

Dec 22, 2019

MDC- Series V2 DC Torque Control System Operation Manual Using Controller's Display



Table of Contents

GENERAL SAFETY RULES.....	3
OPERATION.....	5
OPERATION SCREEN.....	5
PRESETS OR MODEL SELECT	7
PARAMETERS.....	8
PARAMETER DETAILS AND FACTORY SETTING	11
MONITORING.....	25
NETWORK SETTING.....	28
REMOTE.....	28
OTHER SETTING	31
<i>SD Memory card.....</i>	<i>33</i>
BARCODE SETTING.....	34
FIRMWARE UPGRADE	35
<i>SD Memory card update.....</i>	<i>35</i>
WEB SERVER	36

GENERAL SAFETY RULES

WARNING! Read and understand all instructions. Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury

SAVE THIS INSTRUCTIONS

Work Area

- **Keep your work area clean and well lit.** Cluttered benches and dark areas invite accidents.
- **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.
- **Keep bystanders, children, and visitors away while operating a power tool.**
Distractions can cause you to lose control.

Electrical Safety

- **Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.** If the tools should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
- **Avoid body contact with grounded surface ad pipes, radiators, ranges and refrigerators.**
There is an increased risk of electric shock if your body is grounded.
- **Don't expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock
- **Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately.** Damaged cords increase the risk of electric shock.
- **When operating a power tool outside, use an outdoor extension cord marked W-A or W.** These cords are rated for outdoor use and reduce the risk of electric shock.

Personal Safety

- **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
- **Avoid accidental starting. Be sure switch is off before plugging in.** Carrying tools with your finger on the switch or plugging in tools may result in personal injury.
- **Remove adjusting keys or switches before turning the tool on.** A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.
- **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations.

- **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

Tool use and Care

- **Use clamps or other practical way to secure and support the workplace to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
- **Do not force tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
- **Do not use tool if switch does not turn it on or off.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.
- **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventive safety
- **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
- **Maintain tools with care. Keep cutting tools sharp and clean.** Properly maintained tools, with sharp cutting edges are less likely to bind and are easier to control.
- **Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tools operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
- **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool, may become hazardous when used on another tool.

SERVICE

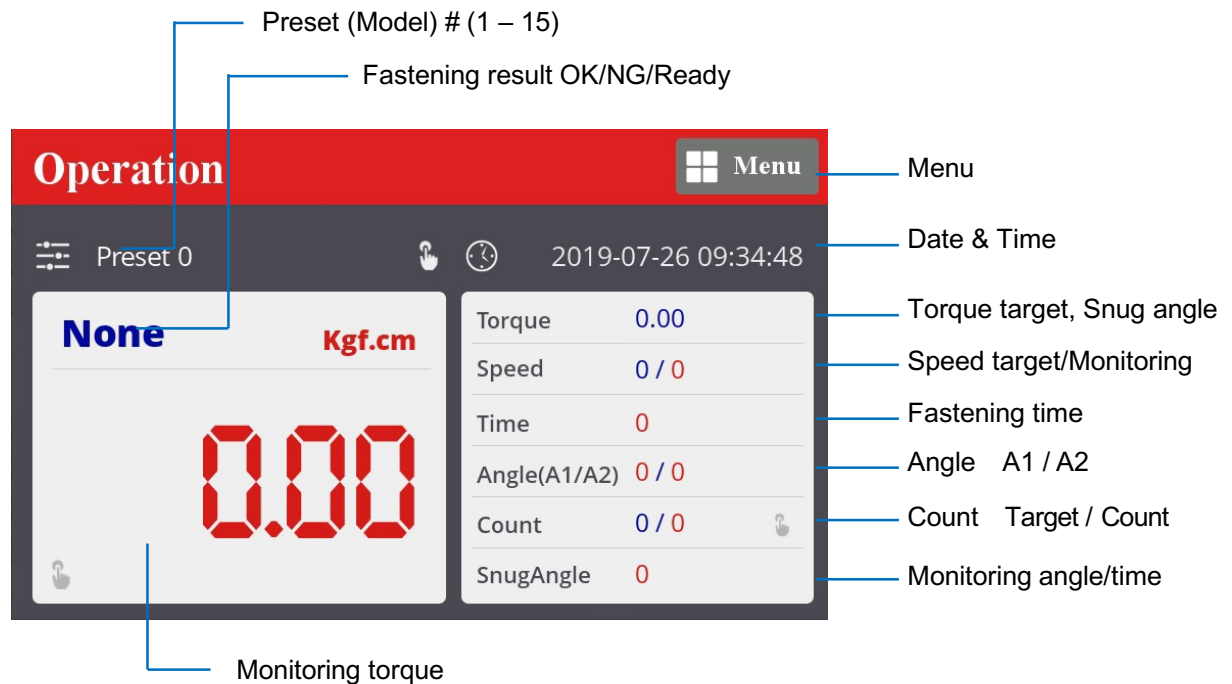
- **Tool service must be performed only by qualified personnel.** Service or maintenance performed by unqualified personnel could result in a risk of injury
- **When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual.** Use of unauthorized parts or failure to follow Maintenance instructions may create a risk of electric shock or injury.

SPECIFIC SAFETY RULES

Hold tool by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring or its own cord. Contact with a "live" wire will make exposed metal parts of the tool "live" and shock the operator.

Never lubricate aerosol oil on to the electrical part.

Operation Operation Screen

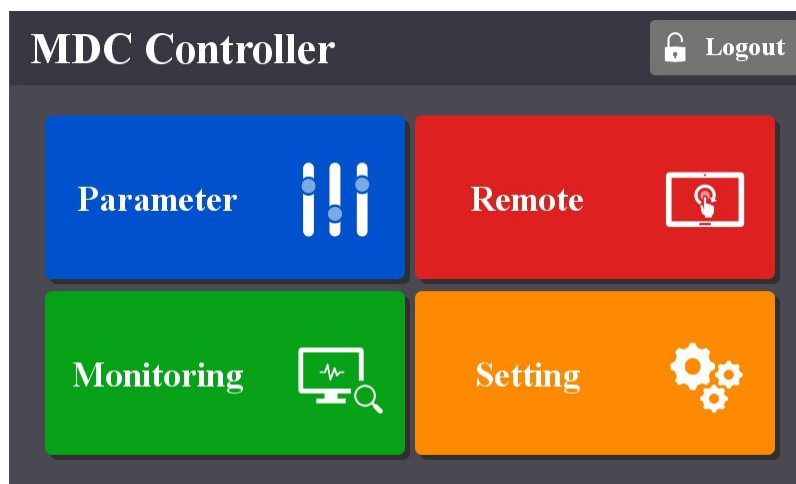


Operation screen is a default window when the controller power ON.

The real time monitoring data and target settings are displayed together.

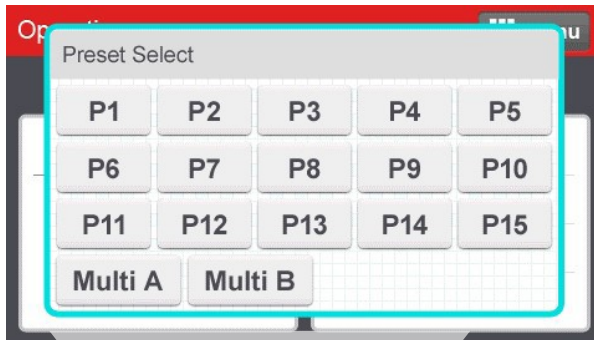
To go other menu, click the **Menu** on the top right side.

There are 4 menu for Parameter change, Remote operation, Real time monitoring and Display settings.

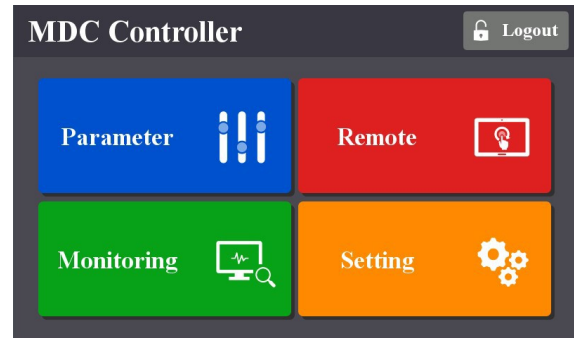




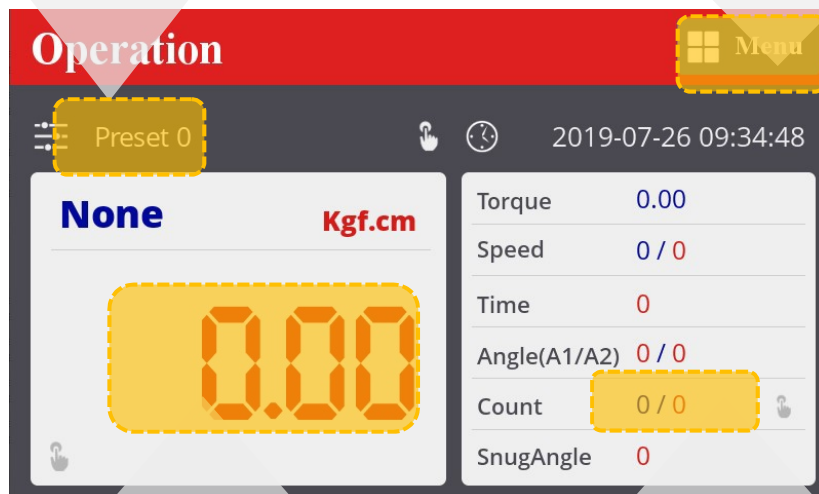
Touch Screen field to move



Preset # or Model
select

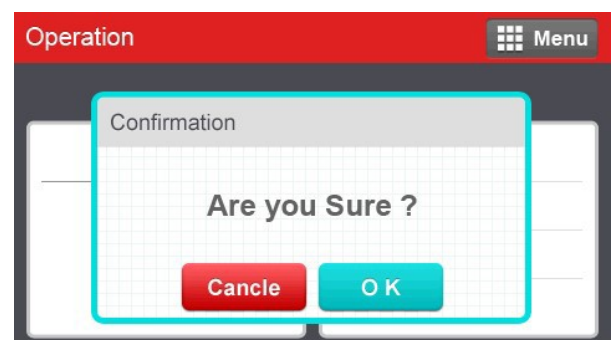
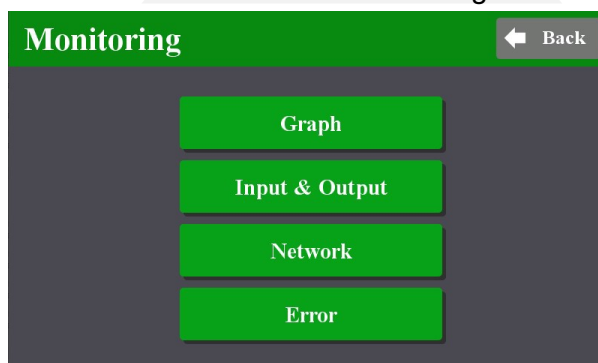


Password Log In



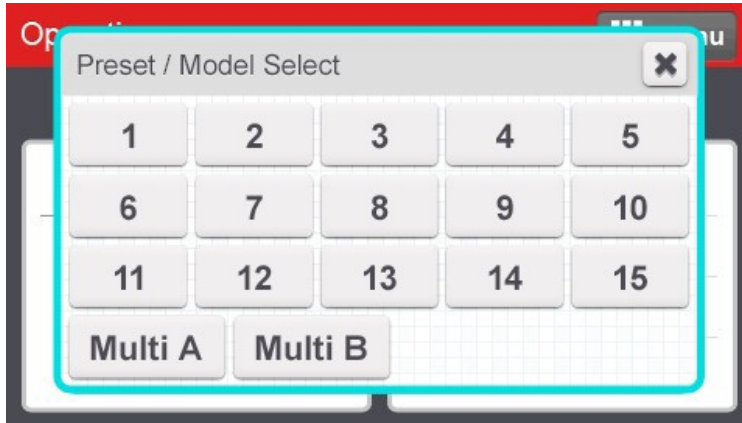
Real time monitoring

Last count cancel



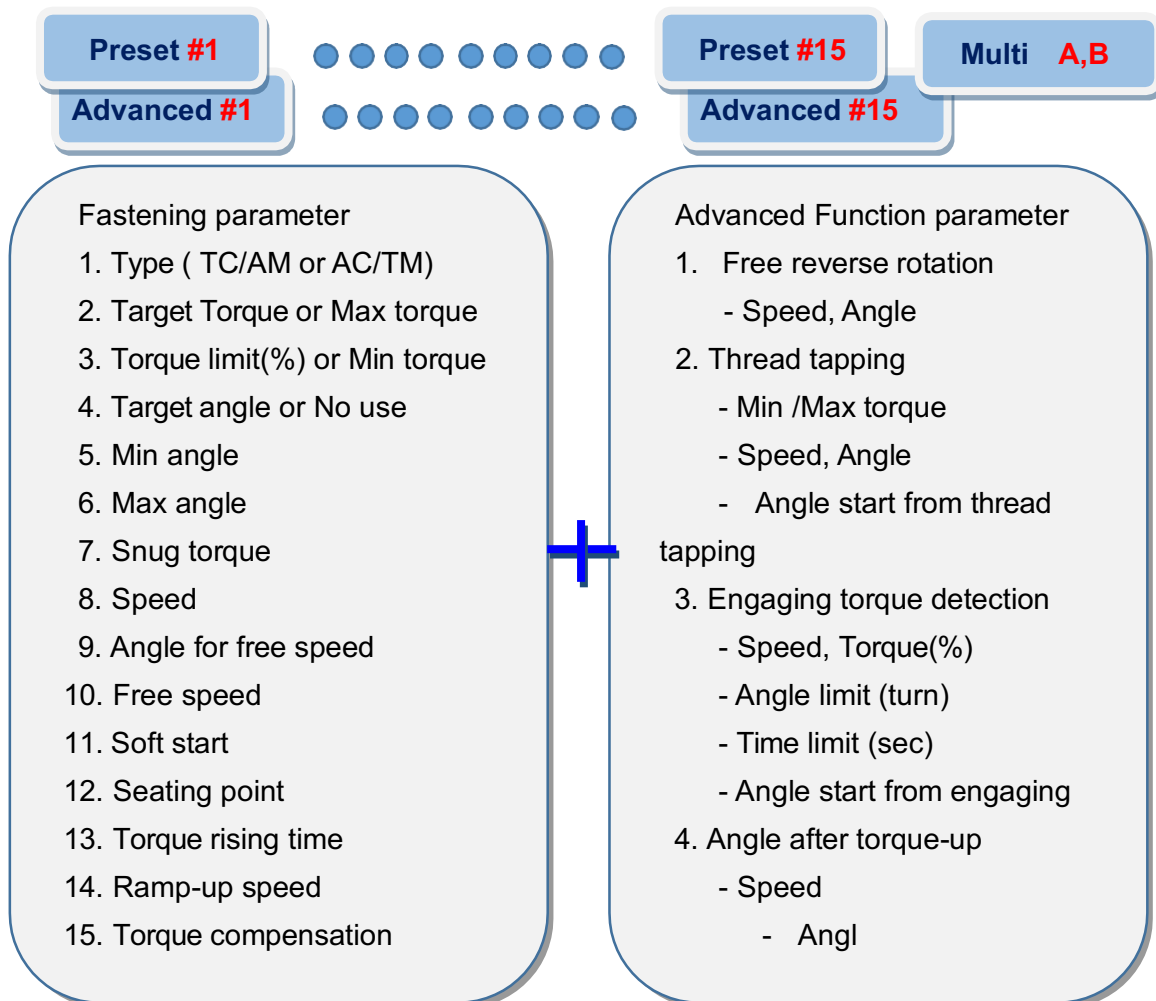
Presets or Model select

To use Model, Controller 7 ☐ Model select ON setting required



There are 15 presets of program.
Each preset contains the following parameters

- Torque
- Speed
- verifying angles
- soft start duration time
- free speed tightening.

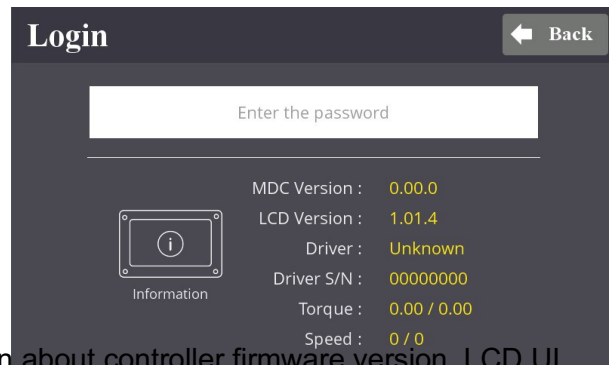


Parameters

To program each Presets, Click  and go to



Parameter menu require password to log in
the initial factory setting is “ 0 “ for password
The password can be changed once log in.
There are approx.. 500 address for each
parameters. Parameters are grouped for
each settings as below



On the log in window, there are tool information about controller firmware version, LCD UI graphic version and option card firmware version, screwdriver model, serial no

Parameter group

Please refer to the operation manual of ParaMon PC software for details of parameter settings.

Group	Parameter	Address
1. Fastening	Preset #1 to #15	A001 – A225
2. I/O	Input	A226 – A233
	Output	A234 – A241
3. Screw count	Number & cycle start	A242 – A247
4. Crow foot option		A265 – A269
5. Controller		A270 – A306
6. Network	IP address	A307 – 320
7. Multi sequence	Multi-A, Multi-B	A321 – 340
8. Error	8 error history	A341 – 348
	Controller model	A349
9. Model	Model #1 to 15	A350 – 649
10. Advanced Function	Advanced #1 to #15	A650 – 874
11. Firmware version		A875

Parameter | Fastening

Back

Type

TC/AM

AC/TM

Target torque

Torque limit (%)

Snug torque

Target speed (rpm)

<

A 1 / 15 Preset

Parameter | Advanced

Back

Min torque (unit)

0.00

Max torque (unit)

0.00

Speed (rpm)

0

Angle (degree)

0

Angle start from prevailing

OFF

ON

<

1 / 15 Prevailing

>

Parameter

Menu

Fastening

Advanced

Screw Count

I / O

Controller

Network

Multi Sequence

Model

Parameter | Multi Sequence

1

Fastening

2

Delay (10ms)

3

Select Preset #

4

Loosening (0.1turn)

5

End

<

A-1 Multi Sequence

>

Parameter | Model

Back

1

Fastening

Preset : 0

Count : 0

2

Delay

Time(100ms) : 0

3

Input

Port : 0

Type : 0

4

Ouput

Port : 0

Type : 0

5

NOP

<

A 1 / 15 Model

>

Parameter | Screw count

← Back

- Cycle start signal

Auto

- Time limit (sec)

- Count port signal type

<

A.

Parameter | Input / Output

← Back

1

None (Unassigned)

2

None (Unassigned)

3

None

5

None

7

None

<

Input function dialog

None (Unassigned)

Preset Select 1

Preset Select 2

Preset Select 3

Start

Fasten / Loosen

Lock

Multi sequence

Alarm Reset

Count Start

Count Reset

Count Out

Preset Select 4

Model Cancel

Model Select 1

Model Select 2

Model Select 3

Model Select 4

F/L Switch enable

Set origin

Move origin point

Parameter

Fastening

Advanced

Screw Count

I / O

Controller

Network

Multi Sequence

Model

Parameter | Controller

← Back

- Driver ID

- Driver model

- Torque unit (all params are init)

- Password

- Controller parameter initialize

<

Controller 1

>

Parameter | Network

← Back

- Mode

STATIC

DHCP

- IP address

255.255.255.255

- Net mask

255.255.255.255

- Gateway

255.255.255.255

- Port

<

0

>

<

Ethernet

>

Parameter details and factory setting

(Firmware version : MDC_New_F7_176_V2.00.4)

	Preset #	Parameter	Address	Factory setting
Fastening	1	TC/AM_AC/TM	1	0
		Torque	2	Auto
		Torque min/max (%)	3	0
		Target angle(degree)	4	0
		Min angle(degree)	5	0
		Max angle(degree)	6	0
		Snug torque(%)	7	0
		Speed (rpm)	8	Auto
		Free fastening angle(degree)	9	0
		Free fastening speed(rpm)	10	0
		Soft start(1-300ms)	11	0
		Seating point (%) 10-90	12	Auto
		Torque rising rate(ms) 50-200	13	50
		Ramp up speed(rpm) 20-80% of max	14	Auto
		Torque compensation (%) 90-110	15	100
	2	TC/AM_AC/TM	16	0
		Torque	17	Auto
		Torque min/max (%)	18	0
		Target angle(degree)	19	0
		Min angle(degree)	20	0
		Max angle(degree)	21	0
		Snug torque(%)	22	0
		Speed (rpm)	23	Auto
		Free fastening angle(degree)	24	0
		Free fastening speed(rpm)	25	0
		Soft start(1-300ms)	26	0
		Seating point (%) 10-90	27	Auto
		Torque rising rate(ms) 50-200	28	50
		Ramp up speed(rpm) 20-80% of max	29	Auto
		Torque compensation (%) 90-110	30	100
	3	TC/AM_AC/TM	31	0

		Torque	32	Auto
		Torque min/max (%)	33	0
		Target angle(degree)	34	0
		Min angle(degree)	35	0
		Max angle(degree)	36	0
		Snug torque(%)	37	0
		Speed (rpm)	38	Auto
		Free fastening angle(degree)	39	0
		Free fastening speed(rpm)	40	0
		Soft start(1-300ms)	41	0
		Seating point (%) 10-90	42	Auto
		Torque rising rate(ms) 50-200	43	50
		Ramp up speed(rpm) 20-80% of max	44	Auto
		Torque compensation (%) 90-110	45	100
	4	TC/AM_AC/TM	46	0
		Torque	47	Auto
		Torque min/max (%)	48	0
		Target angle(degree)	49	0
		Min angle(degree)	50	0
		Max angle(degree)	51	0
		Snug torque(%)	52	0
		Speed (rpm)	53	Auto
		Free fastening angle(degree)	54	0
		Free fastening speed(rpm)	55	0
		Soft start(1-300ms)	56	0
		Seating point (%) 10-90	57	Auto
		Torque rising rate(ms) 50-200	58	50
		Ramp up speed(rpm) 20-80% of max	59	Auto
		Torque compensation (%) 90-110	60	100
	5	TC/AM_AC/TM	61	0
		Torque	62	Auto
		Torque min/max (%)	63	0
		Target angle(degree)	64	0
		Min angle(degree)	65	0
		Max angle(degree)	66	0

		Snug torque(%)	67	0
		Speed (rpm)	68	Auto
		Free fastening angle(degree)	69	0
		Free fastening speed(rpm)	70	0
		Soft start(1-300ms)	71	0
		Seating point (%) 10-90	72	Auto
		Torque rising rate(ms) 50-200	73	50
		Ramp up speed(rpm) 20-80% of max	74	Auto
		Torque compensation (%) 90-110	75	100
	6	TC/AM_AC/TM	76	0
		Torque	77	Auto
		Torque min/max (%)	78	0
		Target angle(degree)	79	0
		Min angle(degree)	80	0
		Max angle(degree)	81	0
		Snug torque(%)	82	0
		Speed (rpm)	83	Auto
		Free fastening angle(degree)	84	0
		Free fastening speed(rpm)	85	0
		Soft start(1-300ms)	86	0
		Seating point (%) 10-90	87	Auto
		Torque rising rate(ms) 50-200	88	50
		Ramp up speed(rpm) 20-80% of max	89	Auto
		Torque compensation (%) 90-110	90	100
	7	TC/AM_AC/TM	91	0
		Torque	92	Auto
		Torque min/max (%)	93	0
		Target angle(degree)	94	0
		Min angle(degree)	95	0
		Max angle(degree)	96	0
		Snug torque(%)	97	0
		Speed (rpm)	98	Auto
		Free fastening angle(degree)	99	0
		Free fastening speed(rpm)	100	0
		Soft start(1-300ms)	101	0

		Seating point (%) 10-90	102	Auto
		Torque rising rate(ms) 50-200	103	50
		Ramp up speed(rpm) 20-80% of max	104	Auto
		Torque compensation (%) 90-110	105	100
	8	TC/AM_AC/TM	106	0
		Torque	107	Auto
		Torque min/max (%)	108	0
		Target angle(degree)	109	0
		Min angle(degree)	110	0
		Max angle(degree)	111	0
		Snug torque(%)	112	0
		Speed (rpm)	113	Auto
		Free fastening angle(degree)	114	0
		Free fastening speed(rpm)	115	0
		Soft start(1-300ms)	116	0
		Seating point (%) 10-90	117	Auto
		Torque rising rate(ms) 50-200	118	50
		Ramp up speed(rpm) 20-80% of max	119	Auto
		Torque compensation (%) 90-110	120	100
	9	TC/AM_AC/TM	121	0
		Torque	122	Auto
		Torque min/max (%)	123	0
		Target angle(degree)	124	0
		Min angle(degree)	125	0
		Max angle(degree)	126	0
		Snug torque(%)	127	0
		Speed (rpm)	128	Auto
		Free fastening angle(degree)	129	0
		Free fastening speed(rpm)	130	0
		Soft start(1-300ms)	131	0
		Seating point (%) 10-90	132	Auto
		Torque rising rate(ms) 50-200	133	50
		Ramp up speed(rpm) 20-80% of max	134	Auto
		Torque compensation (%) 90-110	135	100
	10	TC/AM_AC/TM	136	0

		Torque	137	Auto
		Torque min/max (%)	138	0
		Target angle(degree)	139	0
		Min angle(degree)	140	0
		Max angle(degree)	141	0
		Snug torque(%)	142	0
		Speed (rpm)	143	Auto
		Free fastening angle(degree)	144	0
		Free fastening speed(rpm)	145	0
		Soft start(1-300ms)	146	0
		Seating point (%) 10-90	147	Auto
		Torque rising rate(ms) 50-200	148	50
		Ramp up speed(rpm) 20-80% of max	149	Auto
		Torque compensation (%) 90-110	150	100
	11	TC/AM_AC/TM	151	0
		Torque	152	Auto
		Torque min/max (%)	153	0
		Target angle(degree)	154	0
		Min angle(degree)	155	0
		Max angle(degree)	156	0
		Snug torque(%)	157	0
		Speed (rpm)	158	Auto
		Free fastening angle(degree)	159	0
		Free fastening speed(rpm)	160	0
		Soft start(1-300ms)	161	0
		Seating point (%) 10-90	162	Auto
		Torque rising rate(ms) 50-200	163	50
		Ramp up speed(rpm) 20-80% of max	164	Auto
		Torque compensation (%) 90-110	165	100
	12	TC/AM_AC/TM	166	0
		Torque	167	Auto
		Torque min/max (%)	168	0
		Target angle(degree)	169	0
		Min angle(degree)	170	0
		Max angle(degree)	171	0

		Snug torque(%)	172	0
		Speed (rpm)	173	Auto
		Free fastening angle(degree)	174	0
		Free fastening speed(rpm)	175	0
		Soft start(1-300ms)	176	0
		Seating point (%) 10-90	177	Auto
		Torque rising rate(ms) 50-200	178	50
		Ramp up speed(rpm) 20-80% of max	179	Auto
		Torque compensation (%) 90-110	180	100
	13	TC/AM_AC/TM	181	0
		Torque	182	Auto
		Torque min/max (%)	183	0
		Target angle(degree)	184	0
		Min angle(degree)	185	0
		Max angle(degree)	186	0
		Snug torque(%)	187	0
		Speed (rpm)	188	Auto
		Free fastening angle(degree)	189	0
		Free fastening speed(rpm)	190	0
		Soft start(1-300ms)	191	0
		Seating point (%) 10-90	192	Auto
		Torque rising rate(ms) 50-200	193	50
		Ramp up speed(rpm) 20-80% of max	194	Auto
		Torque compensation (%) 90-110	195	100
	14	TC/AM_AC/TM	196	0
		Torque	197	Auto
		Torque min/max (%)	198	0
		Target angle(degree)	199	0
		Min angle(degree)	200	0
		Max angle(degree)	201	0
		Snug torque(%)	202	0
		Speed (rpm)	203	Auto
		Free fastenig angle(degree)	204	0
		Free fastenig speed(rpm)	205	0
		Soft start(1-300ms)	206	0

		Seating point (%) 10-90	207	Auto
		Torque rising rate(ms) 50-200	208	50
		Ramp up speed(rpm) 20-80% of max	209	Auto
		Torque compensation (%) 90-110	210	100
	15	TC/AM_AC/TM	211	0
		Torque	212	Auto
		Torque min/max (%)	213	0
		Target angle(degree)	214	0
		Min angle(degree)	215	0
		Max angle(degree)	216	0
		Snug torque(%)	217	0
		Speed (rpm)	218	Auto
		Free fastening angle(degree)	219	0
		Free fastening speed(rpm)	220	0
		Soft start(1-300ms)	221	0
		Seating point (%) 10-90	222	Auto
		Torque rising rate(ms) 50-200	223	50
		Ramp up speed(rpm) 20-80% of max	224	Auto
		Torque compensation (%) 90-110	225	100
I/O	I/O (IN)	Input #1	226	1
		Input #2	227	2
		Input #3	228	3
		Input #4	229	4
		Input #5	230	5
		Input #6	231	6
		Input #7	232	7
		Input #8	233	8
	I/O (OUT)	Output #1	234	1
		Output #2	235	2
		Output #3	236	3
		Output #4	237	4
		Output #5	238	5
		Output #6	239	6
		Output #7	240	7
		Output #8	241	8

Screw count	Screw count	Sensor signal type 0 - 3	242	0
		Time limit (if P122-->2)	243	0
		Count complete OUT manage	244	0
		Middle count no. 0 - 99	245	0
		Sensor signal delay time (x10ms)	246	0
		Total count (screw no.)	247	5
Crowfoot	Crowfoot		265	
			266	
			267	
			268	
			269	
Controller	Setting 1	Run time limit / Forward (sec)	270	10
		Run time limit / Reverse (sec)	271	10
		Motor stall time limit (sec)	272	0.2
		Loosening speed (rpm)	273	Auto
		Motor acceleration (ms)	274	100
		Fastening complete signal OUT time	275	0
		Driver ID no.	276	1
		Error display reset time	277	1
		Torque compensation master (%) 90-110	278	100
		Use max torque for Loosen	279	0
		Initial preset # when power ON	280	1
		Driver model no. 1-99	281	selectable
		Password 0-9999	282	0
		Parameter initialize to factory setting	283	0
		Driver auto lock (for Model)	284	0
		Selection on panel	285	0
		Torque holding time(ms) 1-20	286	2

		Protocol	287	0
		Auto speed on torque setting	290	1
		Judge fastening min turns	291	0
		Model select	292	0
		Fastening stop error	293	0
		Reverse Lock	294	0
		Trigger start (Handheld only)	295	0
		Reverse start (Handheld only)	296	0
		Auto data output	297	0
		Beep sound	298	1
		Preset change by Touch pannel	299	1
		COM port Baud rate	300	4
		Torque unit	301	0
		Screw type	302	0
		Auto update port	303	0
		Lamp on time	304	0
		Model start by barcode	305	0
		RS232 port select	306	0
IP Address		Static/DHCP	307	0
		IP Address1	308	192
		IP Address2	309	168
		IP Address3	310	1
		IP Address4	311	100
		Net mask1	312	255
		Net mask2	313	255
		Net mask3	314	255
		Net mask4	315	0
		Gateway 1	316	192
		Gateway 2	317	168
		Gateway 3	318	1
		Gateway 4	319	1
		Port	320	5000
Multi SQ	PG1	MS PG 1	321	0
		MS PG 2	322	0
		MS PG 3	323	0

		MS PG 4	324	0
		MS PG 5	325	0
		MS PG 6	326	0
		MS PG 7	327	0
		MS PG 8	328	0
		MS PG 9	329	0
		MS PG 10	330	0
	PG2	MS PG 11	331	0
		MS PG 12	332	0
		MS PG 13	333	0
		MS PG 14	334	0
		MS PG 15	335	0
		MS PG 16	336	0
		MS PG 17	337	0
		MS PG 18	338	0
		MS PG 19	339	0
		MS PG 20	340	0
ERROR		ERROR 1	341	0
		ERROR 2	342	0
		ERROR 3	343	0
		ERROR 4	344	0
		ERROR 5	345	0
		ERROR 6	346	0
		ERROR 7	347	0
		ERROR 8	348	0
		Controller model	349	Auto
Model		Model data(150)	350 ~ 649	0
Advanced preset 1	Free reverse rotation	Speed (rpm)	650	0
		Angle (turn) 0 - 20	651	0
	Thread tapping	Min torque	652	0
		Max torque	653	0
		Speed (rpm)	654	0

		Angle (degree) 0-3600	655	0
		Angle start from thread tapping	656	0
	Engaging torque detection	Speed (rpm)	657	0
		Torque(%)	658	0
		Angle limit (turn) 0 - 20	659	0
		Time limit (sec)	660	0
		Angle start from engaging	661	0
	Angel after torque up	Speed (rpm)	662	0
		Angle (degree) 0-3600	663	0
		Direction	664	0
Advanced preset 2	Free reverse rotation	Speed (rpm)	665	0
		Angle (turn) 0 - 20	666	0
	Thread tapping	Min torque	667	0
		Max torque	668	0
		Speed (rpm)	669	0
		Angle (degree) 0-3600	670	0
		Angle start from thread tapping	671	0
	Engaging torque detection	Speed (rpm)	672	0
		Torque(%)	673	0
		Angle limit (turn) 0 - 20	674	0
		Time limit (sec)	675	0
		Angle start from engaging	676	0
	Angel after torque up	Speed (rpm)	677	0
		Angle (degree) 0-3600	678	0
		Direction	679	0
		...	...	...
Advanced preset 15	Free reverse rotation	Speed (rpm)	860	0
		Angle (turn) 0 - 20	861	0
	Thread tapping	Min torque	862	0
		Max torque	863	0
		Speed (rpm)	864	0
		Angle (degree) 0-3600	865	0
		Angle start from thread tapping	866	0

	Engaging torque detection	Speed (rpm)	867	0
		Torque(%)	868	0
		Angle limit (turn) 0 - 20	869	0
		Time limit (sec)	870	0
		Angle start from engaging	871	0
	Angel after torque up	Speed (rpm)	872	0
		Angle (degree) 0-3600	873	0
		Direction	874	0
Firmware Version			875	Auto
Monitoring data	Alarm data	Alarm no.	3100	
		Warning no.	3101	
	Data updated on events (Start, F/L, Preset, Torque up)	Event count no. (1- 65,536)	3200	
		Fastening time (ms)	3201	
		Preset no.	3202	
		Target torque (* x 100)	3203	
		Converted torque (* x 100)	3204	
		Target speed (rpm)	3205	
		A1 (* 100)	3206	
		A2 (* 100)	3207	
		A3 (* 100)	3208	
		Screw count value	3209	
		Error	3210	
		Forward / Loosening (F=0, L=1)	3211	
		Status (Fastening complete= 1, other=0, Fastening NG (E330,332,333,334,335,336,337)=2, F/L change=3, Preset change=4, Alarm reset=5, Error(except fastening NG)=6)	3212	
		Snug torque angle (degree)	3213	
		Barcode data 1 (LSB)	3214	
		Barcode data 2	3215	
		Barcode data 3	3216	
		Barcode data 4	3217	

		Barcode data 5	3218	
		Barcode data 6	3219	
		Barcode data 7	3220	
		Barcode data 8	3221	
		Barcode data 9	3222	
		Barcode data 10	3223	
		Barcode data 11	3224	
		Barcode data 12	3225	
		Barcode data 13	3226	
		Barcode data 14	3227	
		Barcode data 15	3228	
		Barcode data 16	3229	
		Barcode data 17	3230	
		Barcode data 18	3231	
		Barcode data 19	3232	
		Barcode data 20	3233	
		Barcode data 21	3234	
		Barcode data 22 (MSB)	3235	
	Realtime Data	Converted torque (* x 100)	3300	
		Speed (rpm)	3301	
		Motor current (mA)	3302	
		Current Preset #	3303	
		Torque up	3304	
		Fastening OK	3305	
		Ready	3306	
		Motor RUN	3307	
		Alarm no.	3308	
		Forward / Loosening (F=0, L=1)	3309	
		Screw count value	3310	
		Input status (MSB=IN 8, LSB=IN 1)	3311	
		Output status (MSB=OUT 8, LSB=OUT 1)	3312	
		Motor Temperature	3313	
		Molde No	3314	
		Current step #	3315	
		Total count	3316	

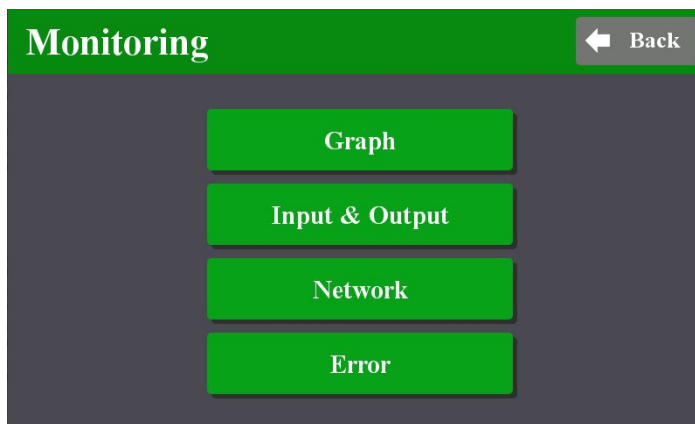
		Curnet step count	3317	
		Curnet Preset #	3318	
		Function	3319	
		Model Complete	3320	
Temporary parameter in RAM	Virtual Preset #1	TC/AM_AC/TM	3500	
		Torque	3501	
		Torque min/max (%)	3502	
		Target angle(degree)	3503	
		Min angle(degree)	3504	
		Max angle(degree)	3505	
		Snug torque(%)	3506	
		Speed (rpm)	3507	
		Free fastenig angle(degree)	3508	
		Free fastenig speed(rpm)	3509	
		Soft start(1-300ms)	3510	
		Seating point (%) 10-90	3511	
		Torque rising rate(ms) 50-200	3512	
		Torque holding time(ms) 1-20	3513	
		Torque compensation (%) 90-110	3514	
Temporary parameter in RAM	Virtual model #1	Model1 - 20	3535 - 3554	
Temporary parameter in RAM	Virtual advenced #1	advenced parameter no 1	3520 - 3534	
Remote control	Operation	Alarm reset	4000	
		Driver Lock 0 : Unlock 1: Lock all dirction 2 : Lock Loosening 3: Lock Fastening	4001	
		No use (Factory only)	4002	
		Remote start (0 : Stop, 1 : Start)	4003	

	Preset # change (Not available on RUN) Data : 1 - 15 for preset #1 - 15 16 for Multi sequence A 17 for Multi sequence B	4004	
	Forward / Loosening (F=0, L=1)	4005	
	Output test only (0 : off, 1 : on) (MSB=OUT 8, LSB=OUT 1) ex) 0xff : output 1 - 8 port all on ex) 0x0f : output 1 - 4 port on	4006	
	Output test enable (0 : disable, 1: enable)	4007	
	Model# change (Not available on RUN) Data: 1- 15 for preset# 1 - 15	4008	

★ Please refer to the operation manual of ParaMon PC software for details of parameter settings.

Monitoring

To monitor fastening data and I/O status, Click  **Menu** and go to  **MONITORING**
There are three(3) real-time monitoring menu and one error history.



2.3.1 Graph : torque, Angle,

Speed and current

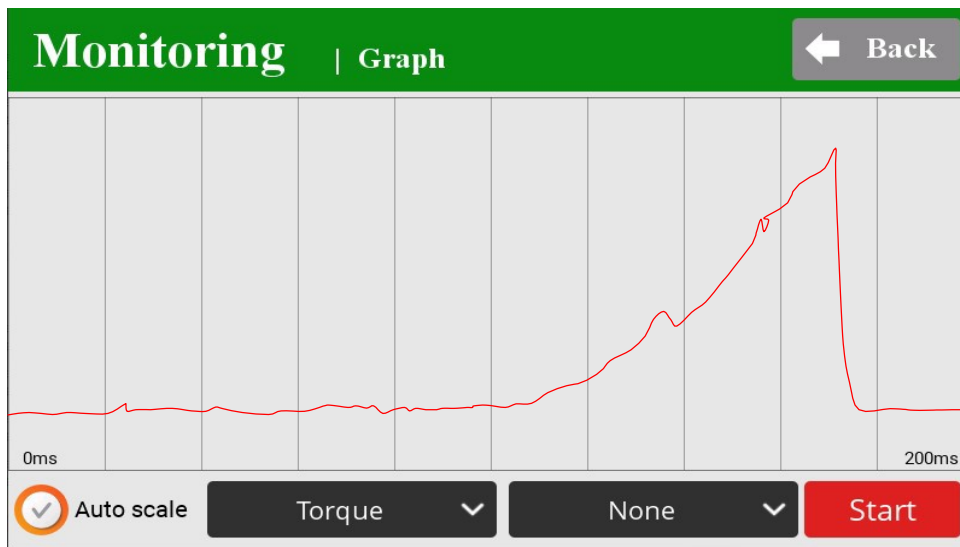
2.3.2 I/O : Input & output status

2.3.3 Network : RS-232 &
Ethernet settings

2.3.4 Error : latest 8 error history

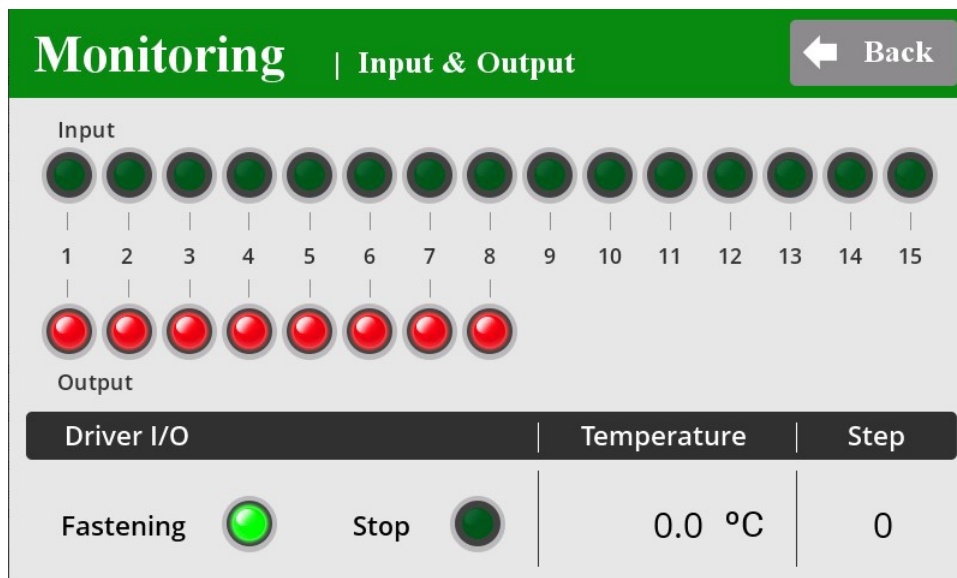
◆ Graph (Torque curve) monitoring

Two channel data curve for Current, Torque, Angle, Speed



The sampling rate is 1ms (0.001second) for maximum 400 data display. The latest 400 data display will be refreshed by moving left from right. Auto scale will display all data on one single screen by changing real-time sampling rate automatically.

◆ I/O Status monitoring



The I/O & tool operation signals are displayed when they are activated.

The temperature of the motor surface is also displayed. Refer to the operation manual of ParaMon for details of wiring, schematic and digital I/O mapping.

[Input]

Input function dialog		
None (Unassigned)	Preset Select 1	Preset Select 2
Preset Select 3	Start	Fasten / Loosen
Lock	Multi sequence	Alarm Reset
Count Start	Count Reset	Count Out
Preset Select 4	Model Cancel	Model Select 1
Model Select 2	Model Select 3	Model Select 4
F/L Switch enable	Set origin	Move origin point

Remark

Set origin : Create the absolute home position by the encoder.

Move origin point : Bit socket position goes back to the home position

[Output]

Output function dialog		
None (Unassigned)	Torque Up	Fastening OK
Ready	Run	Alarm
Status F/L	Count Complete	AL 1
AL 2	AL 3	Model Complete
Torque select 1	Torque select 2	Torque select 3
Torque select 4	Driver lock output	

Network setting

Monitoring | Network

Back

Ethernet

RS-232

IP Address : 192.168.1.100

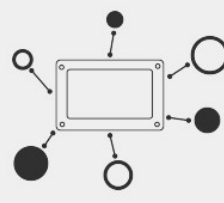
Netmask : 255.255.255.255

Gateway : 192.168.1.1

Port : 5000

MAC : 08 ED 02 80 00 7A

Baudrate : 9600



Remote

Remote menu provides remote tool operation, Auto customizing parameters to have highest cycle time and resets. Click  Menu, and  REMOTE

Remote

Back

Remote

Auto customizing

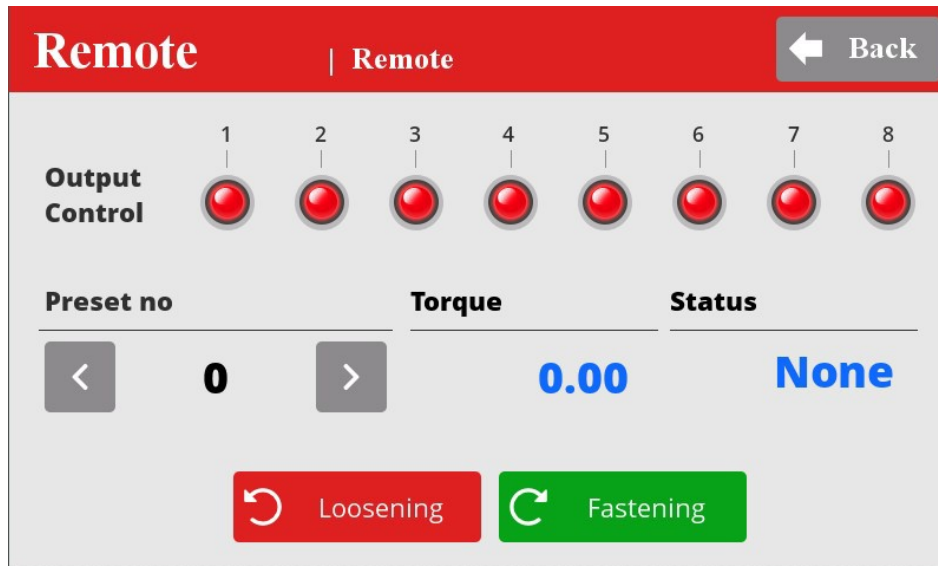
Power reset

Factory reset

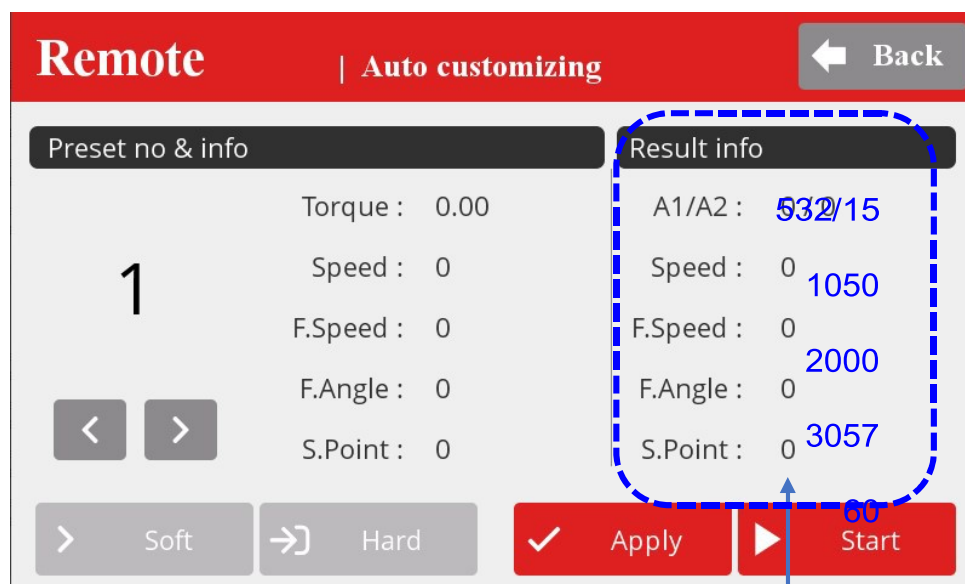
The tool and output signal can be operated remotely by click the screen.

It is useful feature to simulate the tools in automation integration. Easy to find the output wiring and tool test without PLC

- Preset selection
- Remote start tool in Fastening or Loosening direction
- Providing Output signals



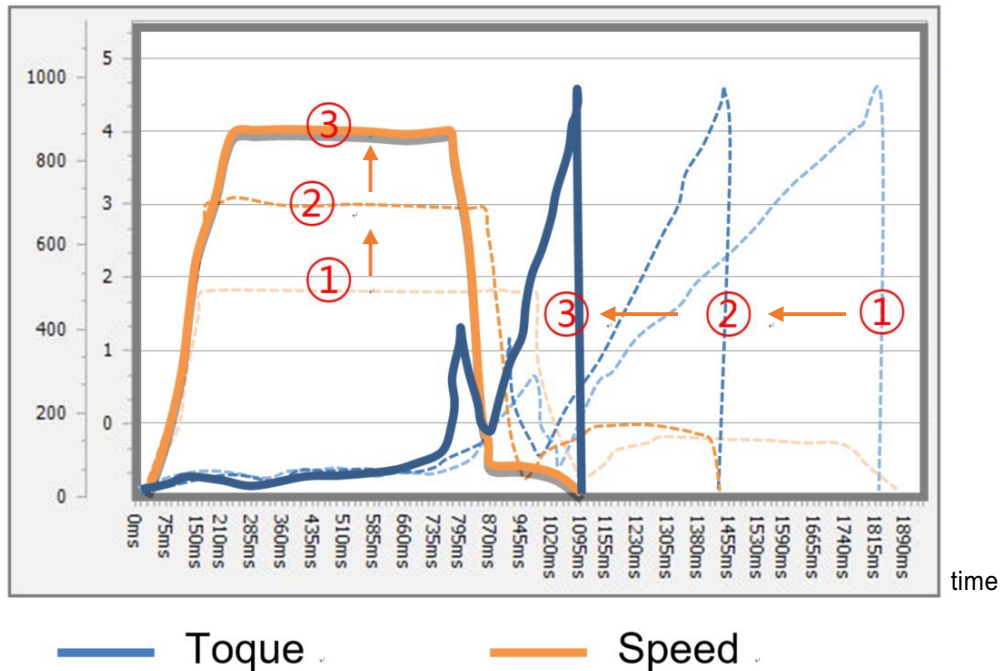
◆ Auto customizing parameters



Simulation & modification window

MD tool has the auto speed setting feature against torque setting not to provide any over torque by speed shock. This auto speed is safe speed on the hard joint condition. On the real application, this setting can be changed manually. Auto customizing feature provides most optimized parameter settings for saving cycle time on the real application.

Speed Torque



- ① Select Preset # to modify parameter settings
- ② Select one of Soft & Hard joint condition when it is obviously clear or both together when it is not clear to be clarified, then click START
- ③ Apply screw tightening several times until there is no more parameter changing on the simulation & modification window. Be sure that the fastening condition should be same during the process. The system changes parameter values by the previous fastening data.
- ④ Once there is no more changes on the simulation & modification window, click STOP to finish testing.
- ⑤ Click APPLY to apply the settings on the simulation & modification window. The setting can be modified by manually before applying them.

◆ Power reset

Power reset provide the equal effect of system rebooting by power OFF and ON of the controller. It refresh the booting by the software without real power off.

◆ Factory reset

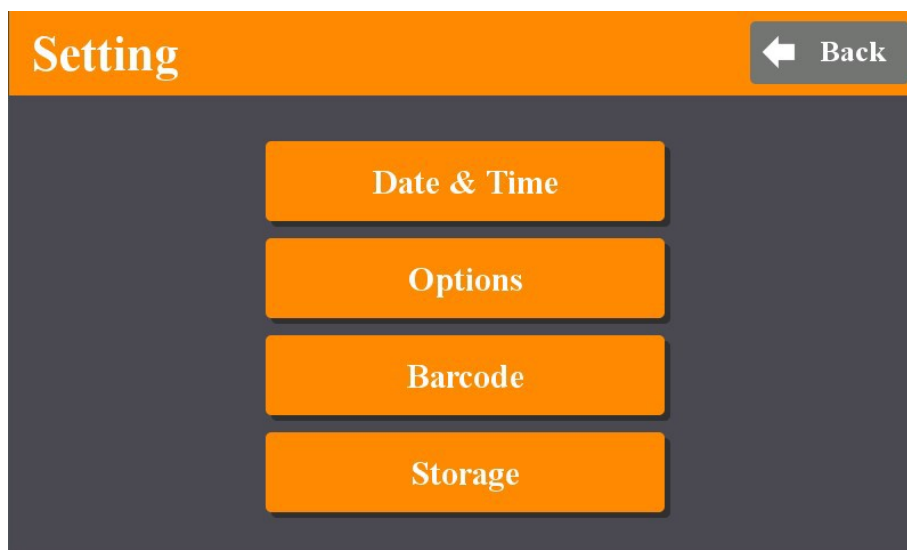
All parameters are reset to the factory setting.

Other Setting

To modify Date, Time and backlight brightness , Click



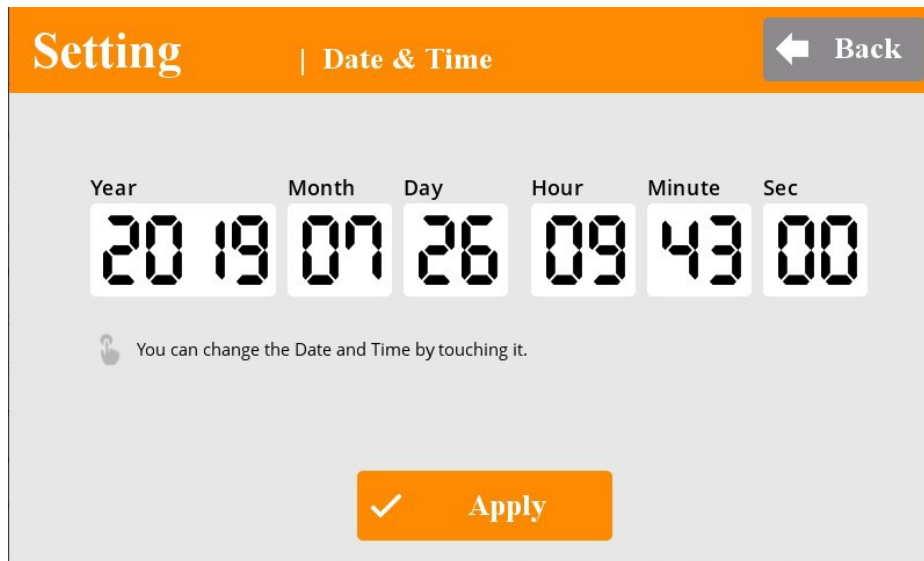
and



System date and time can be modified. yyyy-mm-dd hh:mm:ss

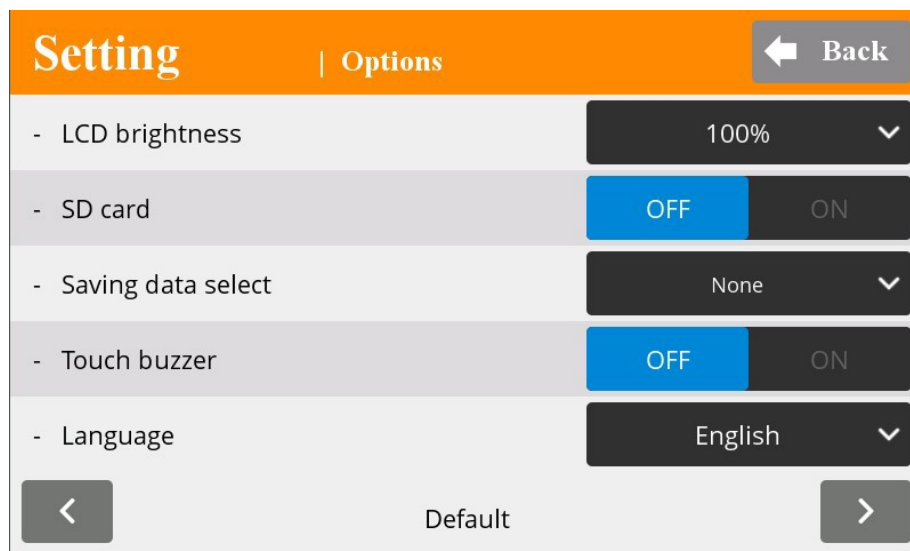
Backlight brightness is adjustable between 2 to 64. Factory setting is 45.

◆ Date and time



System date and time can be modified. yyyy-mm-dd hh:mm:ss

◆ Options



LCD Backlight brightness is adjustable between 1 to 100%.

In order to save the fastening data, Select ON of SD card and select the items to be saved on the SD card ;

- Fastening OK, Fastening NG, Preset change, Fasten/Loosen direction change, Alarm, Error and others.

System creates the folders of YEAR, MONTH automatically. And it creates one file in CSV format with the file name of DATE.

SD CARD > 2017 (folder) > 07 (folder) > 21 (file) File name : 21.csv

The real time fastening data in Monitoring menu are stored together with the system clock time of the controller.

Clock time, Fastening time, Preset#, Target torque, Converted torque, Speed, A1, A2, A3 angles, Count no.

Error code, Forward/Reverse, Status(OK), Snug angle



SD Memory card

- drvstate.txt

 HISTORY ☐ folder

 YEAR ☐ folder / one folder per year

 MONTH ☐ folder / one folder per month

- Date.csv ☐ monitoring data file / one file per one day

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Time	Serial	Barcode	F_time	Preset	T_torque	C_torque	Speed	A1	A2	A3	Count	Error	F/L	Status	Snug angle
2	%16:11:27	16.11.0005	:B170728025201/3	0	1	10	0	214	0	0	0	5	0	0	0	0
3	16:11:30	16.11.0005	:B170601011304/10	0	2	10	0	214	0	0	0	5	0	0	0	0
4	16:11:33	16.11.0005	:B170728025201/3	0	1	10	0	214	0	0	0	5	0	0	0	0
5	16:12:11	16.11.0005	:B170728025201/3	699	1	5	5.14	113	381	8	389	4	0	0	1	0
6	16:12:13	16.11.0005	:B170728025201/3	650	1	5	5.08	113	336	16	352	3	0	0	1	0
7	16:12:15	16.11.0005	:B170728025201/3	1278	1	5	5.09	113	766	11	777	2	0	0	1	0
8	16:12:17	16.11.0005	:B170728025201/3	1000	1	5	4.94	113	581	9	590	1	0	0	1	0
9	16:12:19	16.11.0005	:B170728025201/3	1059	1	5	5.24	113	625	7	632	5	0	0	1	0
10	16:12:21	16.11.0005	:B170728025201/3	813	1	5	5.1	113	464	4	468	4	0	0	1	0
11	16:12:23	16.11.0005	:B170728025201/3	647	1	5	5.11	113	344	8	352	3	0	0	1	0
12	16:12:25	16.11.0005	:B170728025201/3	1029	1	5	4.95	113	597	13	610	2	0	0	1	0
13	16:12:26	16.11.0005	:B170728025201/3	1001	1	5	5.09	113	558	16	574	1	0	0	1	0
14	16:12:28	16.11.0005	:B170728025201/3	0	1	5	0	113	0	0	0	1	0	0	0	0
15	16:12:30	16.11.0005	:B170728025201/3	919	1	5	5.02	113	530	6	536	5	0	0	1	0
16	16:12:32	16.11.0005	:B170728025201/3	0	1	5	0	113	0	0	0	5	0	0	0	0
17	16:12:35	16.11.0005	:B170601011304/10	0	2	7.5	0	163	0	0	0	5	0	0	0	0
18	16:12:38	16.11.0005	:B170601011304/10	890	2	7.5	7.7	163	729	12	741	4	0	0	1	0
19	16:12:40	16.11.0005	:B170601011304/10	942	2	7.5	7.73	163	776	15	791	3	0	0	1	0
20	16:12:42	16.11.0005	:B170601011304/10	936	2	7.5	7.28	163	766	16	782	2	0	0	1	0
21	16:12:43	16.11.0005	:B170601011304/10	942	2	7.5	7.51	163	768	19	787	1	0	0	1	0

** The last scanning data is recorded together with every fastening dat

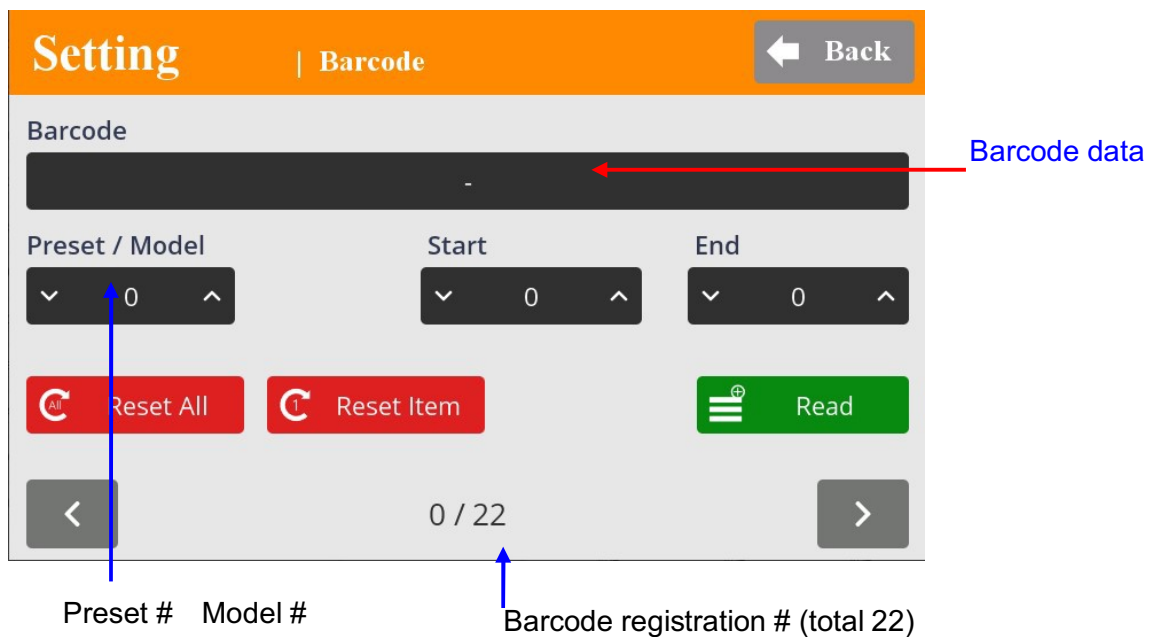
Barcode setting

The barcode information can select the Preset or Model by the setting.

In order to use barcode scanner, there are some parameters to be selected prior to the barcode setting.

[Controller] A306 R2232C : Modbus / Barcode (O)

A300 : RS232C baud rate : Select right one for the scanner



- Total number of barcode registration : up to 22
- Max number of barcode data length : 32 characters (including CR data)
- Registering process
 - 1) Click “READ” and scan the barcode
 - 2) Select the first and ending digit number from the scan data for registration
 - 3) Select Preset # to be linked with the registered scan data
 - 4) Click UP button to move the next registration and repeat the same process.

**** Preset #16 and 17 in P.M# window works for Multi A and B**

When Muti A or B is used, the operation window display contains the followings according to the sequence MA or MB > Step no. > Preset # (current preset #)

- “ Reset all “ button is used to clear all registration
- “ Reset “ button is used to clear the current scan data.

Firmware upgrade

- 1) Remove the SD card for data saving and use the new SD card for firmware update only.
- 2) Create the folder “ Update “
- 3) And copy the firmware files in each folder
- 4) Insert the SD card, and power ON the controller, then it is updated automatically.



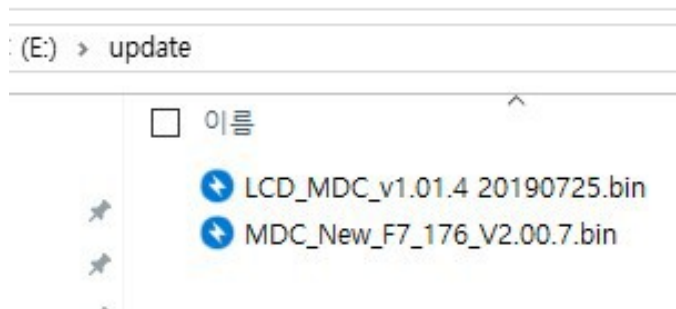
SD Memory card



update

MDC*.bin (MDC firmware file)

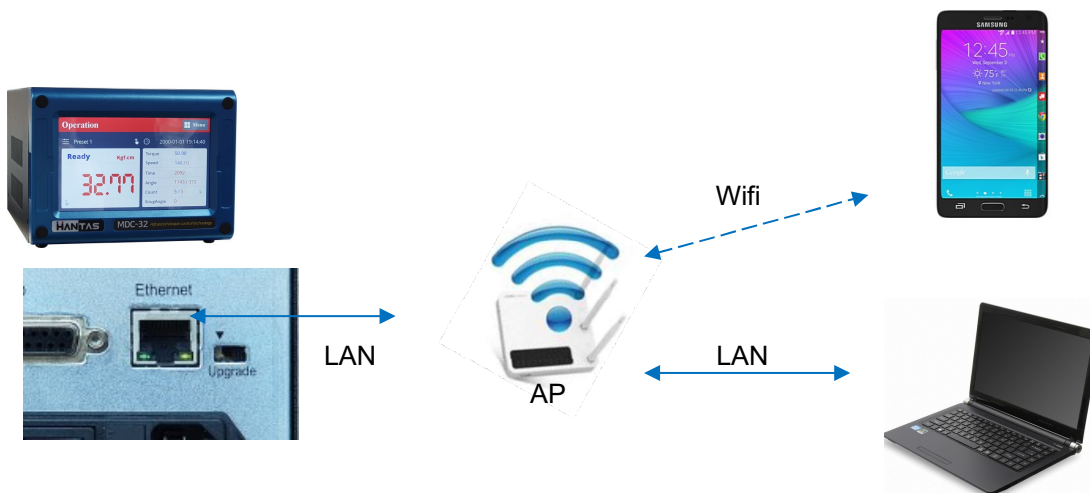
LCD*.bin (LCD firmware file)



Web server

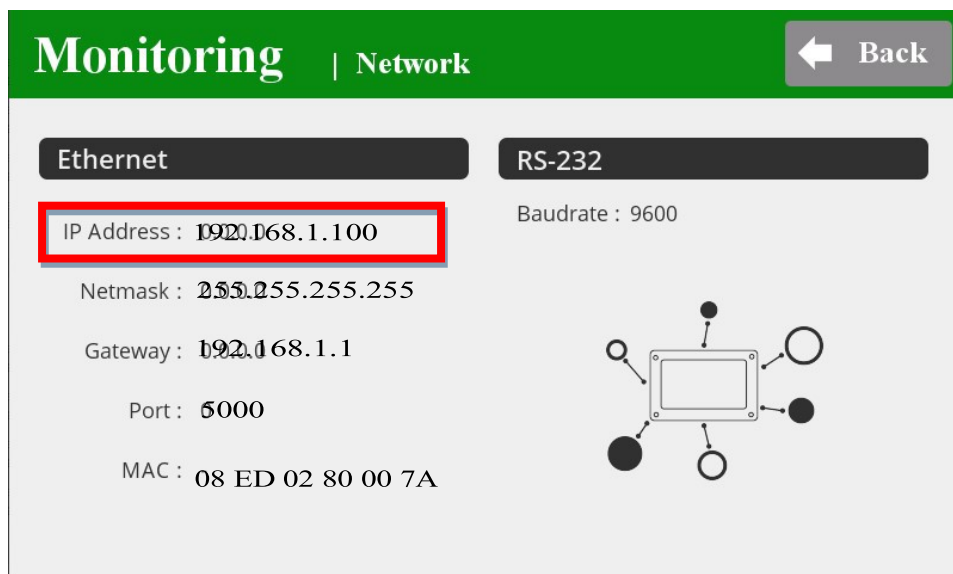
- Web server software is added in the MDC controller
- Web surfing program of Chrome or Firefox is more recommended.
- Access to the IP address of the MDC controller via the web browser on your PC.
- Parameter setting and monitoring are available on the web browser.

Ethernet connection layout



The same AP should be shared between MDC and the device (PC or Smart phone).

Open the web browser and Key in the IP address of the MDC controller



Web server log-in ID : mdc

password : 0

192.168.0.5/fastening.html
07

M D C

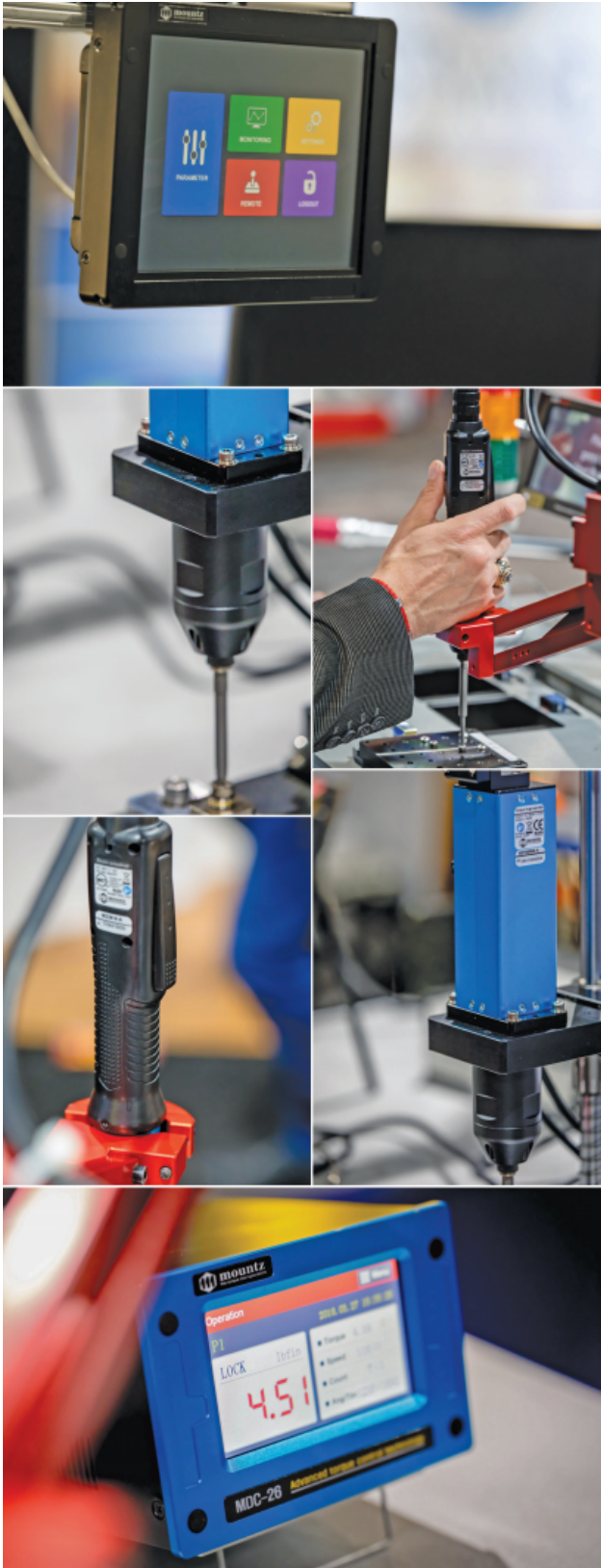
Advanced Torque Control Technology

Parameter
Monitoring
System

Fastening Setting

Select Preset No: ◀ 1 ▶

Parameter	Value	Submit
Type	(First select Type)	TC/AM ▼
Target torque (kgf.cm)	10	8 ~ 90.00
Torque limit (%)	0	0 ~ 100.00
Not use	0	0 ~ 20000
Min angle (degree)	0	0 ~ 20000
Max angle (degree)	0	0 ~ 20000



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