INSTRUCTIONS MANUAL

IMPORTANT

The tool delivered with this manual may have been modified for specific needs.

In that case, please give us the tool code number written on our shipping note or the approximate tool delivery date when you place an order for a new similar tool or for spare parts.

In that way, you will be sure to get the required tool and/or spare part.

WARNING

This information has to be kept in a location known by all users.

Each operator has to read carefully this manual before installing, using, and mending the product.

Be sure that the operator has understood using recommendations and the meaning of signs put on the product.

Most accidents could be avoided respecting this Manual Instructions. As a matter of fact, they were created according to European laws and norms regarding products.

In each case, please respect and follow safety national norms. Do not take off nor damage the stickers or advise put on the product and above all the details imposed by the law.

INDEX

1.   GENERAL SAFETY RULES   ENGLISH

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

1.1 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.

1.2 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.

1.3 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 inflation 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.

1.4 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.

1.5 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.

2. SPECIFIC SAFETY RULES

2.1 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.

2.2 Never lubricate aerosol oil on to the electrical part.

2.   Product

It consist of DC Servo screwdriver and controller as a complete system.

1)   Standard packing item

Screwdriver   Cable_14P (3m)   MDC-26, MDC-32 controller

2) Option accessories

44P I/O wiring box   ParaMon Touch

AC
adapter   RS-232C   Vacuum   Bit holder for
                                                       pick-up   long bit
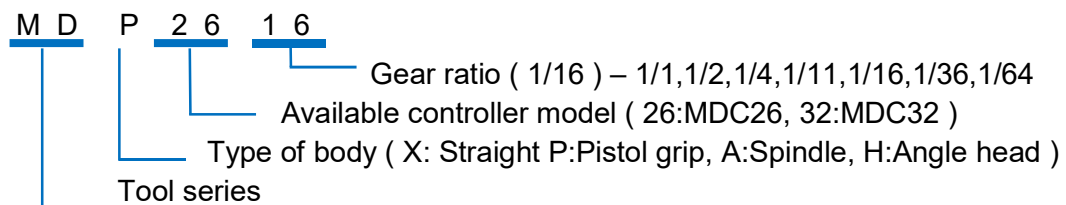
3.   Main features

1) Digital torque and angle program in 15 preset numbers and 2 multi step sequence

programs

2) 15 Models managing variable presets with counting no. and I/O in sequential 10 steps

3) Color LCD touch screen with easy control

4) Auto speed setting by torque

5) Monitoring fastening quality and count of screw numbers

6) Error information by code display

7) Easy parameter setting and monitoring by ParaMON (PC software)

8) Real time torque data and curve display

9) Real time fastening data output

10) Modbus protocol

11) RS232C, Ethernet communication port

4.   Screwdriver

4.1   General specification

no	Item	Specification
1	Electric power	DC38V, 5A max
2	Motor	Swiss DC servo motor
6	Torque accuracy	10% in full scale
7	Torque repeatability	+/- 3%
8	Speed	Auto speed by torque setting,

4.2   Model specification

M D P 2 6 1 6

Gear ratio (1/16) – 1/1,1/2,1/4,1/11,1/16,1/36,1/64
Available controller model (26:MDC26, 32:MDC32)
Type of body (X: Straight P:Pistol grip, A:Spindle, H:Angle head)
Tool series

● Straight hand-held (Lever start)

Model		Torque(kgf.cm)	Speed range	Bit socket	Controller
MD2601		0.3 ~ 4	150-2000	Hex1/4" or dia.4	MDC-26
MD2602		0.5 ~ 7	150-2000	Hex1/4" or dia.4	
MD2604		2 ~ 14	150-1500	Hex1/4"	
MD2611		4~ 34	100-900	Hex1/4"	
MD2616		5 ~ 50	100-620	Hex1/4"	
MD3201		1 ~ 12	150-2000	Hex1/4"	MDC-32
MD3202		2 ~ 22	150-2000	Hex1/4"	
MD3204		4 ~ 40	150-1500	Hex1/4"	
MD3211		10 ~ 90	50-690	Hex1/4"	
MD3216		20 ~ 140	50-470	Hex1/4"	
MD3236		40 ~ 280	50-210	SQ3/8	
MD3264		80 ~ 500	50-115	SQ1/2	

● Pistol grip hand held (Trigger start)

Model	Torque(kgf.cm)	Speed range	Bit socket	Controller
MDP3201	1 ~ 12	150-2000	Hex1/4"	
MDP3202	2 ~ 22	150-2000	Hex1/4"	
MDP3204	4 ~ 40	150-1500	Hex1/4"	
MDP3211	10 ~ 90	50-690	Hex1/4"	MDC-32
MDP3216	20 ~ 140	50-470	Hex1/4"	
MDP3236	40 ~ 280	50-210	Hex1/4"	
MDP3264	80 ~ 500	50-115	SQ3/8	

● Angle head hand-held (Lever start)

Model	Torque(kgf.cm)	Speed range	Bit socket	Controller
MDH2604	2 ~ 14	150-1500	Hex1/4"	
MDH2611	4~ 34	100-900	Hex1/4"	MDC-26
MDH2616	5 ~ 50	100-620	Hex1/4"	
MDH3201	1 ~ 12	150-2000	Hex1/4"	
MDH3202	2 ~ 22	150-2000	Hex1/4"	
MDH3204	4 ~ 40	150-1500	Hex1/4"	
MDH3211	10 ~ 90	50-690	Hex1/4"	MDC-32
MDH3216	20 ~ 140	50-470	Hex1/4"	
MDH3236	40 ~ 280	50-210	SQ3/8	
MDH3264	80 ~ 500	50-115	SQ1/2	

MDP32xx

MD26x
x

MD32x
x

MDH32xx

● Spindle for automation (Remote start by I/O)

Model	Torque(kgf.cm)	Speed range	Bit socket	Wight	Controller
MDA2201	0.10 ~ 0.7	1000	dia.4 half moon		MDC-26
MDA2204	0.2 ~ 2.8	1000	dia.4 half moon		
MDA2601	0.3 ~ 4	150-2000	dia.4 half moon		
MDA2602	0.5 ~ 7	150-2000	Hex1/4" or dia.4		
MDA2604	2 ~ 14	150-1500	Hex1/4" or dia.4		
MDA2611	4 ~ 34	100-900	Hex1/4"		
MDA2616	5 ~ 50	100-620	Hex1/4"		
MDA3201	1 ~ 12	150-2000	Hex1/4"		MDC-32
MDA3202	2 ~ 22	150-2000	Hex1/4"		
MDA3204	4 ~ 40	150-1500	Hex1/4"		
MDA3211	10 ~ 90	50-690	Hex1/4"		
MDA3216	20 ~ 140	50-470	Hex1/4"		
MDA3236	40 ~ 280	50-210	SQ3/8		
MDA3264	80 ~ 500	50-115	SQ1/2		

★ Options

C : Bit cushion – rotating shaft has 4.5mm stroke sliding up cushion

V : Vacuum pick-up assy – screw pick-up by vacuum. It require custom design for mouthpiece
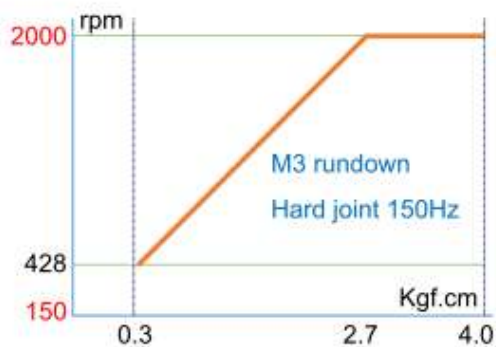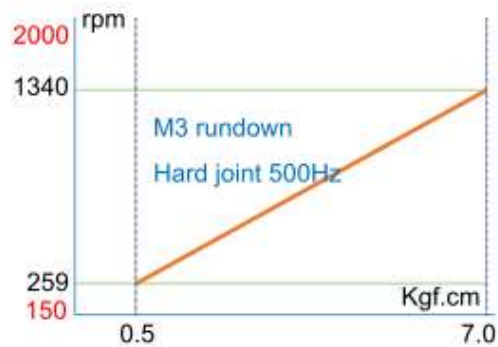
MDA2201-E+C

MDA2201-E+VC

MDA32xx-A

MDA32xx-A
With vacuum pick-up

4.3   Auto Speed by torque setting under the each test condition

◆ Speed range : Available setting range by manual
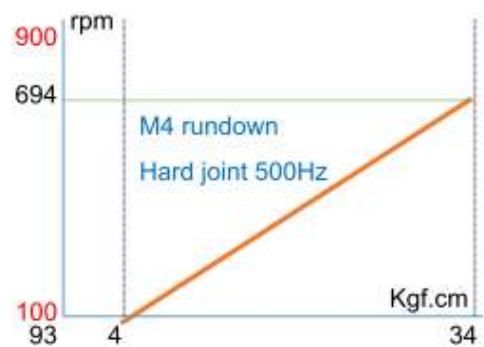◆ **Auto speed by torque setting** : Safe speed not exceeding over torque by rotation inertia under the testing conditions described on the chart
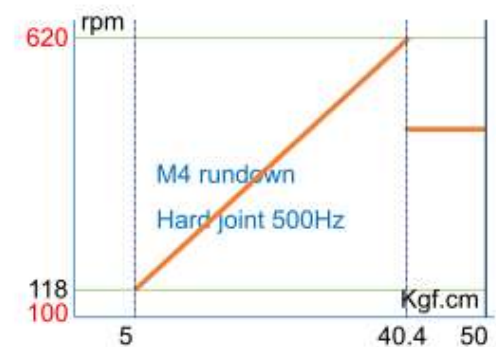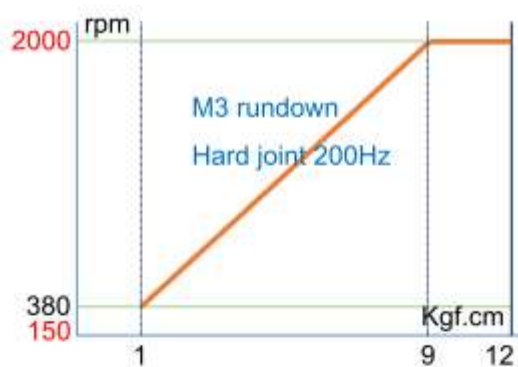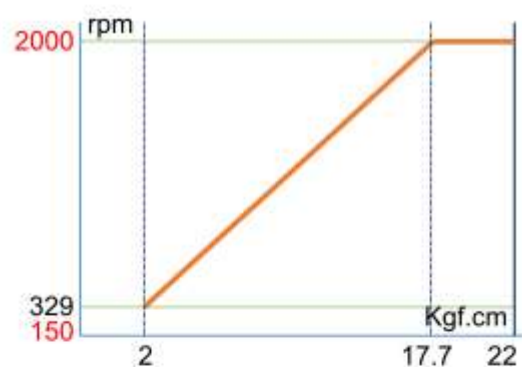

MD2601

MD2602
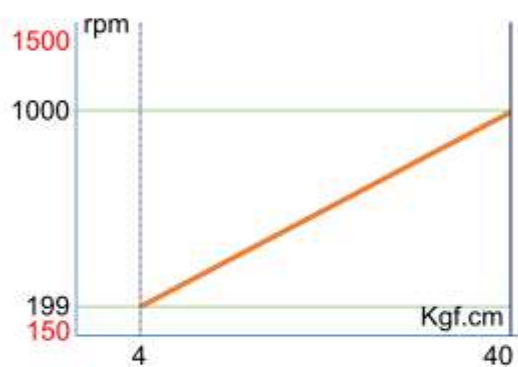

MD2604

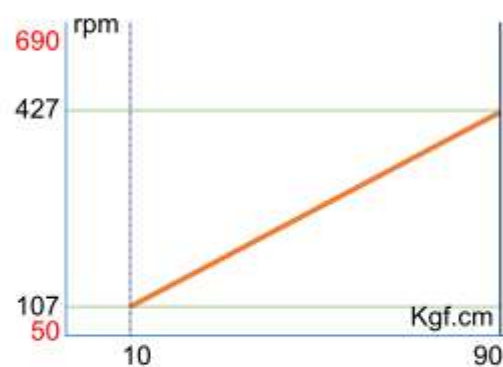

MD2611

MD2616

M3 rundown
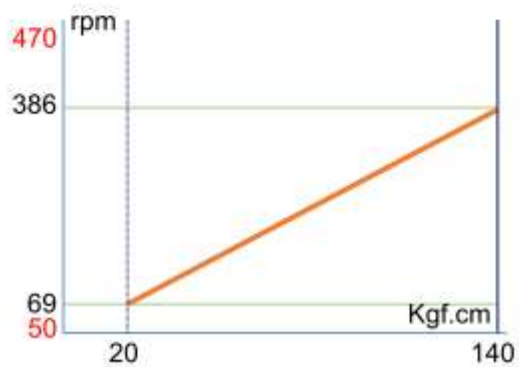Hard joint 200Hz

MD3201

MD3202

MD3204

MD3211

MD3216

4.4 Screwdriver dimension

■ MD2601, MD2602
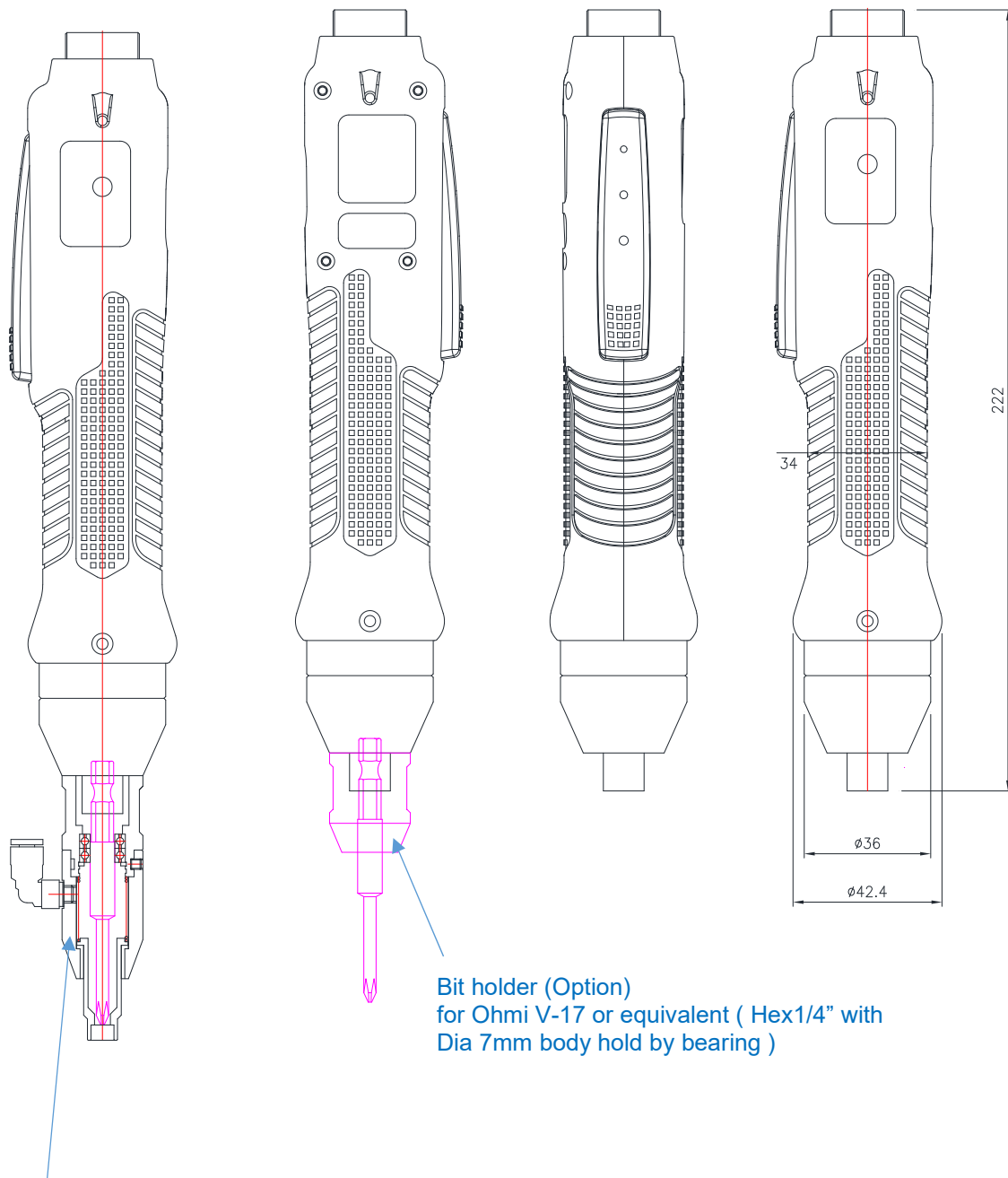
222

34

ø36

ø42.4

Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4" with
Dia 7mm body hold by bearing)

Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia 7mm body hold by bearing)
Mouth piece is not included in the assy. It is custom designed for each screw size and
applications. The above described vacuum pick-up assy is for one of the application. It
doesn't work for all application.

■ MD2604, MD2611, MD2616

228

⌀36

⌀42.4

Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia 7mm body hold by bearing)
Mouth piece is not included in the assy. It is custom designed for each screw size and
applications. The above described vacuum pick-up assy is for one of the application.
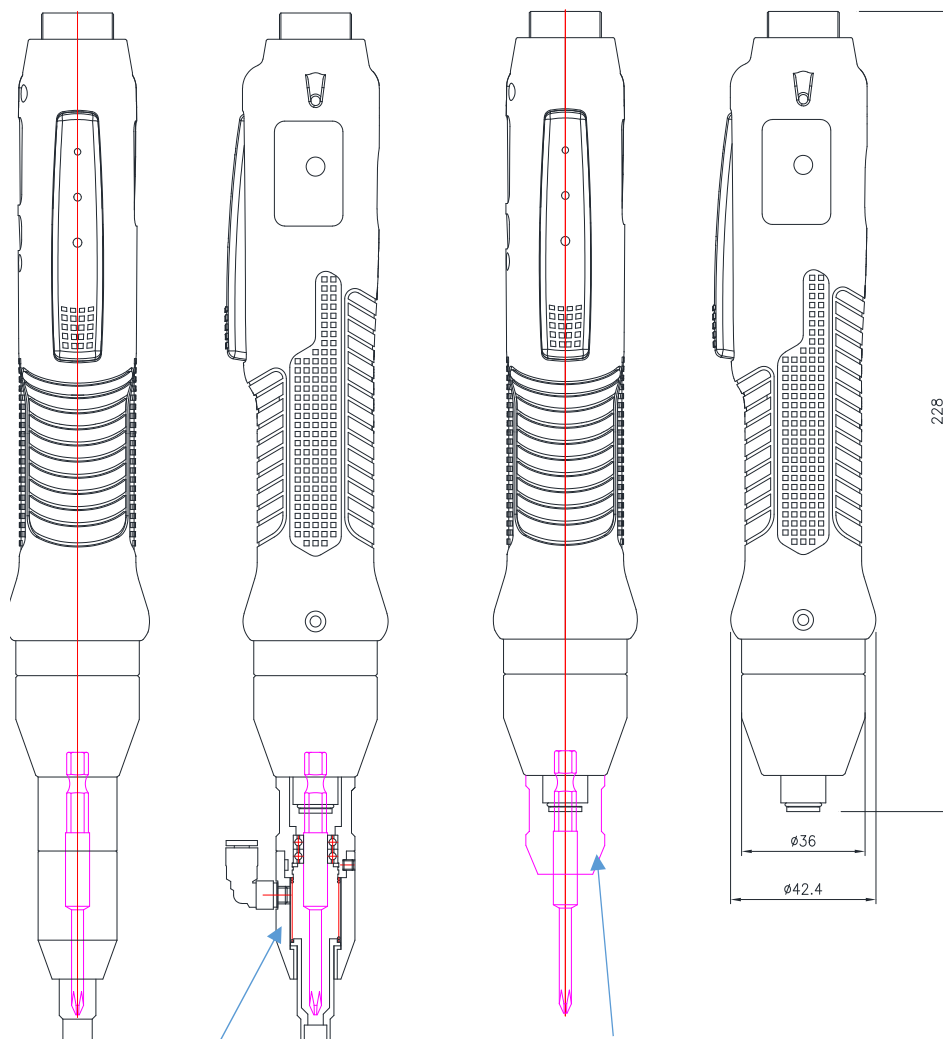It doesn't work for all application.

■ MD3201, MD3202

243

39

ø41

ø49.8

Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia 7mm body hold by bearing)
Mouth piece is not included in the assy. It is custom designed for each screw size and
applications. The above described vacuum pick-up assy is for one of the application. It doesn't
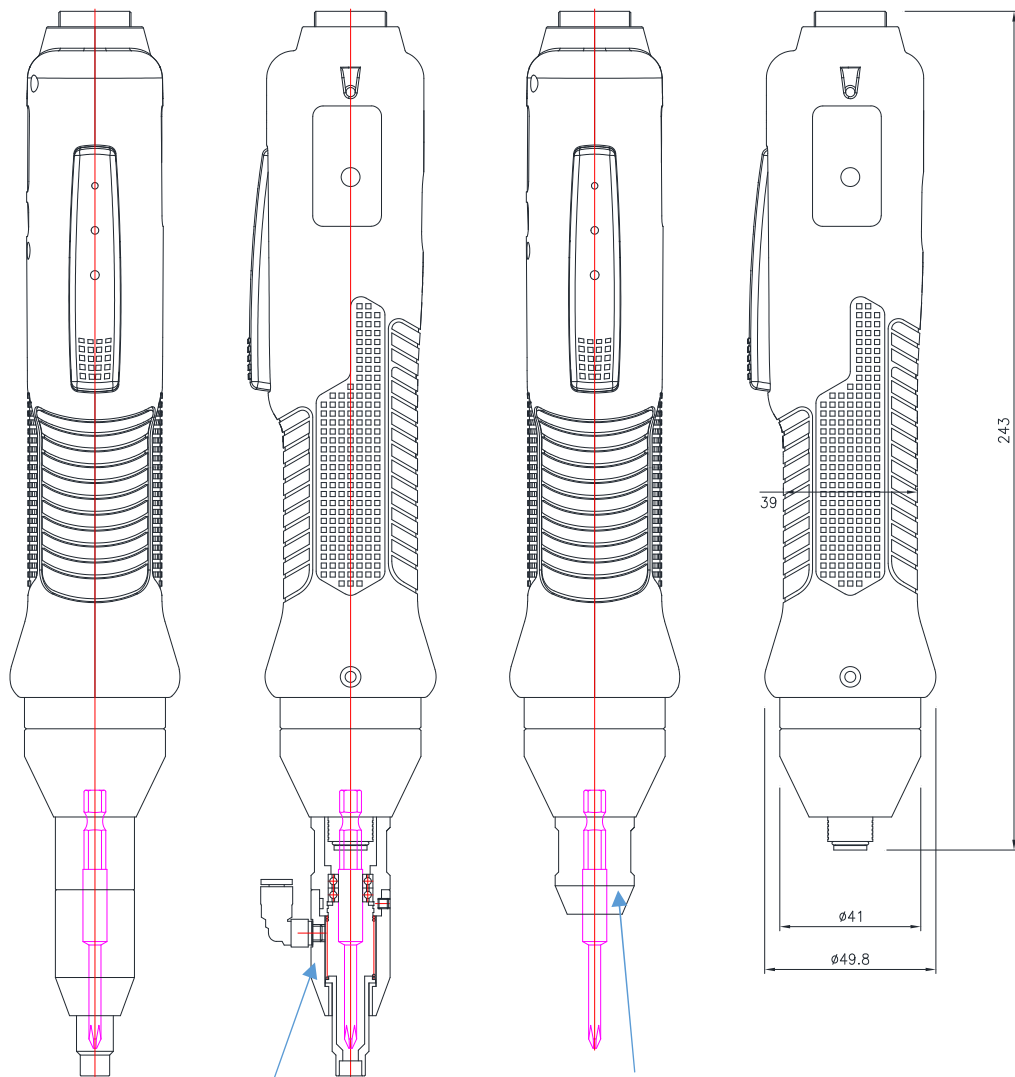work for all application.

■ MD3204, MD3211, MD3216

257

ø41

ø49.8

Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia 7mm body hold by bearing)
Mouth piece is not included in the assy. It is custom designed for each screw size and
applications. The above described vacuum pick-up assy is for one of the application. It doesn't
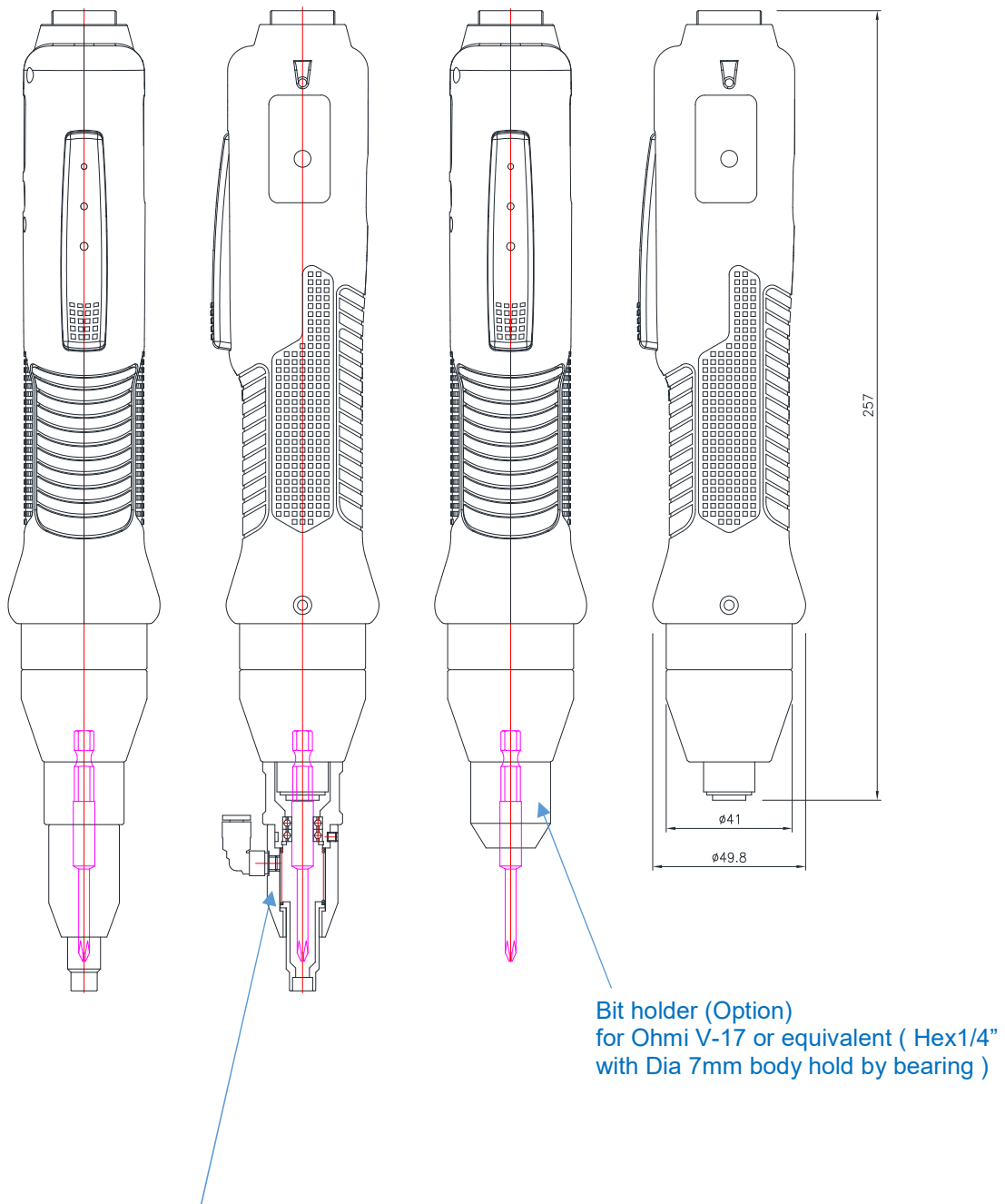work for all application.

■ MDH2604, MDH2611, MDH2616
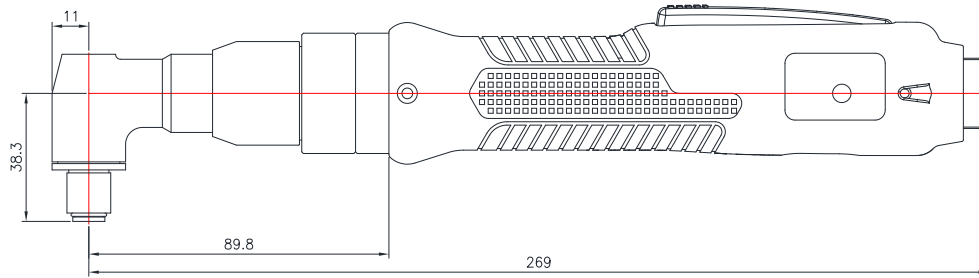
11

38.3

89.8

269

Bit socket : 1/4" hex female (quick change)

■ MDH3201, MDH3204, MDH3211, MDH3216

13.5

47

104.2

303.7

Bit socket : 1/4" hex female (quick change)

13.5

37.8

SQ 3/8"

104.2

303.7
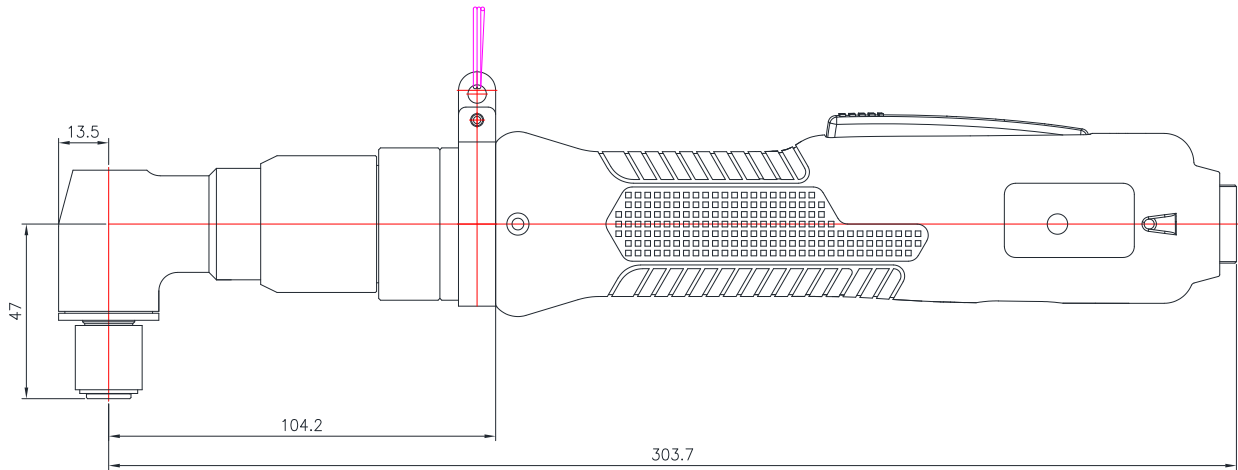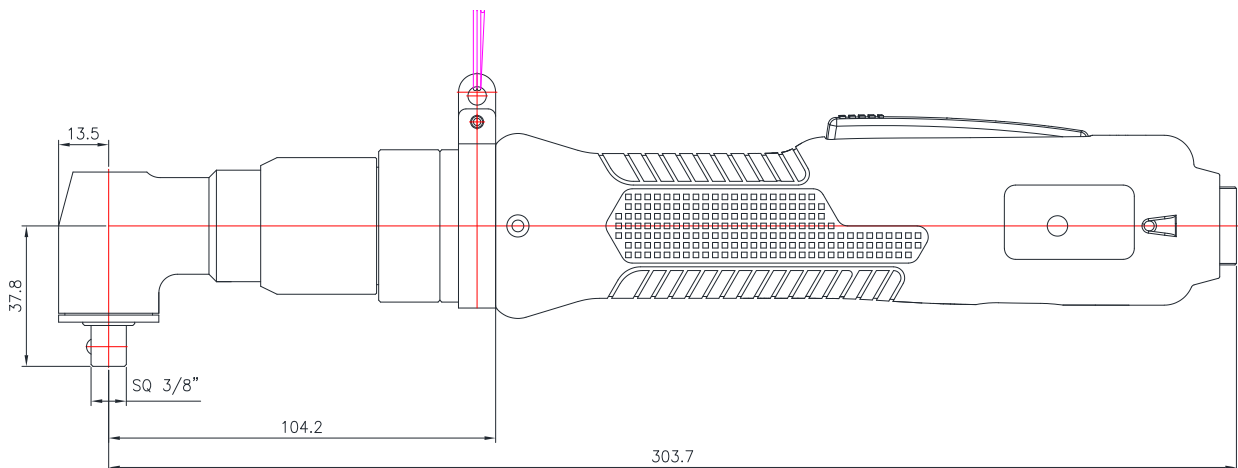
Bit socket : 3/8"SQ drive

■ MDP3201, MDP3202, MDP3204, MDP3211, MDP3216

217

168

1/4" Hex female

U : Top cable connection
Ex. MDP3216-A/U

D : Grip down cable connection
Ex. MDP3216-A/D

3/8" SQ male

SQ 3/8"

Options
- Vacuum pick-up assy
- Bit socket type : A(1/4" Hex), 3/8"SQ
- Cable connection : U (top side), D (grip end)
- Bit holder for 1/4" Hex Ohmi V-17 bit or equivalent

■ MDA2201-E +VC

M D A 2 2 0 1 - E + V C

Model   Bit type
A:1/4"Hex
E:Dia.4mm

Option accessory
V : Vacuum pick-up assy
C : Bit Cushion

Vacuum pick-up + Bit cushion (Option)
Available model : MD2207-E
Bit socket : 4mm round half moon D-cut
Bit cushion : 5mm stroke
Mouthpiece : Custom design (not included)
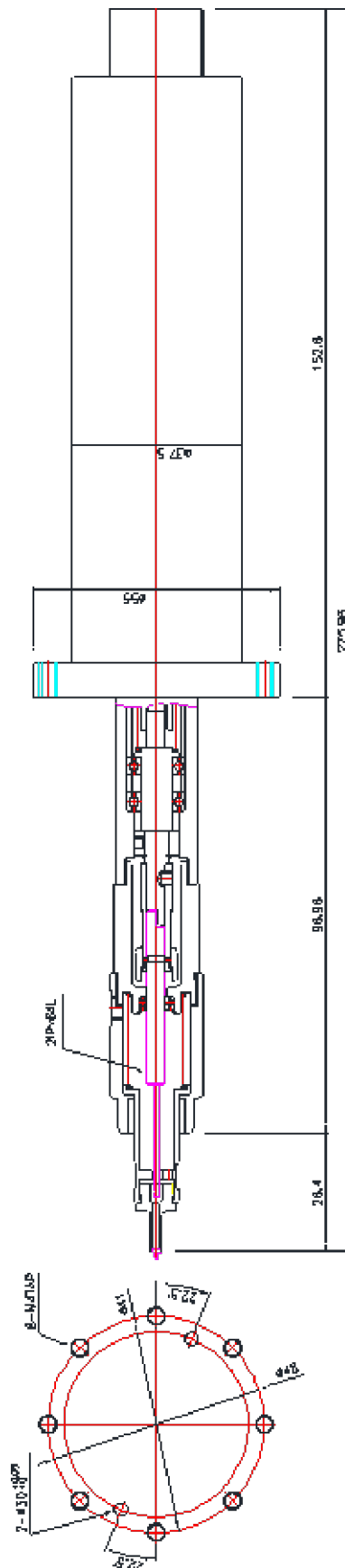
■ MDA2601
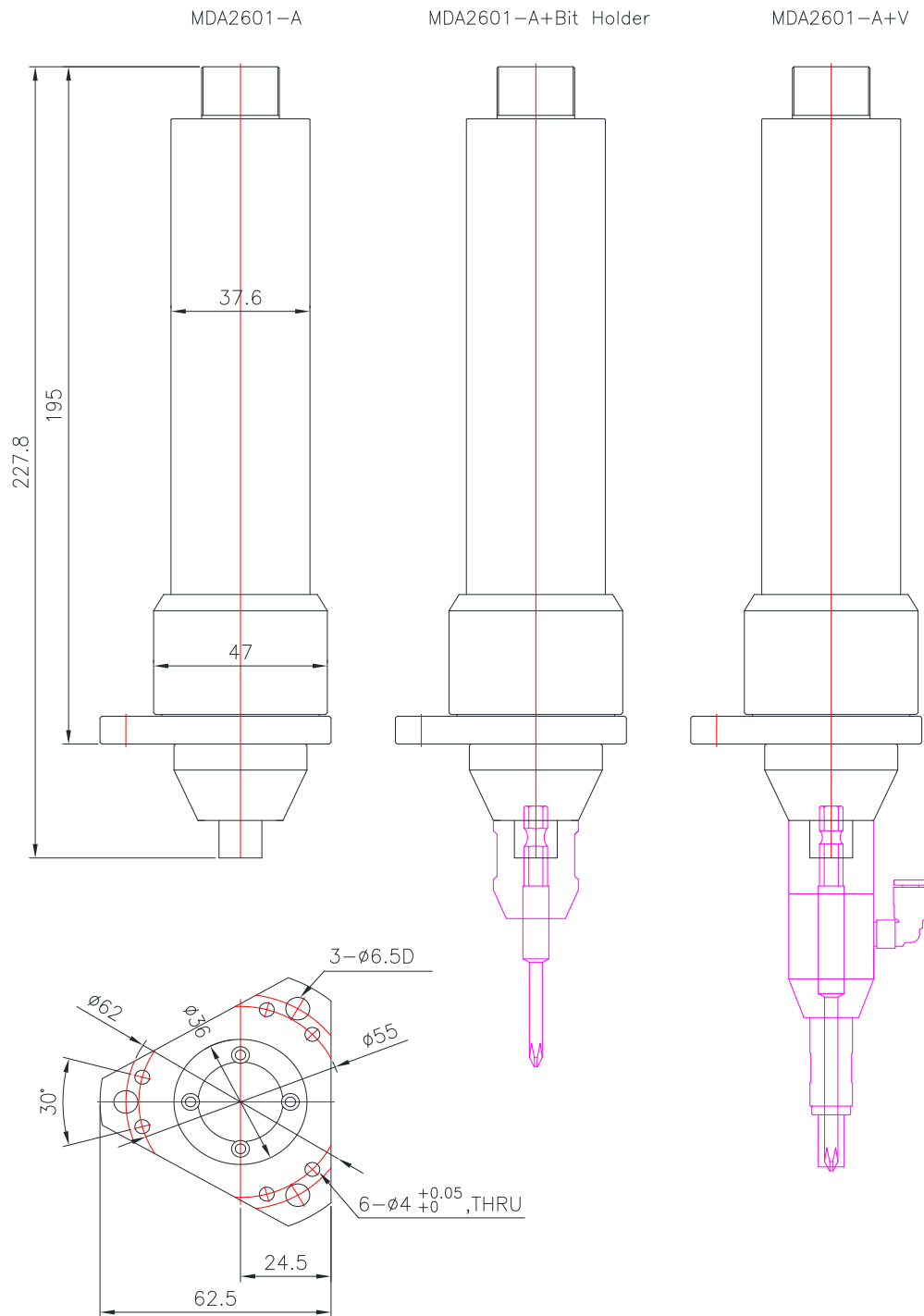
MDA2601−A   MDA2601−A+Bit Holder   MDA2601−A+V

227.8
195
37.6
47

3−Ø6.5D
Ø62
Ø36
Ø55
30°
6−Ø4 +0.05 +0 ,THRU
24.5
62.5

1/4" Hex female

Options
- Bit holder with bearing
- Vacuum pick-up assy
- Bit : 1/4" Hex Ohmi V-17 bit or equivalent

■ MDA2604, MDA2611, MDA2616

MDA2604−A
MDA2611−A
MDA2616−A

MDA2604−A+Bit Holder
MDA2604−A+Bit Holder
MDA2604−A+Bit Holder

MDA2604−A+V
MDA2611−A+V
MDA2616−A+V

234.3
195
37.6
47

3−ø6.5D
ø62
ø36
ø55
30°
6−ø4 $^{+0.05}_{+0}$,THRU
24.5
62.5

Options
- Bit holder with bearing
- Vacuum pick-up assy
- Bit : 1/4" Hex Ohmi V-17 bit or equivalent

1/4" Hex female

■ MDA2602, MDA3201, MDA3202

MDA2602−A   MDA2602−A+Bit Holder   MDA2602−A+V
MDA3201−A   MDA3201−A+Bit Holder   MDA3201−A+V
MDA3202−A   MDA3202−A+Bit Holder   MDA3202−A+V

37.6

232.25

197

47

3−⌀6.5D

⌀62
⌀41
⌀55

30°

6−⌀4 $^{+0.05}_{+0}$,THRU

24.5

62.5

Options
- Bit holder with bearing
- Vacuum pick-up assy
- Bit : 1/4" Hex Ohmi V-17 bit or equivalent

1/4" Hex female

■ MDA3204, MDA3211, MDA3216

MDA3204—A
MDA3211—A
MDA3216—A

MDA3204—A+Bit Holder
MDA3211—A+Bit Holder
MDA3216—A+Bit Holder

MDA3204—A+V
MDA3211—A+V
MDA3216—A+V

251.5
209.05
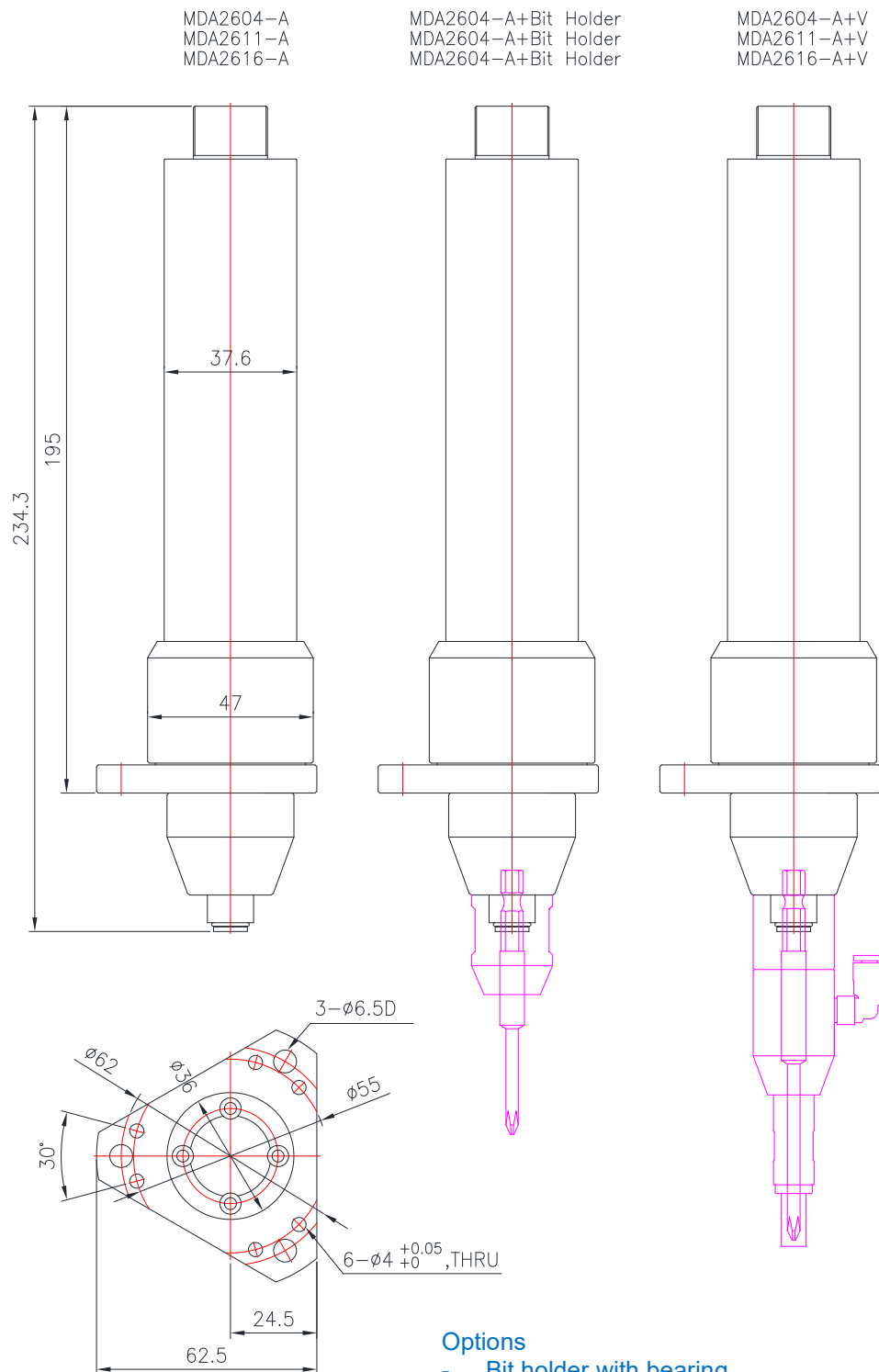37.6
47

3—ø6.5D
ø62
ø41
ø55
30°
6—ø4 $^{+0.05}_{+0}$,THRU
24.5
62.5

1/4" Hex female

Options
- Bit holder with bearing
- Vacuum pick-up assy
- Bit : 1/4" Hex Ohmi V-17 bit or equivalent

5.   Controller

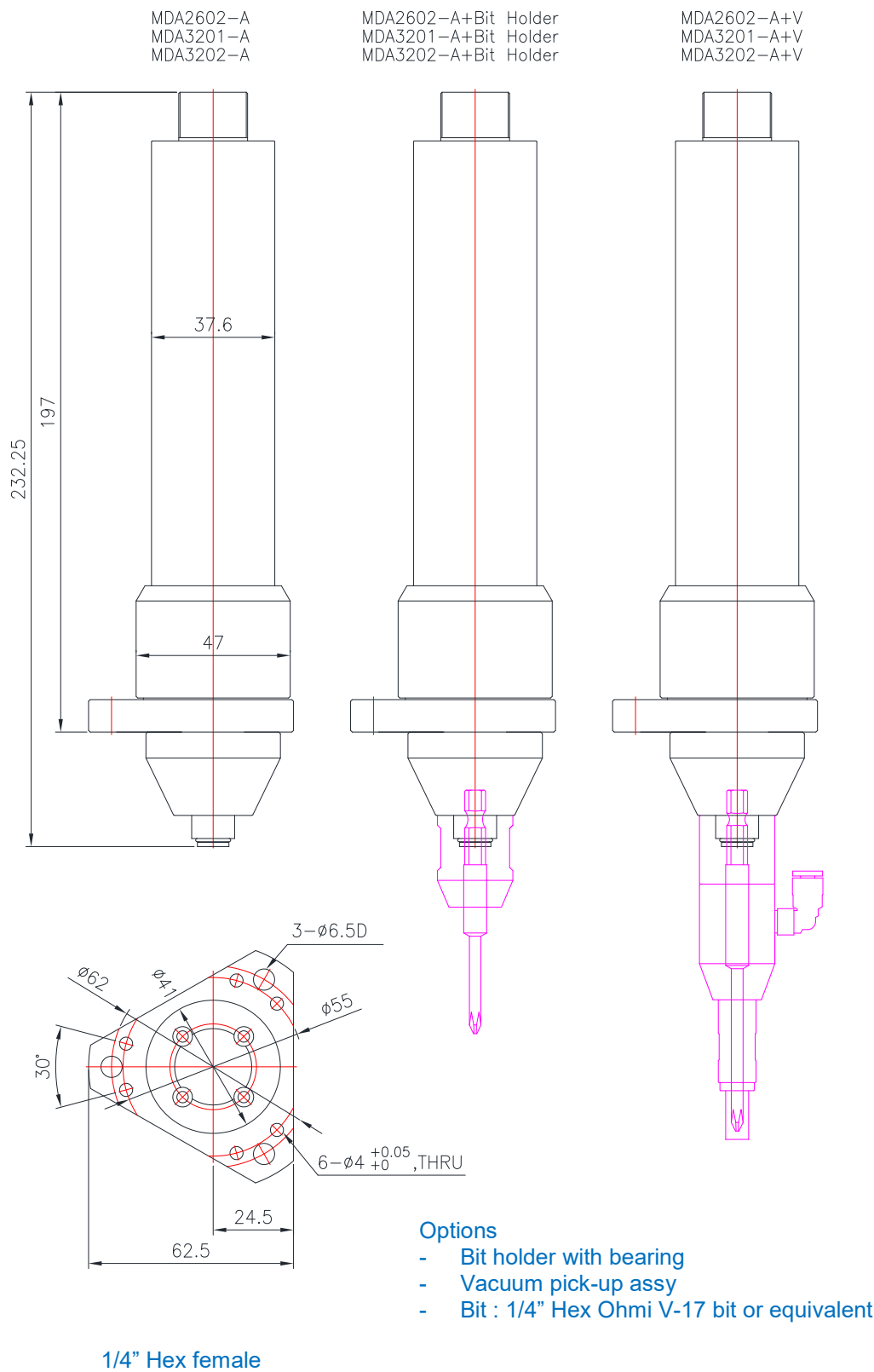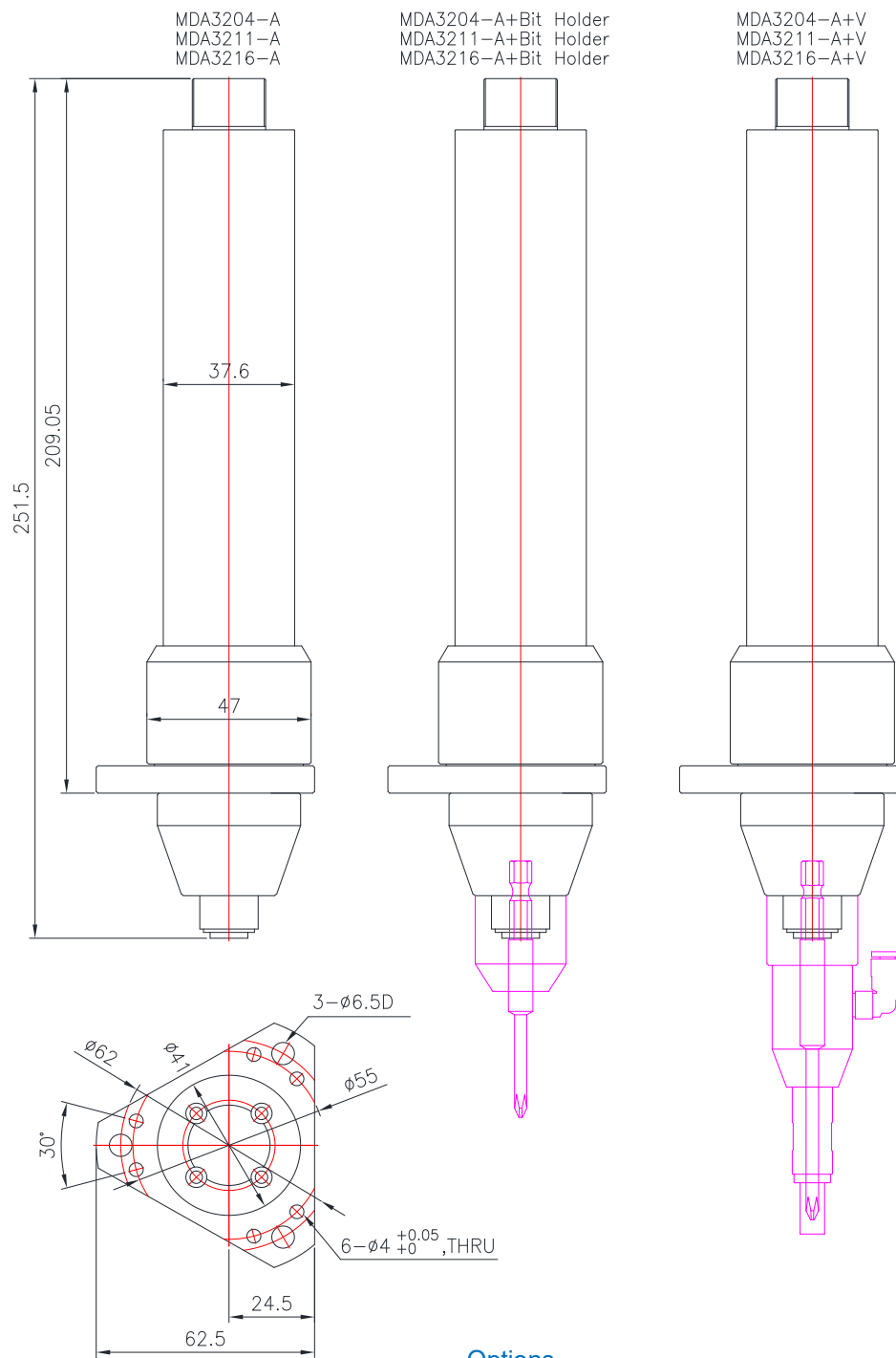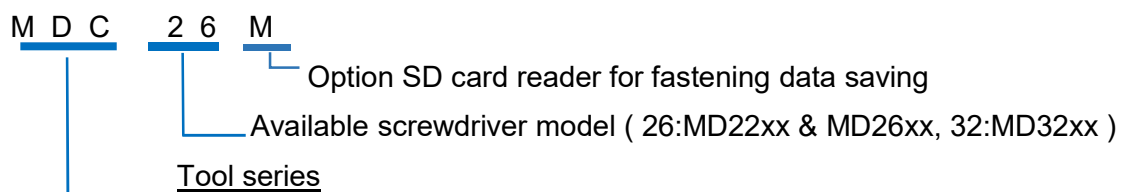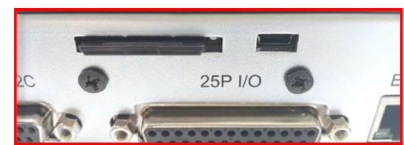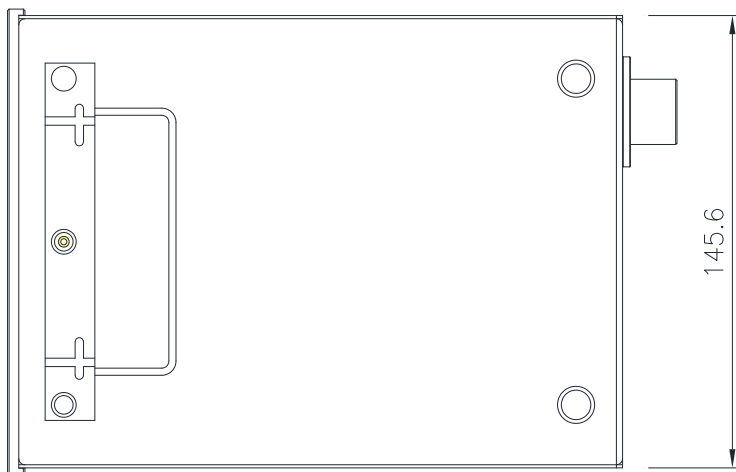## 5.1   Specification

no	Item	Specification	
		MDC-26 series	MDC-32 series
1	Input	AC230V, 50/60Hz 2.5A	
2	Output	DC 38V 5A	
3	Fuses	230V T5A Qty : 2x(N+L)	
4	Operating environment	0 ~ 40℃ / 15 ~ 80% RH (without dew)	
5	Front panel	4.3" Color LCD with touch screen	
6	Communication	1 x RS232C, 1 x RJ45	
7	Protocol	Modbus RTU(Serial), Modbus TCP/IP(Ethernet)	
8	I/O	8 Input & 8 Output flexible I/O (25P D-Sub)	
9	No. of program(Preset)	15	
10	Torque calibration	- 10% ~ +10%	
11	Screwdriver recognition	Auto detection of connected driver when power ON of controller	
12	Error display	Error code display (3 groups)	
13	Fastening verification	Fastening data verification (NG/OK) by the preset pattern of angle.	

5.2   Model specification

M D C   2 6   M

└─ Option SD card reader for fastening data saving

└─ Available screwdriver model (26:MD22xx & MD26xx, 32:MD32xx)

└─ Tool series

5.3 Controller dimension
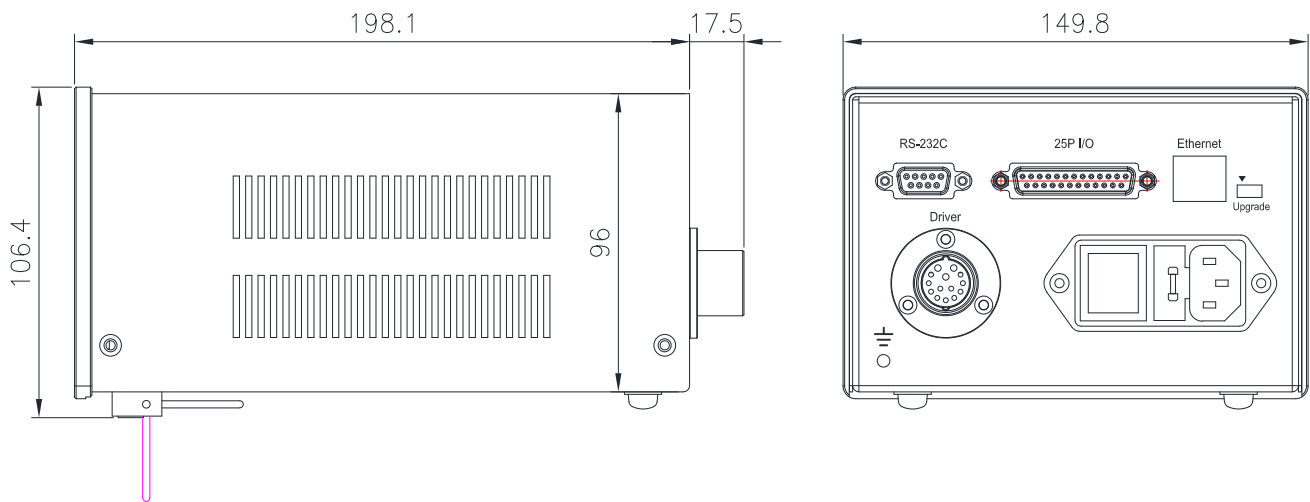
Memory card (option)

6.   Operation

6.1   Getting started at first power on or screwdriver change.
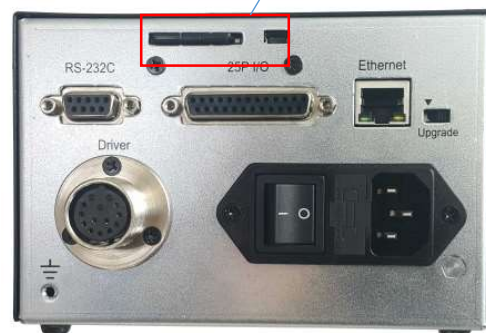*It is really important to initialize the controller and driver as a set, before attempting to make any settings, as the information stored within the controller during testing at time of manufacture may not correlate with the driver shipped with the system.*

- Connect screwdriver to controller with supplied cable
- Connect controller power cable
- Check that UPGRADE switch (rear face) is on right side position
- Power on controller with power switch

Operation   Menu

Error

[114] UNKNOWN DRIVER
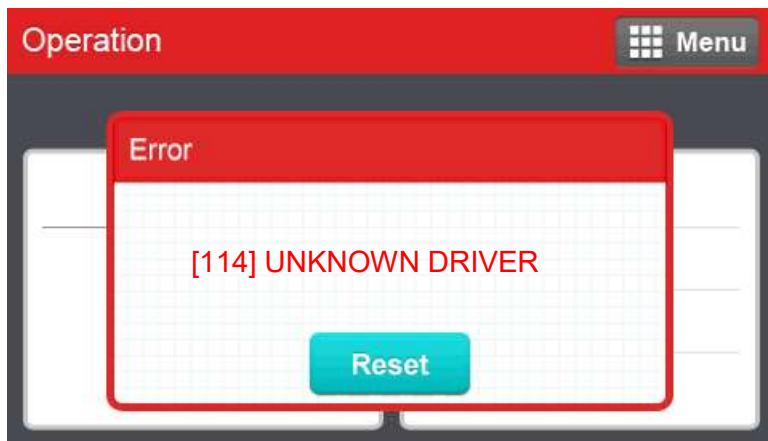
Reset

Controller screen will display error message 114: unkown driver

- Click Reset button.

- Click   Menu button on the top right side

Connexion   Retour

Entrer mot de passe

Version   LCD Ver
Modèle   Opt Ver
Sn No   UI Ver : 1.02.0

Parameter menu require password to log in
- The initial factory setting is " 0 " for password

- Menu screen is displayed :

CONTROLEUR MDC   🔒 Décon

P   Paramètres   👤 Commandes

∿Q Surveillance   Réglage
     temps réel
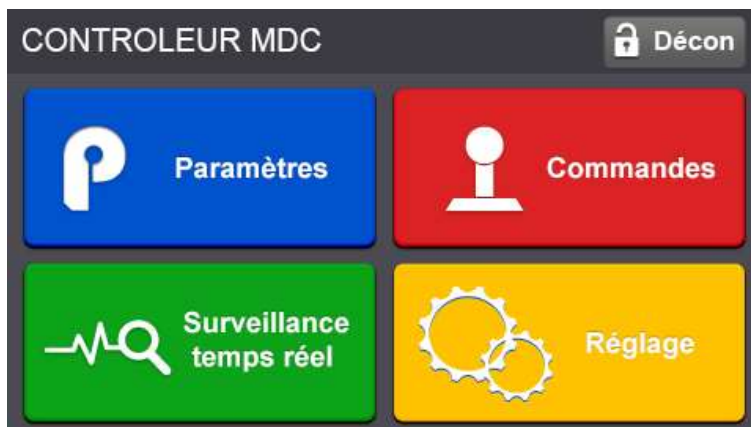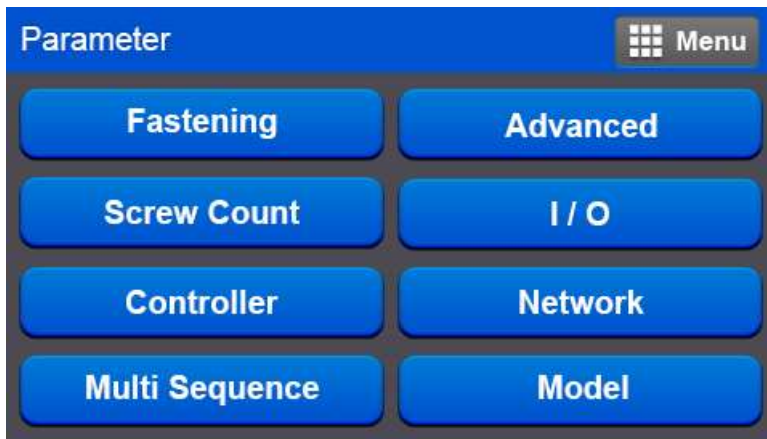
Click Parameter

- Click Controller. First parameter page is displayed

- Click 2 times on arrow at bottom right side to go to Controller page 3/9 :
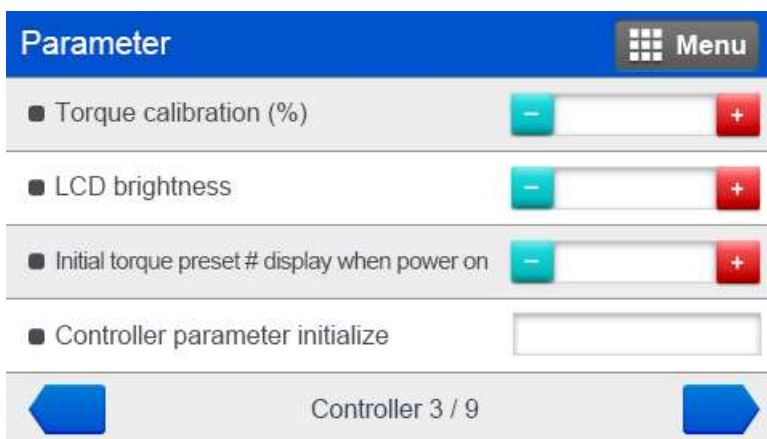
- On last line 'Controller parameter initialize' , set value to 77 and valid.

- During initialization,

- After initialization, automaticaly go back to display

6.2   Operation screen

Program(Preset) # (P1 – P15) or Multiseq. MA, MB or Model (M1 to M15)

Fastening result OK/NG

Menu

Date & Time

Torque target, Snug angle

Speed target/Monitoring

Count target/Monitoring

Monitoring angle/time

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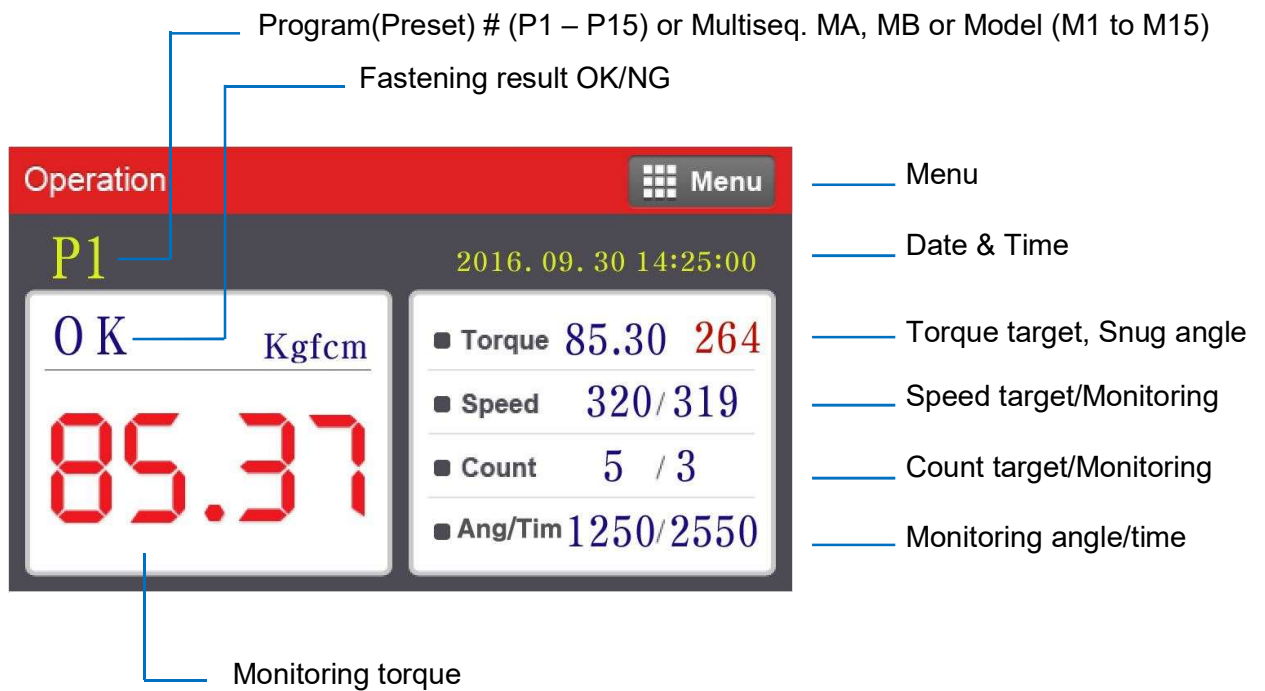
Operation screen is a default window when the controller power ON.

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 Select

P1	P2	P3	P4	P5
P6	P7	P8	P9	P10
P11	P12	P13	P14	P15
Multi A	Multi B			

Preset # or Model select

MDC CONTROLLER   Logout

PARAMETER   REMOTE

MONITORING   SETTINGS

Password Log In

Operation   Menu

P1   2016. 09. 30 14:25:00

O K   Kgfcm

85.37

■ Torque 85.30 264
■ Speed 320/319
■ Count 5 / 3
■ Ang/Tim 1250/2550
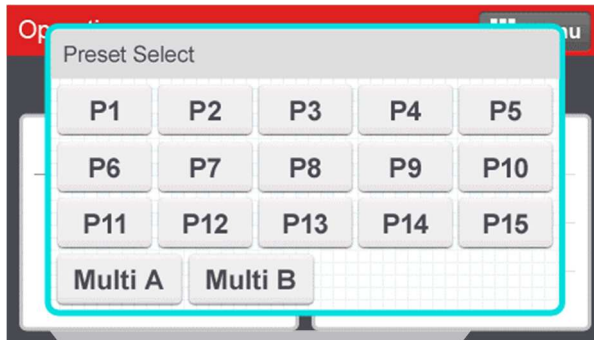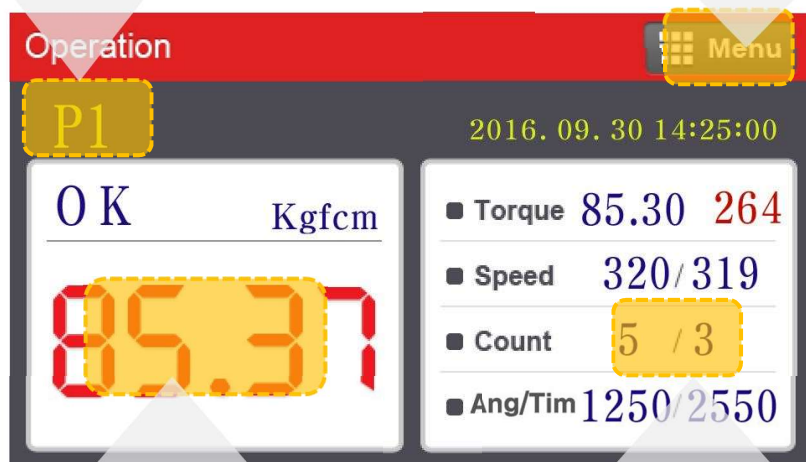
Real time monitoring

Last count cancel

Monitoring   Menu

Graph   >
Input & Output   >
Network   >

Operation   Menu

Confirmation

Are you Sure ?

Cancle   O K
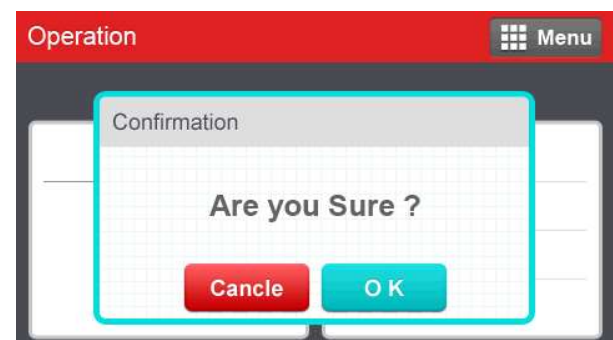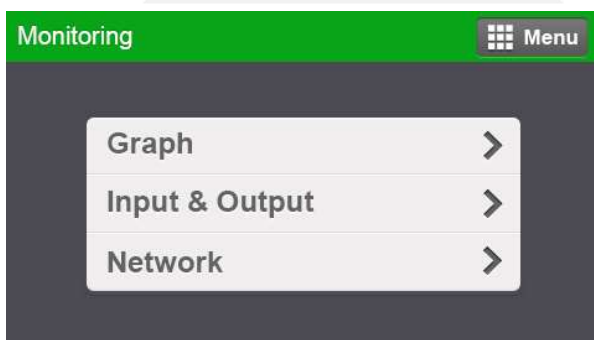
6.3 Rapid view Parameter screens

Parameter	☰ Menu

Sensor signal select ✕

AUTO

Start (Continuous ON)

Start (pulse) + Time limit (optional:P123)

Start (pulse) + Finish (pulse)

Parameter	☰ Menu

● input 1 [ ] ▼ ● input 2 [ ] ▼

● input 3 [ ] ▼ ● input 4 [ ] ▼

● input 5 [ ] ▼ ● input 6 [ ] ▼

● input 7 [ ] ▼ ● input 8 [ ] ▼

◀ Input ▶

Parameter	☰ Menu

Fastening	Advanced
Screw Count	I / O
Controller	Network
Multi Sequence	Model

Parameter	☰ Menu

● IP address [. . .]

● Gateway [. . .]

● Ethernet port [−] [+]

◀ Network ▶

Parameter	

● Torque compensation (%) [−]

● LCD brightness [−]

● Initial torque preset # display when power on [−]

● Auto lock (Model) YES ●

◀ Controller 3 / 8 ▶

6.4   Presets or Model select

To use Model, Controller 4/8 → Model select ON setting required

Preset Select

P1	P2	P3	P4	P5
P6	P7	P8	P9	P10
P11	P12	P13	P14	P15
Multi A	Multi B			
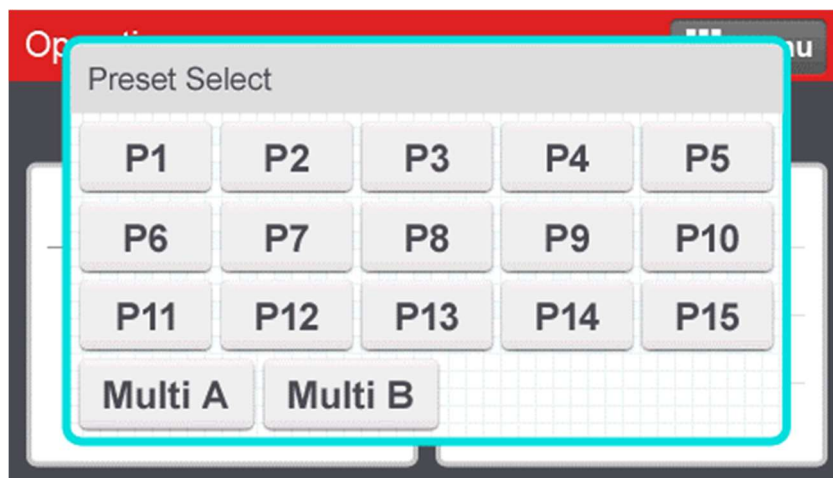
There are 15 presets of program. Each preset contains the following parameters
- - Torque
- - Speed
- - verifying angles
- - soft start duration time

- - free speed tightening.

Preset #1   ● ● ● ● ● ● ● ● ●   **Preset #15**

Multi A

Multi B
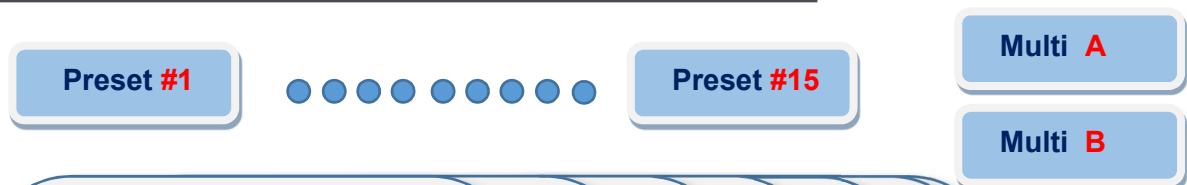
Parameter settings

1. Type (TC/AM or AC/TM)

2. Target Torque or Max torque

3. Torque limit(%) or Min torque

4. Target angle or No use

5. Min angle

6. Max angle

7. Snug torque

8. Speed

9. Angle for free speed

10. Free speed

11. Soft start

12. Seating point

13. Torque rising time

14. Torque holding time

15. Torque compensation

6.5   Parameters

To program each Presets, Click ⊞ Menu and go to   Ⓟ PARAMETER

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

Login   Back

1	2	3	0
4	5	6	Cancle
7	8	9	Enter
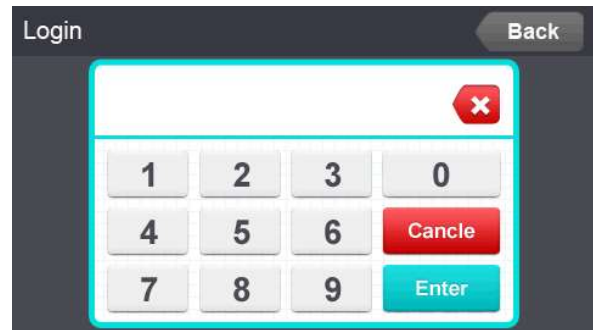
Parameter groups :

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. Advanced Function	Free reverse	A250 – 253
	Engaging detection	A254 – 260
	Angle after torque	A261 – 265
5. Controller	Setting 1	A270 – 284
	Setting 2	A290 – 305
6. Network	IP address	A310 – 318
7. Multi sequence	Multi-A, Multi-B	A321 – 348
8. Model	Model #1 to 15	A350 – 499

6.6 Fastening settings

Parameters listed on A, B and C pages for each Preset from 1 to 15

Preset selection
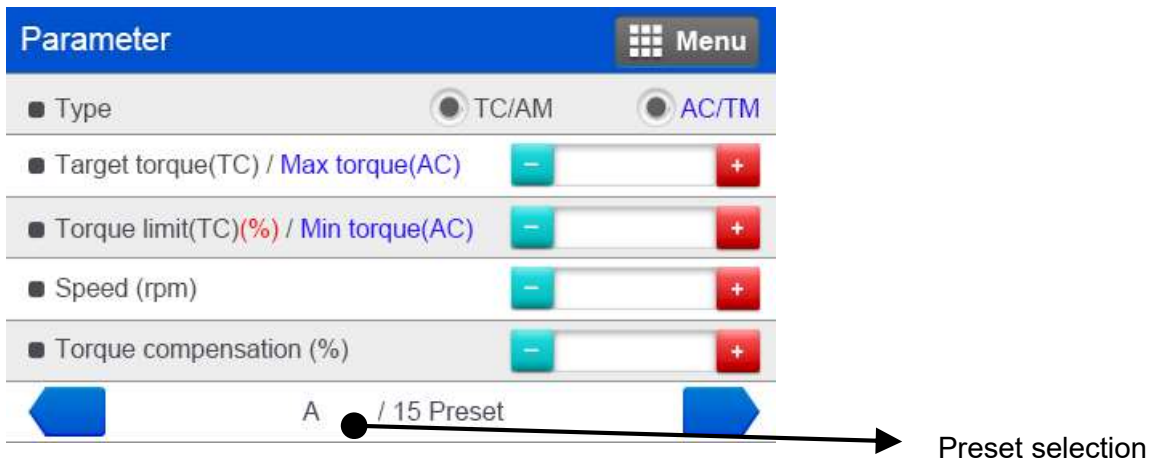
Type

	Unit	Range	Initial
Description	Control type TC/AM : torque control/ angle monitoring AC/TM: angle control/ torque monitoring		

Target torque

	Unit	Range	Initial
	set up in controller	Tool range	
Description	TC/AM : Target torque AC/TM:: Max torque		

Torque limit

	Unit	Range	Initial
Torque limit (TC) % Min torque (AC)	% Set up in controller	0 ~ 100 Tool range	0
Description	TC/AM : torque monitoring tolerance +/- % of target for fastening Ok AC/TM:: Min torque		

Speed

	Unit	Range	Initial
	rpm	Tool range	Auto
Description	Target speed : Speed is changed by torque setting automatically. To change manually, Auto Speed must be Disabled in Controller 5/9		

Torque compensation

	Unit	Range	Initial
	%	80 ~ 120	100
Description	Output torque can be decreased or increased between -/+ 20% for each preset # This torque tunning value is saved in controller, not in driver. Be careful tunning value when replace the screwdriver.		

Target angle

	Unit	Range	Initial
	degree	0 ~ 9999	0
Description	Target angle in AC/TM mode		

Min angle

	Unit	Range	Initial
	degree	0 ~ 9999	0
Description	Minimum angle to be OK in TC/AM mode		

Max angle

	Unit	Range	Initial
	degree	0 ~ 9999	0
Description	Maximum angle to be OK in TC/AM mode		

Snug torque

	Unit	Range	Initial
	Set up in controller	Tool range	0
Description	Point to start monitoring angle in TC/AM mode		

Seating point torque %

	Unit	Range	Initial
	%	10 ~ 95	50
Description	% of target torque Auto speed slow down to ramp-up speed for torque control		

Soft start

	Unit	Range	Initial
	msec	0 ~ 300	0
Description	Speed reach to the target in the setting time, Preset complement to acceleration controller parameter		

Free angle

	Unit	Range	Initial
	degree	0 ~ 9999	0
Description	Angle for Free speed		

Free speed

	Unit	Range	Initial
	rpm	Tool range	0
Description	Manual setting speed. Shift back to the auto speed after the free angle running		

Torque rising time

	Unit	Range	Initial
	msec	50 ~ 200	50
Description	Time setting from seating point to the target		

Ramp-up speed

	Unit	Range	Initial
	rpm	Tool range	Auto
Description	Speed after seating to the end of tightening		

6.7 Advanced functions:
Free reverse rotation, Engaging torque détection, Angle after torque up

3 extra fonctions can be set and selected or not for each Preset
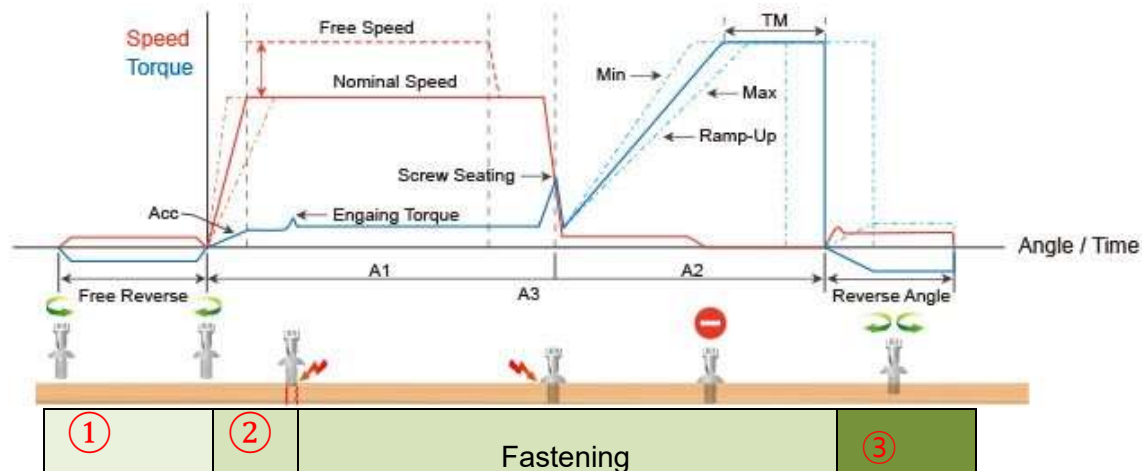
6.7.1 Free reverse rotation before Fastening
Free Reverse rotation to guide the screw into the screw hole smoothly with low speed

Enable

	Unit	Range	Initial
		YES NO	NO
Description	Enable this function		

Speed (rpm)

	Unit	Range	Initial
	rpm	Tool range	0
Description	Tool reverse rotation speed		

Angle (turn)

	Unit	Range	Initial
	0.1 turn	0 ~ 20	0
Description	Reverse rotation angle in rev		

Enable preset number

	Unit	Range	Initial
		1 ~ 15	0
Description	Select preset(s) in which function will be activated, if function enabled		

6.7.2 Engaging Torque detection

It is possible only when the screw engaging provide significantly higher torque than previous free run.
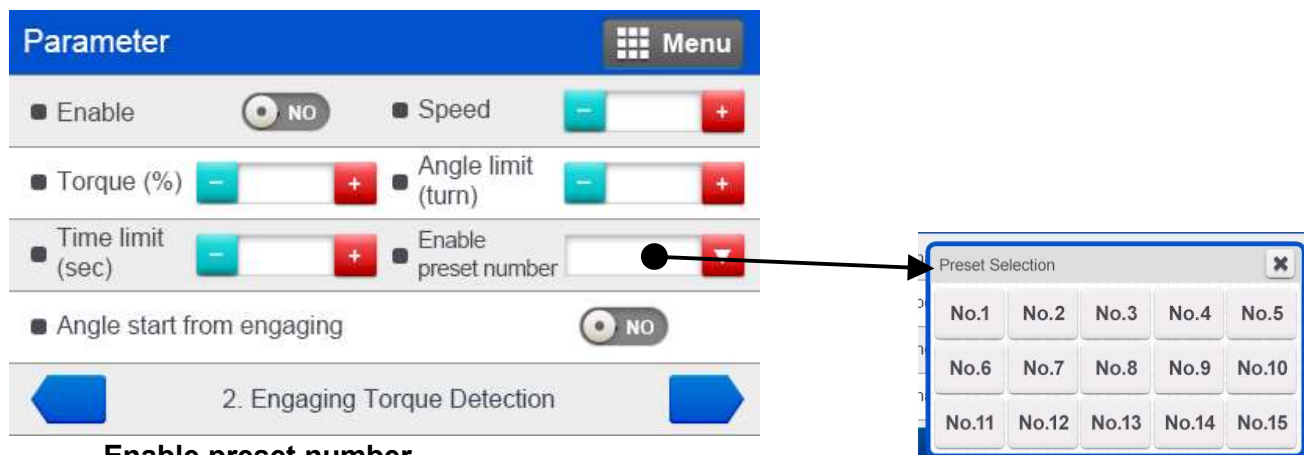
Enable preset number

	Unit	Range	Initial
		YES NO	NO
Description	Enable this function		

Speed

	Unit	Range	Initial
	rpm	Tool range	0
Description	Tool rotation speed		

Torque (%)

	Unit	Range	Initial
	%	0 ~ 50	0
Description	Engaging torque setting by percentage of target torque – detection will be active from this value		

Angle limit (turn)

	Unit	Range	Initial
	0.1 turn	0 ~ 20	0
Description	Max engaging rotation in rev		

Time limit (sec)

	Unit	Range	Initial
	sec	0 ~ 10	0
Description	Max engaging timelap		

Enable preset number

	Unit	Range	Initial
		1 ~ 15	0
Description	Select preset(s) in which function will be activated, if function enabled		

Angle start from engaging

	Unit	Range	Initial
		YES - NO	NO
Description	If select, the monitoring angle count is reset and start again from engaging torque detection.point.		

6.7.3   Angle after torque up
It manage extra angle control in both forward or reverse direction after tightening by torque.
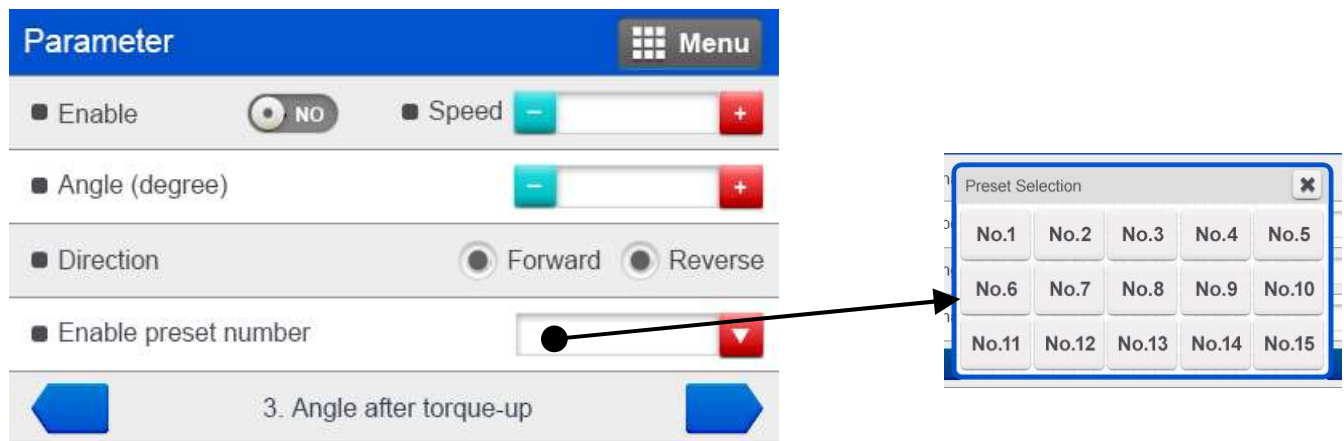
Enable

	Unit	Range	Initial
		YES NO	NO
Description	Enable this function		

Speed

	Unit	Range	Initial
	rpm	Tool range	0
Description	Driver rotation speed		

Angle

	Unit	Range	Initial
	degree	0 ~ 15000	0
Description	Rotation angle		

Direction

	Unité	Range	Défaut
		Forward - Reverse	Forward
Description	Angle rotation direction		

Enable preset number

	Unit	Range	Initial
		1 ~ 15	0
Description	Select preset(s) in which function will be activated, if function enabled		

6.8 Multi Sequence settings

Multi sequence provide a cycle of fastening by a start signal.
Total 10 steps of programing is allowed in MA(Multi A) and MB(Multi B) presets
To program, select the command and required parameter on each step.
To finish the multi sequence programing, last step command should be "END"
For screw counting and I/O's connexions, please use Models

◆ Command details

Command	Description	Data (range)
NOP	No operation	No use
Fastening	tool start fastening process in forward rotation - Selected Preset is fill in Data field	Preset selection 1 to 15
Loosening	tool start loosening process in reverse rotation	Angle in 0.1 turn up to 999
Select preset#	Select preset # (not mandatory) Preset can be selected in data of Fastening command.	Preset selection 1 to 15
Delay	time delay for setting time	1 to 999
Jump	Move to the setting step	2 to 9
Count value = A	Total number "A" to count	1 to 999
Sub if (A)	Subtract 1 from "A" and save the value replacing "A" . If the value " A" is not "0", then move to the next lower step. If the value " A" is "0", then move to 2nd lower step	No use
End	Finish multi-sequence process (mandatory)	No use

Be carreful : Data can be set from 0 et 999. Please set correct value in fields

Example : please refer to Paramon Instruction Manual

6.9   Model settings

It provides sequential screw tightening with screw counting feature together with I/O and time delay managing by programing in 10 steps.

There are 4 different type of command – Input, Output, Fastening and Time delay

Each step can have one of the above four commands with related setting value

The fastening with counting number follows all settings and features in Screw Count menu except the number of screw.

There are total 15 programable Models.

Once Model is selected, the digital inputs for preset # select becomes model # select automatically.

Click on blue area to view :
Description Input/Output data 2
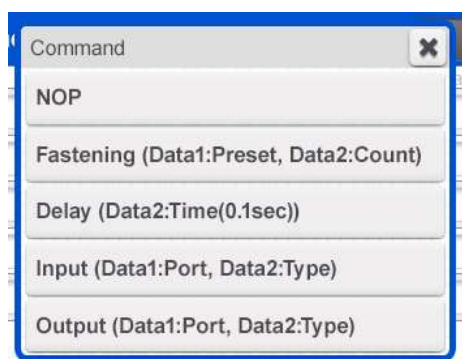
Input/Output data 1 :
IO port used should be
unassigned (None) in IO settings
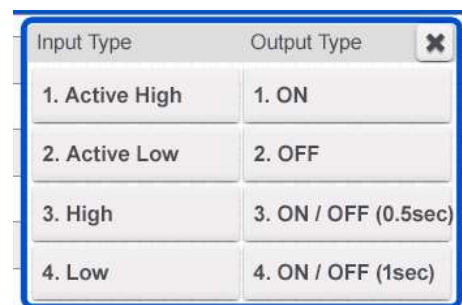
To use model feature, select Enable on the menu controller 4/9 'Model mode'

The spindle can be locked automaticaly in all steps except Fastening step, by selecting Enable on the menu Controller 4/9 'Auto lock (model)'

◆ Command details

Command	Description	Data 1	Data 2
Input	Mapping digital Input	Input # select from 1 - 8	0 : No output → NG 1 : Active High 2 : Active Low 3 : High status 4 : Low status
Output	Mapping digital Output	Output # select from 1 - 8	0 : No Output → NG 1 : On 2 : Off 3 : On for 0.5s and Off 4 : On for 1.0s and Off
Fastening	Start fastening	**Preset # from 1 – 13 14 : MA* 15 : MB***	Count number from 1 - 250
Delay	Delay time	-	0.1 - 25 sec. (unit: 0.1s)

Note :

* : To select preset 14 and 15, please program preset 14 and 15 in a one step multisequence .

E.g.

6.12 Screw count settings

Screw count parameters are set for presets and models.
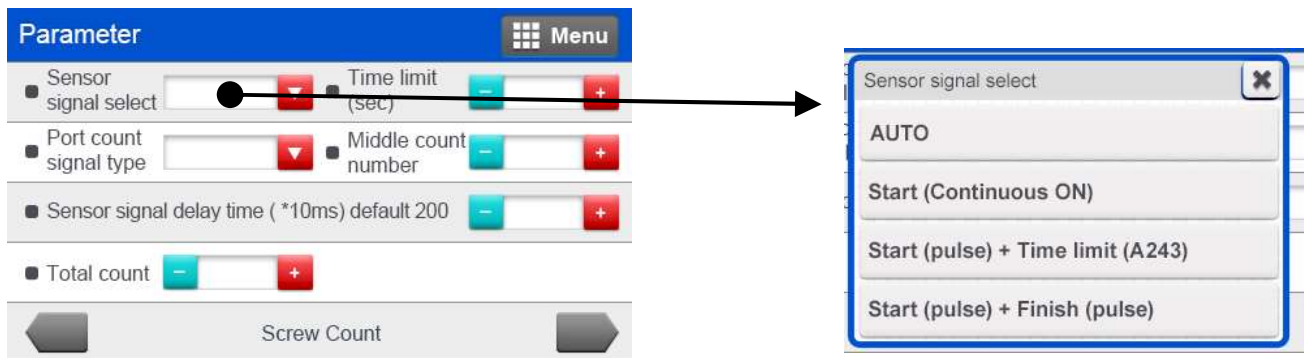
Sensor signal select : Count start(IN) / end(OUT)

1)   No signal, auto start (Auto) - auto reset to total number after "0"

2)   Sensor or switch with one trigger pulse - Count starts with only trigger pulse.
Counting is valid until complete or reset. Reset calls count NG

3)   One trigger pulse with timer for counting - Counting should be completed within the time
of timer from the trigger pulse, otherwise count NG

4)   One trigger pulse to start counting, another trigger pulse to stop counting and evaluate OK
or NG. Any remaining number calls count NG

Time limit : only set if sensor signal is 'start pulse+ time limit'
The fastening time limit from Count START for NG judgment.
The fastening work should be finished within the set time.
Otherwise, the work piece leave the working area

Total Count : is only used with Presets (not used for Model) – set value 0 to 99

Enhanced counting can be set in Models with different values for each preset step.

Port Count signal (OUT) : count complete signal can be set with 4 different type of signals
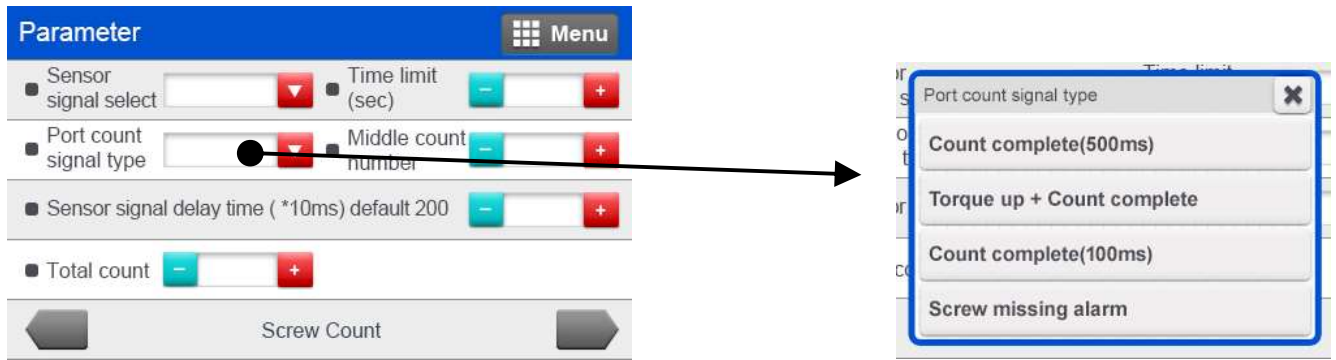
Count complete(500ms)

Torque up + Count complete

Count complete(100ms)
Screw missing alarm
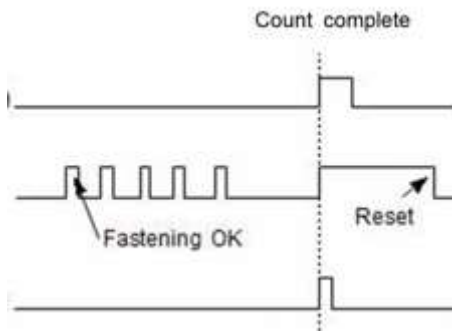
Count complete(500ms) : it provides 500ms of pulse type count complete signal after fasten all set numbers.

Torque up + Count complete : it provides every pulse(0.5sec) signal of torque OK and count complete signal after fasten all set numbers.
The count complete signal will be off after reset of count number when first screw of the new workpiece is tightened.

Count complete(100ms) : it provide a 100ms of pulse type count complete signal after fasten all set numbers.

Screw missing alarm : it provide a 100ms of pulse type alarm signal when screw missed in a cycle.

Middle count number :
When the count number is reaches to the middle count number, count complete signal out become ON till the total count is completed.
'Port count signal type' setting is ignored on this features.
'0' : no use.

6.13 Controller settings

Forward run time

	Unit	Range	Initial
	Sec	0 - 60	10
Description	Run limit to forward rotation – It prevent the continuous running over the preset time. The driver stops automaticaly at the preset time and provides the pattern NG with error code		

Reverse run time limit

	Unit	Range	Initial
	Sec	0 - 60	10
Description	Run limit to reverse rotation – It prevent the continuous running over the preset time. The driver stops automaticaly at the preset time and provides the pattern NG with error code		

Motor stall limit

	Unit	Range	Initial
	Sec	0,1 – 0,5	0,2
Description	Immediate stop when motor is stalled.- It prevent the continuous time going against the motor stall for over heat protection		

Loosening speed

	Unit	Range	Initial
	rpm	Tool range	Max tool speed
Description	Tool reverse rotation speed		

Acceleration

	Unit	Range	Initial
	ms	10 ~ 1000	150
Description	Slow start of motor to the target speed.		

Fastening OK signal out time

	Unit	Range	Initial
	ms	0 ~ 500	0
Description	Signal output time setting longer than 150ms which is factory setting. Shorter time than factory setting doesn't work..		

Driver ID

	Unit	Range	Initial
		1 ~ 99	1
Description	MDC ID used to identify ethernet data communication.		

Error display reset time

	Unit	Range	Initial
	sec	0 ~ 10	1,0
Description	Error display and reset after the below set time Value 0 : manual reset with RESET button		

Torque calibration

	Unit	Range	Initial
	%	80 ~ 120	100
Description	Master torque calibration : Output torque can be decrease or increase between + ou - 20% Concern all programs from P1 to P15 This torque tunning value is saved in controller, not in driver. Be careful tunning value when replace the screwdriver		

LCD brightness

	Unit	Range	Initial
		10 ~ 64	45
Description	Brightness level of the touch screen.		

Initial torque preset # display when power on

	Unit	Range	Initial
		1 ~ 17	1
Description	Choice of initial preset selection on display when power on.		

Controller parameter initialize

	Unit	Range	Initial
		0 to 9999	0
Description	Key in '77' and press enter button. Flash the parameters back to factory settings - screwdriver is paired to controller.		

Model mode

	Unit	Range	Initial
		YES - NO	NO
Description	Yes : model selection on operation screen No : Preset and Multi selection on operation screen		

Auto lock (model)

	Unit	Range	Initial
		YES - NO	NO
Description	Driver can be locked in out of the process when the model mode is selected		

Selection on panel

	Unit	Range	Initial
		Preset - Model	Preset
Description	Allow Model or Preset selection on operation screen		

Password

	Unit	Range	Initial
		0 ~ 9999	0
Description	Password to access controller menu Factory setting password is '0' at the initial.		

Autospeed

	Unit	Range	Initial
		YES - NO	YES
Description	Provide the safe speed on the torque setting (P1 ~ P15). The speed is automatically calculated		

Judge min turn

	Unit	Range	Initial
	turn	0 ~ 5	0
Description	Turns out of judgement		

Reserved

	Unit	Range	Initial
			0
Description	No use.		

Fastening stop error

	Unit	Range	Initial
		YES - NO	NO
Description	NO : does not create any NG when the tool stops without fully tightening by torque up.		

Reverse lock

	Unit	Range	Initial
		YES - NO	NO
Description	YES will disable the reverse rotation switch on screwdriver.		

Trigger start (handheld only)

	Unit	Range	Initial
		YES- NO	NO
Description	Trigger (⊓) start Enable/Disable with start lever		

Reverse start (handheld only)

	Unit	Range	Initial
		YES - NO	NO
Description	Reverse rotation switch can start the screwdriver in reverse by pushing it and stops by moving it back		

Auto data output

	Unit	Range	Initial
		YES - NO	NO
Description	Fastening data output automatically on every events as like run, For/Rev change, torque up, preset change, etc. Monitoring data come out through RS232 or Ethernet without data request command (port set controller page 8/9)		

Alarm sound control

	Unit	Range	Initial
		YES NO	YES
Description	Activation of noise alarm – stops when reset (timer or manual)		

Enable on panel

	Unit	Range	Initial
		YES- NO	YES
Description	Enable touch screen field to move on operation screen(see page 29).		

Baudrate port com

	Unit	Range	Initial
		9600 ~ 230400	115200
Description	RS232 communication speed To be set as computer com port or barcode reader setting		

Torque unit

	Unit	Range	Initial
		Kgf.cm ~ Lbf.ft	N.m
Description	Kgf.cm / Kgf.m / cNm / Nm / ozf.in / lbf.in / lbf.ft Whenever the unit is changed, all parameters are initialized and controller should be reboot again.		

Screw type

	Unit	Range	Initial
		CW - CCW	CW
Description	Rotation direction for tightening Concern presets (P1 ~ P15).		

Auto data output port

	Unit	Range	Initial
		RS232 - Ethernet	RS232
Description	Data output port selection for automatic report Auto data should be also set on (controller page 6/9)		

Lamp on time

	Unit	Range	Initial
	sec	0 ~ 30	0
Description	Screwdriver LED lamp off timer 0 = lamp off timer disable.		

Option card

	Unit	Range	Initial
		YES - NO	YES*
Description	Fastening data saving option with SD memory card is available by optional order with extra cost *Controller with ending letter **M** (ex. MDC-26**M**)		

Torque holding time

	Unit	Range	Initial
	ms	1 ~ 20	2
Description	Timelap torque is maintained after torque		

RS232 select

	Unit	Range	Initial
		MODBUS - Barcode	MODBUS
Description	RS232 Port use : for data report or barcode reader **Please ensure that baudrate is set to correct value in controller page 7/9 (usual 9600)** **Please use RS232 adapter for barcode reader, Ref 4-5234520.**		

6.14 I/O settings

Parameter ▦ Menu

■ input 1 [ ] ■ input 2 [ ]
■ input 3 [ ] ■ input 4 [ ]
■ input 5 [ ] ■ input 6 [ ]
■ input 7 [ ] ■ input 8 [ ]
◀ Input ▶

Input Mapping ✖

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

Parameter ▦ Menu

■ Output 1 [ ] ■ Output 2 [ ]
■ Output 3 [ ] ■ Output 4 [ ]
■ Output 5 [ ] ■ Output 6 [ ]
■ Output 7 [ ] ■ Output 8 [ ]
◀ Output ▶

Output Mapping ✖

None (Unassigned)	Torque Up	Fastening OK
Ready	Run	Alarm
Status F/L	Count Complete	AL 1
AL 2	AL 3	Model Complete
Preset Select 1	Preset Select 2	Preset Select 3
Preset Select 4		

MDC 25P I/O schematic

The digital I/O provide the free assignment feature for 8 Inputs and 8 Outputs.
Factory setting of I/O assignments are as following.

To validate changing I/O, turn the power OFF and ON again.
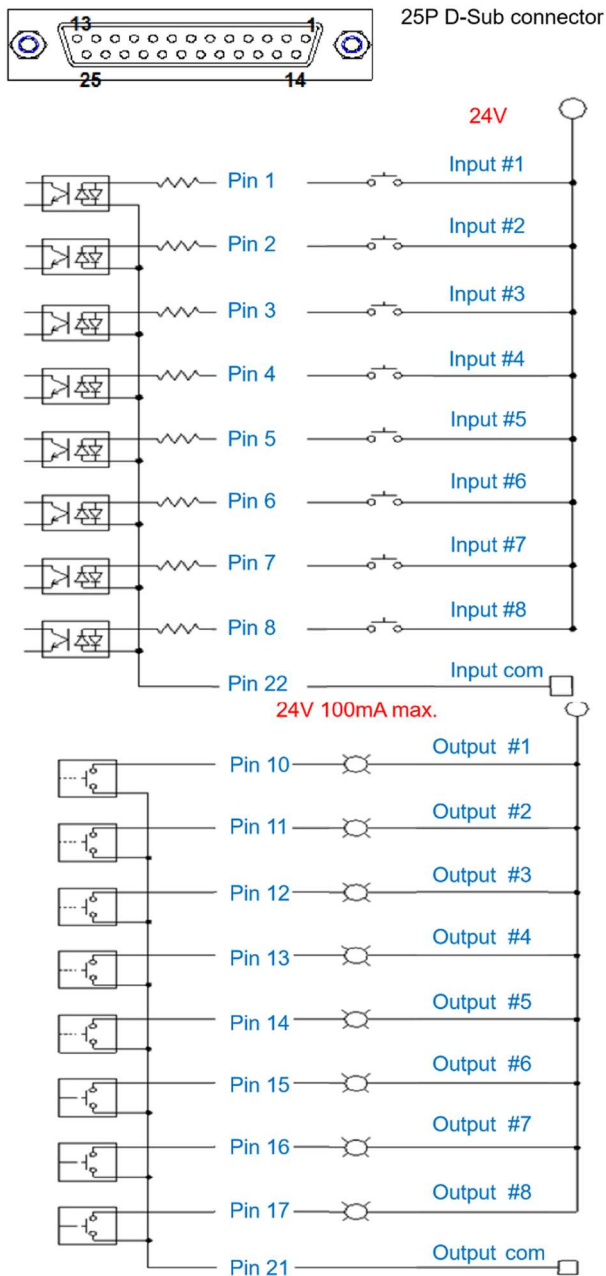
I/O connections   Factory settings

Pin No	Description	Factory setting
1	IN 1	Preset select 1
2	IN 2	Preset select 2
3	IN 3	Preset select 3
4	IN 4	Start
5	IN 5	Forward / Reverse
6	IN 6	Driver Lock
7	IN 7	Multi sequence
8	IN 8	Alarm Reset
9	X	
10	OUT 1	Torque UP
11	OUT 2	Fastening OK
12	OUT 3	Ready
13	OUT 4	Motor RUN
14	OUT 5	Alarm
15	OUT 6	Status F/L
16	OUT 7	Count complete
17	OUT 8	Alarm 1
18	X	
19	X	
20	X	
21	Out COM	
22	In COM	
23	X	
24	X	
25	X	

Binary coding with 5 inputs to select preset # and Mode (identical for Model)

Preset #	Input				
	Torque select 4	Torque select 3	Torque select 2	Torque select 1	Multi sequence
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	
Multi A	0	0	0	0	1
Multi B	0	0	0	1	1

◆ Binary coding with 3 outputs for error codes in 7 groups

Error code	Alarm 3	Alarm 2	Alarm 1
110,111,112,113,114,115,116,118,200,201,220	0	0	1
300,301,302,303,304,309	0	1	0
310,311	0	1	1
330,331	1	0	0
332	1	0	1
333,334,335,336, 337	1	1	0
400,401,500	1	1	1

6.15 Network settings

Initial :

      IP adress : 192 . 168 . 1 . 100

      Gateway : if necessary

      Ethernet port : 5000 (0 ~ 9999)

6.16 Monitoring

To monitor fastening data and I/O status, Click **☷ Menu** and go to **⟋Ⅿ◍ MONITORING**

There are three(3) real-time monitoring menu.

And one error history.

Monitoring	☷ Menu
Graph	>
Input & Output	>
Network	>
Error	>
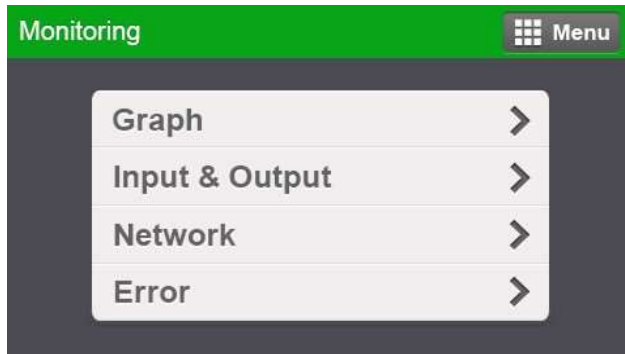
Graph : torque, Angle, Speed and current

I/O : Input & output status

Network : RS-232 & Ethernet

Error : latest 8 error history

◆ Graph (Torque curve) monitoring
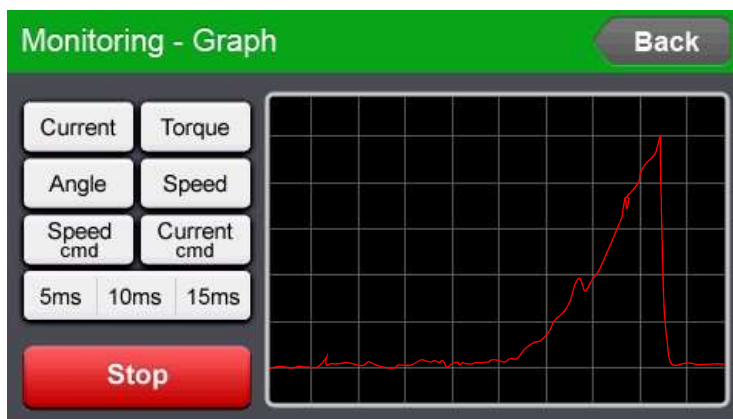
Select a data monitored vs time sampling

-Current

-Torque

-Angle

-Speed

Select the required data and press Start.

The sampling rate is 5ms for 1second, 10ms, for 2 second and 15ms for 3 second display with total 200 data.

◆ I/O Status monitoring

The active I/O & tool operation signals are displayed with orange color by real time.

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.

◆ Network monitoring
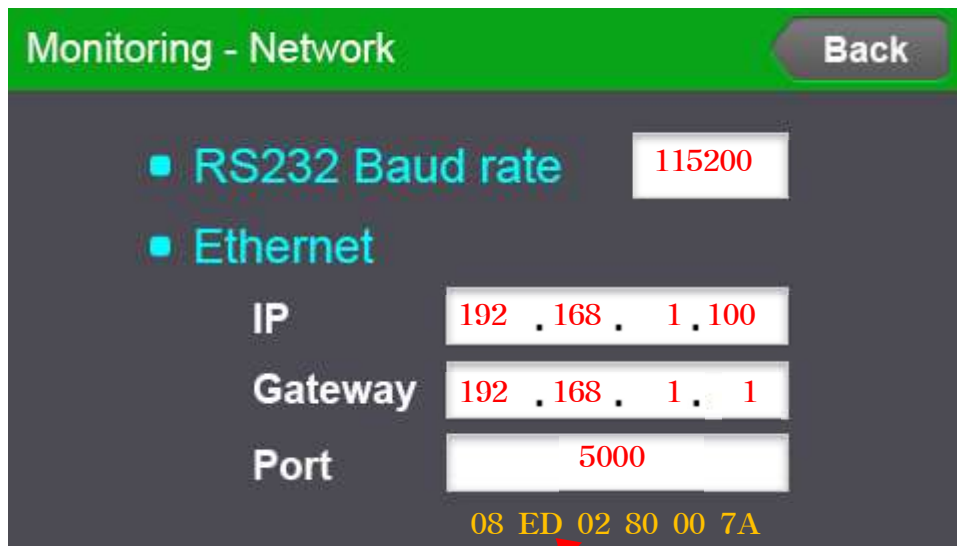
Controller MAC address

6.17 Remote & Auto customizing

For remote operation and Auto customizing parameters, Click , and
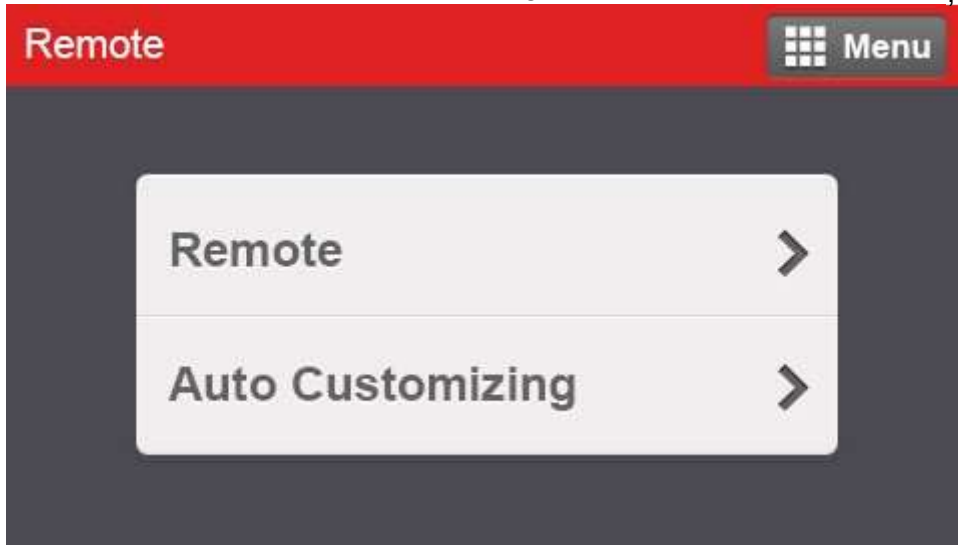
◆ Remote

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
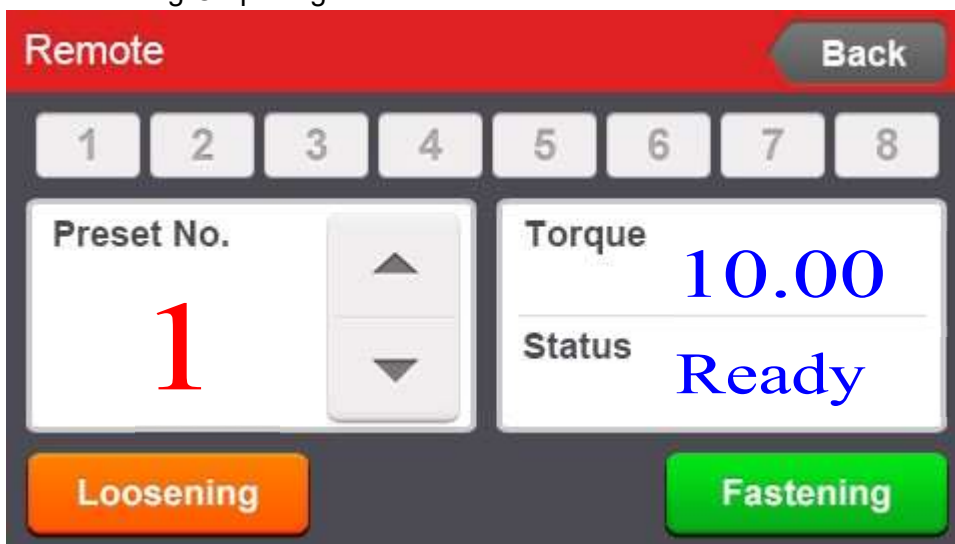
◆ Auto customizing parameters

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
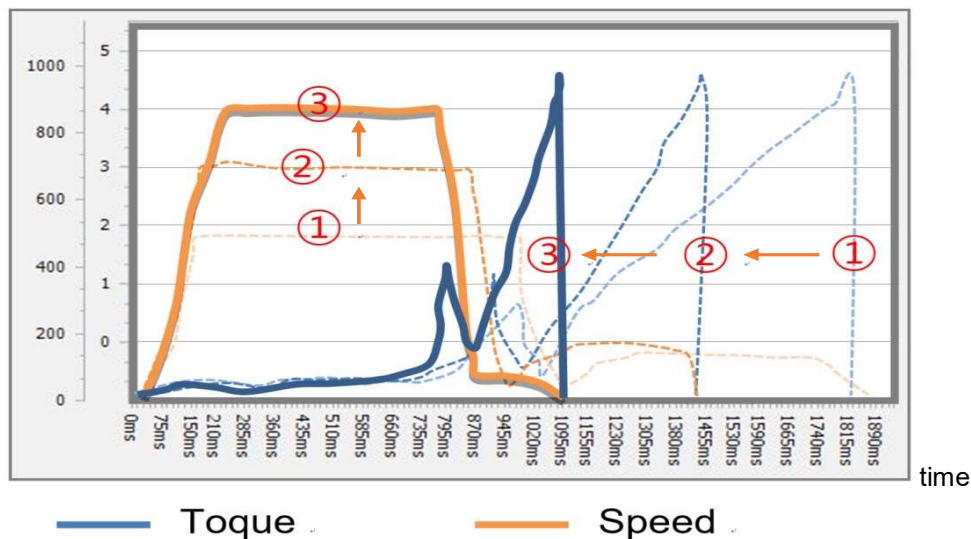
① Select Preset # to modify parameter settings

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.

6.18 General Settings

To modify Date, Time and backlight brightness , Click **⊞ Menu** , and
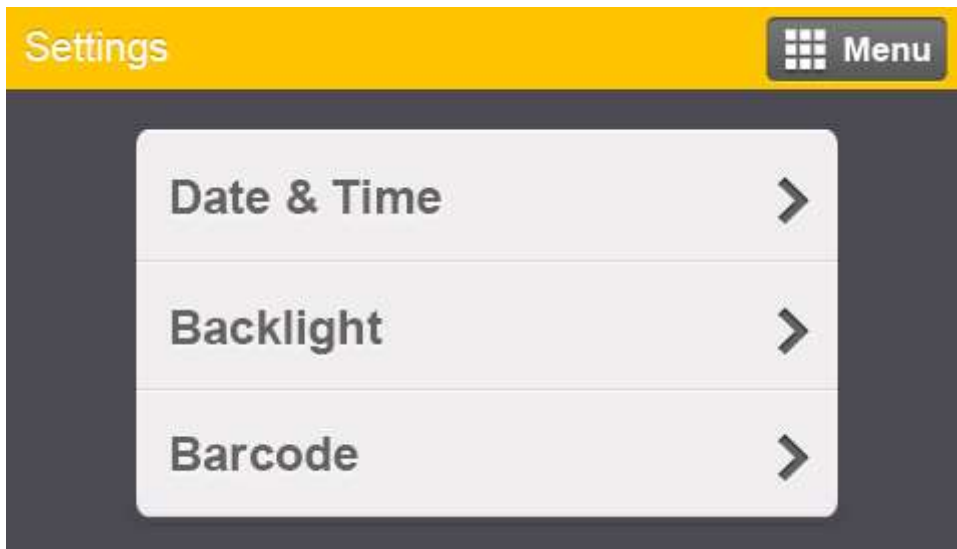
System date and time can be modified. yyyy-mm-dd hh:mm:ss

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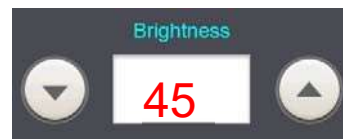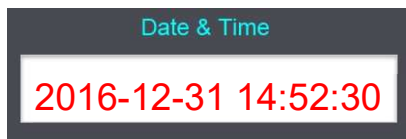
6.19 Barcode settings

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.

Controler 9/9 screen : R2232C : Modbus / Barcode (1)

Controler 7/9 screen : RS232C baud rate : Select right one for the scanner

Number of characters in barcode

Settings - Barcode

Barcode   P/M #

Read

Start   End

Reset

Reset all

Selected Preset/Model: 1 to 15, MA=16, MB=17

Press read to activate barcode reading
Bar code is displayed on left side

Reset current scan data

Clear all registration

barcode number

Significant characters start and end
For Preset selection
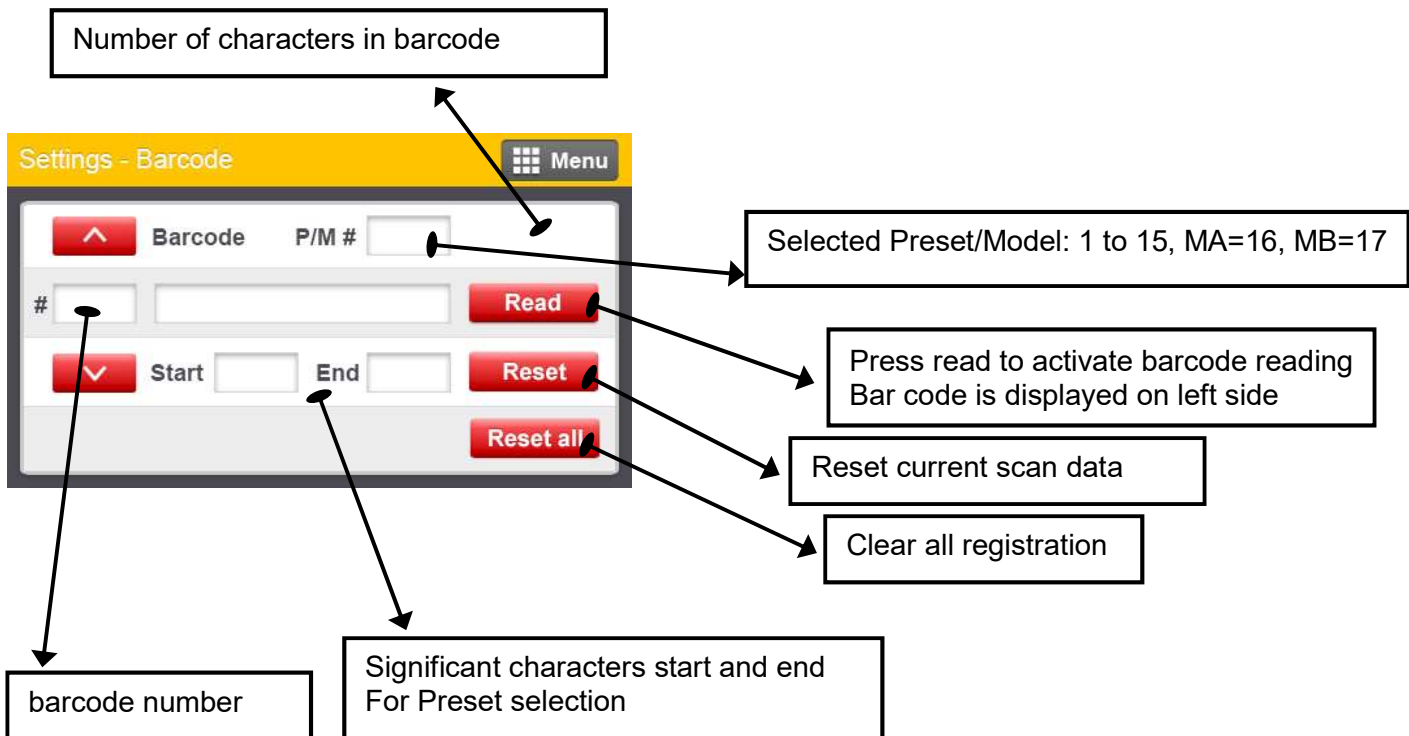
Total number of barcode registration : up to 22

Max number of barcode data length : 24 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 Muli A or B is used, the operation window display contains the followings according to the sequence
    MA or MB > Step no. > Preset # (current preset #)

6.20 SD memory card (Option)

To use this option, check on the parameter (A305) on the Parameter setting.
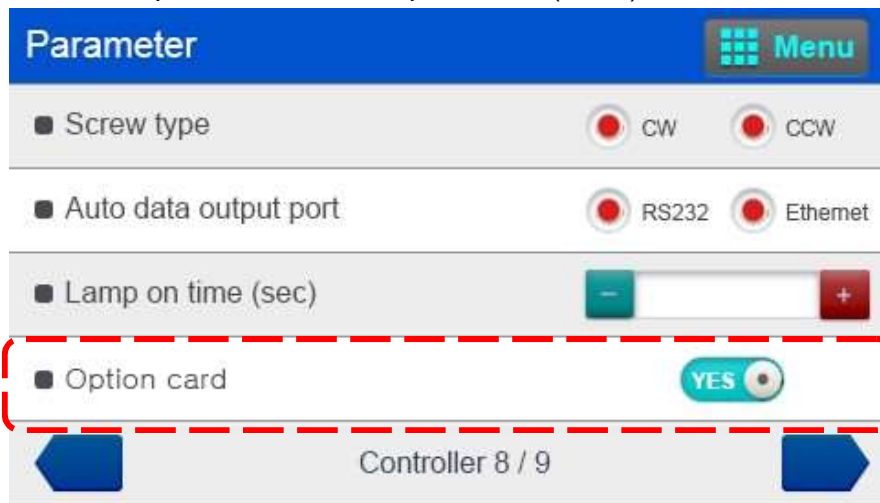
System creates the folders of YEAR, MONTH automatically. And it creates one file in CSV format with the file name of DATE.

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

	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 data

7. MODBUS COM protocol

MDC controller is capable of connecting to the host controller (Handy Loader, HMI, PLC, PC, etc.) through RS232 serial communication or Ethernet, allowing the user to use such functions as parameter change and data monitoring.

Please refer to dedicated instruction manual COM MODBUS protocol ref 60307

8. Error code

8.1 System error

code	Error	Description	How to reset
110	AD offset error	When the power of controller is ON, the tool offset is out of range. Reset and retry booting. If failed, repair is required	RESET button
111	SMPS voltage error	SMPS power supply voltage is lower than the limit	RESET button
112	Over speed	Over rotation speed than the set value. Check the cable connection.	Auto reset after 1 sec.
113	Driver parameter read error	Reading failure of screwdriver parameter	Power Off →On
114	Screwdriver connection error	The controller is not compatible with the connected screwdriver. The screwdriver is out of the capacity of the controller. Use the right range of screwdriver.	Replace driver
115	Controller recognition error	Program itself can not recognize the controller information.	Power Off →On
116	Com error to read I/O data	System failed to read the data from I/O port by communication issue	Power Off →On
118	No motor rotation error	When motor rotation is not monitored	RESET button
120	No (option) SD card	SD card is not detected but the parameter of Option card selected to be used (ENABLE). It makes alarm every 20 seconds. Insert SD card or Disable the controller parameter page 8/9 (A305 ParaMon)	Auto reset
121	SD card damage	SD memory card is not available to read and write.	Replace SD card
122	Option card communication error	Communication failure with the Option card board	
200	Parameter reading failure	It failed to read parameter at all. Check the EEP-ROM damage or communication failure	Power Off →On
201	Parameter Checksum error	The read parameter is wrong by the checksum routine	Power Off →On
220	Multi-sequence program error	Multi-sequence program is wrong	RESET button

8.2   Fastening error by the pattern setting

code	Error	Description	How to reset
300	Forward run time over	Over run time limit (Forward) contoller page1/9 (A270 ParaMon)	Auto reset after set time
301	Reverse run time over	Over run time limit(Reverse) contoller page1/9 (A271 ParaMon)	Auto reset after set time
302	Model setting error	Failure in Model programing.	
303	Model cancel	The Model process is canceled	
304	Motor stall by loosening failure	Motor stall by loosening failure within time limit controller page1/9 (A272 ParaMon)	Auto reset after set time
309	Bit socket tray	Bit socket tray application error	
310	Time over in screw counting	Over the time limit of screw counting (A243 ParaMon)	Auto reset after set time
311	Screw missing	When the work-piece moves out of the working area without complete number of fastening, it provide alarm and display the latest number. It can be clear to "0" by pressing RESET button.	Auto reset after set time or RESET button
330	Min Angle error	Target torque reached before the Min angle	Auto reset after set time
331	Target angle setting error	Target angle setting is out of the range [AC/TM mode]	Auto reset after set time
332	Angle over	Target torque reached over the Max angle	Auto reset after set time
333	No torque complete	Operation stops before complete cycle of torque up by releasing lever trigger	Auto reset after set time
334	Engaging torque detection fail	The engaging torque is not detected in time or angle limit	Auto reset after set time
335	Converted torque error	Converted torque is out of OK range	Auto reset after set time

336	Over torque error	torque reached to the high limit of torque	Auto reset after set time
337	Torque up in free speed duration	Torque reach to the 110% of the target torque during free speed operation.	Auto reset after set time
400	Ethernet port fail	Ethernet device IC initializing fail	RESET button
401	Ethernet socket error	Ethernet communication error related with socket	RESET button
500	Over temperature	Overtemperature over 80°C	Auto reset under 80°C

9. Parameter details and factory setting

(Firmware version 1.06.1)

	Preset #	Parameter		Address	Factory setting
Fastening	1	TC/AM (0)	AC/TM (1)	1	0
		Target torque	Max torque	2	Auto
		Torque limit (%)	Min torque	3	0
		No use	Target angle(degree)	4	0
		Min angle(degree) 0-9999		5	0
		Max angle(degree) 0-9999		6	0
		Snug torque		7	0
		Speed (rpm)		8	Auto
		Free fastening angle(degree) 0-9999		9	0
		Free fastening speed(rpm)		10	0
		Soft start(1-300ms)		11	0
		Seating point (%) 10-95		12	Auto
		Torque rising rate(ms) 50-200		13	50
		Ramp-up speed (rpm)		14	Auto
		Torque compensation (%) 80-120		15	100
	2	Same parameters for preset 2		16 to 30	
	3	Same parameters for preset 3		31 to 45	
	4	Same parameters for preset 4		46 to 60	
	5	Same parameters for preset 5		61 to 75	
	6	Same parameters for preset 6		76 to 90	
	7	Same parameters for preset 7		91 to 105	
	8	Same parameters for preset 8		105 to 120	
	9	Same parameters for preset 9		121 to 1135	
	10	Same parameters for preset 10		136 to 150	
	11	Same parameters for preset 11		151 to 165	
	12	Same parameters for preset 12		166 to 180	
	13	Same parameters for preset 13		181 to 195	
	14	Same parameters for preset 14		196 to 210	
	15	Same parameters for preset 15		211 to 225	

	Preset #	Parameter	Address	Factory setting
/O	I/O (IN)	Input #1	226	1
		Input #2	227	2
		Input #3	228	3
		Input #4	229	5
		Input #5	230	6
		Input #6	231	7
		Input #7	232	8
		Input #8	233	9
	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
Advanced Function	Free Reverse	Enable(1) / Disable(0)	250	0
		Speed (rpm)	251	0
		Angle (turn) 0 - 20	252	0
		Applicable Preset # 1-15	253	0
	Engaging torque detection	Enable(1) / Disable(0)	254	0
		Speed (rpm)	255	0
		Torque(%)	256	0
		Angle limit (turn) 0 - 20	257	0
		Time limit (sec)	258	0
		Applicable Preset # 1-15	259	0
		Angle start from engaging	260	0
	Extra angle after torque up	Enable(1) / Disable(0)	261	0
		Speed (rpm)	262	0
		Angle (degree) 0-3600	263	0
		Direction	264	0
		Applicable Preset # 1-15	265	0

Legend for I/O (IN):
0) None
1) Preset select 1
2) Preset select 2
3) Preset select 3
4) Preset select 4
5) Start
6) Fasten / Loosen
7) Driver Lock
8) Multi sequence
9) Alarm reset
10) Count start
11) Count reset
12) Count(workpiece) out
13) Model cancel
14) Model select 1
15) Model select 2
16) Model select 3
17) Model select 4

Legend for I/O (OUT):
0) None
1) Torque Up
2) Fastening OK
3) Ready
4) Motor RUN
5) Alarm
6) Status of F/L
7) Count complete
8) Alarm code 1
9) Alarm code 2
10) Alarm code 3
11) Model complete
12) Preset Select1
13) Preset Select2
14) Preset Select3
15) Preset Select4

	Preset #	Parameter	Address	Factory setting
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
		LCD brightness 10-64	279	45
		Initial preset # when power ON	280	1
		NO USE	281	0
		Password 0-9999	282	0
		Parameter initialize to factory setting	283	0
		Driver auto lock (for Model)	284	0
		Preset/Model selection on panel 0-1	285	0
		Torque holding time(ms) 2 - 20	286	2
	Setting 2	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
		Option card	305	0
		RS232 Select MODBUS(0) BARCODE (1)	306	0

	Preset #	Parameter	Address	Factory setting
IP Address		IP Address1	310	192
		IP Address2	311	168
		IP Address3	312	1
		IP Address4	313	100
		Gateway 1	314	192
		Gateway 2	315	168
		Gateway 3	316	1
		Gateway 4	317	1
		Port	318	5000
Multi SQ	PG MA	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
	PG MB	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

	Preset #	Parameter	Address	Factory setting
		Controller model	349	Auto
Model		Model data(150)	350 ~	0
Firmware			500	Auto

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

Doc.**60300**.04/18

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