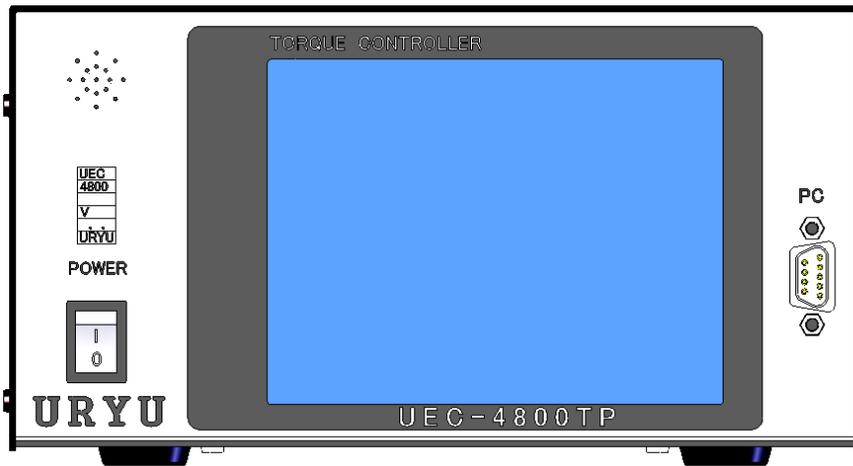


**Controller for Highly Reliable
Fastening Tools**

UEC-4800TP

Instruction Manual



2.0 Edition

URYU SEISAKU, LTD.

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1. Safety Instructions

Do 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.



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

◆ Installation & Surroundings

	<h1>WARNING</h1>
<ul style="list-style-type: none">● Place on a metal or other incombustible component to prevent a fire.● Keep away from the combustibles to prevent a fire.● Avoid foreign material intrusion to prevent a fire.● Set up Controller on a site that can bear its weight to avoid personal injury from accidental falling.● Keep the workplace well lighted and clean to avoid personal injury.● Never wear loose-fitting clothes or dangling jewelry when using this 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.● Securely install and fix this System to avoid personal injury in case of an emergency like an earthquake.	

◆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.

◆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 UEP-MC tool. Never place any magnet near the UEP-MC tool to avoid any magnetic field effect. Otherwise, the tool may malfunction.

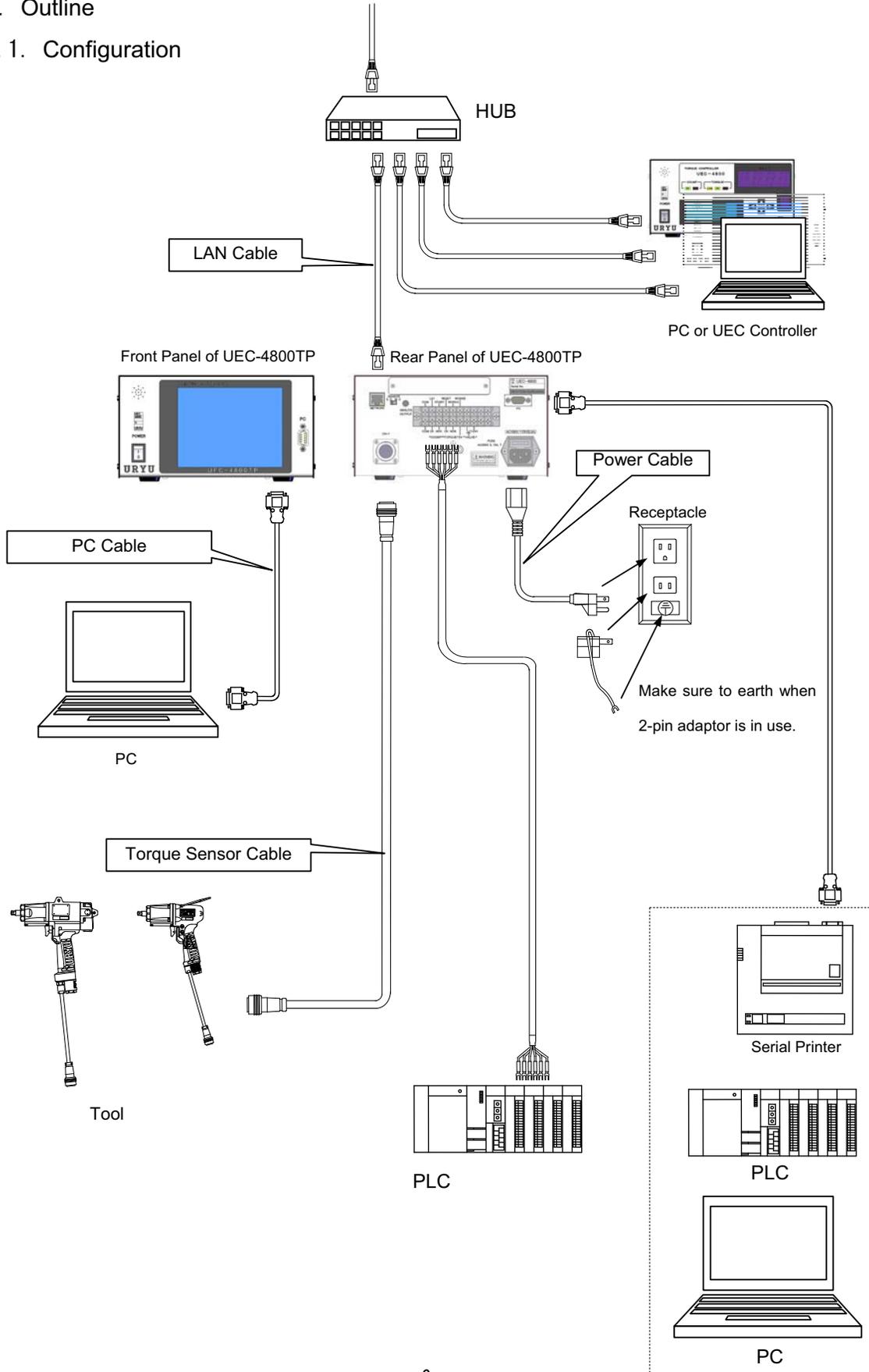


Disclaimer

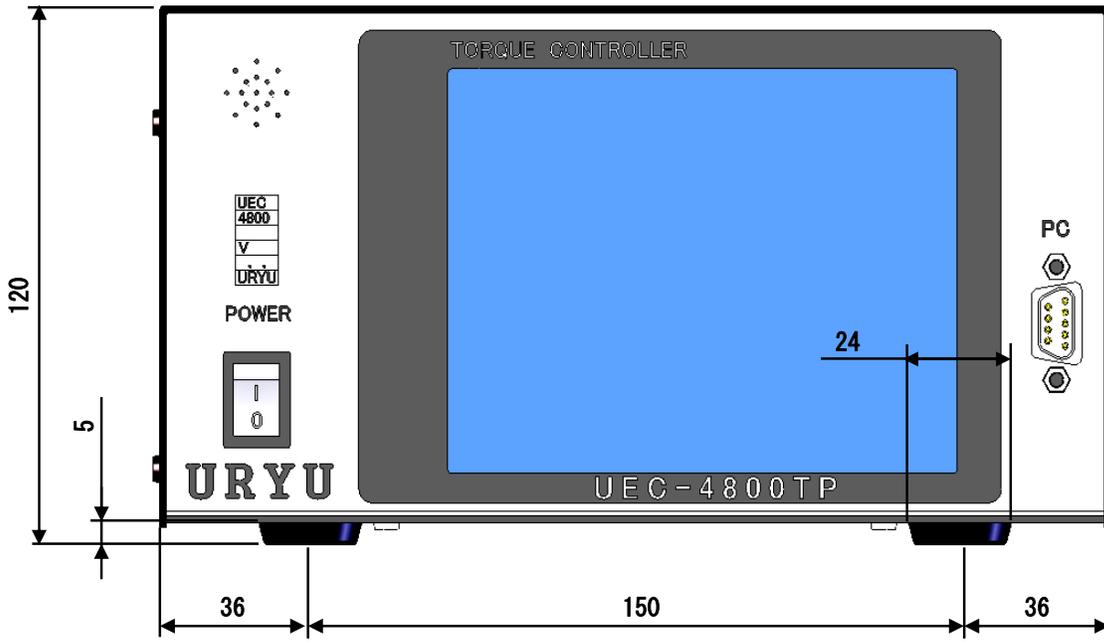
- Contents of this Manual may change without notice.

2. Outline

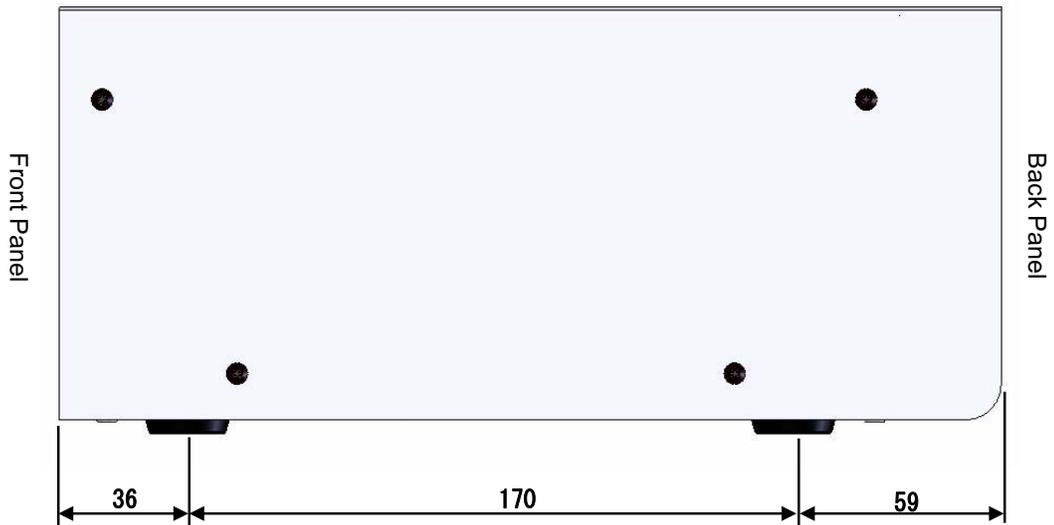
2.1. Configuration



2.2. Dimensions

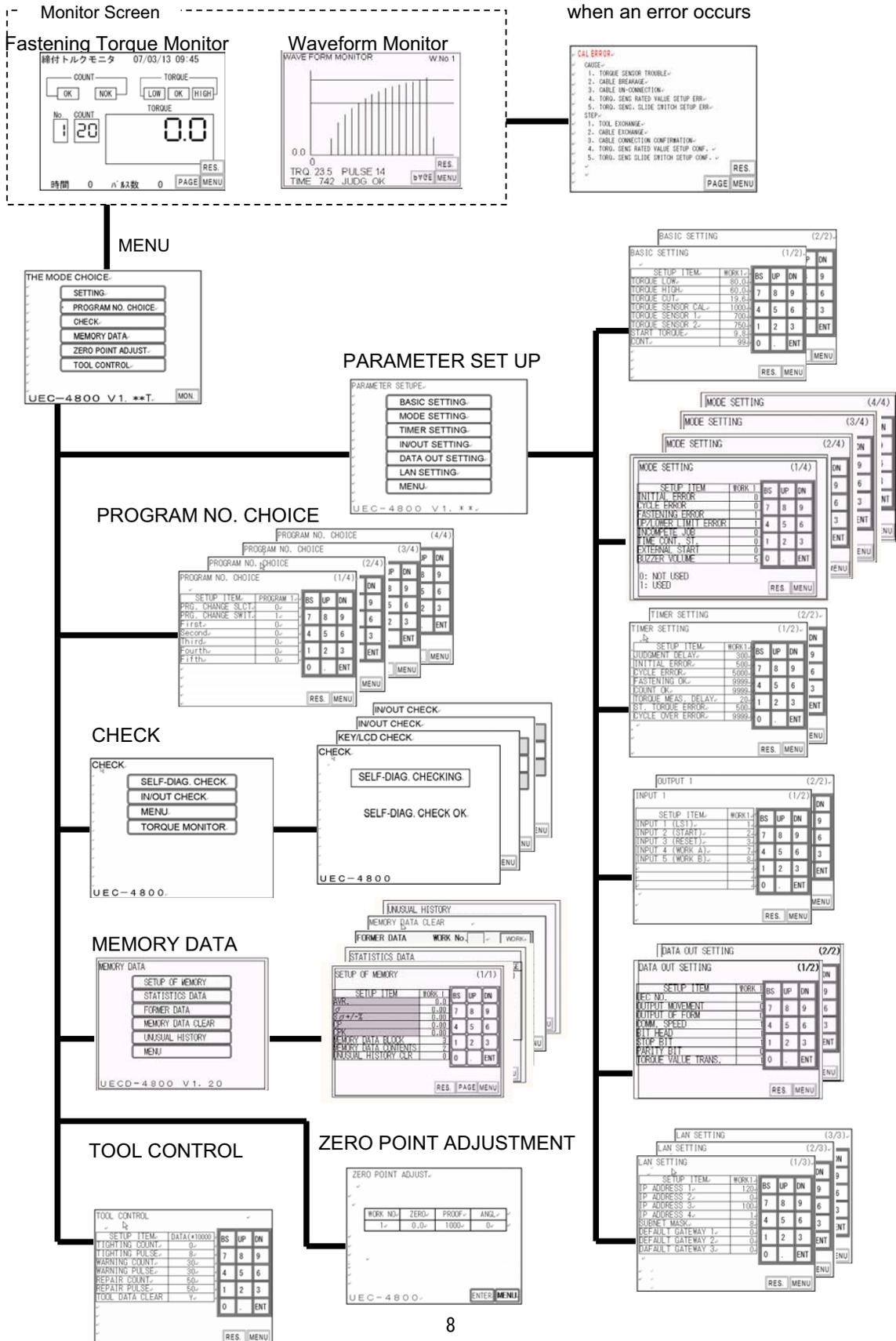


Front Panel



Side Panel

2.3. Block Diagram



2. 4. Features

1. Self-diagnosis Function: When UEC is switched on, it performs self-diagnosis by checking ROM → RAM → A/D → D/A → ZERO / CAL in sequence for 10 seconds.
2. You have options of 5 fastening systems. 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 change over 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

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

Item	Conditions
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 ² or less (10 – 60 Hz)
Altitude	Maximum 1,000 m above sea level
Over voltage Category	Category III * ¹
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.

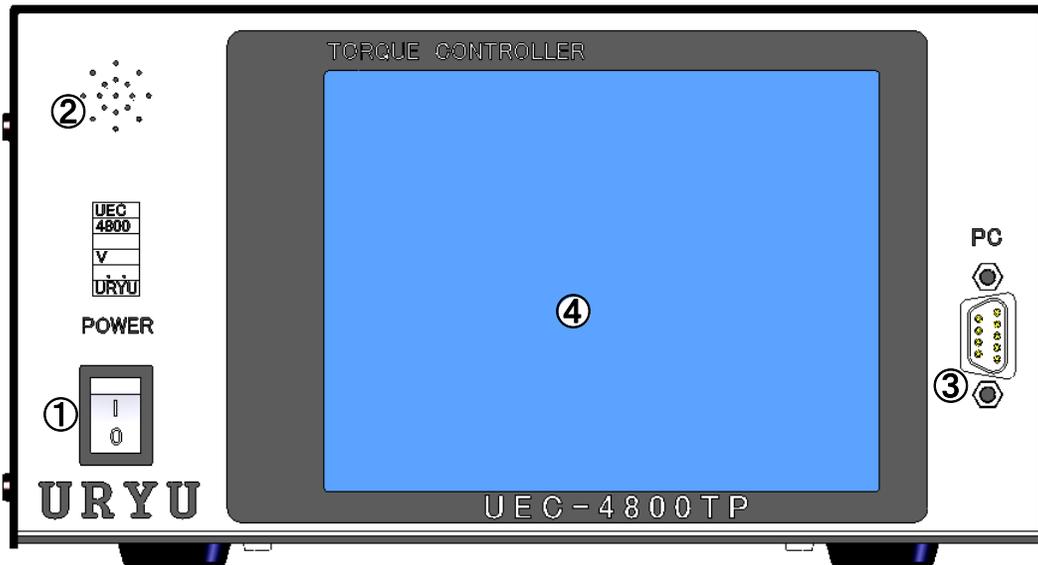
Note: IEC International Electric Standard Committee

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	Touch Panel type: 3.6 kgs LCD type: 3.4 kgs	
Dimensions	265 (D) x 222 (W) x 120 (H)	
Main Features	Torque Control / Monitor Fastener Number Count	
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)	<u>LCD (20 letters x 4 liners)</u> Work number, Bolt Count number, Tightening Time, and Pulse Blow Number displayed <u>1-digit Digital Display (DPM)</u> Work number displayed <u>4-digit Digital Display (DPM)</u> Torque Reading displayed
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 (3 meter long)	
	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	

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

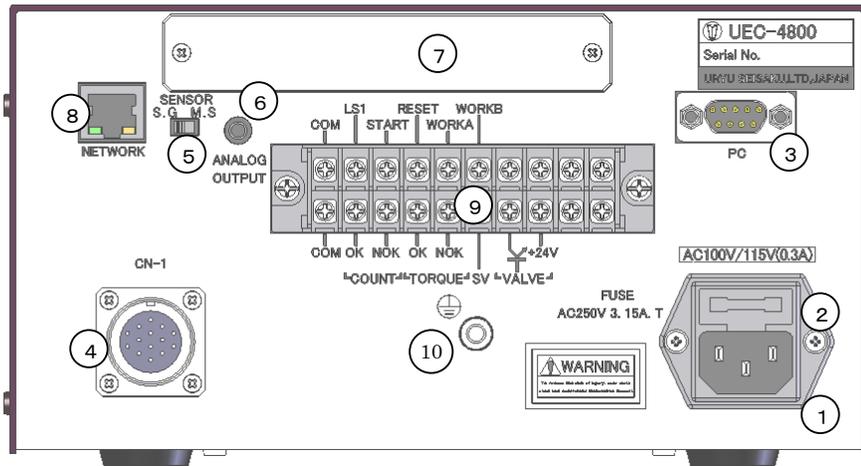
Use the straight cable.

④ Touch panel

Display and input the fastening data such as the torque, 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

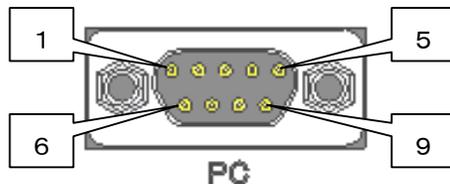
Connect the power cord. Make sure to ground the grounding wire of the power receptacle.

② Fuse holder

Protections fuse of UEC (3.15A)

③ PC connector (D-sub 9-pin female)

RS232C serial port for the data output to be used for serial printer, PLC, PC, and barcode reader



Pin Purposes	
Pin #	Purposes
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 Sensor cable connector CN-1

Connect sensor cable from a tool

⑤ Sensor select switch

Select switch of either MS (URYU original Magnetostrictive type sensor) or SG (strain gauge type sensor). Set this switch to [MS] when you use MC wrenches.

⑥ Analog output terminal

Terminal for the torque waveform output. Please refer to [16. Torque Waveform Measurement](#) and [17. ANALOG output terminal](#) for details.

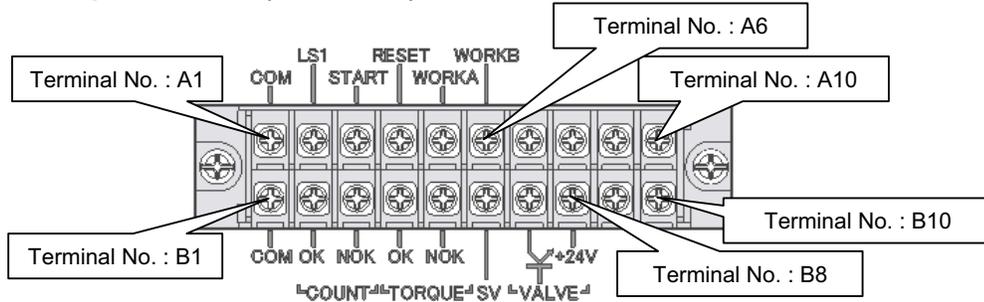
⑦ Space for Optional Board

Space for optional board

⑧ Network connector

Connector for Ethernet to connect to the database

⑨ Input and Output terminals (free format)



Terminal No.	Signal allocations	Terminal No.	Signal allocations	
A1	COM: Common terminal for the input terminals (-)	B1	COM: Common terminal for output terminals	
A2	LS 1: Input the line control signal	B2	COUNT ON: Output COUNT OK signal until timer comes up	
A3	START: External start	B3	COUNT NOK: Output COUNT NOK signal until NOK is cleared	
A4	RESET: Use to clear NOK	B4	TORQUE OK: Output TORQUE OK signal until timer comes up	
A5	WORK A: Input for the work No. change	B5	TORQUE NOK: Output TORQUE NOK signal until NOK is cleared	
A6	WORK B: Input for the work No. change	B6	SV: Output for change of slow speed or full speed. Output SV signal when the measured torque reaches the start torque.	
A7	Not used	B7	VALVE: Valve Output (0V)	
A8		B8	VALVE COM: +24	
A9		Not used	B9	Not used
A10			B10	

Allocation of terminal board is free format. You can change the signal allocations of A2 – A6 and B2 – B6 by IN/OUT SETTING. Inputs A7 – A10 and outputs B9 & B10 are not used.

Note:

- Contact input is necessary for the input to the input terminals A1 and A2 – A6.
- Output terminals of B1 and B2 – B6 are the no-voltage output. Wiring should be made at DC24V or less.
- Use Y-shape crimp contact or round-shape contact for the wiring.

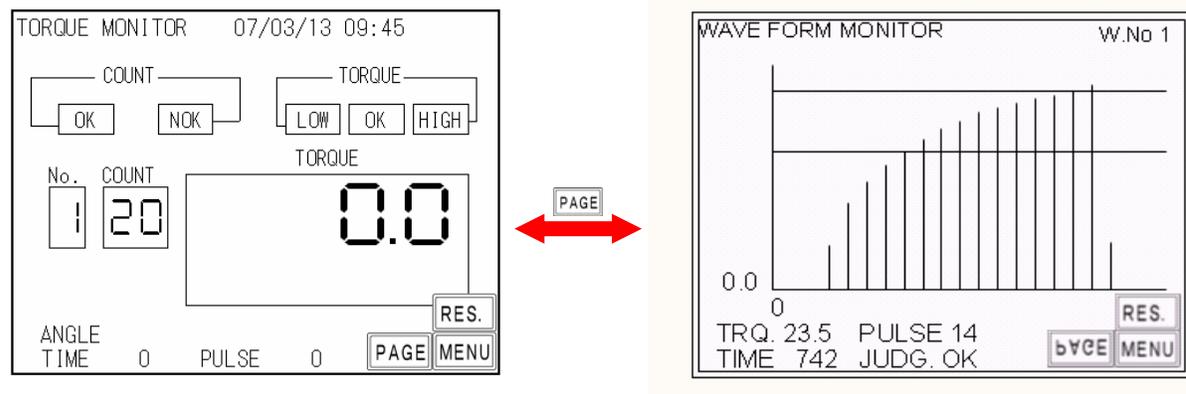
⑩ Grounding terminal

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.

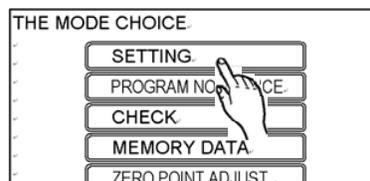
- (1) By PC (Please refer to the instruction manual of UEC-4800 setup software for details.)
 - 1) Connect the communication cable, straight cable, to [PC] connector in the front panel of UEC, and connect to PC through RS232C or Ethernet of NETWORK connector in the rear panel.
 - 2) Change the setting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

- (2) From the touch panel screen

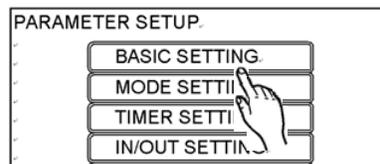
- 1) Touch **MENU** in either the TORQUE MONITOR screen or the WAVE FORM MONITOR screen to move to the THE MODE CHOICE screen.



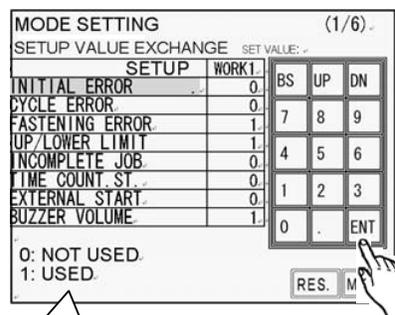
- 2) Touch **SETTING** in the THE MODE CHOICE screen to move to the PARAMETER SETUP screen.



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

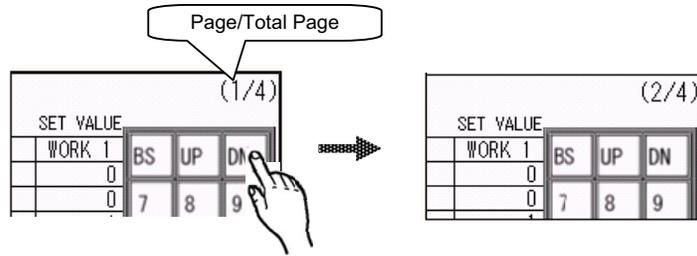


- 4) Numeric keypad comes up in the MODE SETTING screen. Touch **ENT** for over 3 seconds to enter the writing mode. Message [SETUP VALUE EXCHANGE] appears at the top of the screen while in the writing mode, and the contents of the setting value appears at the bottom.

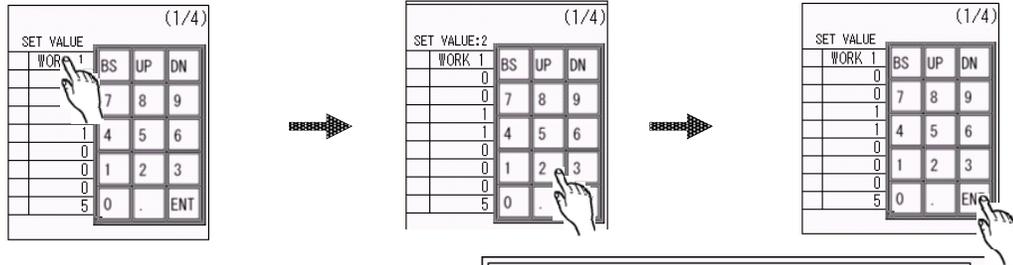


Setting range and condition appears.

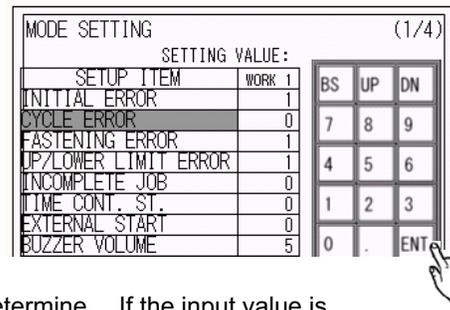
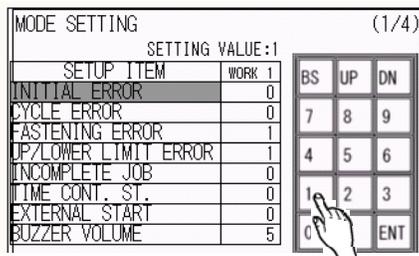
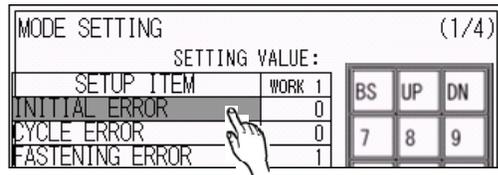
- 5) Touch **DN** to move to the next page and touch **UP** to move to the previous page.



- 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.

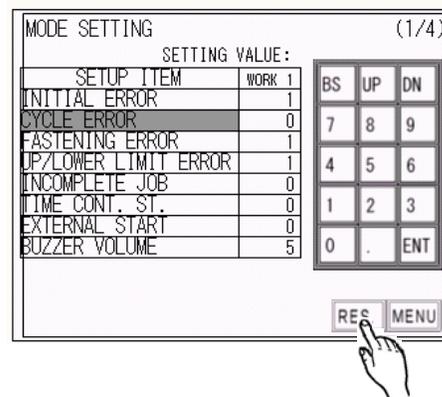


- 7) Touch the setup item that you want to change the parameters.



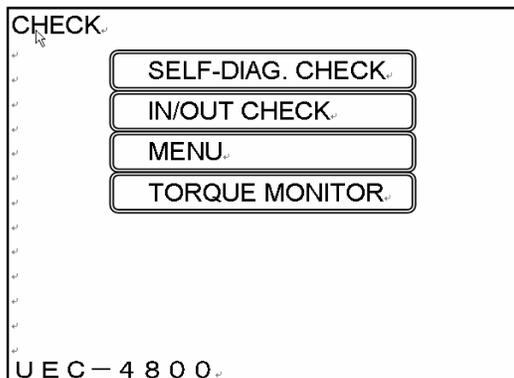
- 8) Input the numeric number and touch **ENT** to determine. If the input value is settable one, it is written. If the input value is out of the setting range or the interlocking value error such as the torque lower limit value < torque cut value happens, you need to input the settable value again.

- 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.



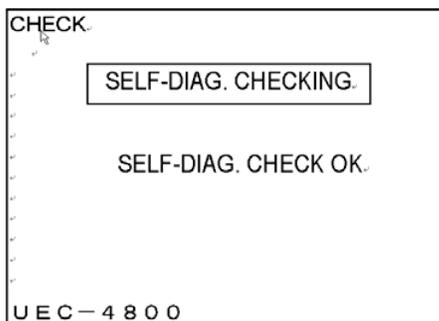
6. Check

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

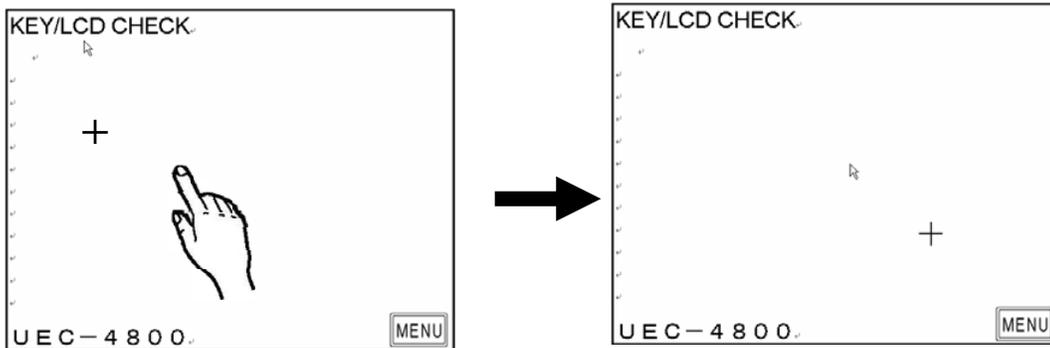
It checks if the torque sensor wiring and sensor specifications are appropriate to the sensor setting value.

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.

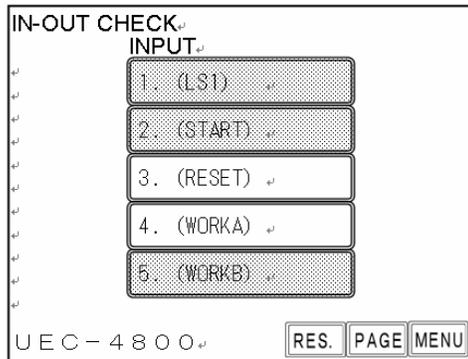


Press to finish the key/LCD check, and move to the CHECK screen.

6. 2. Input and Output check (wiring diagnosis of the terminals and the tool)

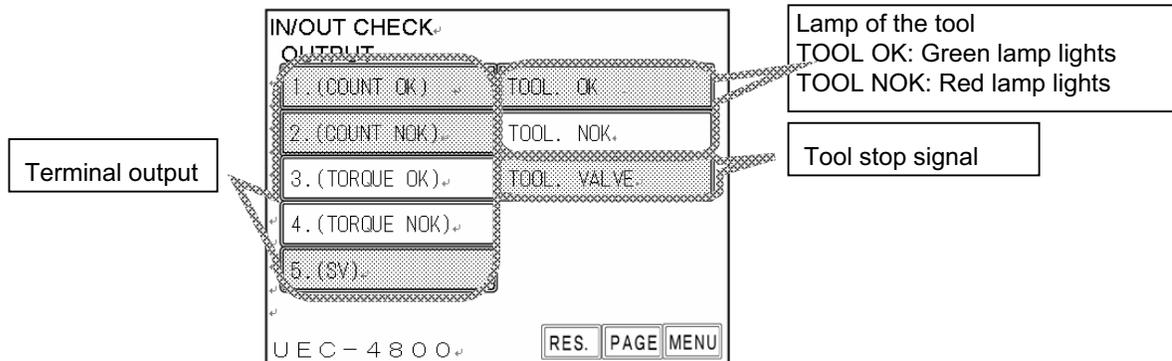
By monitoring the input condition to the terminal block and making the compulsory signal output to either the terminal block or the tool, UEC checks the incoming wirings of the terminals of UEC, the tool and the sensor cable connected.

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 POINT ADJUST.

WORK NO.	ZERO	PROOF
1	0	1000

U E C D - 4 8 0 0 ENTER MENU

[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 to have UEC correct the zero point deviation. A message 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.

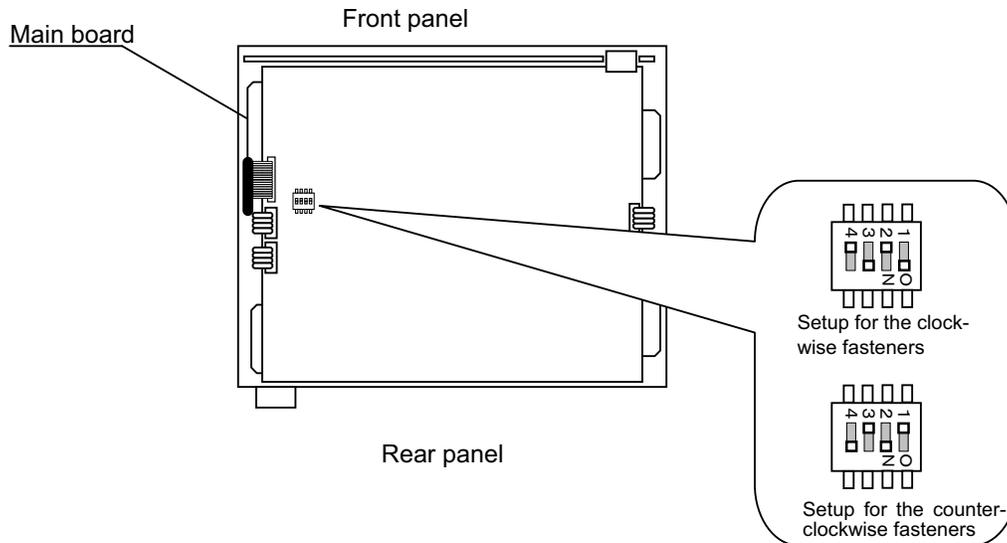
② If 1 is set to WORK SIG. SEL.

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. Change over 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

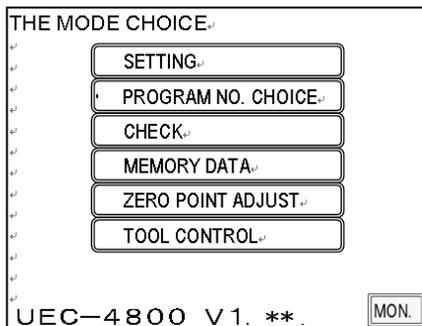
【LAN SETTING】

Setting for the Ethernet related items like IP address etc

【PROGRAM NO. CHOICE SETTING】

Setting for the Program Number Choice parameters

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

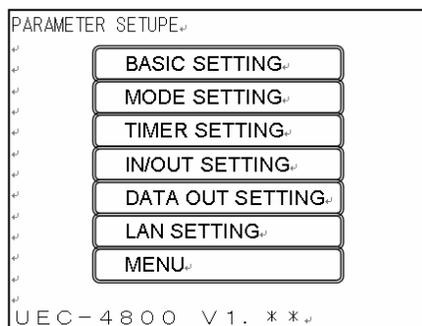


Touch **SETTING.**, and the THE MODE CHOICE screen comes up.

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 } < Torque CUT value < Torque upper limit value
Start torque 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 [Ω])

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;

- Start point of the judgment delay timer
- Start point of the initial error detection timer
- Start point of the cycle error detection timer
- Start point of the torque measurement start delay timer
- 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 (1/4)

MODE SETTING (1/4)	
SETUP ITEM	WORK 1
INITIAL ERROR	0
CYCLE ERROR	0
FASTENING ERROR	1
UP/LOWER LIMIT ERROR	1
INCOMPLETE JOB	0
TIME CONT. ST.	0
EXTERNAL START	0
BUZZER VOLUME	5

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

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

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 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 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.

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

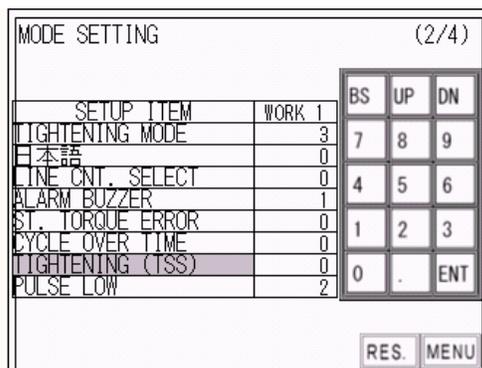
Default: 5

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 (2/4)



Control method (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】

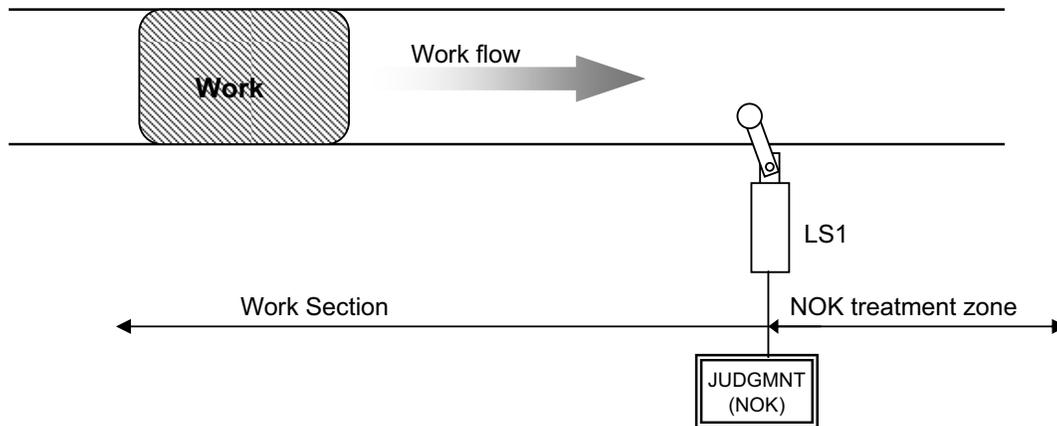
- Determine the indication language for touch panel.
- When 0 is set, setup item name becomes [ENGLISH], and when 1 is set, setup item name becomes [日本語] (Japanese).

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

Default: 0

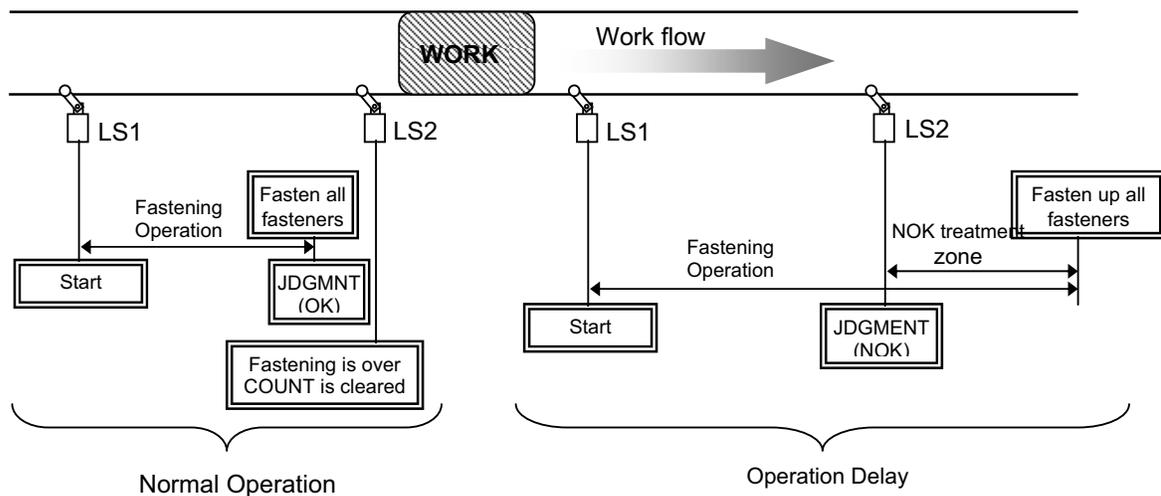
Setting: 0

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.



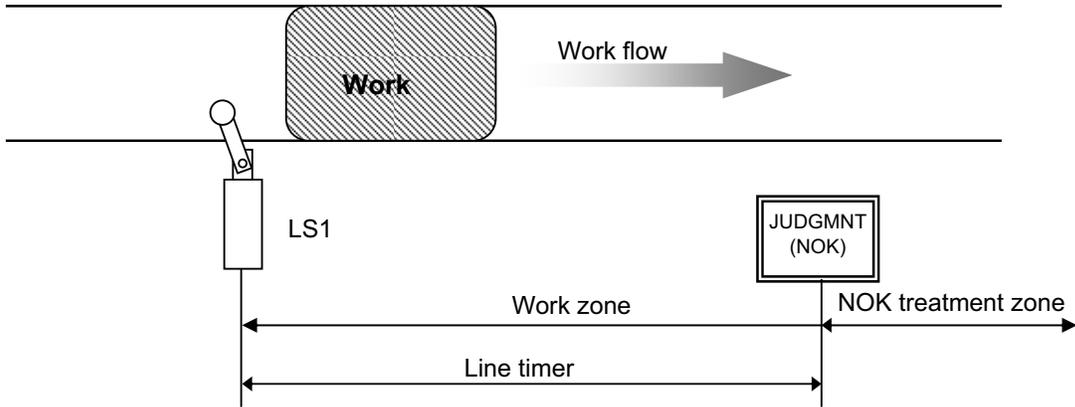
Setting: 1

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

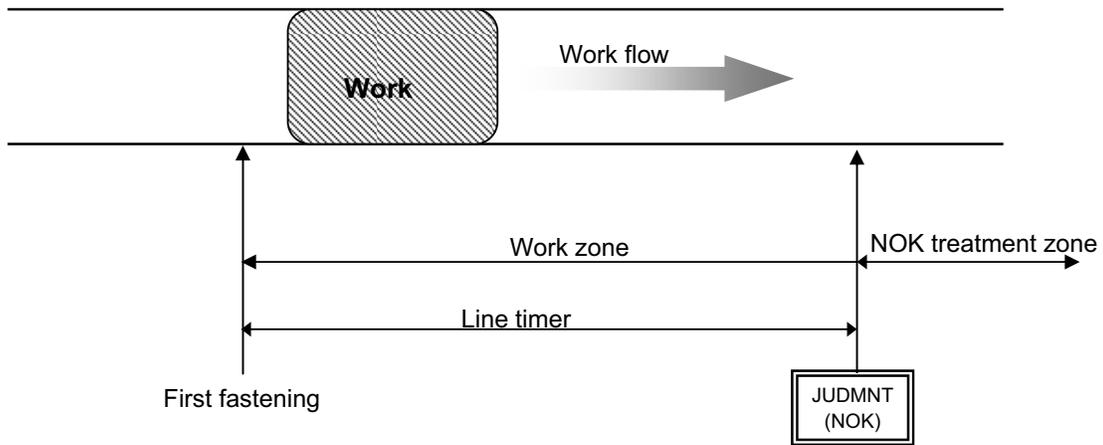
Switch on the limit switch, and the operation starts and UEC provides the judgment when the timer comes up. Operation starts by switching on LS1 terminal, and the line control timer starts functioning. UEC provides COUNT NOK if the line control timer comes up before the preset number of fasteners is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

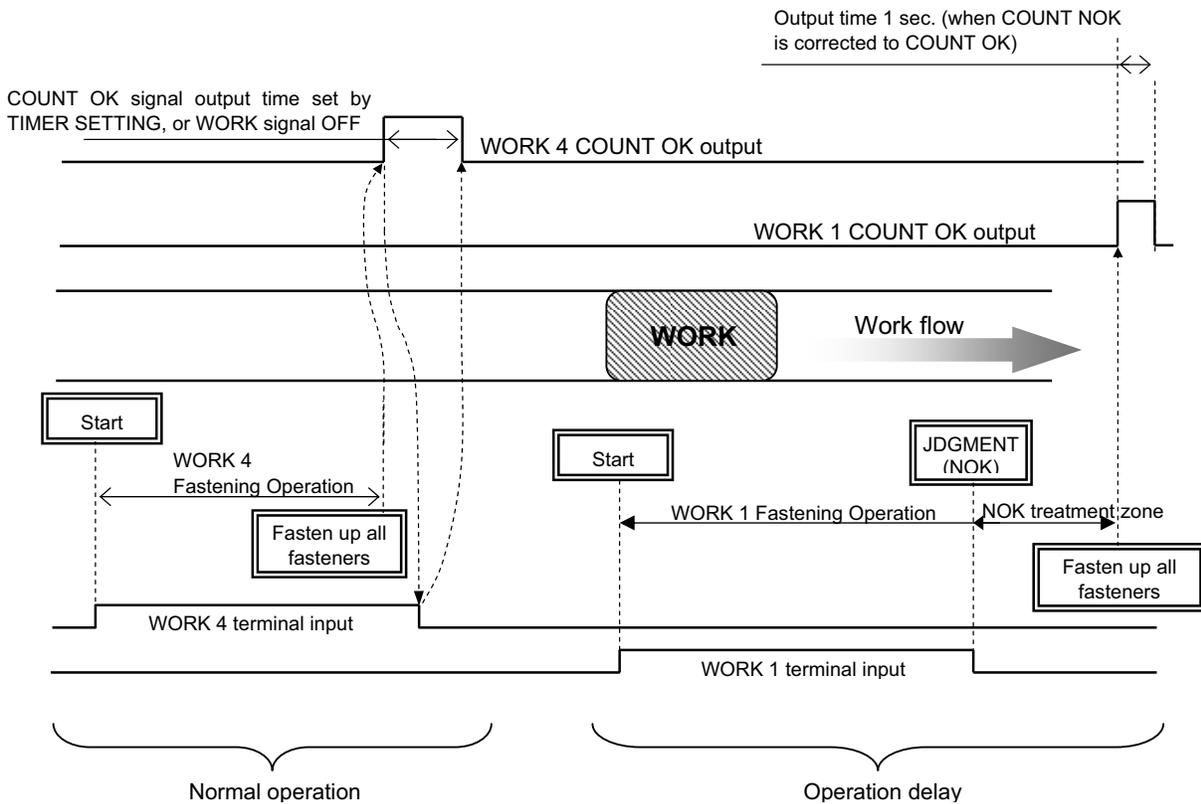
When the preset fasteners are fastened up, COUNT OK signal terminal is switched on corresponding to the selected work number. [WORK 2 COUNT OK] output terminal is switched on when UEC provides COUNT OK of work No. 2.

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.

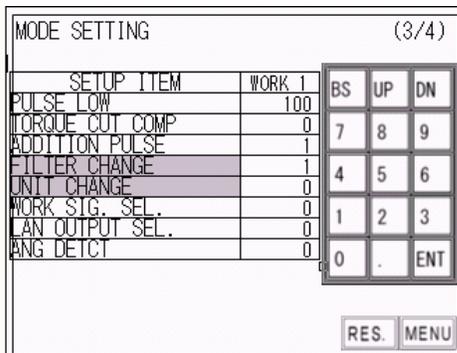
【How to reset】

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 (3/4)



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.

Spare for Angle detect

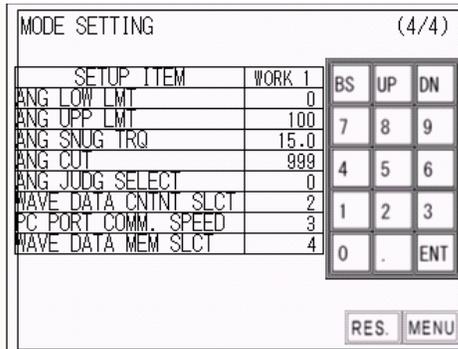
Default: 0

Setting: 0, 1, 2, 3 or 4

【Function】

Not used now

Fourth screen (4/4)



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

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).
- 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

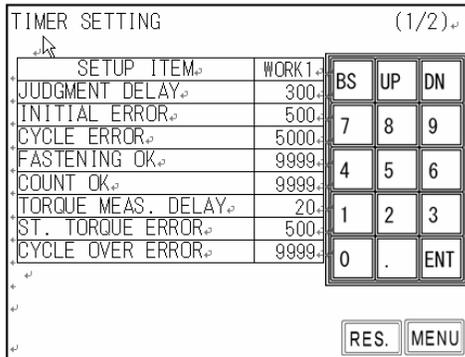
Setting: 4 Memorize the wave data, but not notice with neither the display message nor the buzzer sound.

【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.

10. 3. TIMER Setting

First screen (1/2)



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 (2/2)

TIMER SETTING (2/2)	
SETUP ITEM	WORK 1
VALVE RETURN	300
REVERSE ROTATE	300
PIN ADJUSTMENT	0
LINE CONTROL	100
YEAR	7
MONTH, DAY	407
HOUR, MIN	1534

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

RES. MENU

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.

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.

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.

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 5.

Default and name of terminal

Setup item	Default (function)	Name of terminal
INPUT 1 (* * * * *)	1 (LS1)	LS1
INPUT 2 (* * * * *)	2 (START)	START
INPUT 3 (* * * * *)	3 (RESET)	RESET
INPUT 4 (* * * * *)	7 (WORK A)	WORKA
INPUT 5 (* * * * *)	8 (WORK B)	WORKB

Setup item

Entry	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 (use for nutrunners)
3	RESET	Reset the number of unfastened fasteners. (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 fasters.
6	QL	Signal for QL wrench. Count down the fasteners.
7	WORK A	Signal for WORK signal select. Use when 0 is set to WORK SIG. SEL.
8	WORK B	
9	WORK C	
10	WORK 1	Signal for WORK signal select (program No.) Use when 1 is set to WORK SIG. SEL.
11	WORK 2	
12	WORK 3	
13	WORK 4	
14	WORK 5	
15	CUT	Stop a tool externally

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 5.

SETUP ITEM	WORK NO.
OUTPUT 1 (COUNT OK)	1
OUTPUT 2 (COUNT NOK)	2
OUTPUT 3 (TORQUE OK)	3
OUTPUT 4 (TORQUE NOK)	4
OUTPUT 5 (SV)	5

Default and name of terminal

Setup item	Default (function)	Name of terminal
OUTPUT 1 (* * * * *)	1 (COUNT OK)	COUNT OK
OUTPUT 2 (* * * * *)	2 (COUNT NOK)	COUNT NOK
OUTPUT 3 (* * * * *)	3 (TORQUE OK)	TORQUE OK
OUTPUT 4 (* * * * *)	4 (TORQUE NOK)	TORQUE NOK
OUTPUT 5 (* * * * *)	5 (SV)	SV

Setup item

Entry	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 reset.
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 reset.
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.
7	TORQUE HIGH NOK	Provide the signal output when the torque high NOK judgment.
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 non-operative status while the setting is overwritten.
10	CAUTION	Caution signal Provide this signal if the cumulative fastener number or pulse number reaches the repair fastener number or pulse 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	

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 (1/2)

DATA OUT SETTING		(1/2)		
SETUP ITEM	WORK	BS	UP	DN
UEC NO.	1			
OUTPUT MOVEMENT	0	7	8	9
OUTPUT OF FORM	0			
COMM. SPEED	1	4	5	6
BIT HEAD	1			
STOP BIT	1	1	2	3
PARITY BIT	0			
TORQUE VALUE TRANS.	1	0	.	ENT

RES. MENU

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 (2/2)

DATA OUT SETTING		(2/2)		
SETUP ITEM	WORK	BS	UP	DN
PULSE NUMB.	1	7	8	9
FASTENED TIME	1	4	5	6
DECISION	1	1	2	3
WAVE DATA CNTNT SLCT	0	0	.	ENT
WAVE DATA TRNSM SLCT	0			
WAVE DATA FORM	0			
ID DATA SLCT	0			
ID DATA NUMB.	0			

RES. MENU

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
Fastening Error	G	47H
Torque Low NOK	H	48H
Torque High NOK	I	49H
Pulse Low NOK	L	4CH
Pulse High NOK	M	4DH
PASS	P	50H
QL	Q	51H

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.

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].

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)

The screenshot shows the 'LAN SETTING (1/3)' screen. It features a table with two columns: 'SETUP ITEM' and 'WORK1'. 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'.

SETUP ITEM	WORK1
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

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)

LAN SETTING		(2/3)		
SETUP ITEM	WORK1	BS	UP	DN
DEFAULT GATEWAY 4	0	7	8	9
TCP PORT	2101	4	5	6
CONNECT MODE	1	1	2	3
HOST IP ADDRESS 1	120	0	.	ENT
HOST IP ADDRESS 2	0			
HOST IP ADDRESS 3	100			
HOST IP ADDRESS 4	0			
REMOTE TCP PORT	2101			

RES. 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)

LAN SETTING		(3/3)		
SETUP ITEM	WORK1	BS	UP	DN
LAN RETRY NUM.	3	7	8	9
Comm.-less time	10	4	5	6
MAC ADDRESS	***	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 Change

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), (2/4), (3/4), and (4/4). Each screen contains a table with two columns: 'SETUP ITEM' and 'PROGRAM 1'. To the right of 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 each screen are 'RES.' and 'MENU' buttons.

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

SETUP ITEM	PROGRAM 1
Sixth	0
Seventh	0
Eighth	0
Ninth	0
Tenth	0
Eleventh	0
Twelfth	0

SETUP ITEM	PROGRAM 1
Thirteenth	0
Fourteenth	0
Fifteenth	0
Sixteenth	0
Seventeenth	0
Eighteenth	0
Nineteenth	0

SETUP ITEM	PROGRAM 1
Twentieth	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. At the top, it says 'PROGRAM NO. CHOICE (1/4)'. Below this is a table with two columns: 'SETUP ITEM' and 'PROGRAM 1'. The table contains the following rows:

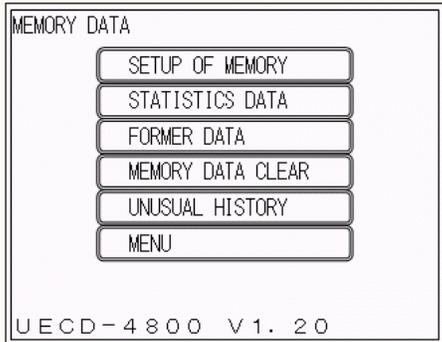
SETUP ITEM	PROGRAM 1
PRG. CHANGE SLCT	0
PRG. CHANGE SWIT	1
First	0
Second	0
Third	0
Fourth	0
Fifth	0

To the right of the table is a keypad with buttons: BS, UP, DN, 7, 8, 9, 4, 5, 6, 1, 2, 3, 0, ., ENT. Below the keypad are two buttons: RES. and MENU. A callout box points to the '0' value in the 'PRG. CHANGE SLCT' row, 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, σ , 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

σ (σ value)

- Displays σ value of memorized data

3 σ (3 σ value)

- Displays 3 σ ±% value of memorized data

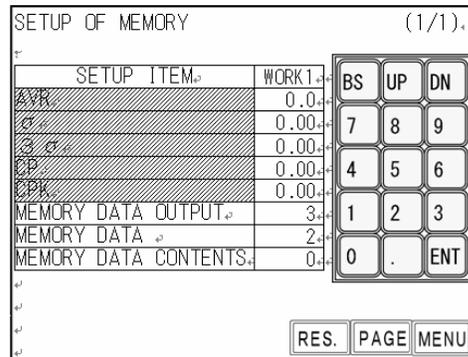
CP (CP value)

- 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, σ value, 3 σ 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.

11.2. Statistics Data

STATISTICS DATA				
W.No	N	AVE.	σ	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	3σ	σ +/-	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 calculates the memorized data and displays [N] (number of data) of fastening data, average value, [σ] (standard deviation), 3σ /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	

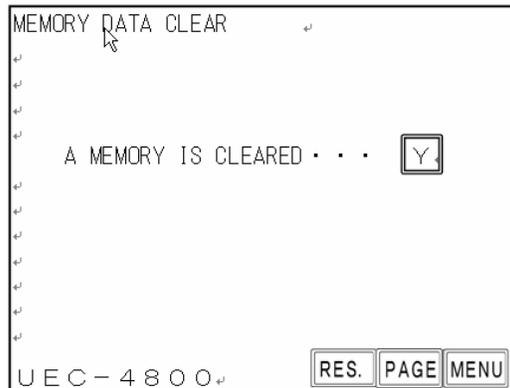
UEC-4800 RES. PAGE MENU

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 → 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 ... , 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].

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

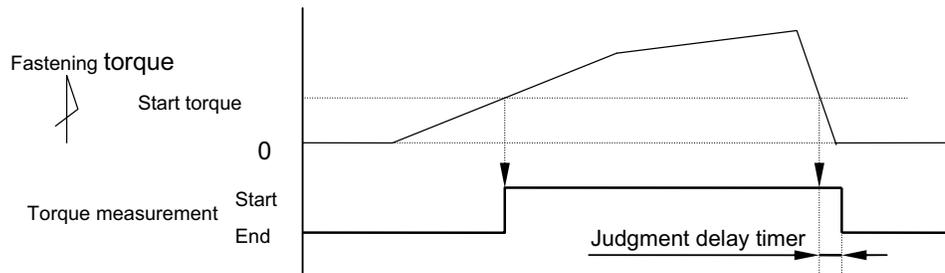
13.1. Fastening control

Fastening control method is selectable from 5 options.

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

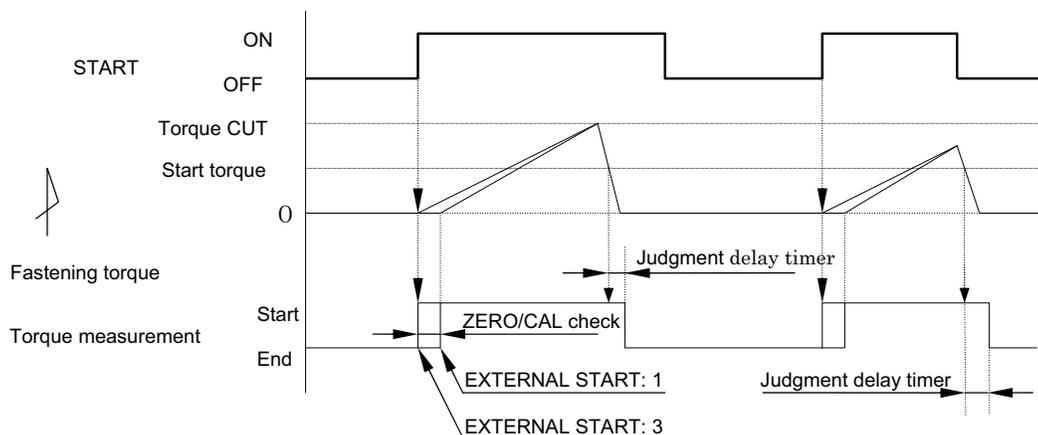
1) Torque monitor Control method: 1

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

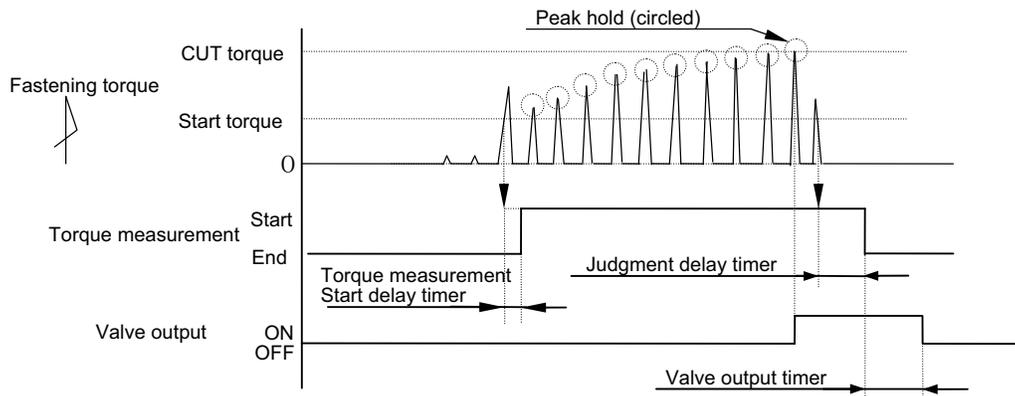
This is mainly used for torque control of nutrunner. UEC switches on VALVE terminal to have nutrunner operated and controls its torque. Switching on external start signal, nutrunner operates and UEC starts torque measurement. Nutrunner continues operating until torque reaches CUT torque. UEC provides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



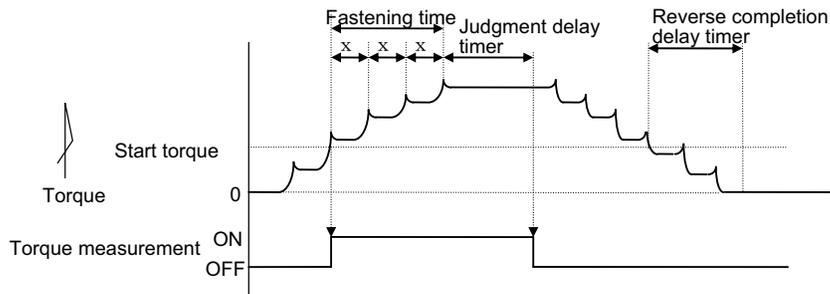
3) MC/EC wrenches Torque control Control method: 3

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.



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.

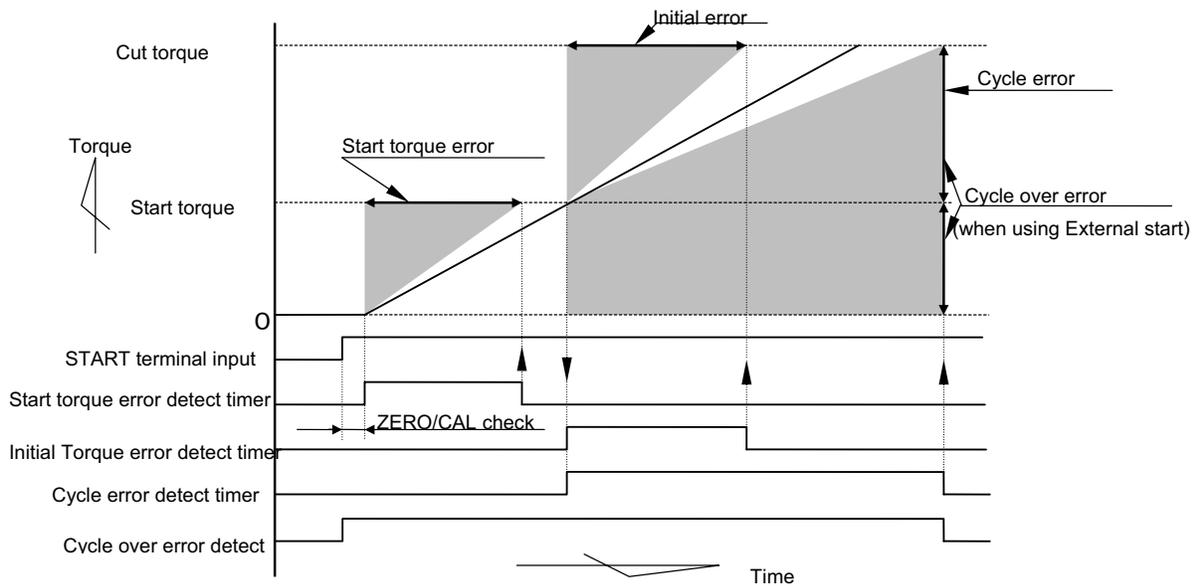
(ANGLE LOW NOK)

- 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

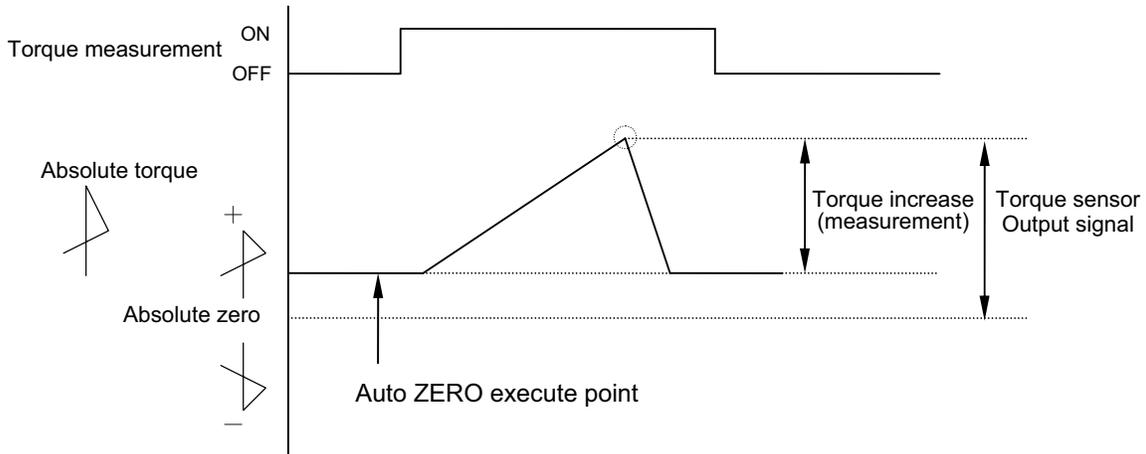
- Displays a message [ZERO ERROR] and [measured torque value].
- Displays a message [CAL ERROR] and [measured torque value].
- Buzzer sounds.
- TORQUE NOK terminal is switched on.

15. Auto ZERO

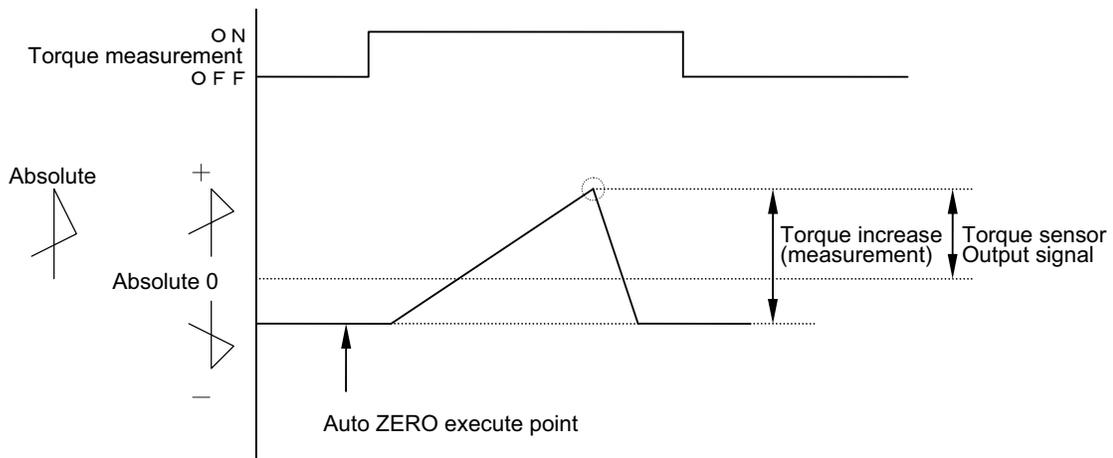
This is a function to do correct torque value measurement by doing automatic correction measured torque variation due to torque sensor's ZERO point deviation. UEC memorizes ZERO point deviation confirmed by ZERO/CAL check, includes the deviation degree in torque sensor signal, and converts the adjusted 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

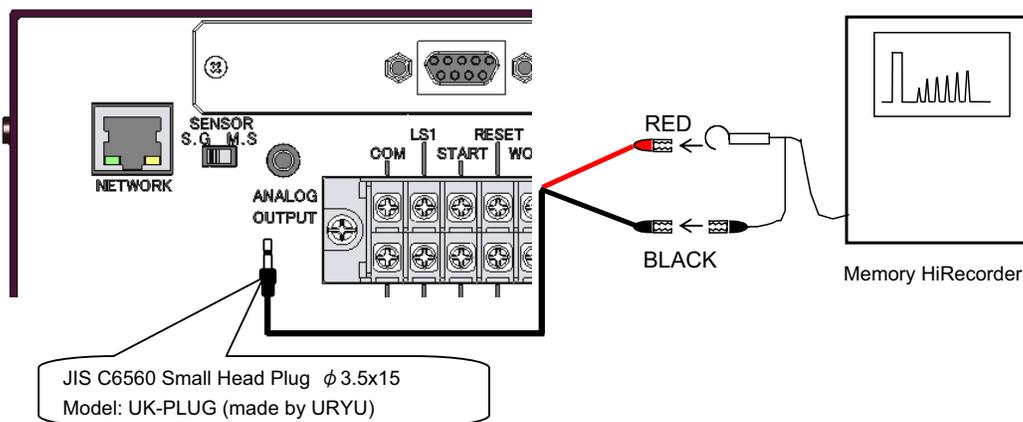
UEC executes AUTO ZERO after ZERO/CAL check.

- 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

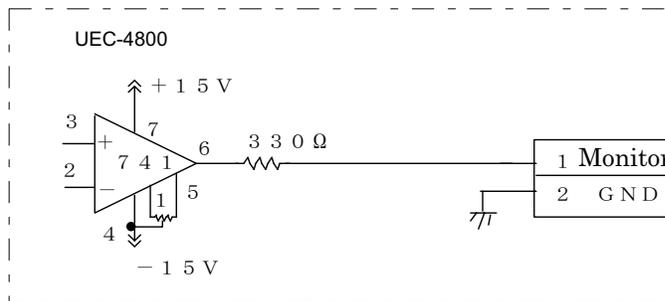
Following is output voltage (x V) when rated load torque is applied to torque sensors. Output voltage changes per sensor specifications.

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

2) How to convert analog output voltage to torque value

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

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

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".

Setting Error

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

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.

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.

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.

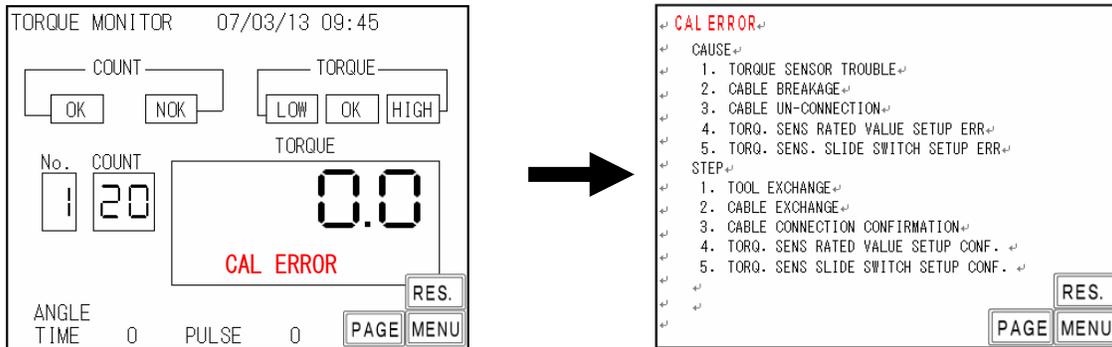
Blown Fuse

- 1) When the AC fuse (Refer to 4.2 Rear panel ②) is blown, you cannot power on UEC.
- 2) When the DC24V fuse on the board inside UEC housing is blown, following phenomenon occurs.
 - Tool does not shut off even if the torque reaches CUT torque.
 - Tool's lamp does not light.

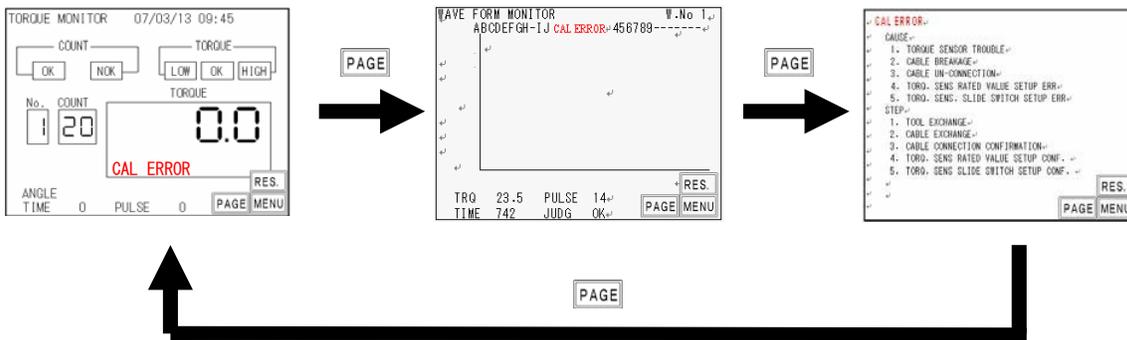
18.2. Error display screen

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. Recommended Action

Error	Recommended Action
ZERO Error	<ul style="list-style-type: none"> • Be sure to set the sensor switch to the tool connected. • Replace the tool and sensor cable assembly. • Get the sensor values to agree with the EC tool connected. • Check that the tool is running while the CAL checking is being made. If so, stop running the tool. 
CAL Error	
Buffer Full Error	<ul style="list-style-type: none"> • Set the setting of "Waveform memory function select to 4.
Setting Error	<ul style="list-style-type: none"> • Check and correct the mode settings parameters to see they are logically correct like the formula (START < CUT). The setting range will be displayed on the bottom of display.
Initial Torque Spike / Cycle Incomplete Error	<ul style="list-style-type: none"> • Check any possible re-hitting and/or cross-threaded fastener. • Check the alignment of workpiece and bolt. • Check the start torque and cut torque values. • Check the timers for initial torque spike / cycle incomplete error. *1 • Check the pulse low / high limits. *1 • Check the angle low / high limits. *1
Pulse Low / High Error	
Angle Low / High Error	
Fastening Error	<ul style="list-style-type: none"> • Check the tool performance / air pressure and volume applied to tool. • Check that the judgment delay timer is long enough. • Be sure not to release the trigger before the tool reaches the CUT level.
Start Torque Error	<ul style="list-style-type: none"> • Check the alignment of workpiece and bolt. • Check the tool performance / air pressure and volume applied to tool. • Check that the start torque error detect timer is correctly set.
Cycle Over Error	<ul style="list-style-type: none"> • Check the tool performance / air pressure and volume applied to tool. • Check that the cycle over error detect timer is correctly set.
Warning Count / Pulse Number Error	<ul style="list-style-type: none"> • Recondition the tool like oil change and set the count / pulse number for the next maintenance due time.
Repair Count / Pulse Number Error	<ul style="list-style-type: none"> • Repair or replace the tool and clear the repair count / pulse number.
Warning Memory Error	<ul style="list-style-type: none"> • Download and store the data in the UEC-4800 memory. Then, clear the data stored in it. • If this function is not needed, change the settings so that you can cancel it.
ROM, RAM, and D/A Error	<ul style="list-style-type: none"> • Replace the UEC-4800.
A/D Error	<ul style="list-style-type: none"> • Replace the tool and UEC-4800.
SUM Check Error	<ul style="list-style-type: none"> • If it works correctly after it is powered on again or reset by the reset  key, the UEC-4800 may be affected by the noise. Note that all the existing settings are cleared after resetting it by the reset  key. Make the settings into it again.
Blown DC24V Fuse on the PC board	<ul style="list-style-type: none"> • Check the wiring and replace the DC24V fuse (mode number HM10(1A) made by Daito Communication Apparatus Co. Ltd. and Uryu part number 909-814-0). When you replace the fuse, make sure to turn off and unplug the UEC-4800.

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

19. Networking

The controller has several networking options available including Ethernet and hardwired field bus. All parameters pertaining to networking are configured in the web interface via its Ethernet.

19.1 Ethernet

Each Ethernet connection can be configured to communicate with most popular plant equipment including data collection servers, laptop software, and PLCs.

Ethernet ports by default are set to an IP address of 10.10.30.150 and need to be changed before being put into service.

To gain initial access to the controller:

- Configure a computer's Ethernet port to an IP address of 10.10.30.xxx. Do not set it to 10.10.30.150 (that address is assigned to the controller). 10.10.30.99 works in most cases.
- Connect an Ethernet crossover cable from the computer to the controller.
- Launch the computer's web browser. Type the controller IP address (10.10.30.150) into its address bar.
- Navigate to the communications page.
- Set the desired IP Address, IP Mask, and Gateway.
- Cycle power on the controller and connect it to the network.

19.1.1 Web Interface

The controller's web interface is available from any computer on that has access on the local network. To access the web interface launch a browser and type the controller IP address into its address bar.

From the interface you will have access to the controller's status, internal data files, parameters, and time. The pages do not automatically refresh but selecting refresh from the browser will reload the latest information from the controller. Data files will be standard ASCII text in CSV (comma separated variables) format that can be opened in Microsoft Excel and other programs.

On pages with parameters there will be a submit button to apply any changes. All parameters on the page are submitted when the button is hit. When submitted each parameter will get range checked against allowable limits. If a parameter is outside of its range it will be limited to its minimum or maximum value. When the page is refreshed (F5) the edit fields will contain each parameter's final value.

19.1.2 Security

The web interface has an option to add a user password for security. A password is never required to view the web pages on the controller. It is only required to make a change to a parameter. If the controller password is not set (a zero length string) the user will not be prompted to enter a password for any changes. The controller is shipped from the factory without a password.

The security feature utilizes the authentication built into the browser. When a change to a parameter is made the controller checks the programmed password. If a password is required the controller will request it from the browser and in turn the browser will prompt the user. The browser will request a

“User name” and “password”. Since the controller only contains one password (one user) the “User name” can be left blank. Once the password is entered it is returned to the controller where it will be checked and if it is correct the parameters are saved. If it is incorrect the controller will request it from the browser again.

After a password has been entered most browsers will cache it and return on subsequent request without prompting the user. So as long as the browser is not closed it would not be necessary to enter the password on every change to the parameters.

To remove a password from the controller it just needs to be set to a zero length string and saved via the submit button. Of course this action requires the existing password. If the password is lost or unknown contact your AIMCO representative for a method of retrieval.

19.1.3 ToolsNet

The controller has the ability to send rundown data to a ToolsNet server. Once the controller is on the local network there are five parameters that must be set to store data correctly on the server.

1. **Server IP Address:** This is the IP address of the ToolsNet server. If the server is on another subnet you will also have to verify the gateway in the Ethernet settings.
2. **Server Port Number:** This is the TCP port the server is listening on for a new connection. The default for this is 6547 but it should be verified with the local ToolsNet server administrator.
3. **Station Id:** This is used to identify the data in the ToolsNet database. Work with your local ToolsNet server administrator to set this correctly.
4. **System Number:** This is used to identify the data in the ToolsNet database. Work with your local ToolsNet server administrator to set this correctly.
5. **Station Number:** This is used to identify the data in the ToolsNet database. Work with your local ToolsNet server administrator to set this correctly.

19.1.4 Open Protocol

The controller has the ability to accept an “Open” protocol connection. This connection is available over Ethernet and/or the standard serial ports. Through this connection you can enable/disable the tool, set the active parameter set, collect rundown data, set the time and much more.

1. **Port Number:** The TCP port number the controller listens on to accept an Open protocol connection via Ethernet. The default port is 4545 but can be changed if required.
2. **Cable Loss Detection:** Only used for a serial Open protocol connection. If set to 1 the controller will close the connection on a time-out. If it is set to 0 the controller will not close the connection. See the latest Open protocol specification for details on time-outs and keep alive messages.
3. **Cell ID:** Optional variable that is passed through the Open protocol connection.
4. **Channel ID:** Optional variable that is passed through the Open protocol connection.

5. **Controller Name:** Optional variable that is passed through the Open protocol connection.

To set up a serial port for Open protocol set the function on the desired COM port to “Open Protocol” and cycle the power on the controller.

The Controller supports the following MIDs. See the latest Open protocol specification for details on each MID.

MID	Description	Note
0001	Communication start	
0003	Communication stop	
0010	Parameter set numbers upload request	
0018	Select Parameter set	
0020	Reset Parameter set batch size	
0042	Disable tool	
0043	Enable tool	
0050	Vehicle Id Number download request	
0060	Last tightening result data subscribe	Rev 1-2 and 999 supported
0063	Last tightening result data unsubscribe	
0070	Alarm subscribe	
0073	Alarm Unsubscribe	
0080	Read time upload request	
0082	Set Time in the Torque Controller	
9999	Keep alive message	

19.1.5 AIMCO Database

The controller has the ability to send rundown data to an AIMCO data collection server. Once the controller is on the local network there are two parameters that must be set to store data correctly on the server.

1. **Server IP Address:** This is the IP address of the AIMCO data collection server. If the server is on another subnet you will also have to verify the gateway in the Ethernet settings.
2. **Server Port Number:** This is the TCP port the server is listening on for a new connection. See your local AIMCO data collection server administrator for the correct port number.

19.1.6 Modbus TCP

The controller will accept a connection from a Modbus TCP master.

19.1.7 Controller Outputs

The Controller's outputs are located at address 0 and contain one status word.

Controller Outputs																
Bits																
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Address 0	Handshake			Job Complete			Healthy	Running	Process number							

Bit	Name	Function
0-7	Process Number	Process number echo. Latched while it is in a job.
8	Running	Indicates the tool is running.
9	Healthy	Indicates the controller has no faults.
10	Not used	
11	Not used	
12	Job Complete	Indicates the job is complete. Will go off when Enable input goes off.
13	Not used	
14	Not used	
15	Handshake	Echo of the Handshake input

19.1.8 Controller Inputs

The Controller inputs are located at address 1024 and 1036. Address 1024 contains one control word and 1036 contains the 20 character VIN.

		Controller Inputs															
		Bits															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Address 1024	Handshake							Abort	Enable	Process number							

Bit	name	Function
0-7	Process Number	Process number input. The enable must be off to change the Process Number. On a change to the Process Number the batch is also reset.
8	Enable	On the rising edge of Enable the tool will be enabled.
9	Abort	If Abort is on the tool will be disabled.
10	Not used	
11	Not used	
12	Not used	
13	Not used	
14	Not used	
15	Handshake	Will be echoed to the Handshake output

19.2 Profibus/DeviceNET

The controller can have an optional Profibus or DeviceNET interface. These interfaces are accomplished through the use of a serial bridge. The serial bridge is provided by *MKS Instruments, Inc*. See the latest MKS documentation for details on sending and receiving messages.

19.2.1 Logical I/O

The controller has five status bytes of outputs.

		Controller Outputs							
		Bit							
		7	6	5	4	3	2	1	0
Byte	0							Tool Ready	Tool Enable
	1				Bypass	Batch Complete	Msg Received	Status NOK	Status OK
	2								
	3		Buzz Slow	Buzz Fast	Red	Yellow	Green	Blue	White
	4			Pause	Red Flashing	Yellow Flashing	Green Flashing	Blue Flashing	White Flashing

Byte	Bit	Name	Function
0	0	Tool Enable	The enabled state of the tool.
	1	Tool Ready	On if the tool is ready to run. Will be off if tool is disabled or there is a fault on the controller.
	2-7	Not used	
1	0	Status OK	Rundown status on for an accept. This bit is timed and will be on for ½ second.
	1	Status NOK	Rundown status on for a reject. This bit is timed and will be on for ½ second.
	2	Msg Received	On to indicate a message has been received from the MKS module and the inputs have changed. This bit is timed and will be on for ½ second.
	3	Batch Complete	Indicates the batch is complete. Will go off when batch is reset or when the tool enable is turned off.
	4	Bypass	State of the bypass input.
	5-7	Not used	
2	0-7	Not used	
3	0-6	Light Tower Status	Bitwise status of the Light Tower lights.
	7	Not used	
4	0-5	Light Tower Status	Bitwise status of the Light Tower lights.
	6-7	Not used	

Controller Inputs								
Bit								
7 6 5 4 3 2 1 0								
Byte	0					PSET		
	1	PLC Enable	White Flash	Pause			Tool Enable	
	2-11	Sequence Number						
	12-31	Serial Number						

Byte	Bit	Name	Function
0	0-7	PSET	Set the active parameter set of 1-32. If 0 the active parameter set is left unchanged.
1	0	Tool Enable	If PLEC Enable is 0 this input is ignored. If PLC Enable is 1 this bit can be used to enable or disable the tool.
	1-3	Not used	
	4	Pause	Setting Pause to 1 cause the light stack to strobe. Setting it to 0 put the light stack back into its normal operation.
	5	White Flash	Setting White Flash to 1 cause the light stack to flash the white light. Setting it to 0 put the light stack back into its normal operation.
	6	PLC Enable	Setting PLC Enable to 1 allows the Tool Enable bit. Setting it to 0 disables the Tool Enable function.
	7	Not used	
2-11	0-7	Sequence Number	10 character Sequence Number.
12-31	0-7	Serial Number	20 character Serial Number.

19.3 Data Output Settings

The use of Ethernet or other field busses requires that the data output settings of the UEC-4800 are configured correctly. This can be done from either the UEC-4800 front panel or the setup software.

UEC Data Output Settings		
Field	Value	Meaning
UEC No	01	UEC Identifier Number
Out Movement	0	Output all data through RS232C
Output Form	0	#-CR
Comm Speed	1	9600 bps
Bit	1	8 bit
Stop	0	1 bit
Parity	0	No parity
Torque Val Trans	1	Output
Pulse Numb	1	Output
Fastened Time	1	Output
Decision	1	Output
Wave Data Out	1	Output (only effects front PC port)
Ang Data Transm	1	Output
Wave Data Form	0	Binary Output (only effects front PC port)
ID Data Out	0	Not Output
ID Data Form	00	ID data digit

19.3.1 Data Output Configuration through front panel

- 1) Turn on the UEC-4800 and wait for self-diagnosis check to finish. The screen will change to the measurement screen when complete.
- 2) Press  in the measurement screen to go to the menu screen.
- 3) Use the arrows to select 'Settings' and press .
- 4) Use the arrows to select the work number to set up parameters and press .
- 5) Use the arrows to select 'Data Out' and press .
- 6) Press and hold  for more than 3 seconds to enter writing mode.
- 7) Select the parameter to change and press .
- 8) Use   to increase the value and   to select the digit to change.
- 9) Ensure that the values match the following settings:

DATA OUT	(1/6)
→UEC No.	01
OUT.MOVEMENT	0
OUTPUT OF FORM	0

DATA OUT	(2/6)
→COMM.SPEED	1
BIT	1
STOP	0

DATA OUT	(3/6)
→PARITY	0
TORQ.VAL.TRANS	1
PULSE NUMB.	1

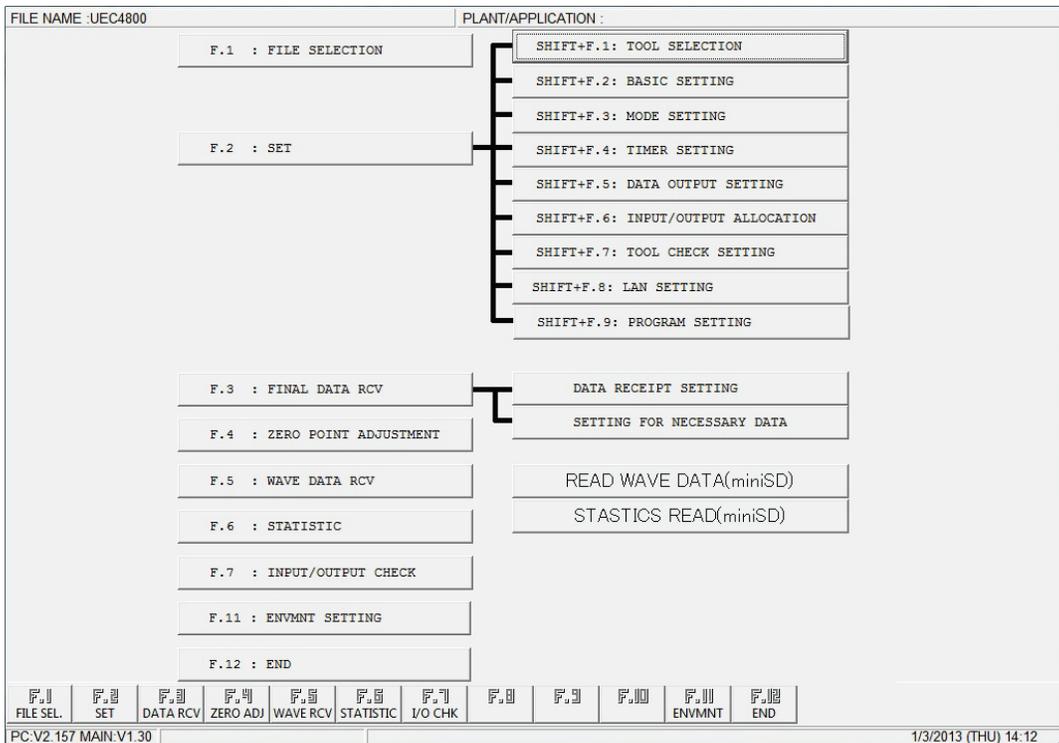
DATA OUT	(4/6)
→FASTENED TIME	1
DECISION	1
WAVE DATA OUT	1

DATA OUT	(5/6)
→ANG. DATA TRANSM	1
WAVE DATA FORM	0
ID DATA OUT	0

DATA OUT	(6/6)
→ID DATA FORM	00

19.3.2 Data Output Configuration from PC

- 1) Turn on the UEC-4800 and wait for self-diagnosis check to finish.
- 2) Connect the front PC port on the UEC-4800 to a PC with the UEC-4800 setup software using a straight serial cable.
- 3) Start the setup software on the pc.
- 4) Go to 'Main Menu' (F12) and then 'File Selection' (F1) and select your configuration file or create a new one.
 - If a settings file is not present or settings need to be downloaded then proceed to the next section '**Downloading/Importing UEC-4800 Settings**'
- 5) Go back to the 'Main Menu' and go to 'Data Output Setting'.



UEC-4800 Setup Software Main Menu

- 6) Check that the settings match the settings below. If not then change the appropriate settings.
- 7) Click 'Send' to send new parameters to the UEC-4800.

FILE NAME :UEC2		PLANT/APPLICATION :	
ID OUT PUT	(MODE 33)	0:NOT SEND	NUMBER OF PULSE (MODE 58) 1:SEND
ID DIGIT	(MODE 68)	0	TIME (MODE 59) 1:SEND
UEC NO.	(MODE 50)	1	JUDGE (MODE 60) 1:SEND
OUTPUT	(MODE 51)	0:OUTPUT ALL	WAVE DATA (MODE 61) 1:SEND
DATA FORMAT	(MODE 52)	0:#-CR	ANGLE (MODE 62) 1:SEND
BAUD RATE	(MODE 53)	1:9600	
BIT LENGTH	(MODE 54)	1:8 BIT	
STOP BIT	(MODE 55)	0:1 BIT	
PARITY BIT	(MODE 56)	0:NONE	
TORQUE	(MODE 57)	1:SEND	

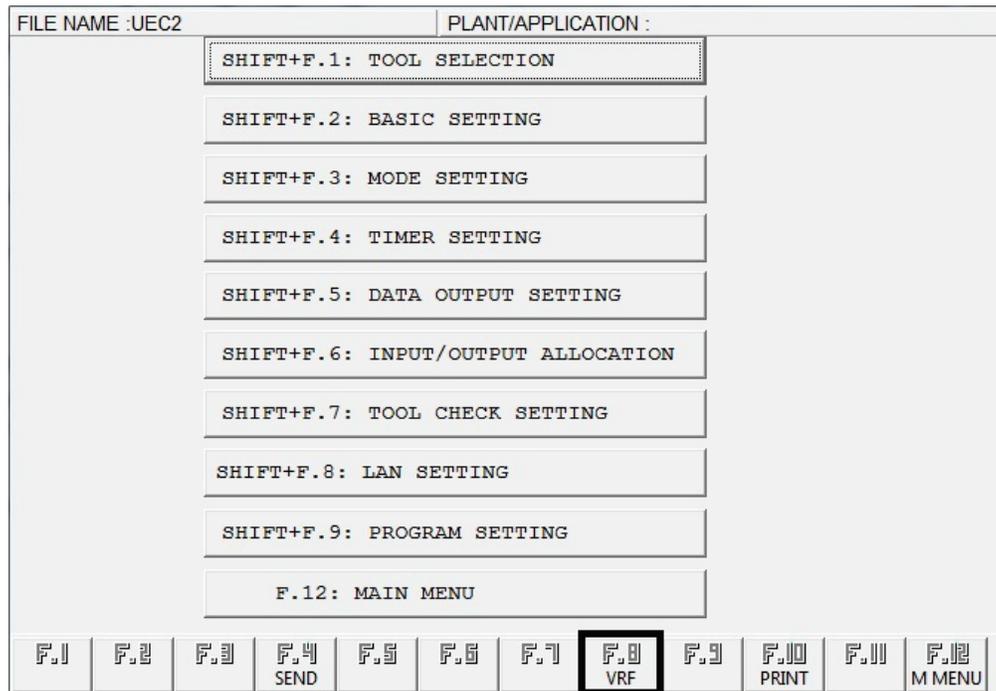
F1 F2 F3 F4 SEND F5 F6 PRINT F7 F8 F9 F10 F11 F12 SET MENU

Data Output Settings Menu

19.3.3 Downloading/Importing UEC-4800 Settings

The settings on the UEC-4800 can be downloaded from the device using the PC setup software. If a tool hasn't been selected under Main Menu → Tool Selection then some of these menu items may be disabled.

- 1) Connect the front PC port on the UEC-4800 to a PC with the UEC-4800 setup software using a straight serial cable.
- 2) Turn on the UEC-4800 and wait for self-diagnosis check to finish.
- 3) Start the setup software on the pc.
- 4) Go to 'Main Menu' (F12) and then 'File Selection' (F1) and select your configuration file or create a new one by clicking 'New' (F1).
- 5) After selecting the file the 'Main Menu' is shown. If menu options are disabled then a tool needs to be selected by clicking 'Tool Selection' and then 'Select' to select the tool. Return to 'Set Menu' (F12).
- 6) In the 'Set Menu' (F2 from Main Menu) choose 'VRF' (F8) at the bottom of the screen.
- 7) A window will appear asking to check the set value. Click 'Yes'.
- 8) The program will now communicate with the UEC-4800 and show the differences between the file and the data on the controller. Click yes to import the settings from the controller and overwrite the settings file on the PC.



Set Menu – Where to download/import UEC-4800 Settings

20. Light Tower Color Definitions

UEC - LIGHT ASSIGNMENT FOR LIGHT TOWER AND KEY BYPASS		
Light Color	Judgment	Assignment
Green	Accept	UEC
Red	High Torque	UEC
Red Flashing	Fault other than High Torque, Pulse Count, and Angle Errors	UEC
Yellow	High Pulse/Angle	UEC
Yellow Flashing	Low Pulse/Angle	UEC
Blue	Bypass	Key Bypass
White	Tool Enabled	UEC
White Flashing	Open	External
Lights Strobe	Open	External

21. Error Proofing

21.1 Barcode Reader

The max length of a barcode is 20 characters if it is longer the leading characters will be lost and the last 20 will be used. Since barcode readers send their characters in burst there is no need to program in a length. The software just waits for the reader to stop sending. Once the barcode is read the results are stored as the VIN.

21.2 VIN Pattern Matching

All new VINs from barcode readers, Profibus, DeviceNET, Ethernet/IP or protocols are checked against for a VIN match against each PSET (starting from #1 and through #8). If a match is found the PSET is changed. In order to qualify as a match the received barcode must be at least as long as the match string. The match string can contain “don’t care” characters (‘.’) as a wild card. In the example below a barcode of “Abc123” selects PSET #1, “abc567” selects PSET #2, “def” selects PSET #4, “Abc” selects PSET #5, and “AB” does nothing.

Pset	Process Number	VIN Match	Machine ID
1	<input type="text" value="1"/>	<input type="text" value="Abc"/>	<input type="text" value="TM01"/>
2	<input type="text" value="2"/>	<input type="text" value="abc"/>	<input type="text" value="TM02"/>
3	<input type="text" value="3"/>	<input type="text" value="DEF"/>	<input type="text" value="TM03"/>
4	<input type="text" value="4"/>	<input type="text" value="def"/>	<input type="text" value="TM04"/>
5	<input type="text" value="5"/>	<input type="text" value="..c"/>	<input type="text" value="TM05"/>
6	<input type="text" value="6"/>	<input type="text"/>	<input type="text" value="TM06"/>
7	<input type="text" value="7"/>	<input type="text"/>	<input type="text" value="TM07"/>

22. Setting the time

UECs with a real-time clock can have the time set through the web, Open Protocol, or sync to a ToolsNet server.

22.1 From the web interface

- Open the web browser from a PC and type the controller IP address into the address bar.
- Navigate to the ‘Time’ page. The current values for the time and date are displayed.
- Replace the values for time and date and click ‘Set time’.

22.2 From the Open protocol interface

- See the Open Protocol section for how to connect to the controller with this interface

22.3 From a ToolsNet server

- The time will automatically sync when connected to a ToolsNet server