECT. +TR**

Default : 5

Setting Range: 0~20% (against rated torque)

**【Function】**

This is the threshold level for detection of fluctuation for + side fluctuation when disconnection happens.

The range of time can be set by `TIMER SETTING`.

When disconnection error is detected, the screen shows [disconnection error] , and the buzzer is on.

It does not output `TORQUE NOK` via terminal.

How to reset the error is depending upon the setting at “Pulse/Stall”.

**【How to reset the error】**

“0” or “2” on “Pulse/Stall” : Reboot the controller.

“1” or “3” on “Pulse/Stall” : Press `RESET` or input `RESET` signal via terminal.

**DETECT. -TR**

Default : 5

Setting Range: 0~20% (against rated torque)

**【Function】**

This is the threshold level for detection of fluctuation for - side fluctuation when disconnection happens.

The range of time can be set by `TIMER SETTING`.

When disconnection error is detected, the screen shows [Udn.E.] , and the buzzer is on.

It does not output `TORQUE NOK` via terminal.

How to reset the error is depending upon the setting at “Pulse/Stall”.

**【How to reset the error】**

“0” or “2” on “Pulse/Stall” : Reboot the controller.

“1” or “3” on “Pulse/Stall” : Press `RESET` or input `RESET` signal via terminal.

**PULS/STALL (Tool type selection for disconnection detection)**

Default: 4

Setting 0: Pulse tool. The disconnection error cannot be cleared by `RESET` and the controller needs to be rebooted. Reverse `CUT` error detection is made.

Setting 1: Pulse tool. The disconnection error can be cleared by `RESET`. Reverse `CUT` error detection is made.

Setting 2: Discontinuous(Stall) tool. The disconnection error cannot be cleared by `RESET` and the controller needs to be rebooted. Reverse `CUT` error detection is not made.

Setting 3: Discontinuous(Stall) tool. The disconnection error can be cleared by `RESET`. Reverse `CUT` error detection is not made.

Setting 4: Disconnection detection is not made.

**【Function】**

Choose if the disconnection detection is made for torque sensor wiring on tool/tool cable. Tool type selection. How to clear the error.

### 10.3. TIMER Setting

#### First screen (1/3)



#### JUDGMENT DELAY (Judgment delay timer (former name: TIMER 1))

Default: 300 [msec]

Setting range: 100 – 9999 [msec]

##### 【Function】

- This is to set time interval how long UEC delays judgment output after one fastening has been completed.
- Use this timer as the torque measurement end point when UEC is in control operation.
- Take torque spike after CUT into your consideration to determine length of this timer.

##### Guideline of set value

- 300 [msec] for oil pulse wrenches
- 500 [msec] for continuous tool like angle nutrunners

#### INITIAL ERROR (Initial error detect timer (former name: TIMER 2))

Default: 500 [msec]

Setting range: 1 – 9999 [msec]

##### 【Function】

- Use this timer when 1 is INITIAL ERROR.
- This is to determine the minimum time from start torque to cut torque. UEC provides NOK if the torque reaches cut torque earlier than this timer comes up.
- This timer starts functioning when measured torque reaches start torque level.

#### CYCLE ERROR (Cycle error timer (former name: TIMER 3))

Default: 5000

Setting range: 1 – 9999 [msec]

##### 【Function】

- This is to determine the maximum time from start torque to cut torque. UEC provides NOK if the torque does not reach cut torque even after this timer comes up.
- This timer starts functioning when measured torque reaches start torque level.
- It is necessary to set this timer when 1 is set to CYCLE ERROR (former name : MODE 2) or when 1 is set to TIME CONT. ST. (former name: MODE 6).

#### FASTENING OK (Fastening OK signal output timer (former name: TIMER 4))

Default: 9999

Setting range: 0 – 9999 [msec]

##### 【Function】

- This is to determine the fastening OK signal output duration time from output terminal TORQUE OK. Not necessary to set up this timer usually.
- UEC ceases to send the TORQUE OK output after the next tightening is made, even if this timer is on.
- Set up this timer only when duration of output signal affects external PLC or circuit.
- Set 0, and UEC maintains signal output until next cycle.

#### COUNT OK (COUNT OK signal output timer (former name: TIMER 5))

Default: 9999

Setting range: 0 – 9999[msec]

##### 【Function】

- Determine COUNT OK signal output duration time from output terminal COUNT OK.
- Set 0, and UEC maintains signal output until next cycle.

#### TORQUE MEAS. DELAY (Torque measurement start delay timer (former name: TIMER 6))

Default: 20

Setting range: 0 – 9999 [msec]

##### 【Function】

- UEC start torque measurement when this timer comes up. (UEC does not measure the torque until this timer comes up.)
- Timer starts functioning when the torque reaches torque start level. (If the external start is used, the timer starts functioning when start terminal is switched on.)
- Use this timer when the torque spike can happen at the bolt or nut seating point.

#### ST. TORQUE ERROR (Torque error detect timer (former name: TIMER 7))

Default: 500

Setting range: 1 – 9999 [msec]

##### 【Function】

- This timer starts functioning when START terminal is switched on.
- Set this timer when 1 is set to ST. TORQUE ERROR.

#### CYCLE OVER ERROR (Cycle over error detect timer (former name: TIMER 8))

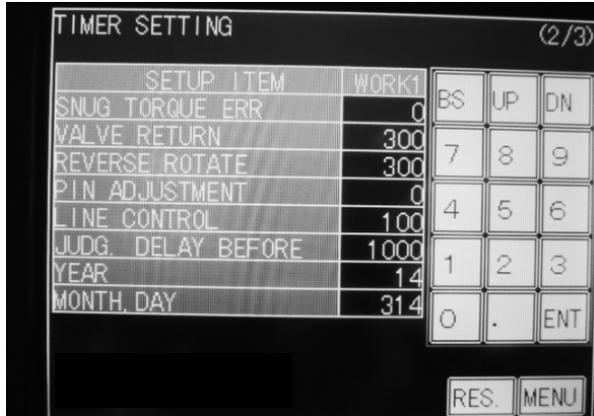
Default: 9999

Setting range: 1 – 9999 [msec]

##### 【Function】

- This timer starts functioning when START terminal is switched on.
- Set this timer when 1 is set to CYCLE OVER.

## Second screen (2/3)



### SNUG TRQUE ERR

Default: 0

Setting range : 0~9999

#### 【Function】

UEC provides snug torque error if the torque does not reach snug torque until this snug toque error timer ends.

### VALVE RETURN (Valve close timer (former name: TIMER 20))

Default: 300

Setting range: 1 – 9999 [msec]

#### 【Function】

- This timer starts functioning when the judgment delay timer comes up, and UEC switch off the valve (valve on) when this timer comes up.

#### Guideline of setting

- 300 [msec] for the valve integrated type tools like MC wrenches
- 500 [msec] or longer for the valve external type tools like ULMC series. If the external valve is away from tool, the longer duration than 500 would be recommended.
- When the external valve is used, and when after UEC switch on VALVE terminal to stop a tool and it switch off VALVE terminal before a tool's lever is released, set the bigger value to this timer. If a tool does not operate by next operation, adjust to the smaller value.

### REVERSE ROTATION (Reverse complete delay timer (former name: TIMER 21))

Default: 300

Setting range: 0 – 9999 [msec]

#### 【Function】

- This timer is to control tool's reserve operation complete.
- Use this timer when 9 is set to TIGHTENING MODE.

#### PIN ADJUSTMENT (Pin hole alignment timer (former name: TIMER 40))

Default: 0

Setting range: 0 – 9999 [msec]

##### 【Function】

- Use this timer to align bolt pin and the hole in a line.
- This timer starts functioning when UEC provides the torque judgment. UEC suspends torque measurement until this timer comes up. Turn the fastener to align bolt pin and a hole in a line while UEC suspends torque measurement.

**Note: Set 0 if you do not do pin hole alignment.**

#### LINE CONTROL (Line control timer (former name: TIMER 50))

Default: 100

Setting range: 1 – 9999 [sec]

##### 【Function】

- Use this timer when either 2 or 3 is set to LINE CNT. SELECT (former name: MODE 14). This timer is to make line control by time.

#### JUDG.DELAY BEF (Judgment Delay Timer before CUT torque [TIMER 30])

Default : 300

Setting range : 100 – 9999 [msec]

##### 【Function】

This is to set time interval how long UEC delays judgment output after fastening is aborted before reaching CUT torque. This function is also to avoid low torque or incomplete job error when fastening soft joint applications (see page 71).

##### 【Guideline for setting】

Pulse tools: 300msec

Discontinuous tools: 500msec

\* Conventional judgement delay timer is functioned after reaching CUT torque.

#### YEAR

Default: 0

Setting range: 0 – 255 [Year]

##### 【Function】

- This is to set the year of calendar timer of UEC.
- Enter 0, and the year of calendar timer is set to [Year 2000]. Enter 6, and the year of calendar time is set to [Year2006].

#### MONTH, DAY

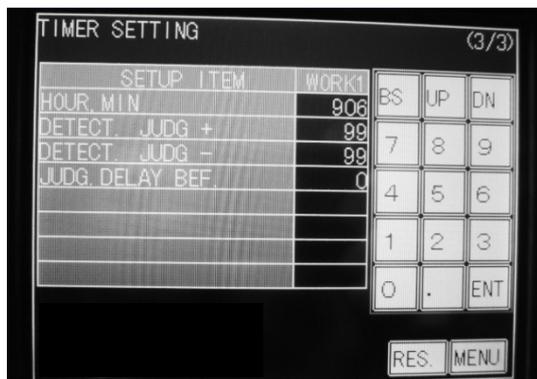
Default: 0

Setting range: 0101 – 1231 [Month/Date]

##### 【Function】

- This is to set the month and day of calendar timer of UEC.
- Enter [315] to set the calendar time to March 15.

### Third Screen(3/3)



#### HOUR, MIN

Default: 0

Setting range: 0000 – 2359 [Hour and minute]

#### 【Function】

- This is to set the time of calendar timer of UEC.
- Enter [1540] to set the calendar time to 15:40.

#### DETECT. JUDG +

Setting Range : 0~99msec

Default : 6

#### 【Function】

When detecting disconnection, this can set the range of + side fluctuation.

UEC provides an error when it detects the fluctuation over the value specified.

#### DETECT. JUDG -

Setting Range : 0~99msec

Default : 8

#### 【Function】

When detecting disconnection, this can set the range of - side fluctuation.

UEC provides an error when it detects the fluctuation over the value specified.

#### JUDGE.DELAY BEF

Setting Range : 0~999msec

Default : 50

#### 【Function】

The detection is made during this time before the judgment delay timer ends. If there is a fluctuation during this time, UEC provides a disconnection error.

## 10.4. Input and output setting

Signal allocations of input and output terminal board is free format. You can change signal allocations as required by setting.

### INPUT 1 (Input terminal select 1)

Set the signal allocations of input terminals by INPUT 1 to INPUT 6.



### Default and name of terminal

Setup item	Default (function)	Name of terminal
IN TERMINAL 1	1 (LS1)	IN 1
IN TERMINAL 2	2 (START)	IN 2
IN TERMINAL 3	3 (RESET)	IN 3
IN TERMINAL 4	7 (WORK A)	IN 4
IN TERMINAL 5	8 (WORK B)	IN 5
IN TERMINAL 6	9 (WORK C)	IN 6

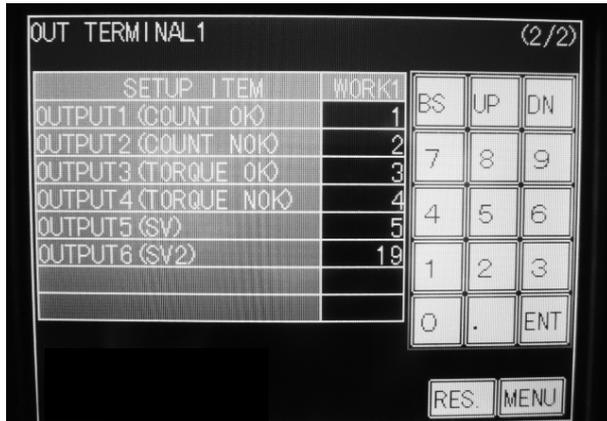
### Setup item

Setting	Name of Signal	Function
1	LS 1	When 0 is set to LINE CNT. SELECT, provide judgment signal. When either 1 or 2 is set, provide start fastening process signal.
2	START	External start
3	RESET	Reset the error, but hold the number of unfastened fasteners when the error happens.
4	LS 2	Judgment (use when 1 is set to LINE CNT. SELECT)
5	PASS	Compulsory completion Provide COUNT OK compulsory even if there are unfastened fasteners.
6	QL	Signal for QL wrench. Count down the fasteners.
7	WORK A	Signal for WORK select.
8	WORK B	Select WORK No. 1 – 8 by the signal combination of WORK A – C. Use when 0 is set to WORK SIG. SEL.
9	WORK C	
10	WORK 1	
11	WORK 2	Signal for WORK select Select WORK No. 1 – 5 by the input signal combination of WORK 1 – 5. Use when 1 is set to WORK SIG. SEL.
12	WORK 3	
13	WORK 4	
14	WORK 5	
15	CUT	
16	VALVE	Stop a tool externally
17	TOOL SWITCH	Connection check for solenoid valve. Torque reading is not available when it is on.

Note: It is not possible to assign same signal to two or more terminals.

## OUTPUT 1 (Output terminal select 1)

Set up the signal allocations of output terminals by OUTPUT 1 – OUTPUT 6.



### Default and name of terminal

Setup item	Default (function)	Name of terminal
OUT TERMINAL 1	1 (COUNT OK)	OUT1
OUT TERMINAL 2	2 (COUNT NOK)	OUT2
OUT TERMINAL 3	3 (TORQUE OK)	OUT3
OUT TERMINAL 4	4 (TORQUE NOK)	OUT4
OUT TERMINAL 5	5 (SV)	OUT5
OUT TERMINAL 6	6 (TORQUE LOW NOK)	OUT6

### Setup item

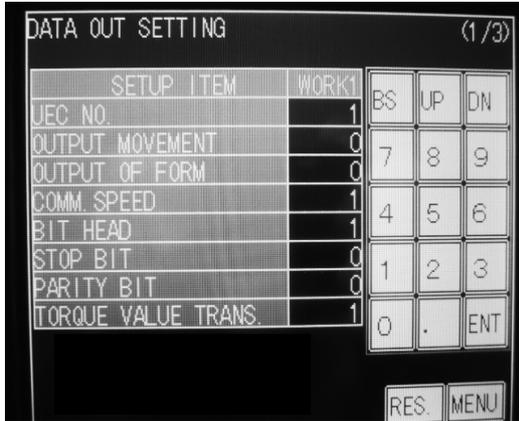
Setting	Name of signal	Function
1	COUNT OK	Count OK signal Signal output duration time is set by COUNT OK of TIMER SETTING.
2	COUNT NOK	Count NOK signal Provide COUNT NOK signal output until COUNT NOK is cleared.
3	TORQUE OK	Torque OK signal Signal output duration time is set by FASTENING OK of TIMER SETTING.
4	TORQUE NOK	Torque NOK signal Provide TORQUE NOK signal output until TORQUE NOK is cleared.
5	SV	Provide the signal output when torque reaches the start torque.
6	TORQUE LOW NOK	Provide the signal output when the torque low NOK judgment is provided.
7	TORQUE HIGH NOK	Provide the signal output when the torque high NOK judgment is provided.
8	OPERATION RANGE	Provide the signal output while the fastening is in process.
9	CPU RUN	Provide the signal output when UEC is in operation. Switch off when UEC gets inoperable status while the setting is overwritten.
10	CAUTION	Caution signal Provide this signal output when the cumulative fastening number or pulse blow number reaches the preset repair fastener number or pulse blow number.
11	WORK A ANSWER	WORK Answer Provide answer output signal of active work No.
12	WORK B ANSWER	
13	WORK C ANSWER	
14	WK 1 COUNT OK	COUNT OK per WORK NO.
15	WK 2 COUNT OK	
16	WK 3 COUNT OK	
17	WK 4 COUNT OK	
18	WK 5 COUNT OK	
19	SV2	Effected when torque reaches snug torque value.

Note: It is not possible to assign same signal to two or more terminals.

## 10.5. Data output setting

Determine the contents of the output data and memory data sent through RS232C port.

### First screen (1/3)



UEC NO. (Former name: MODE 98)

Default: 1

Setting: 1 – 25 Give every UEC its own number when plural UECs are in use connected by RS232C.

OUTPUT MOVEMENT (former name: MODE 58)

Default: 0

Setting : 0 Output all data through RS232C

Setting: 1 Output only the following errors through RS232C

- Torque/Pulse number/High & Low angle errors
- Fastening errors (start torque/initial/cycle/cycle over/fastening suspension errors)

Setting: 2 Not output through RS232C

**【Function】**

Set 0 when connecting to Global Pokayoke.

OUTPUT OF FORM (Data system select) (former name : MODE 59)

Default: 0

Setting: 0 # - CR

Setting: 1 # - LF

Setting: 2 ENQ, No ACK/NAK - ET

**【Function】**

Determine system of the contents of output data sent through RS232C port in rear of UEC.

COMM. SPEED (Communication speed select (baud rate) (former name: MODE 60)

Default: 1

Setting: 0 4800 bps

Setting: 1 9600 bps

Setting: 2 19200 bps

**【Function】**

This is to determine the baud rate of the output data sent through data output RS232C port.

**Note: This is not the communication speed between PC and UEC.**

BIT HEAD (Bit length select (former name: MODE 61)

Default: 1

Setting: 0 7 bit

Setting: 1 8 bit

**【Function】**

This is to determine the bit length of output data sent through data output RS232C port.

STOP BIT (former name: MODE 62)

Default: 0

Setting: 0 1 bit

Setting: 1 2 bit

**【Function】**

This is to determine the stop bit of output data sent through data output RS232C port.

PARITY BIT (former name: MODE 63)

Default: 0

Setting: 0 No parity

Setting: 1 Even number parity

Setting: 2 Odd number parity

**【Function】**

This is to determine the parity check of output data sent through data output RS232C port.

TORQUE VALUE TRANS (Torque value output select (former name: MODE 64)

Default: 1

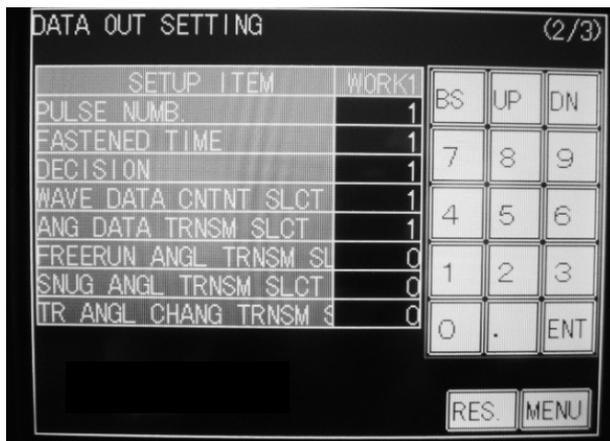
Setting: 0 Not output

Setting: 1 Output (5 digits including decimal point)

**【Function】**

This is to determine whether include or not the torque value in the output data sent through data output RS232C port.

## Second screen (2/3)



**PULSE NUMB.** (Pulse number output select (former name: MODE 67))

Default: 1

Setting: 0 Not output

Setting: 1 Output (4 byte)

**【Function】**

This is to determine whether include or not the pulse number in the output data sent through data output RS232C port.

**FASTENED TIME** (Fastening time output select (former name : MODE 68))

Default: 1

Setting: 0 Not output

Setting: 1 Output (4 byte)

**【Function】**

This is to determine whether include or not the fastening time from start torque till cut torque in output data sent through data output RS232C port.

**DECISION** (Fastening judgment output select (former name: MODE 69))

Default: 1

Setting: 0 Not output

Setting: 1 Output (1 byte)

**【Function】**

This is to determine whether include or not the judgment in output data sent through data output RS232C port.

Contents	ASCII code	HEX code
TORQUE OK	@	40H
START LEVEL ERROR	C	43H
CYCLE ERROR	D	44H
INITIAL ERROR	E	45H
CYCLE OVER ERROR	F	46H
INCOMPLETE JOB ERROR	G	47H
TORQUE LOW NOK	H	48H
TORQUE HIGH NOK	I	49H
ANGLE LOW NOK	J	4AH
ANGLE HIGH NOK	K	ABH
PULSE LOW NOK	L	4CH
PULSE HIGH NOK	M	4DH
PASS	P	50H
QL	Q	51H
FREE RUN ERROR	R	52H
SNUG TORQUE ERROR	T	54H
SNUG TORQUE LOW	U	55H
SNUG TORQUE HIGH	V	56H

#### WAVE DATA CNTNT SLCT (Wave data content output select)

Default: 1

Setting: 0 Not output

Setting: 1 Output

Setting: 2 Output when NOK

#### 【Function】

This is to determine whether output or not waveform data to UEC-4800 setup software. This will not sent to the RS232C port on the back panel.

#### ANG DATA TRANSM SLCT (Fastening angle output select (former name: MODE 65))

Default: 1

Setting: 0 Not output ("0000" to be transmitted)

Setting: 1 Output (4 bytes)

#### 【Function】

This is to determine whether include or not the angle in output data sent through data output RS232C port.

#### FREE RUN TRNSM (Free run angle data output select)

Default: 0 Do not output free run angle data

Setting: 1 Output free run angle data

Function: Select if output data includes free run angle data.

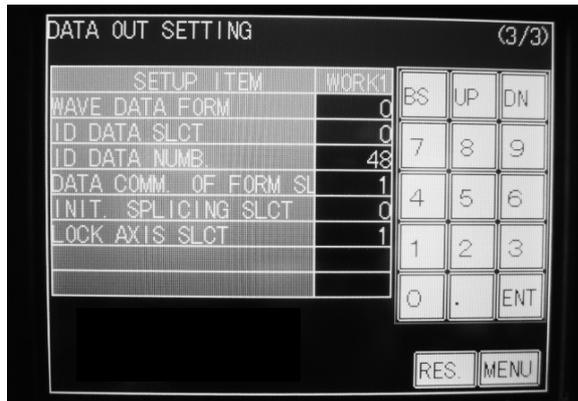
### SNUG DATA TRNSM (Snug angle data output select)

Default: 0 Do not output snug angle data

Setting: 1 Output snug angle data

Function: Select if output data includes snug angle data.

### Third Screen(3/3)



### WAVE DATA FORM (Wave form data output select)

Default: 0

Setting: 0 Send by Binary format (2 byte per data)

Setting: 1 Send by ASCII format (4 byte per data)

#### 【Function】

This is to determine the file format to send waveform data to the UEC-4800 setup software.

Set 0 (Binary) at present.

### ID DATA SLCT (ID data output select)

Default: 0

Setting: 0 Not output

Setting: 1 Output

#### 【Function】

This is to determine whether include or not ID number in output data sent through data output RS232C port.

### ID DATA NUMB. (ID data digit number)

Default: 0

Setting range: 1 - 48

#### 【Function】

This is to determine the digit number of VIN NO.

Not used digit is filled with [0].

### DATA COMM. FOR (Data Communication select)

Default: 1 UEC operate tool as per command from server and return result data.  
Setting: 0 UEC operate tool as per internal fastening setup and output result data.  
Function: Select either setup when communication is made by URYU standard protocol.

### INIT. SPLICING (Internal hook up select)

Default: 0 When switched on, UEC transmit initial hook up command to server.  
Setting: 1 When switched on, server transmits initial hook up command to UEC.  
Function: Select either setup when communication is made by URYU standard protocol.

### LOCK AXIS (Tool switch off option)

Default: 1 UEC gets tool inoperative unless server provide operation command.  
Setting: 0 Tool is operative without command from server.  
Function: Select either setup when communication is made by URYU standard protocol.

## 10.6. LAN setting

This is to set up for Ethernet connection.

Set up the value in LAN SETTING screen, and a message [LAN SETTING] appears. It takes approx. 20 seconds after you change setting values and a message [LAN SETTING] goes off from a screen.

Please do not touch .

LAN setting screen consists of three pages.

### First screen (1/3)

SETUP ITEM	WORK 1
IP ADDRESS 1	120
IP ADDRESS 2	0
IP ADDRESS 3	100
IP ADDRESS 4	1
SUBNET MASK	8
DEFAULT GATEWAY 1	0
DEFAULT GATEWAY 2	0
DEFAULT GATEWAY 3	0

BS UP DN  
7 8 9  
4 5 6  
1 2 3  
0 . ENT

RES. MENU

### IP ADDRESS 1 - 4

Default: 120.0.100.1

Setting range: 0 - 255

- This is to determine the IP address of UEC.

### SUBNET MASK

Default: 8

Setting range: 1 - 31

Setting: 1 (255.255.255.254)

8 (255.255.255. 0)

16 (255.255. 0. 0)

24 (255. 0. 0. 0)

31 (128. 0. 0. 0)

- This is to set up Subnet mask.

### DEFAULT GATEWAY 1 - 4

Default: 0

Setting range: 0 - 255

- Set up when connecting to PC via router. Set up the parameters when you hook up your PC to controller via router.

### Second screen (2/3)

The screenshot shows a screen titled "LAN SETTING (2/3)". It contains a table with two columns: "SETUP ITEM" and "WORK1". The table lists several items with their current values:

SETUP ITEM	WORK1
DEFAULT GATEWAY 4	0
TCP PORT	2101
CONNECT MODE	1
HOST IP ADDRESS 1	120
HOST IP ADDRESS 2	0
HOST IP ADDRESS 3	100
HOST IP ADDRESS 4	0
REMOTE TCP PORT	2101

Below the table is a numeric keypad with buttons for BS, UP, DN, 7, 8, 9, 4, 5, 6, 1, 2, 3, 0, ., and ENT. At the bottom of the screen are buttons for RES. and MENU.

### TCP PORT

Default: 2101

Setting range: 0 - 9999

- This is to set up the TCP port of UEC.

### CONNECT MODE (Connection mode)

Default: 1

Setting: 0 Set UEC as host

Setting: 1 Set UEC as client

- Set [1] (UEC as client), when connecting to the UEC-4800 setup software.

### HOST IP address 1 - 4

Default: 120.0.100.0

Setting range: 0 - 255

This is to set up the IP address of PC which communicates with UEC through Ethernet.

### REMOTE TCP PORT

Default: 2101

This is to set up TCP port of PC which communicates to UEC through Ethernet. Set up with same value of TCP port of UEC.

### Third screen (3/3)

SETUP ITEM	WORK1
LAN RETRY NUM.	3
Comm.-less time	10
MAC ADDRESS	***

BS	UP	DN
7	8	9
4	5	6
1	2	3
0	.	ENT

RES. MENU

#### LAN RETRY NUM. (LAN retry number)

Default: 3

Setting range: 0 - 10

- This is to determine the retry number to be made.

#### Comm.-less time (LAN nonresponding limit time)

Default: 10

Setting range: 0 - 10

- This is to determine waiting time in case of nonresponding.

#### MAC ADDRESS

Default: Assign unique address

Setting range: 0 - 9999

- Mac address of UEC.
- Impossible to change the setting value.

## 10.7. Program Number

This is to set the program number choice. Maximum 8 kinds (fastening torque, judgment values of torque and angle etc.) of program can be set up per work. It is possible to set up maximum 20 fasteners under same work number. 8 kinds of work number (from program 1 to 8) can be set up for first fastener up to 20th fastener. This function is available with the V1.15 UEC-4800TP or later.

The figure shows four sequential screenshots of the 'PROGRAM NO. CHOICE' menu, labeled (1/4) through (4/4). Each screen displays a table with 'SETUP ITEM' and 'PROGRAM 1' columns, a numeric keypad with 'BS', 'UP', and 'DN' keys, and 'RES.' and 'MENU' buttons.

**Screen (1/4):** Shows the first five program choices. The 'PROGRAM 1' column contains values 0, 0, 1, 0, 0, 0.

SETUP ITEM	PROGRAM 1
PRG. CHANGE SLCT	0
PRG. CHANGE SWIT	1
First	0
Second	0
Third	0
Fourth	0
Fifth	0

**Screen (2/4):** Shows the next five program choices. The 'PROGRAM 1' column contains values 0, 0, 0, 0, 0, 0.

SETUP ITEM	PROGRAM 1
Sixth	0
Seventh	0
Eighth	0
Ninth	0
Tenth	0
11th	0
12th	0

**Screen (3/4):** Shows the next five program choices. The 'PROGRAM 1' column contains values 0, 0, 0, 0, 0, 0.

SETUP ITEM	PROGRAM 1
13th	0
14th	0
15th	0
16th	0
17th	0
18th	0
19th	0

**Screen (4/4):** Shows the final program choice. The 'PROGRAM 1' column contains value 0.

SETUP ITEM	PROGRAM 1
20th	0

### PRG. CHANGE SLCT (Program change select)

Default: 0

Setting: 0 Not use

Setting: 1 Use, and program number is selected by signal input from terminal of UEC.

Setting: 2 Select program number by the 32-byte data received on the serial port on the rear panel. Set 1 to ID DATA SLCT, and set 32 to ID DATA NUMB in the DATA OUT SETTING screen.

Setting: 3 Receive work number signal from 48-byte data received on the serial port on the rear panel. Set 1 to ID DATA SLCT, and set 48 to ID DATA NUMB in the DATA OUT SETTING screen.

#### 【Function】

- This is to determine whether use or not the program number choice, and how to change program number.
- When setting value is changed from 0 to any of 1 – 3 or vice versa, UEC clears memory data. It is because UEC memorizes program number when program number choice is used.

PRG. CHANGE SWIT (Program change switch)

Default: 0

Setting: 0 Switch to next work number only when UEC provides fastening OK.

Setting: 1 Switch to next work number whichever UEC provides fastening OK/NOK.

Setting: 2 Switch to next work number when UEC provides OK or torque HIGH NOK.

【Function】

- This is to determine the condition to have UEC switched to next work number when program number choice is used.

First – 20th Fastener

Default: 0

Setting range: 0 - 8

Setting: 0 Fastening is ended.

1 – 8: Fastening is performed per setting of selected work number.

【Function】

- This is to determine which fastener is fastened by which setting of work number.

【Setting example】

Set either 1 or 2 to PRG. CHANGE SLCT, and set 1 to First, Second and Third fastener, and 2 to Fourth fastener. First, second and third fastener is fastened up to CUT values of WORK 1 setting, and judged in accordance to WORK 1 setting. Fourth fastener is fastened in accordance to WORK 2 setting. Set 0 to fifth fastener, if the fastening is ended with fourth fastener.

If either 1 or 2 is set to PROG. CHANGE SWIT, it is possible to fasten up to 20 fasteners. It is possible to set up work number to each fastener from first up to 20th.

Work number select is settable with maximum 8 kinds from program 1 to 8.

When 3 is set to PROG. CHANGE SLCT., work number combination and fastening number and fastening are decided and received from the serial port on the rear plane.

The image shows a control panel interface with a menu titled "PROGRAM NO. CHOICE (1/4)". The menu lists several items with their corresponding program numbers:

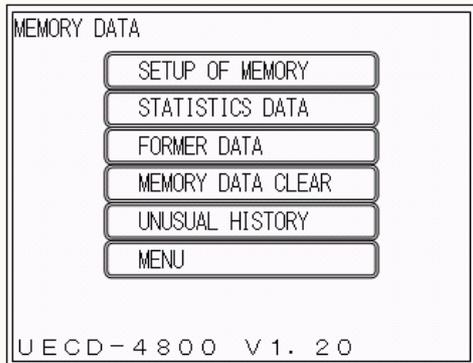
SETUP ITEM	PROGRAM 1
PRG. CHANGE SLC	0
PRG. CHANGE SWIT	1
First	0
Second	0
Third	0
Fourth	0
Fifth	0

Below the menu is a keypad with buttons labeled BS, UP, DN, 7, 8, 9, 4, 5, 6, 1, 2, 3, 0, ., and ENT. At the bottom of the panel are buttons labeled RES. and MENU. A callout box points to the "PRG. CHANGE SWIT" row in the menu, containing the text: "Select Program No. you want to set up parameters. Selectable from program 1 up to 8."

## 11. Memory Data

This is to set up the setting of memory data related items and display memory data like average,  $\sigma$ , original data etc.

- (1) Touch **MENU** in the measuring screen to enter MENU screen.
- (2) Touch **MEMORY DATA** to move to MEMORY DATA screen. Menu of MEMORY DATA is displayed. Select the screen you want to set up or change the setting values.



Memory data screen consists of following five pages.

### 【SETUP OF MEMORY】

Set up for the contents of memory

### 【STATISTICS DATA】

Display N (memory data number) per work number, calculated average and CP value etc.

### 【FORMER DATA】

Display former memorized data per work number

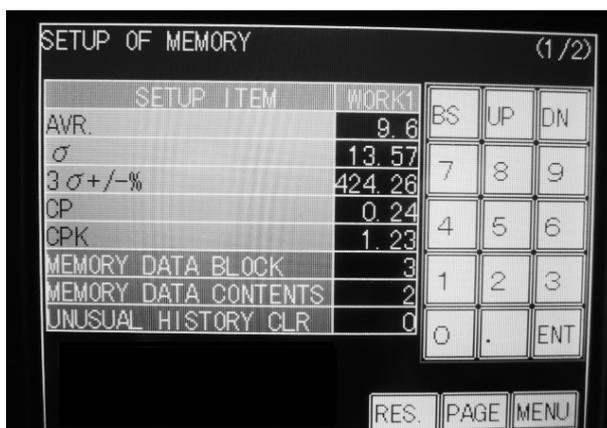
### 【MEMORY DATA CLEAR】

Clear data memorized in UEC

### 【UNUSUAL HISTORY】

Display the error history stored in the UEC-4800TP

### 11.1. Memory related setting



AVR (Average value)

- Displays average value of memorized data

$\sigma$  ( $\sigma$  value)

- Displays  $\sigma$  value of memorized data

### 3 $\sigma$ (3 $\sigma$ value)

- Displays 3 $\sigma$ ±% value of memorized data

### CP (CP value)

- Displays CP value of memorized data
- Displayed value is calculated one from the selected work number setting value (torque high and low limit value)

### CPK (CPK value)

- Displays CPK value of memorized data
- Displayed value is the calculated one from the selected work number setting values (torque high and low limit value).

**Note: All the above mentioned values, average value,  $\sigma$  value, 3 $\sigma$  value, CP value and CPK value, are the calculated ones, not the setting values.**

## MEMORY DATA BLOCK (former name: MODE 87)

Default: 3

Setting: 1 UEC stores data of work number all in one without time/date and ID number.  
(Maximum 12,000 pcs.)

Setting: 2 UEC stores data per work number without time/date nor ID number.  
(Maximum 1,500 pcs.)

Setting: 3 UEC stores data of work number all in one including time/date, but without ID number.  
(Maximum 5,400 pcs.)

Setting: 4 UEC stores data per work number including time/date, but without ID number.  
(Maximum 680 pcs.)

Setting: 5 UEC stores data of work number all in one including time/date and ID number.  
(Maximum 2,200 pcs.)

Setting: 6 UEC stores data per work number including time/date and ID number.  
(Maximum 270 pcs.)

### 【Function】

- This is to determine whether per work number or work number 1 -8 all in one, and whether include time/date and ID number UEC stores the data.
- When the data is stored per work number, the storable maximum data becomes 1/8 of the one stored by batch. UEC drops old data to memorize new data one by one after the storage comes to the maximum.
- When the data is stored with time/date, the storable maximum data becomes approx. 1/2.
- UEC calculates average value, CPK value etc. per block.

## MEMORY DATA CONTENTS (former name: MODE 88)

Default: 0

Setting: 0 Not memorize the fastening data

Setting: 1 Memorize all fastening data

UEC provides warning (memory level warning) when the data storage comes to another 10 pieces to maximum memory. Switch on RESET terminal, or press **RES.**, and the display will go off. But UEC provides warning, if you continue fastening.

Setting: 2 memorize all fastening data, but not warn maximum memory.

Setting: 3 Memorize only OK data and warn maximum memory.

Setting: 4 Memorize only OK data, but not warn maximum memory.

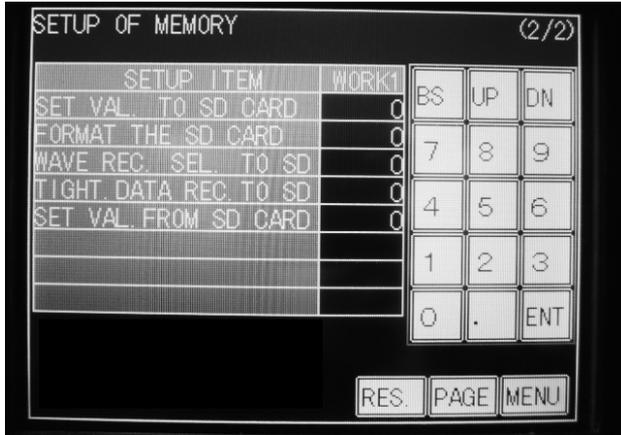
**【Function】**

- This is to determine what to memorize and whether warn maximum memory when the data storage comes to another 10 pieces to maximum memory.
- All memorized data is cleared when the setting value is changed.

**UNUSUAL HISTORY CLR**

**【Function】**

- Enter 1 to clear the error data points messages stored in UEC-4800TP.



**SAVE SETTING VALUE (Save setting value with miniSD card)**

**【Function】**

Set to [1], save each setting value stored in controller into miniSD card.

When the values are saved, the date as “SDyear/month/date” will be named as file name.

When the values are saved again in the same day and you would like to save the values with the same file name, the position of 10 for date will change as 30→40→50 to prevent the date duplicating.

Example);

When the values are saved on June 10, 2011, folder “SD110610” is made in root folder of miniSD and file of “SD110610.SDT” is saved in the folder.

“110610” displays on the screen of “SD READ VALUE”

**SD FORMAT (Format miniSD card)**

After inserting miniSD and set to [1], the miniSD is formatted

Format miniSD when the miniSD is used with UEC-4800 for the first time.

**SD WAVEFORM MEMORY SELECT (miniSD waveform data memory)**

Default : 0

Setting: 0 Not memorize to miniSD

Setting: 1 Memorize to miniSD

**【Function】**

After inserting miniSD and set to [1], memorize waveform data into miniSD card.

miniSD card to 2GB is available.

Change [0] to [1], save waveform data of fastening after the Setting number changed to [1] . Another data before the Setting number changed to [1] is not saved.

SD FASTENING DATA MEMORY (miniSD fastening data memory)

Default: 0

Setting : 0 Not memorize to miniSD

Setting : 1 Memorize to miniSD

**【Function】**

After inserting miniSD, Set to [1], memorize fastening data into miniSD card.  
miniSD card to 2GB is available.

Change [0] to [1], save fastening data of fastening after the Setting number changed to [1] . Another data before the Setting number changed to [1] is not saved.

SD READ VALUE (miniSD setting value read)

Default: 0

Setting : 1 to 4 Read setting values saved in miniSD.

**【Function】**

Select "SD READ VALUE" in writing mode, a file name saved in the miniSD displays.

When a number on the left of file name is inputted, the setting values are read. In case of the above, when [3] is inputted, the file of "110606" is read

When setting file is made with PC and read it with UEC-4800, make the file name to be "SD+ 6 figures"  
(The file name is not displayed when a number of the figures are short.)

## 11.2. Statistics Data

STATISTICS DATA				
W.No	N	AVE.	$\sigma$	RANGE
1	1212	30.5	16.47	80.0-60.0
2	0.00	0.00	0.00	0.0-0.0
3	0.00	0.00	0.00	0.0-0.0
4	0.00	0.00	0.00	0.0-0.0
5	0.00	0.00	0.00	0.0-0.0
6	0.00	0.00	0.00	0.0-0.0
7	0.00	0.00	0.00	0.0-0.0
8	0.00	0.00	0.00	0.0-0.0

PAGE 

STATISTICS DATA				
W.No	$3\sigma+/-$	CP	CPK	RANGE
1	162.01	0.20	-1.00	80.0-60.0
2	0.00	0.00	0.00	0.0-0.0
3	0.00	0.00	0.00	0.0-0.0
4	0.00	0.00	0.00	0.0-0.0
5	0.00	0.00	0.00	0.0-0.0
6	0.00	0.00	0.00	0.0-0.0
7	0.00	0.00	0.00	0.0-0.0
8	0.00	0.00	0.00	0.0-0.0

UEC-4800    RES. BYCE MENU    UEC-4800    RES. BYCE MENU

UEC calculates the memorized data and displays [N] (number of data) of fastening data, average value, [ $\sigma$ ] (standard deviation),  $3\sigma$ /Average value (scatter), [CP] (process capability index), [CPK] (unilateral process capability index) and [RANGE] (torque low limit – torque high limit).

When either 2 or 4 are set to MEMORY DATA BLOCK, UEC displays the data per work number 1 – 8. When either 1 or 3 is set to MEMORY DATA BLOCK, UEC displays all data in WORK 1.

Maximum [N] is 12,000 data.

### 11.3. Former data (raw data)

FORMER DATA						WORK No.	WORK No.
No.	TORQ.	ANGLE	PULSE	TIME	JUDG.		
1	30.2	0	17	640	OK	↑	
2	30.4	0	17	639	OK		
3	30.4	0	16	595	OK		
4	20.1	0	18	697	OK		
5	30.2	0	18	692	OK		
6	30.2	0	16	613	OK		
7	30.3	0	17	639	OK		
8	30.6	0	15	584	OK		
9	30.2	0	16	608	OK		
10	30.5	0	17	644	OK		↓

UEC-4800 RES. PAGE MENU

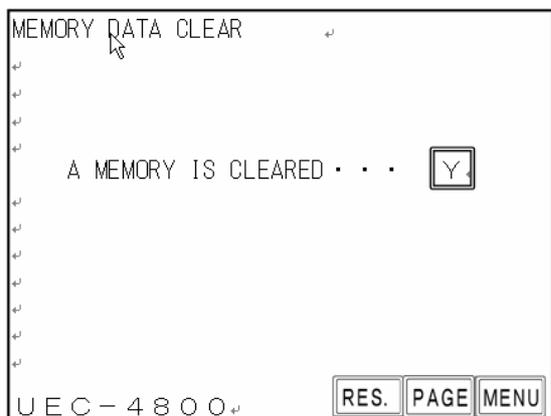
UEC displays memorized data of Torque, Pulse number, fastening time and judgment. Maximum data which can be displayed on 1 page is 10 pieces. Touch  or  to have another 10 data scrolled up or down.

When either 2 or 4 are set to MEMORY DATA BLOCK, fastening data is displayed per work number.

Touch  in right upper of a screen, and work number is changed to other like 1 Æ 2 with data display of each work number. When either 1 or 3 is set to MEMODY DATA BLOCK, all fastening data is displayed on work number 1 all in one. (Maximum [N] is 12,000 data.)

WORK No.			WORK No.
PULSE	TIME	JUDG.	
17	640	OK	↑
17	639	OK	
16	595	OK	
18	697	OK	

## 11.4. Memory data clear



Enter MEMORY DATA screen and a message [A MEMORY IS CLEARED ... ] appears. Touch , and UEC starts clearing the memorized data. A message [MEMORY CLEARING...] while UEC is clearing the memorized data, and a message [MEMORY CLEAR END] appears when UEC finishes clearing the memorized data.

Touch  to move to the SETUP OF MEMORY screen.

- Memory clear can be made through PC pressing  F.9 MEMORY CLEAR key of statistics screen of the UEC-4800 setup software.

## 11.5. Unusual History

UNUSUAL HISTORY	
No	Unusual history and date
1	ZERO ER133.2 09/08/07 04:02
2	ZERO ER 90.4 09/08/07 04:02
3	ZERO ER133.2 09/08/07 04:02
4	
5	
6	
7	
8	
9	
10	

U E C - 4 8 0 0      RES. bYCE MENU

This screen allows you to clear the history of error.

You can see the error data points and their dates on screen. If this screen displays Zero and/or Cal errors, you may check the error measurements as well. You may scroll through the screen by upward-pointing and downward-pointing arrows if more than 10 error data points are listed on a display. Up to 50 error data points can be displayed.

You may erase the error data points on the SETUP OF MEMORY screen.

## 12. TOOL CONTROL

UEC can memorize the total fastening number and pulse number since a tool is brought into use. It enables UEC to provide a notice of simple maintenance such as oil change by [WARNING COUNT/PULSE] and parts replacement/overhaul by [REPAIR COUNT/PULSE].

TOOL CONTROL	
SETUP ITEM	DATA(*10000)
TIGHTING COUNT	0
TIGHTING PULSE	8
WARNING COUNT	30
WARNING PULSE	30
REPAIR COUNT	50
REPAIR PULSE	50
TOOL DATA CLEAR	Y

BS	UP	DN
7	8	9
4	5	6
1	2	3
0	.	ENT

RES.	MENU
------	------

**TIGHTENING COUNT** (Total tightening count number [1 unit: 10,000 fasteners])

Default: 0

Setting range: 0 – 99999 [1 unit: 10,000 fasteners]

- This is total number of fasteners that the present tool now in use has fastened until now.
- This is NOK fasteners inclusive.

**TIGHTENING PULSE** (Total fastening pulse number [1 unit: 10,000 pulses])

Default: 0

Display range: 0 – 99999 [1 unit: 10,000 pulses]

- This is total number of pulses that the present tool now in use has fastened until now.
- This is NOK pulse inclusive.

**WARNING COUNT** (Warning count number [1 unit: 10,000 fasteners])

Default: 30

Setting range: 0 – 9998 [1 unit: 10,000 fasteners]

- UEC displays a warning message when the total fastening number reaches preset cycles.
- Set the number of fasteners that you are going to repair a tool next time.

**【Display status when number of fasteners reaches warning cycle】**

- Touch panel display message : [WARNING COUNT ERR]

**Note: Set [0] if you do not use this function.**

WARNING PULSE (Warning pulse number [1 nit: 10,000 pulses])

Default: 0

Setting range: 0 – 9998 [1 unit: 10,000 pulses]

- UEC displays a warning message when the total pulse number reaches preset pulses.
- Set the number of pulses that you are going to repair like oil change a tool next time.

**【Display status when number of pulses reaches warning pulse】**

- Touch panel display message : [WARNING PULSE ERR]

**Note: Set [0] if you do not use this function**

REPAIR COUNT (Repair count number [1 unit: 10,000 fasteners])

Default: 0

Setting range: 0 – 9999 [1 unit: 10,000 fasteners]

- UEC will let you know by a message when the total fastener numbers reach preset cycle.

**【Display status when the total number of pulses reaches repair cycles】**

- Buzzer sounds.
- CAUTION terminal is switched on.
- Touch panel display message : [REPAIR COUNT ERR]

**Note: Set 0 if you do not use this function**

REPAIR PULSE (Repair pulse number [1 unit: 10,000 pulses])

Default: 0

Setting range: 0 – 9999 [1 unit: 10,000 pulses]

- UEC lets you know by a message when the total pulse numbers reaches the preset pulses.

**[Output status when the total pulses reaches the preset pulses]**

- Buzzer sounds.
- CAUTION terminal is switched on.
- Touch panel display message : [REPAIR PULSE ERR]

**Note: Set 0 when you do not use this function.**

TOOL DATA CLEAR

Default: Y

Touch  to clear the total fastening numbers and pulse numbers.

**Note: This is not setting.**

## 13. Functions

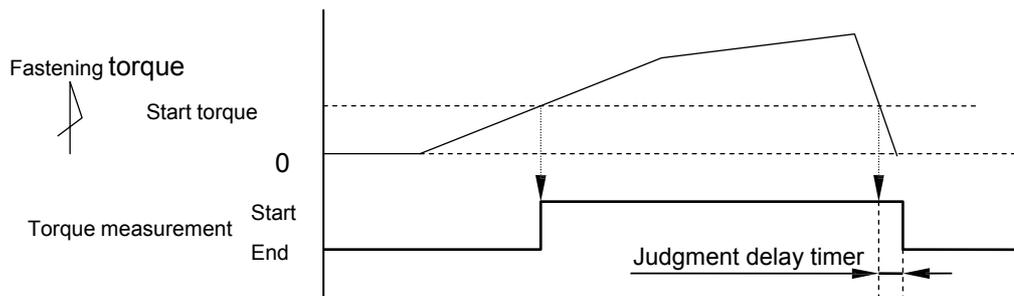
### 13.1. Fastening control

Fastening control method is selectable from 5 options.

- Control method :
- 1 Torque monitor
  - 2 Torque control
  - 3 MC/EC wrenches Torque control
  - 5 AMC wrenches Torque control
  - 9 T type wrenches Torque monitor

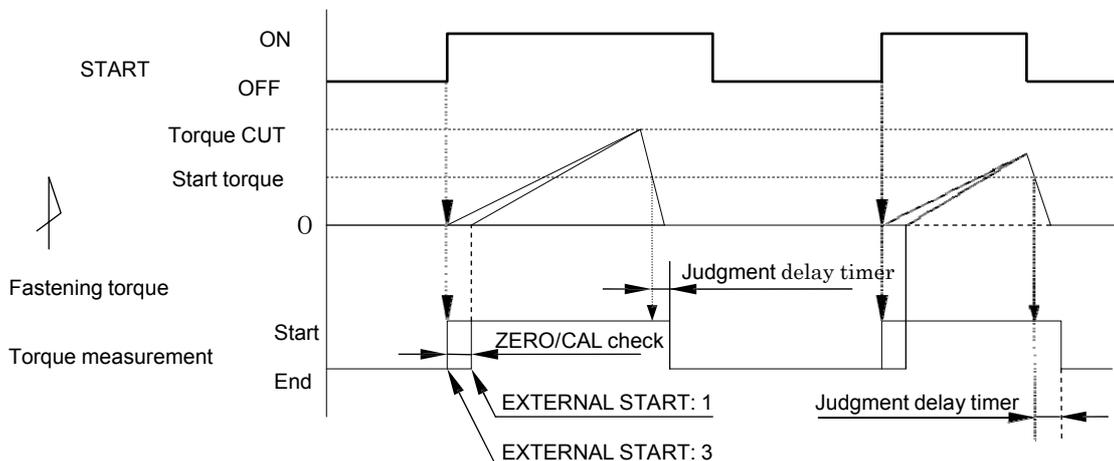
#### 1) Torque monitor Control method: 1

This is used mainly for torque monitoring of the angle nutrunner UAN series, which shuts off by mechanical clutch. When 0 is set to EXTERNAL START, UEC starts torque measuring by the external start signal input. When 1 is set to EXTERNAL START, UEC starts torque measurement when detecting the start torque or greater torque and provides the judgment when the judgment delay timer comes up after the torque gets lower than the start torque.



#### 2) Torque control Control method: 2

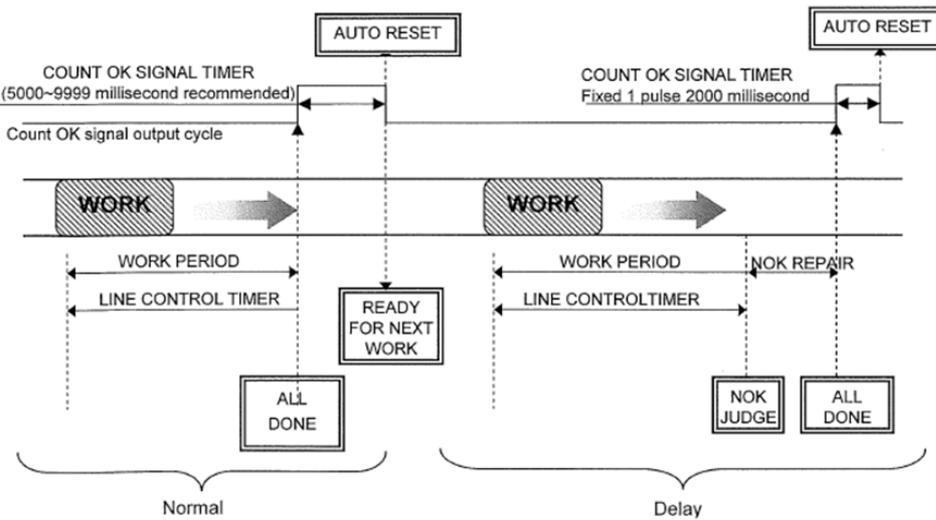
This is mainly used for torque control of nutrunner. UEC switches on VALVE terminal to have nutrunner operated and controls its torque. Switching on external start signal, nutrunner operates and UEC starts torque measurement. Nutrunner continues operating until torque reaches CUT torque. UEC provides judgment when judgment delay timer comes up after the torque gets lower than start torque.



3) MC/EC wrenches Torque control Control method: 3

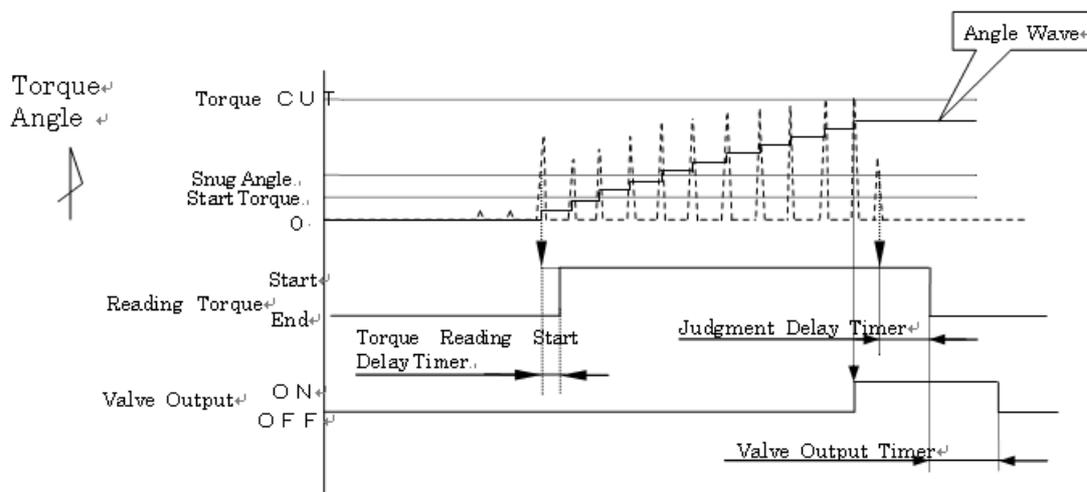
This is to control torque of either MC or EC wrenches. UEC starts torque measurement when detecting the start torque or greater torque, and switches on valve terminal to stop the tool when reaching torque cut level. UEC provides judgment when judgment delay timer comes up after torque gets lower than start torque.

When torque measurement delay timer is set up, it starts functioning when detecting start torque or greater torque. UEC cancels torque spike at the bolt seating point by suspending torque measurement until torque measurement start delay timer comes up, and then starts torque measurement.

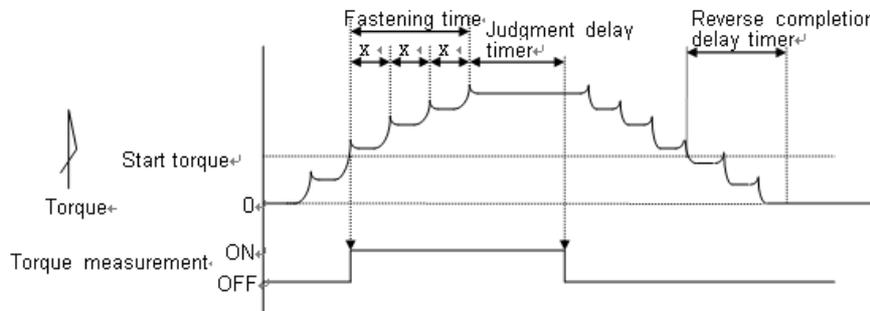


4) AMC Wrench Torque Control and Angle Monitoring Control Method: 5

Torque Control and Angle monitoring is made for AMC wrenches. UEC starts torque measurement when detecting the start torque or greater torque, and switches on valve terminal to stop the tool when reaching torque cut level. UEC provides judgment when judgment delay timer comes up after torque gets lower than start torque. Angle reading will be started when detecting the snug torque or greater torque. Angle reading is even made during the torque reading start delay timer.



5) T type wrenches Torque and fastening time monitor Control method: 9  
 UEC monitors torque and fastening time of shut off tools.



UEC starts torque measurement when detecting the start torque or greater torque, judges the tool is shut off when provides judgment when the fastening time between peak torque (x in a graph) gets longer than the judgment delay timer, and provides judgment.

After UEC provides judgment, reverse completion delay timer gets functioning when the residual load torque gets lower than start torque by the tool's reverse operation. Timer timeout is regarded as the completion of tool reverse operation, UEC switches off VALVE to cancel the tool's operation start.

#### Fastening time

- (1) Fastening time measurement start point
  - When torque reaches start torque
- (2) Fastening time measurement end point
  - A point is determined by deducting the judgment delay timer off time from the time required until judgment output.

## 13.2. Upper and low limit judgment

UEC provides judgment whether or not the detected torque, angle or pulse number is within upper and low limit.

Upper and low limit judgment is made against torque or pulse numbers until fastening is completed.

Upper and low limit of torque is set in TORQUE LOW and TORQUE HIGH in the BASIC SETTING screen.

Upper and low limit of angle is set in ANGLE LOW and ANGLE HIGH in the MODE SETTING screen.

Upper and low limit of pulse number is set in PULSE LOW and PULSE HIGH in the MODE SETTING screen.

### [Judgment]

(1) OK judgment when the measurement value is within upper and low limit. (OK)

- Touch panel OK lamp (green) will light.
- Tool's LED lamp will light in green.
- UEC output TORQUE OK.
- When 1 is set to ALARM BUZZER, UEC gives single sounding "Pi" for each fastener OK result, and double sounding "Pi-Pi" for COUNT OK.

(2) HIGH NOK judgment when the measurement is confirmed higher than upper limit. (TORQUE HIGH NOK)

- Touch panel display message [TORQUE HIGH]
- Touch panel HIGH lamp will light in red.
- Tool's LED lamp lights in red.
- Buzzer sounds.
- UEC outputs TORQUE NOK.
- UEC outputs TORQUE HIGH.

(3) ANGLE HIGH NOK judgment when the measurement is confirmed higher than upper limit. (ANGLE HIGH NOK)

- Touch panel display message [ANGLE HIGH]
- Buzzer sounds.
- UEC outputs TORQUE NOK.

(4) Judgment when pulse number is greater than pulse number upper limit.

- Touch panel display message [PULSE NO.HIGH]
- Tool's LED lamp lights in red.
- Buzzer sounds.
- UEC outputs TORQUE NOK.

(5) LOW NOK judgment when the measurement is confirmed lower than low limit. (TORQUE LOW NOK)

- Touch panel display message [TORQUE LOW]
- Touch panel LOW lamp will light in yellow.
- Tool's LED lamp lights in yellow.
- Buzzer sounds.
- UEC outputs TORQUE NOK.
- UEC outputs TORQUE LOW NOK.

(6) ANGLE LOW NOK judgment when the measurement is confirmed lower than low limit.

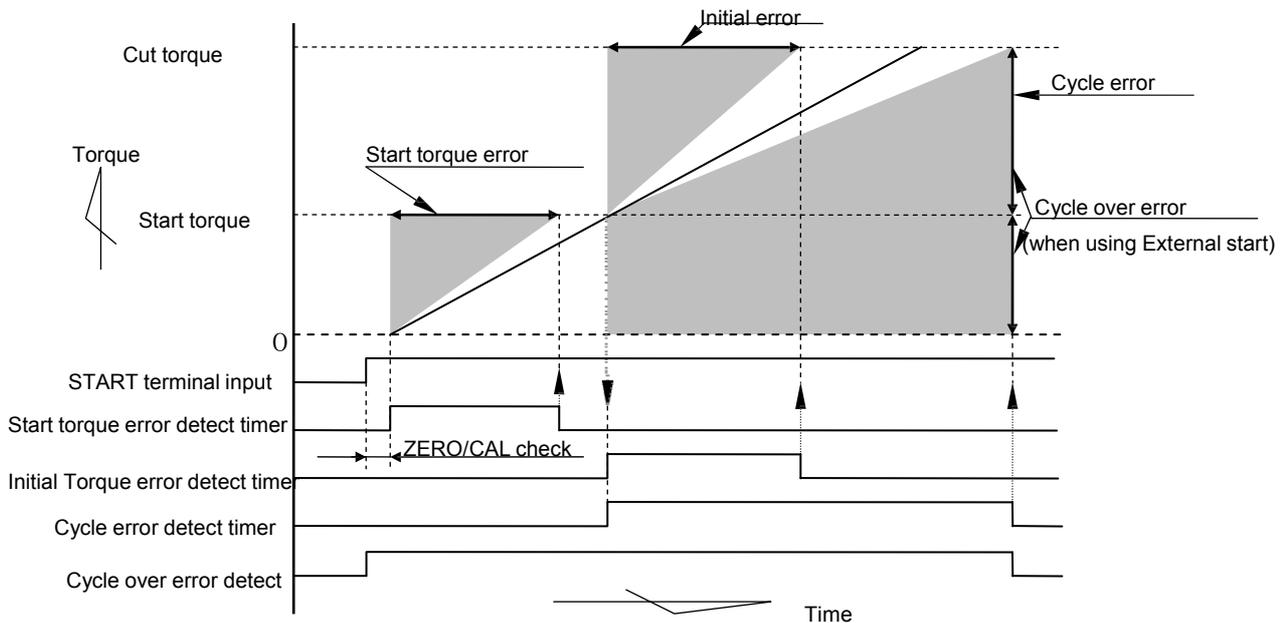
(ANGLE LOW NOK)

- Touch panel display message [ANGLE LOW]
- Buzzer sounds.
- UEC outputs TORQUE NOK.

(7) Judgment when pulse number is lower than pulse number low limit.

- Touch panel display message [PULSE NO.LOW]
- Tool's LED lamp lights in yellow.
- Buzzer sounds.
- UEC outputs TORQUE NOK.

### 13.3. Torque change degree zone monitor



Note) Above is an example of linear torque change curve.

#### 1) Start torque error

UEC detects the time from the time when external start terminal is switched on till the torque reaches start torque, and provides the judgment if the torque reaches start torque before the start torque error detect timer comes up.

[Note]

- UEC could not detect the error if the preliminary fastening condition varies much per bolt or nut.
- UEC could not detect the error when it takes long to fit the nutrunner socket to work piece.

[Setting value]

- ST. TORQUE ERROR detection: 1
- ST. TORQUE ERROR timer: 1 – 9999 [msec]

[How to set]

- Monitor the time from external start input to start torque of the correct fastening, and determine the setting value. The time is displayed on TIGHTENING (TSS) of the MODE SETTING screen (second page).

2) Initial torque error

UEC provides the error when the time from start torque to cut torque is shorter than the time of initial error detect timer.

[Setting value]

- Initial error detect select: 1
- Initial error detect timer : 1 – 9999 [msec]

[How to set]

- Determine the setting value by monitoring the time from start torque to cut torque of the correct fastening.

3) Cycle error

UEC provides the error when the time from start torque to cut torque is longer than the time of cycle error detect timer.

[Setting value]

- Cycle error detect select : 1
- Cycle error detect timer : 1 – 9999 [msec]

[How to set]

- Determine the setting value by monitoring the time from start torque to cut torque of the correct fastening.

4) Cycle over error

UEC provides the error when judgment is not made from START terminal input till the cycle over error detect timer comes up.

This is used for detecting the idling of nutrunner when a socket is not fit into a work piece.

[Setting value]

- Cycle over error detect: 1
- Cycle over error detect timer : 1 – 9999[msec]

[How to set]

- Determine the setting value with time to spare by monitoring the time from START terminal input to judgment output of the correct fastening.

## 14. Torque Sensor Wiring Check

UEC makes torque sensor cable's damage, break or short circuit. The error detection is made when ZERO/CAL check is in action.

### 14.1. Error detection

#### 1) Zero check

UEC checks how big the voltage of torque sensor will change from 0(V) under no load condition. UEC detects ZERO error if the voltage variation (DPM display zero point) becomes greater than 6% of CAL value.

#### 2) CAL check

UEC checks whether sensor setting value in UEC is appropriate to the connected torque sensor's wiring and the specifications. UEC checks if the deviation is less than  $\pm 6\%$  from CAL value to provide CAL error by applying simulative electric pressure to the torque sensor so as to put the torque sensor in the virtual condition under rated load strain. UEC detects Cal error if the torque sensor is not connected with UEC correctly, or its wiring and the specifications does not fit to UEC set up.

### 14.2. ZERO/CAL check perform timing

- When self-diagnosis function is running by switching on UEC.
- When RESET terminal is switched on.
- When  is touched.
- When START terminal is switched on, if either 0 or 1 is set to EXTERNAL START.
- When [F6 ZERO CAL] on the ZERO POINT ADJUSTMENT screen of the UEC-4800 setup software is pressed.

When error is detected

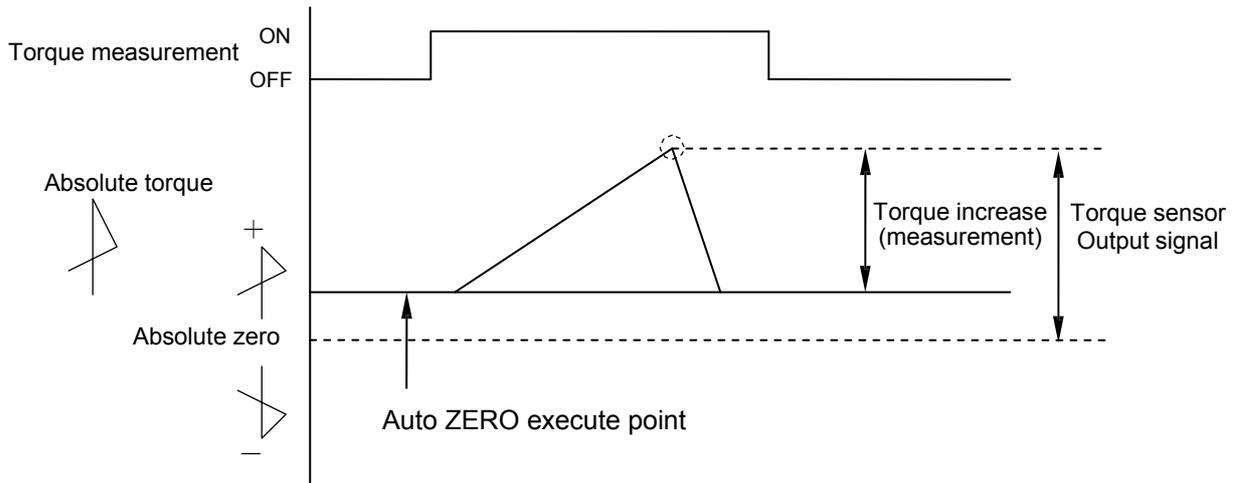
- Displays a message [ZERO ERROR] and [measured torque value].
- Displays a message [CAL ERROR] and [measured torque value].
- Buzzer sounds.
- TORQUE NOK terminal is switched on.

## 15. Auto ZERO

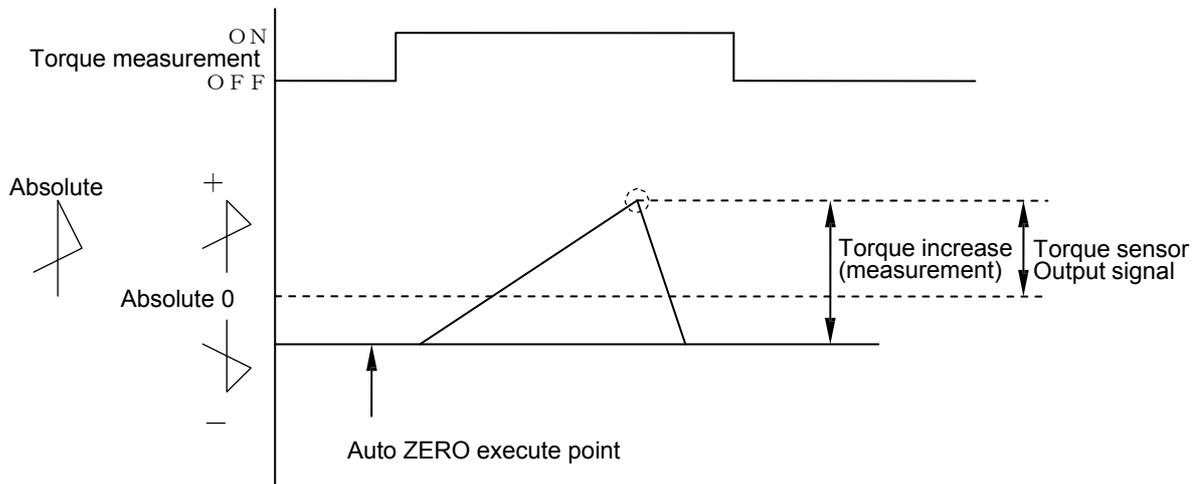
This is a function to do correct torque value measurement by doing automatic correction measured torque variation due to torque sensor's ZERO point deviation. UEC memorizes ZERO point deviation confirmed by ZERO/CAL check, includes the deviation degree in torque sensor signal, and converts the adjusted torque signal to torque value. This auto ZERO will not function when ZERO/CAL error.

### Examples of AUTO ZERO

1) When ZERO/CAL check detects plus (+) side deviation.



2) When ZERO/CAL check detects (-) side deviation



### Auto ZERO execute timing

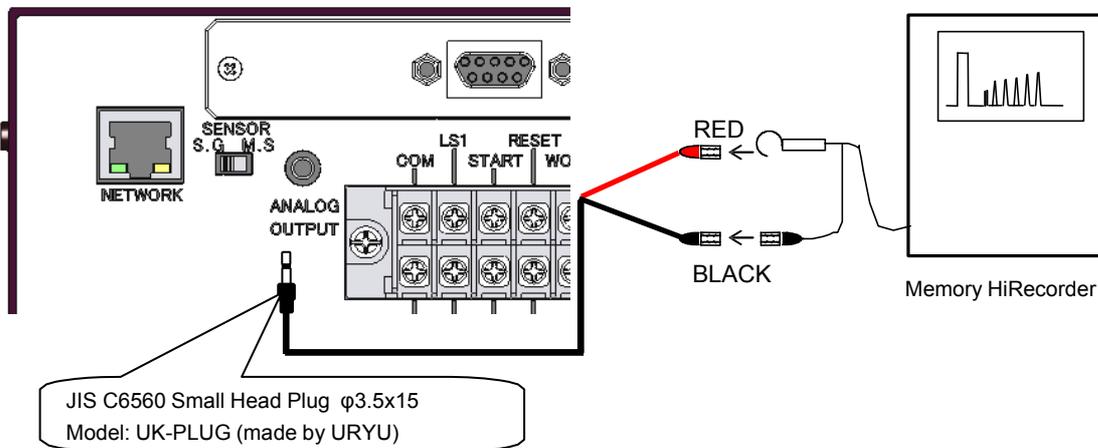
UEC executes AUTO ZERO after ZERO/CAL check.

- At the time of self-diagnosis when UEC is switched on.
- When touching **RES.** or RESET TERMINAL is switched on.
- When external start (START terminal of terminal board) is switched on

## 16. Torque waveform measuring procedure

Following explains how to measure the torque waveform by using the memory HiCORDER or memory scoop.

- 1) Make sure that the setting values are correctly set up, especially check if the connected torque sensor's sensor specifications and the torque sensor setting value agree with appropriate CAL value.
- 2) Connect the waveform measurement equipment to the ANALOG OUTPUT terminal of UEC-4800TP.



Note) UK-PLUG's red wire: connect with torque signal  
UK-PLUG's black wire: connect with 0V (GND)

- 3) Touch **RES.**, and UEC makes CAL check, and Memory HiCORDER will display CAL waveform height (rated torque applied electric pressure).
- 4) Confirm CAL waveform height, and then set and adjust waveform measurement tool.
- 5) Perform torque waveform measurement.

## 17. ANALOG OUTPUT terminal

UEC outputs the analog torque signal voltage in real time by having the torque sensor output signal voltage amplified by 1000 times, filtered and attenuated.

### 1) Torque sensor output voltage specification table

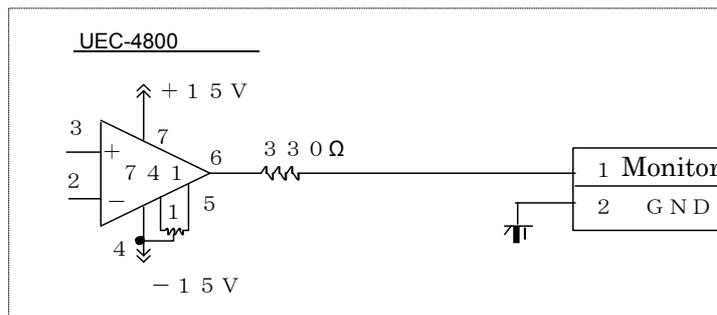
Following is output voltage (x V) when rated load torque is applied to torque sensors. Output voltage changes per sensor specifications.

Torque sensor specifications	ANALOG output voltage ( x V)
480Ω 2000x10 <sup>-6</sup>	DC 1.5V
700Ω 750x10 <sup>-6</sup>	DC 0.75V
700Ω 1500x10 <sup>-6</sup>	DC 1.5V
700Ω 1600x10 <sup>-6</sup>	DC 1.6V
350Ω 2000x10 <sup>-6</sup>	DC 1.5V
350Ω 4000x10 <sup>-6</sup>	DC 1.5V
Magnetostrictive type sensor	DC 1.5V

### 2) How to convert analog output voltage to torque value

$$\text{Torque Value} = \frac{\text{Output voltage when strained by fastening } (\Delta V)}{\text{Output voltage when applied rated load } (x V)} \times \text{Rated torque}$$

### 3) Analog output terminal specifications



### 4) Analog output terminal

Plug size : JIS C6560 small head plug ø3.5x15

Terminal connection cable type : UK-PLUG (made by URYU)

Part code : 909-483-0

## 18. Error

### 18.1. Error message & contents

#### **ZERO Error**

- When more than  $\pm 6\%$  deviation off from rated value is detected.

#### **CAL Error**

- When more than  $100\pm 6\%$  deviation off from rated value is detected

#### **Angle I/F Error**

- \* Angle Encoding Cable is not connected or disconnected. Angle Board Interface is broken. Resolver is broken.

#### **Angle Board disconnected**

- Angle Board Interface is broken. The connector is not connected firmly between the main board on controller and Angle Board Interface.

#### **Buffer Full Error:**

- \* This error is fired when more angle data to a buffer than the memory unit can accommodate is flowed into it (buffer overflow). The memory capacity is programmable on mode settings of "WAVEFORM MEMORY FUNCTION SELECT". If it is set to either 1 or 4, this message does not come up.

#### **Setting Error:**

- \* When not settable setting value is input. When the setting value is out of the setting range or interlock value is input.

#### **Torque LOW [Yellow Lamp]**

- Torque value is under the lower limit.

#### **Torque HIGH [Red Lamp]**

- Torque value is over the higher limit.

#### **Pulse Number LOW**

- When the pulse number is less than pulse number low limit.

#### **Pulse Number NOK**

- When the pulse number is over than pulse number high limit.

#### **Fastening Angle LOW (Angle Judgment WRN)**

- When the measured angle is less than angle low limit.

#### **Fastening Angle HIGH (Angle Judgment WRN)**

- When the measured angle is over than angle high limit.

#### **Angle LOW (Angle judgement warning)**

- Angle value is under the angle lower limit.

#### **Angle HIGH (Angle judgement warning)**

- Angle value is over the angle higher limit.

#### **Initial Error**

- When fastening torque reaches CUT torque before initial error detection timer comes up.

#### **Cycle Error**

- When fastening torque does not reach CUT torque before cycle error detection timer comes up.

#### **Fastening Suspension**

- When the fastening is suspended before the torque reaches CUT torque.

#### **Start Torque Error**

- Start torque error detect timer starts functioning when start terminal is switched on. When the torque does not reach start torque before this timer comes up.

#### **Cycle Over Error**

- Cycle over error detect timer starts functioning when start terminal is switched on. When the fastening operation (judgment) is not completed before this timer comes up.

**Snug Torque Error**

- Torque does not reach snug torque until the snug torque error timer ends.

**Snug Angle Low Error**

- Angle value from Start Torque to Snug Torque is under the Snug lower limit.

**Snug Angle High Error**

- Angle value from Start Torque to Snug Torque is over the Snug higher limit.

**Free Running Angle Error**

- Free Running Angle is under the Free Running lower limit.

**Warning Count Number Error**

- When the total fastening cycle reaches the warning cycle setting value.

**Warning Pulse Number Error**

- When the total fastening pulse number reaches the warning pulse number setting value.

**Repair Count Number Error**

- When the total fastening cycle reached the repair number setting value.

**Repair Pulse Number Error**

- When the total pulse number reaches the repair pulse number setting value.

**Warning Memory Error**

- When the memory remaining volume gets less than -10 from the maximum memory data.

**ROM Error**

- When ROM of board is broken down or causes malfunction for some reasons.

**RAM Error**

- When RAM of board is broken down or causes malfunction for some reasons.

**A/D Error**

- When A/D of board is broken down or causes malfunction for some reasons.

**D/A Error**

- When D/A of board is broken down or causes malfunction for some reasons.

**SUM Check Error**

- When the setting data memorized in RAM have error.

**Filter Error**

- Filter IC on the main board is broken.

**Valve Disconnection Error**

- Allocate 16 (Valve) to the input terminal. No need to allocate #16 to the terminal.

**Blown Fuse**

- 1) When the AC fuse (Refer to 4.2 Rear panel ②) is blown, UEC cannot be powered on.
- 2) When the DC24V fuse on the board inside UEC housing is blown, following phenomenon occurs.
  - \* LED of the power switch does not light.
  - \* Tool does not shut off even if the fastening torque gets over the cut level.
  - \* Tool's lamp does not light.

**Disconnection Error**

- Wiring disconnection on torque transducer. The wiring on sensor cable or cables inside tool may be disconnected or broken.

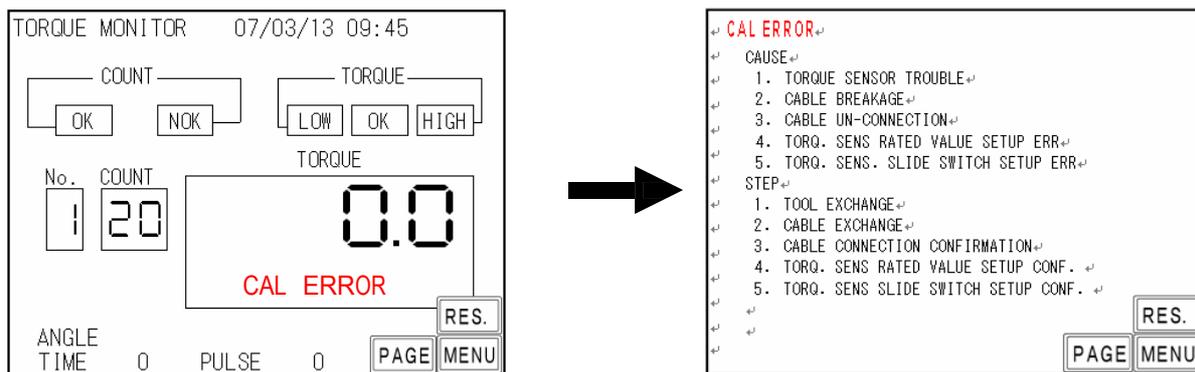
**Reverse CUT Error**

- The torque may be output to the opposite direction.
- Wiring on sensor cable or torque sensor may be disconnected.

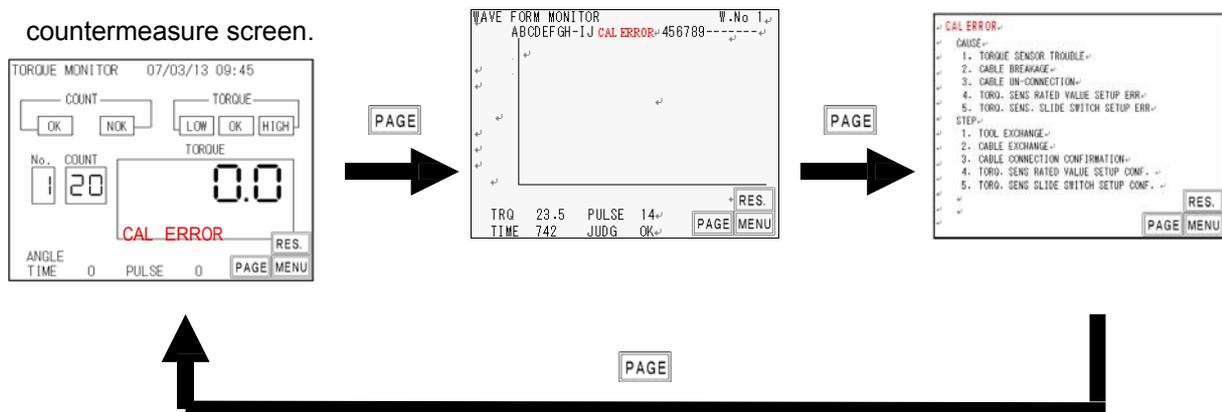
## 18.2. Error display screen

When UEC detects the error that is not related to the fastening or maintenance, cause and the countermeasures can be displayed on the touch panel screen.

1) Touch the error message to move to the cause and countermeasure screen. It goes same on the WAVE FORM MONITOR screen and the TORQUE/ANGLE WAVE FORM MONITOR screen.



2) When UEC detects an error, keep touching **PAGE** on the monitor screen to move to the error and countermeasure screen.



### ✕Error Messages Available on the Touch Panel

- CAL Error
- ZERO Error
- A/D Error
- MEMORY Error

### 18.3. Trouble Shooting

Error	Countermeasure
ZERO error	<ul style="list-style-type: none"> <li>Be sure to set the select switch, [M.S] or [S.G], in UEC rear panel (refer to 4.2 Rear Panel 5)</li> </ul>
CAL error	<ul style="list-style-type: none"> <li>Replace a tool and sensor cable.</li> <li>Get the sensor values to agree with the torque sensor connected.</li> <li>Check if the tool is running during the checking is being made.</li> </ul>
Angle I/F Error	<ul style="list-style-type: none"> <li>Power off the controller and replace tool and sensor cable with new ones.</li> <li>Check the angle board or replace it with new one.</li> <li>Check the control method. Do not choose AMC tools when using MC/EC tools.</li> </ul>
Angle Board Disconnected	<ul style="list-style-type: none"> <li>Check the connection between angle board and main board.</li> <li>Replace the angle board with new one.</li> <li>Check the tool model and control method.</li> </ul>
Buffer Full error	<ul style="list-style-type: none"> <li>Check the communicating cable.</li> <li>Set the setting of WAVEFORM MEMORY FUNCTION SELECT to 4.</li> </ul>
Valve Disconnection Error	<ul style="list-style-type: none"> <li>Check the wiring to the solenoid valve or replace the wiring/solenoid valve with new one.</li> <li>Do the countermeasure on the "Blown DC24V Fuse on the PC board error" below.</li> <li>Do not allocate #16.</li> </ul>
Setting error	<ul style="list-style-type: none"> <li>Check and correct the mode settings parameters to see they are logically correct like the formula START&lt;CUT.</li> </ul>
Initial/Cycle error	<ul style="list-style-type: none"> <li>Check any possible double-fitting and/or cross thread fastener.</li> <li>Check the alignment of workpiece and bolt.</li> <li>Check start torque and cut torque values.</li> <li>Check the timers for initial torque spike/cycle incomplete error. *1</li> <li>Check the pulse low/high limits. *1</li> <li>Check the angle low/high limits. *1</li> </ul>
Pulse number LOW/HIGH	
Fastening angle LOW/HIGH	
Angle LOW/HIGH	
Fastening suspension error	<ul style="list-style-type: none"> <li>Check the tool performance and air pressure applied to tool.</li> <li>Check the judgement delay timer is long enough.</li> <li>Be sure not to release the trigger before the tool reaches the CUT level.</li> </ul>
Start torque error	<ul style="list-style-type: none"> <li>Check the alignment of workpiece and bolt.</li> <li>Check the tool performance and air pressure applied to tool.</li> <li>Check the start torque and start torque error detect timer is correctly set.</li> </ul>
Cycle over time error	<ul style="list-style-type: none"> <li>Check the tool performance and air pressure applied to the tool.</li> <li>Check the setting value of cycle over error detect timer is correctly set.</li> </ul>
Snug Torque Error	<ul style="list-style-type: none"> <li>Check tool performance, air pressure, and application.</li> <li>Check start torque and snug torque.</li> </ul>
Snug Angle Low Error	<ul style="list-style-type: none"> <li>Check if the bolt is double hit or cross threaded.</li> <li>Check the snug angle lower limit, start torque, and snug torque.</li> </ul>
Snug Angle High Error	<ul style="list-style-type: none"> <li>Check tool performance, air pressure, and application.</li> <li>Check if the bolt is cross threaded.</li> <li>Check the snug angle higher limit, start torque, and snug torque.</li> </ul>
Free Running Angle Error	<ul style="list-style-type: none"> <li>Check if the bolt is double hit, pre-fastened or cross threaded.</li> <li>Check start torque.</li> </ul>
Warning count/pulse number error	<ul style="list-style-type: none"> <li>Recondition the tool like oil change and set the count/pulse number for the next maintenance due time.</li> </ul>
Repair count/pulse number error	<ul style="list-style-type: none"> <li>Repair or replace a tool, and clear the repair count / pulse number.</li> </ul>



Warning memory error	<ul style="list-style-type: none"> <li>Download and store the data in the UEC-4800 memory, and then clear the memorized data.</li> <li>Review the setting value of MEMORY DATA CONTENTS if this function is not needed.</li> </ul>
ROM/RAM error	<ul style="list-style-type: none"> <li>Replace the UEC-4800.</li> </ul>
A/D error	<ul style="list-style-type: none"> <li>Replace the tool or the UEC-4800.</li> </ul>
Filter Error	<ul style="list-style-type: none"> <li>Replace the controller with new one or send the unit to Uryu for repair.</li> </ul>
Sum check error	<ul style="list-style-type: none"> <li>If UEC works in order again by switching on or pressing <b>RES</b>, memory can be overwritten by noise. Set all the setting values again as the previous setting values are initialized when UEC is recovered by switching on or pressing <b>RES</b>.</li> </ul>
Blown DC24V Fuse on the PC board	<ul style="list-style-type: none"> <li>Check the wiring and replace the fuse (model: MH10(1) code number: 909-814-0 maker: Daitoh tushinki). Make sure to switch off and disconnect the power cable from AC power receptacle when replacing the fuse.</li> </ul>
Disconnection Error	<ul style="list-style-type: none"> <li>Check if the connector of sensor cable is firmly connected and locked.</li> <li>Replace the tool/cable with new one.</li> </ul>
Reverse CUT Error	<ul style="list-style-type: none"> <li>Replace the tool/cable with new one.</li> <li>Check if the polarity switch on the main board is correct. Refer to 8.1 Torque Polarity.</li> </ul>

\*1: Decide the values referring to the fastening time from start torque to cut level, blow numbers, and angle for good tightening.