M

SERIES

Multi-turn

Electric Valve Actuators

Service Unique Nice Youthful Energy Honesty

SUNYEH

OPERATION MANUAL

APP

(iOS / Android)

SUN YEH ELECTRICAL IND. CO., LTD.

SY04-C004C-EN

Contents

1 General Information

⚠ **Failure to follow safety instructions may cause serious injury, equipment damage, or voided warranty.**

1.1 Safety Instructions

- Installation, maintenance and repair works must be performed by trained personnel.
- The Handling shall follow the safety and warning instruction contained in this manual.
- The user should read and follow instructions contained in this operation manual. Failure to do this may result in damages and void warranty. Sun Yeh will not be liable for damages due to operator negligence or misuse.
- Local health and safety regulation shall be complied with.
- In a few cases, the surface temperature may exceed 60℃ (140 ℉). Please check the surface temperature before operation, using an appropriate thermometer and wearing protective gloves before operation.

1.2 Installation, Storage, Transport

- Please read operation manual and wiring diagram carefully before installation.
- Perform all basic settings including stroke limitation for open and close direction prior to operation.
- Verify the power supply's voltage is in accordance with the data on nameplate to prevent short circuit or electrical/electronic parts damage caused by incorrect power input.
- Turn power off before wiring or maintenance.
- Connect the ground wire to PE point inside the electric actuator.
- To avoid functional failure caused by static, do not touch any components on the PCBA with metal tools or bare hands.
- Use proper techniques when installing conduit and properly seal the connection to prevent vapor condensation from entering the unit.
- Actuator should be installed in an upright or horizontal position. Do not mount upside down or below a horizontal position.
- These units are not designed to operate in vacuum spaces or where an explosive atmosphere exists.
- Periodically inspect actuator enclosure to prevent dust from accumulating.

2 Product Overview

Sun Yeh M series multi-turn electric actuators are designed to provide output torque from 41 Nm to 100 Nm (363 in·lb to 885 in·lb) and output speed from 15 rpm to 120 rpm which fit with various types of valves. After combining with a gear box, the maximum output torque increases.

It comes standard with backlit LCD display and reed switches to make operation easily under different light conditions.

The manual override is equipped to enable the automatic operating mode switched to manual operation easily and stably, no matter under operation or during power outages.

2.1 Features

- Five speeds can be chosen. The output torque remains constant when output speed changes.
- High efficiency BLDC motor technology allows output torque and speed adjustable in both directions.
- Manual / electrical control can be switched via a lever. When the motor is electrically activated, for safety reason, the handwheel will not rotate to prevent personnel injury.
- Torque overload protection at each end of stroke.
- Double-sealed and IP68 (8 m, 120 hrs) enclosure protection.
- Patent obtained in UK, USA, Taiwan, China, Japan, and Germany.
- Setting, monitoring, and diagnosing are possible through local control and APP with Bluetooth.

(iOS / Android)

- Available communication solutions: Modbus RTU RS485, Profibus DP V0.
- Temperature of motor and electronic components is monitored.
- Non-intrusive design allows setting and adjusting without cover removal.
- Multi-language LCD display incorporated with reed switches makes operating, setting, adjusting easy and simple.
- Automatic phase correction and phase loss protection.
- Instantaneous reversal protection.
- Four levels of assigned password protection hierarchical prevent unauthorized changes.

3 Product Mechanical Data

3.1 Parts Identification

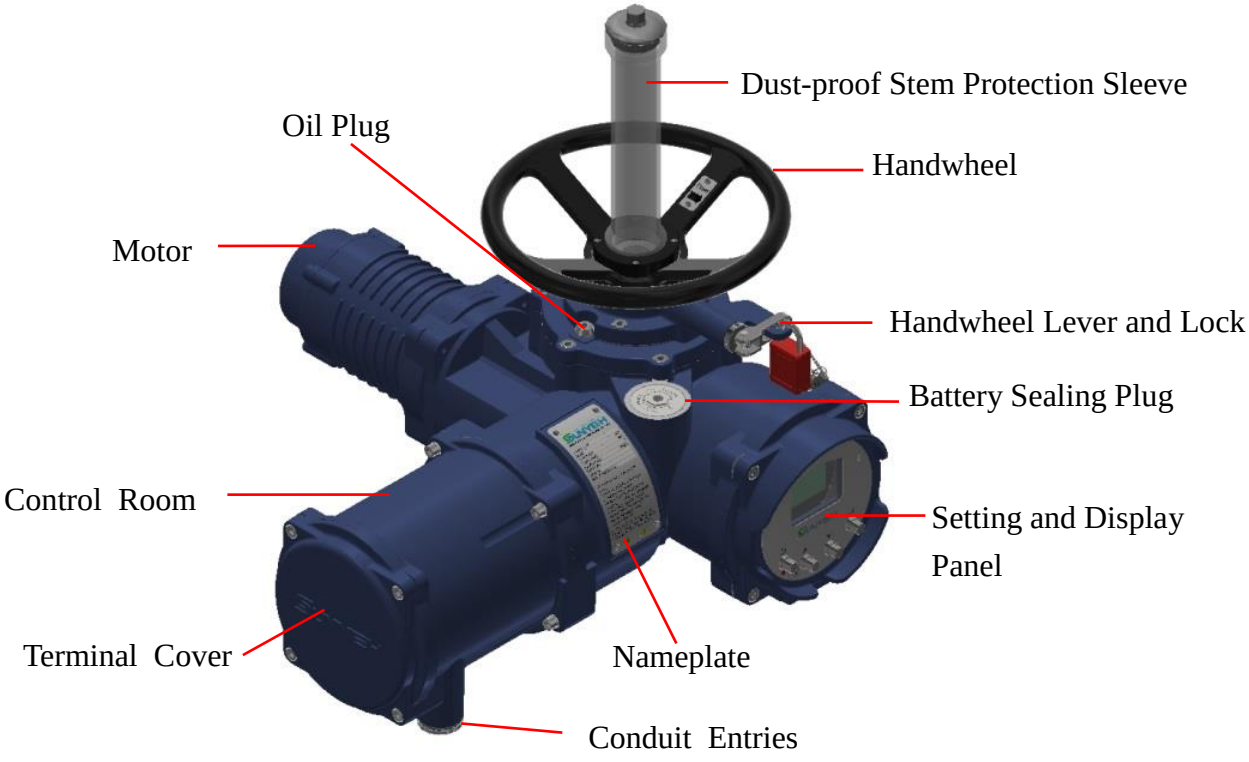


Figure 1 Actuator

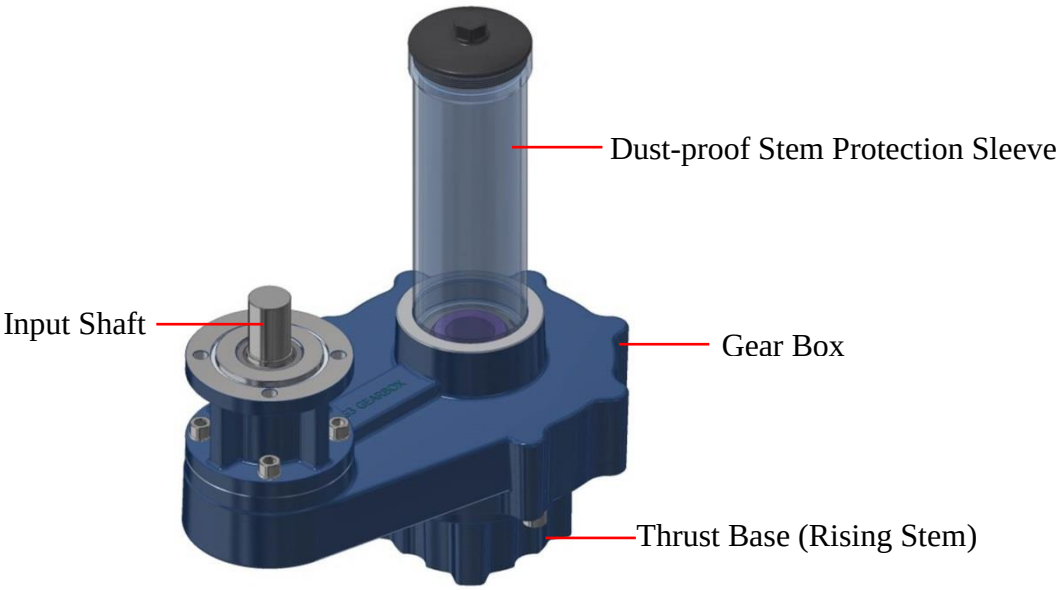
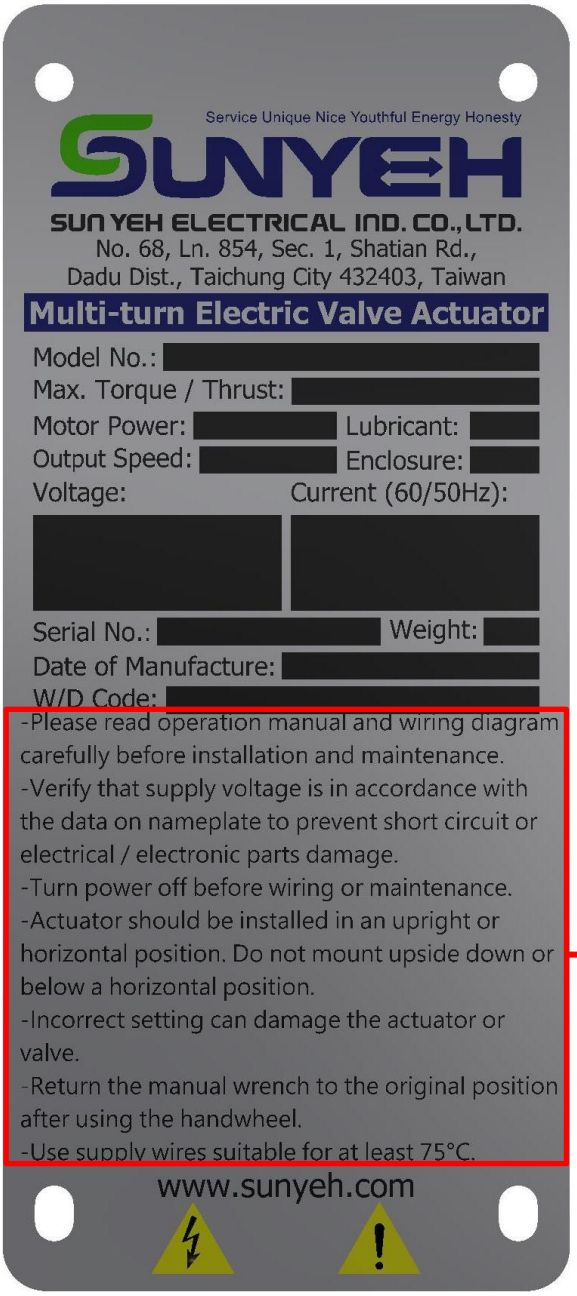


Figure 2 Gear Box

3.2 Nameplate Instruction



Caution

3.3 Technical Data

Model	Output Speed	Factory Setting	Non-rising stem					Rising stem						Mounting Flange
			Max Torque		Max Stem Acceptance Diameter	Weight		Max Thrust			Max Stem Acceptance Diameter	Weight		
	rpm	rpm	Nm	in·lb	mm	kg	lb	kgf	lbf	kN	mm	kg	lb	ISO 5210
M-41	40 - 120	40	41	363	35	52	115	4080	8996	40	28	55	121.5	F10
M-55	30 - 90	30	55	487										
M-80	20 - 60	30	80	708										
M-100	15 - 45	30	100	885										

*** There are five speeds can be chosen, refer to 8.7.4 (P.48) for setting.**

3.4 External Gear Box

- **G201 Multi-turn Gearbox**

Model	Output Speed	Factory Setting	Non-rising stem					Rising stem						Mounting Flange
			Max Torque		Max Stem Acceptance Diameter	Weight		Max Thrust			Max Stem Acceptance Diameter	Weight		
	rpm	rpm	Nm	in·lb	mm	kg	lb	kgf	lbf	kN	mm	kg	lb	ISO 5210
M-41	13 - 40	13	123	1090	40	22	48.5	7140	15744	70	32	25	55.1	F12
M-55	10 - 30	10	165	1460										
M-80	7 - 20	10	240	2125										

- **G202 Multi-turn Gearbox**

Model	Output Speed	Factory Setting	Non-rising stem					Rising stem						Mounting Flange
			Max Torque		Max Stem Acceptance Diameter	Weight		Max Thrust			Max Stem Acceptance Diameter	Weight		
	rpm	rpm	Nm	in·lb	mm	kg	lb	kgf	lbf	kN	mm	kg	lb	ISO 5210
M-41	8 - 24	8	205	1815	45	25	55.1	10200	22491	100	36	27.5	60.6	F14
M-55	6 - 18	6	275	2435										
M-80	4 - 12	6	400	3540										

- **G203 Multi-turn Gearbox**

Model	Output Speed	Factory Setting	Non-rising stem					Rising stem						Mounting Flange
			Max Torque		Max Stem Acceptance Diameter	Weight		Max Thrust			Max Stem Acceptance Diameter	Weight		
	rpm	rpm	Nm	in·lb	mm	kg	lb	kgf	lbf	kN	mm	kg	lb	ISO 5210
M-41	5.7 - 17.1	5.7	285	2520	60	32.5	71.6	15300	33737	150	44	36	79.4	F16
M-55	4.3 - 13	4.3	385	3410										
M-80	2.8 - 8.6	4	560	4960										
M-100	2.1 - 6.4	4	700	6200										

4 Storage, Transport and Packaging

4.1 Receiving / Inspection

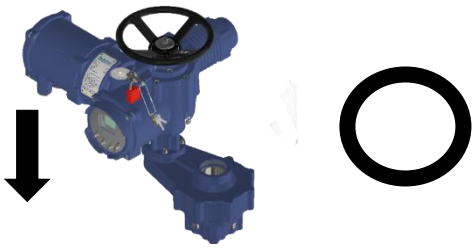
- Carefully inspect the package for any damages resulting from shipping and report all damages to the freight carrier and seller.
- After unpacking the product and information packet, please keep the cartons and any packing materials in case of product return or replacement. Verify that the items on the packing slip or on the bill of lading are the same as what were ordered. If there is any discrepancy, please contact the seller.
- Verify if the technical data on nameplate is in accordance with what was ordered.

4.2 Storage

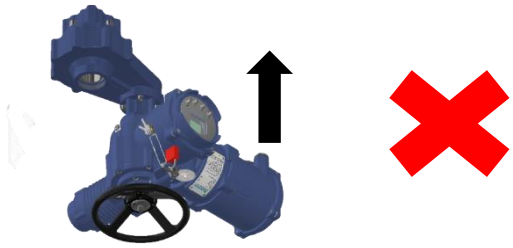
- The actuator should be stored in a dry area with relative humidity of less than 90 % and at temperatures between -20 ℃ to +40 ℃ (-4 ℉ to +104 ℉).
- The product shall be stored with suitable protection from corrosive substance that can damage the metal and insulating parts.
- The water-proof plug should not be removed until the actuator is ready to be cabled. Use suitable cable glands with IP68 rating (8 m, 120 hrs). Ensure that the water-proof plug is securely tightened for any unused conduit entries.

4.3 Transport

- Please refer to **3.3 Technical Data** and **3.4 External Gear Box** for the weight of the actuator and external gearbox and confirm the lifting tools can bear the total weight of the device, including actuator, gearbox and valve before lifting.
- Make sure the conduit entries are not upside down when lifting the actuator (Picture below).



Correct: The conduit entries are facing down.



Error: The conduit entries are facing up.

- The gear train has been sufficiently lubricated at the factory. Do NOT lift upside down to avoid the mechanism failure in case the gears could not soak in the lubricating oil completely.
- When lifting the actuator, the rope or hook shall be fixed on the shell, not on the hand wheel, and the actuator shall be kept in a balanced state to prevent tilting and sliding. For the hanging method, please refer to 4.3.1 lifting schematic diagram.
- Perform the lifting trials at a lower height to eliminate any potential danger before lifting at a higher height.
- Actuators packaged in cartons can stand up to land, sea, or air transportation.
- Packaged actuators shall avoid of violent impact and strong vibrations and be protected from rain or snow.

4.3.1 Lifting Schematic Diagram

⚠ **Please confirm the lifting tools can bear the total weight of the device, including actuator, gearbox and valve before lifting.**

【Actuator】

【Gear Box】

【Actuator and Gear Box】

5 Mounting

5.1 Preparing Actuator Drive Bush

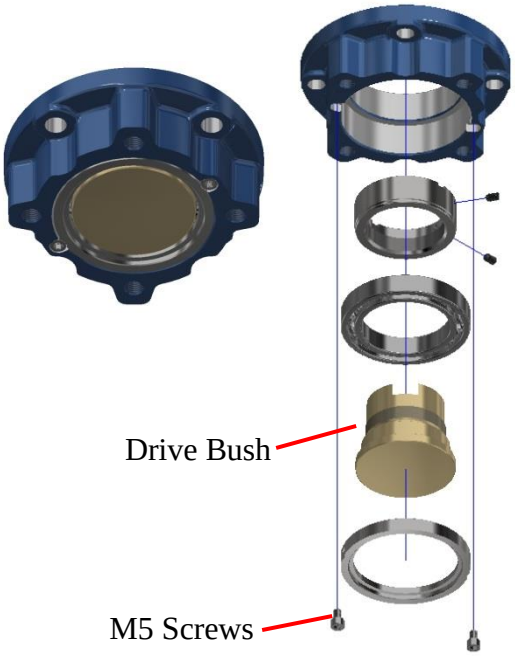


Figure 1
Non-thrust Base Assembly
(Non-Rising Stem)

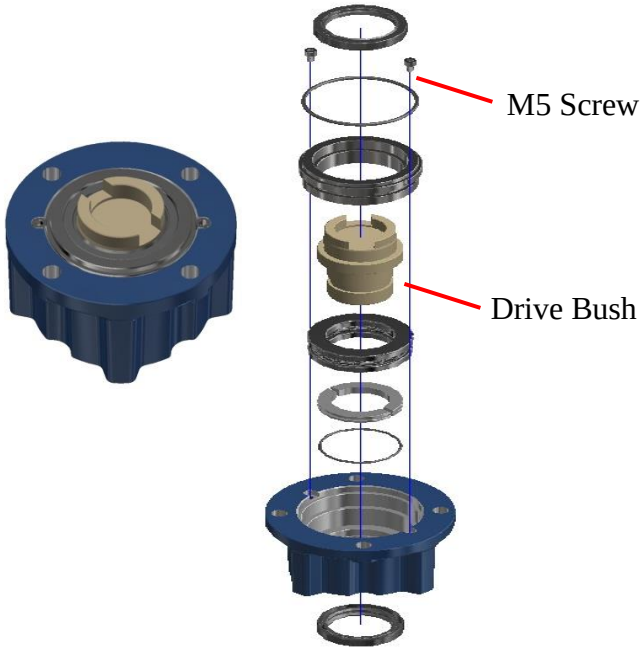
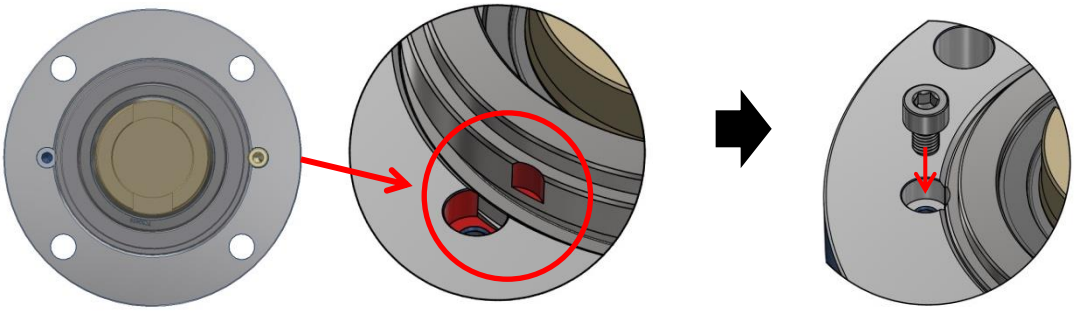


Figure 2
Thrust Base Assembly
(Rising Stem)

a. Loosen M5 screws from the base assembly of the actuator or gearbox and dismantle the components. Remove the drive bush from base assembly.
b. Machine the drive bush to suit the valve stem.
c. Reassemble the base assembly and fasten M5 screws.

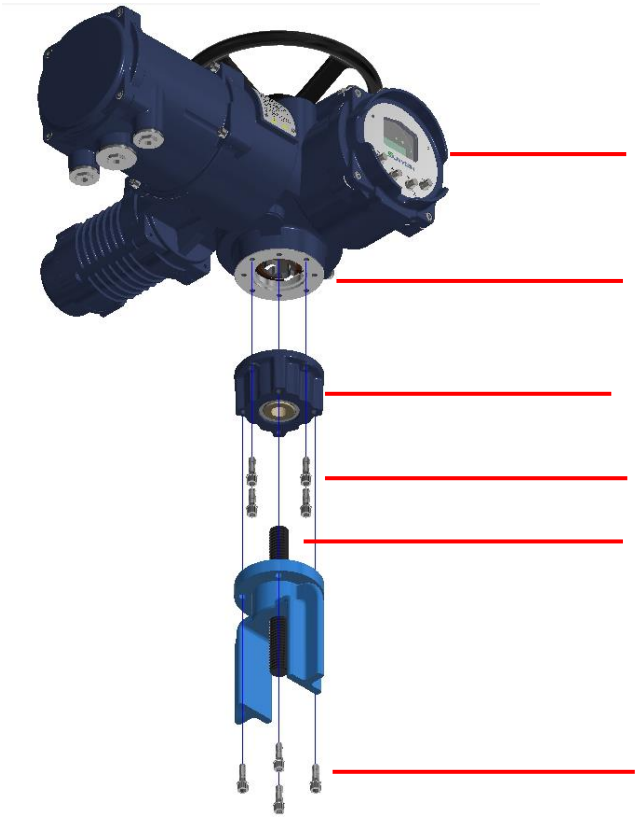
⚠ **Make sure if the screw hole is in the right position.**



Screw Size	Torque (Nm)
M5	4.2

5.2 Mounting Actuator with Valve

- **Rising Stem**



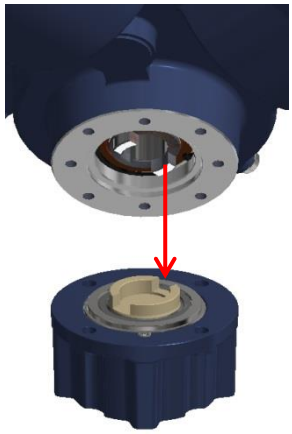
a. Apply a small quantity of grease to the valve stem【5】.

b. Screw the thrust base assembly【3】into the valve stem【5】 until it is flush with the valve flange. Then keep rotating the thrust base assembly【3】until alignment of the fixing holes.

c. Fasten M10 screws【6】, but do not tighten completely.

d. Mount the actuator【1】 with the thrust base assembly 【3】, to ensure the stem nut is engaged with the output drive sleeve【2】(see photo on the right).

⚠ **If the flanges are flush with each other, the actuator【1】will be engaged with thrust base assembly【3】properly.**



e. Adjust the actuator【1】until alignment of mounting holes on the thrust base assembly【3】.

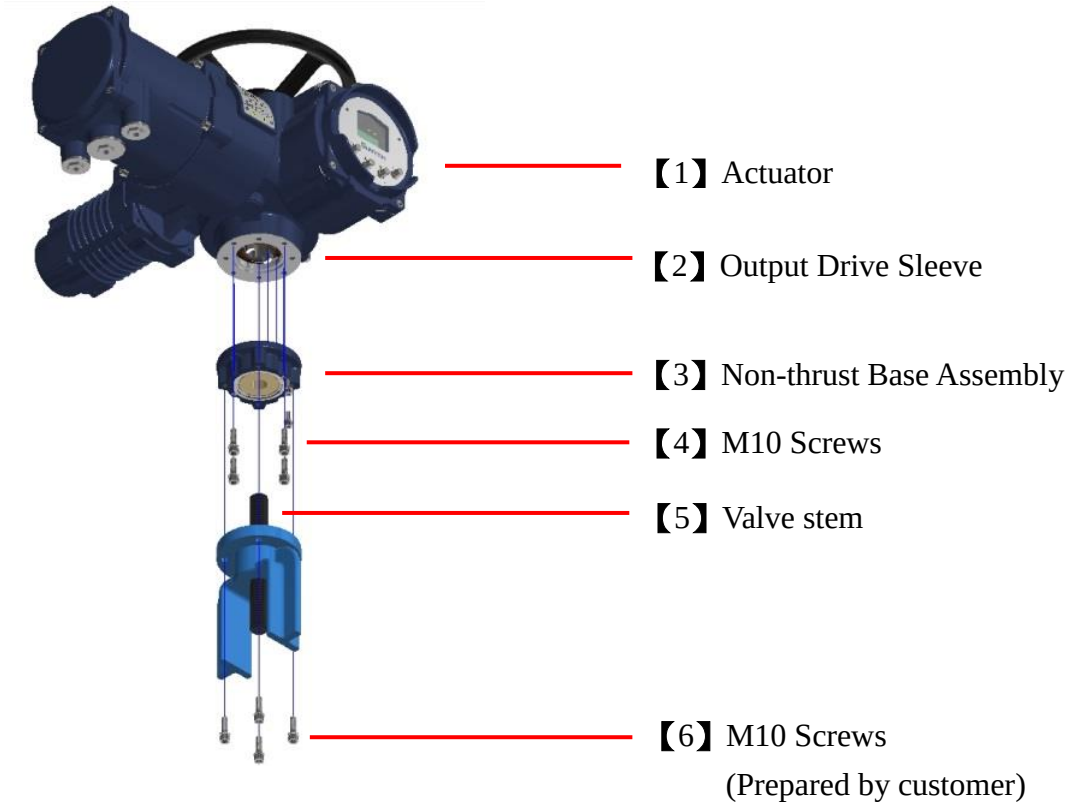
f. Use M10 screws【4】 to fasten the actuator【1】with the thrust base assembly【3】and fasten actuator screws (M10).

Screw Size	Torque (Nm)
M10	35

g. Tighten M10 screws【6】.

Screw Size	Torque (Nm)
M10	35

- **Non-rising Stem**



a. Use M10 screws【4】to fasten the non-thrust base assembly【3】with the actuator【1】.

Screw Size	Torque (Nm)
M10	35

b. Mount the actuator【1】with the valve stem【5】until it is flush with the valve flange.

c. Adjust the actuator【1】until alignment of the fixing holes and ensure the stem nut of non-thrust base assembly 【3】is engaged with the output drive sleeve【2】(see photo on the right).

⚠ **If the flanges are flush with each other, the actuator【1】will be engaged with the non-thrust base assembly【3】properly.**

d. Tighten M10 screws【6】.

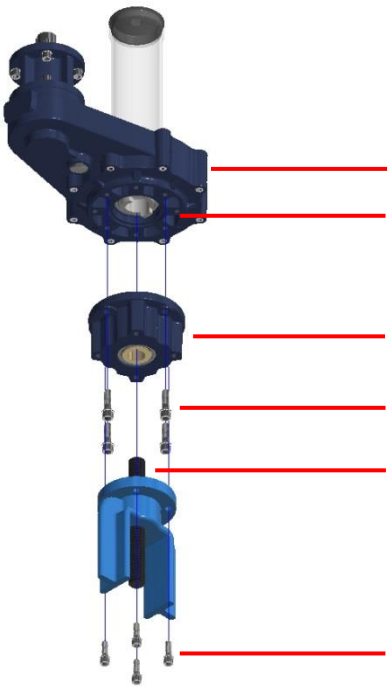
Screw Size	Torque (Nm)
M10	35

⚠

- **Use suitable screws and couplings to direct mount with the valve.**
- **DO NOT lift the actuator through the handwheel while moving to avoid actuator damage.**
- **The basic setting is finished if the actuator is mounted with the valve when ex-factory.**

5.3 Mount Gear Box with Valve

- **Rising Stem**



a. Apply a small quantity of grease to the valve stem【5】.

b. Screw the thrust base assembly【3】into the valve stem【5】until it is flush with the valve flange. Then keep rotating the thrust base assembly【3】until alignment of the fixing holes.

c. Fasten the screws【6】, but do not tighten completely.

d. Mount the gear box【1】 with the thrust base assembly 【3】to ensure the stem nut is engaged with the output drive sleeve【2】(see photo on the right).

⚠ **If the flanges are flush with each other, the gear box【1】 will be engaged with the thrust base assembly【3】properly.**

e. Adjust the gear box【1】until alignment of mounting holes on the thrust base assembly【3】 .

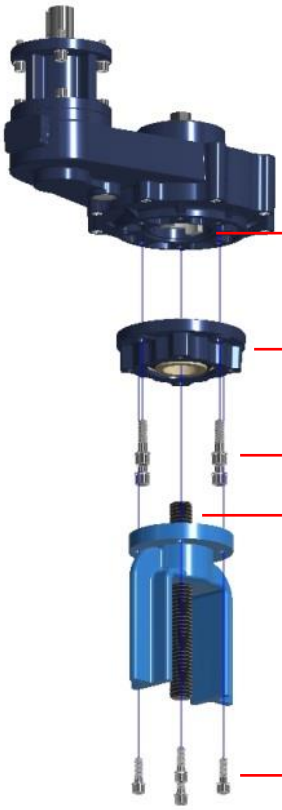
f. Use the screws 【4】to fasten the gear box【1】with the thrust base assembly【3】.

Gear Box	Screw Size	Torque (Nm)
G201	M12	61
G202	M16	151
G203	M20	208

g. Tighten the screws【6】.

Gear Box	Screw Size	Torque (Nm)
G201	M12	61
G202	M16	151
G203	M20	208

- **Non-rising Stem**

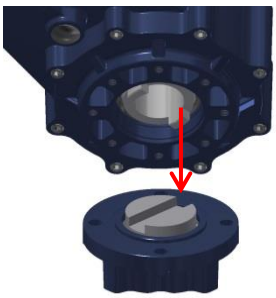


a. Use the screws 【4】to fasten the non-thrust base assembly【3】 with the gear box 【1】.

Gear Box	Screw Size	Torque (Nm)
G201	M12	61
G202	M16	151
G203	M20	208

b. Mount the gear box 【1】with the valve stem 【5】until it is flush with the valve flange.

c. Adjust the gear box【1】until alignment of the fixing holes and ensure the stem nut of non-thrust base assembly【3】is engaged with the output drive sleeve【2】(see photo on the right).

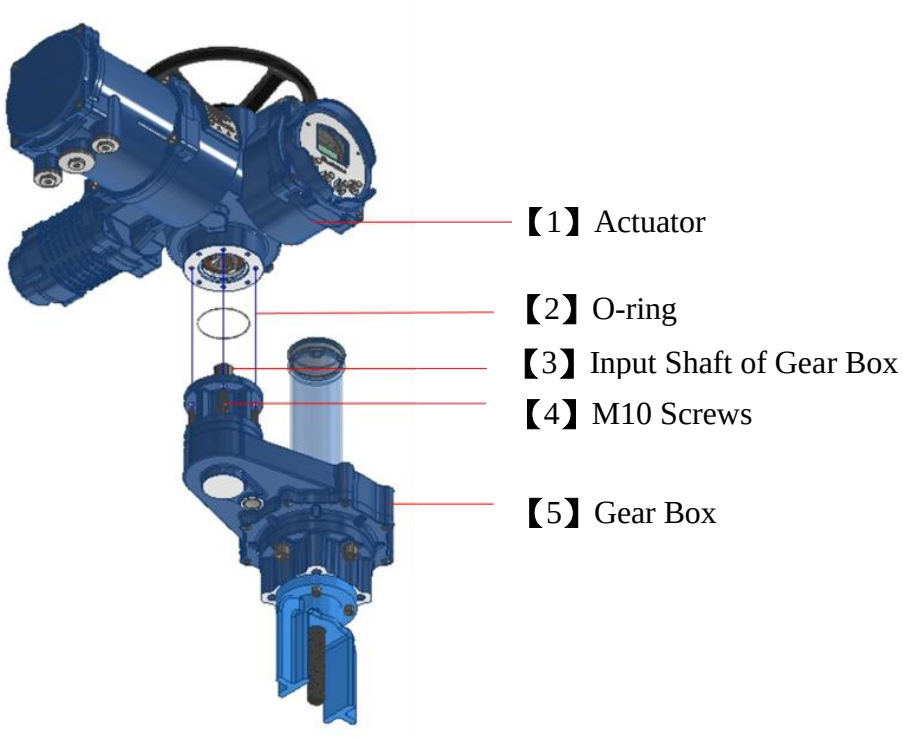


⚠ **If the flanges are flush with each other, the gear box 【1】 will be engaged with non-thrust base assembly【3】 properly.**

d. Tighten the screws【6】.

Gear Box	Screw Size	Torque (Nm)
G201	M12	61
G202	M16	151
G203	M20	208

5.4 Mounting Actuator with Gear box



a. Ensure that the O-ring【2】fits uniformly in the recess of the gear box.

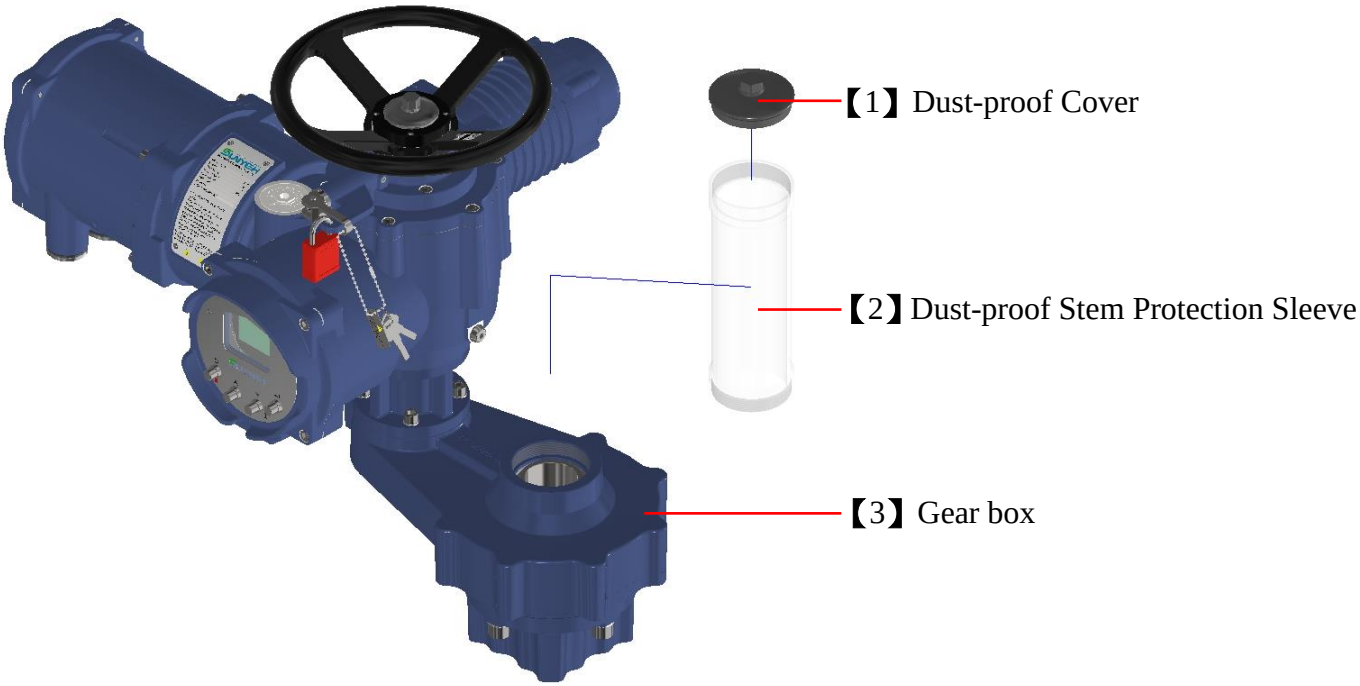
b. Mount the actuator【1】with gear box【3】and align the input shaft of the gear box【3】.

c. Rotate the actuator【1】to let the flange hole of the gear box align with the flange hole of the gear box【5】.

d. Tighten M10 screws 【4】per the table below.

Screw Size	Torque (Nm)
M10	35

5.5 Mounting Dust-proof Stem Protection Sleeve



a. Remove the dust-proof cover【1】from gear box【3】.

b. Place the dust- proof stem protection sleeve【2】on the gear box【3】 and tighten with the gear box【3】.

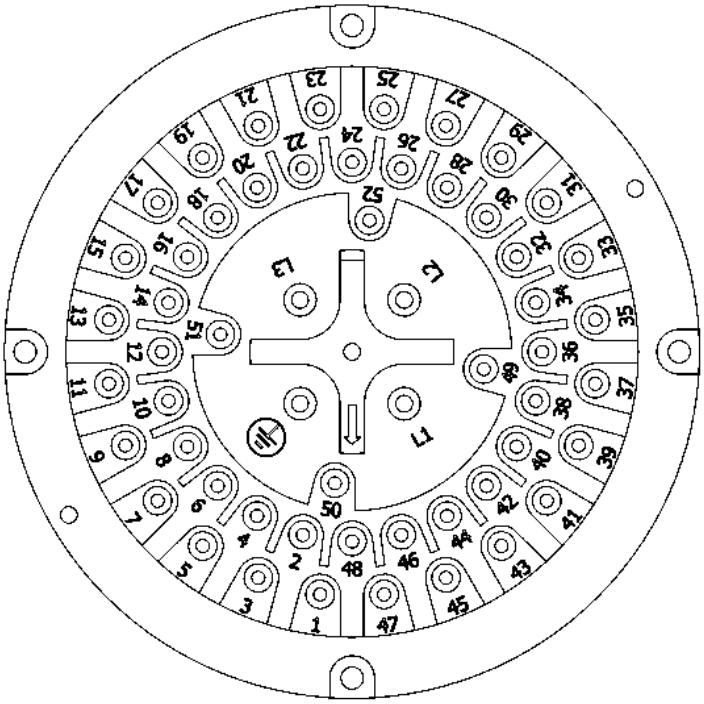
c. Tighten the dust-proof cover【1】 with the dust-proof stem protection sleeve【2】.

6 Electrical Connection

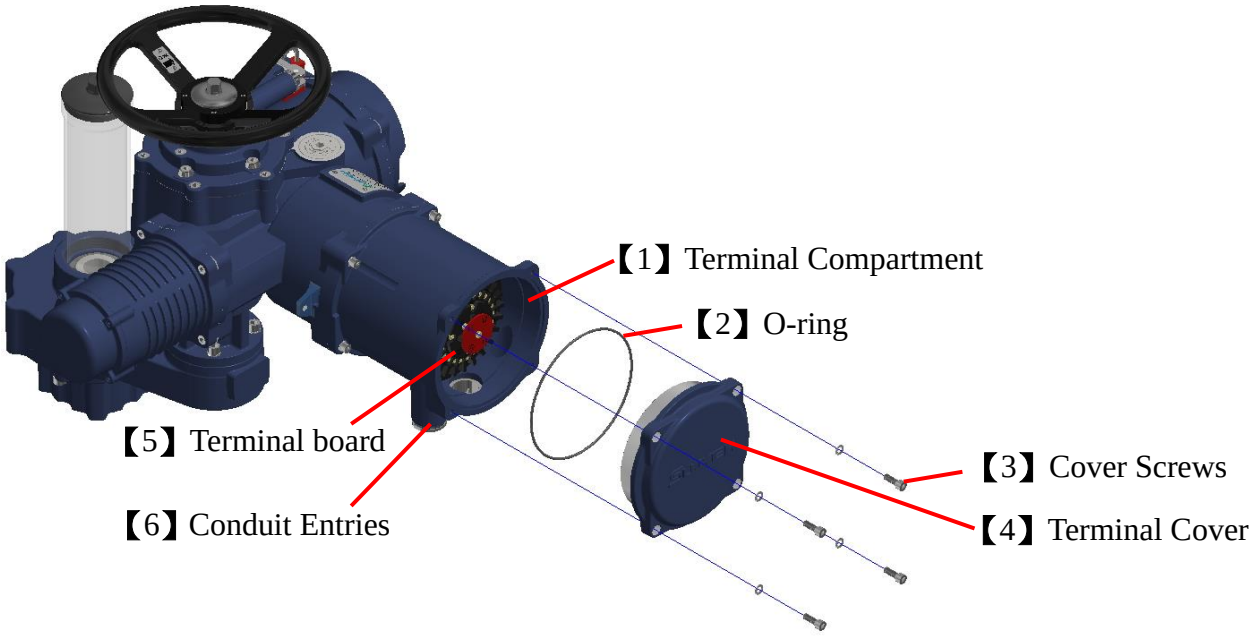
6.1 Terminal Block Layout

⚠

- **Verify supply voltage is in accordance with the data on nameplate.**
- **The handling shall follow the safety and warning instruction. The user should read and follow instructions contained in this operation manual.**
- **Installation, maintenance and repair works must be performed by trained personnel.**
- **Wiring according to the order-related wiring diagram and keep it after wiring. Please contact your sales representatives in case of loss.**
- **For short-circuit protection, a switch or circuit breaker must be included in the wiring installation.**



6.2 Removing Terminal Cover



⚠ **Ensure all power supplies are isolated before removing the cover.**

a. Loosen the cover screws【3】and remove the terminal cover【4】

⚠ **Please do not lose the O-ring【2】.**

b. Tighten the conduit entries with suitable cable glands with IP68 (8 m, 120 hrs) rating.

c. Unused conduit entries 【6】 have to be sealed with plugs to reach IP68 (8 m, 120 hrs) rating.

6.3 Electrical Connection - Cable Connection

- **Terminal cross section and tightening torques**

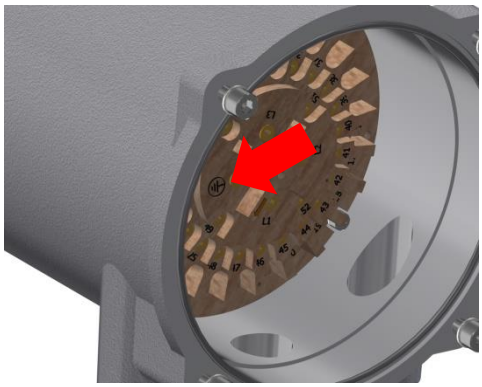
Type	Cross Section (mm^2)	Torque (Nm)
Power terminals (L1, L2, L3) & PE connection	5	2
Control contacts (1-52)	4	1

a. Connect cables according to the order-related wiring diagram.

⚠ **Risk of electric shock in case a protective earth conductor is NOT connected!**

⚠ **Start running the device only after having connected the protective earth conductor inside actuator.**

b. Tighten PE conductor firmly to PE ⏚ connection.



7 Manual Operation

⚠

- **Incorrect settings may lead to valve damage.**
- **Perform all basic settings including stroke limitation for open and close direction prior to operation.**
- **For purposes of setting and verifying, the actuator can be operated manually in case of motor failure or power outage. Manual operation is engaged by an internal changeover mechanism. Remove the lock for manual operation in any time and relock after using manual operation. Even if supply power to actuator during manual operation, it will not switch from manual to electric operation and cause personal injury.**

7.1 Manual Operation Steps

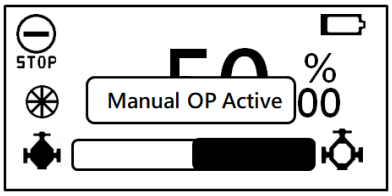
a. Disengage motor operation before manual operation

b. Remove the lock from handwheel lever.

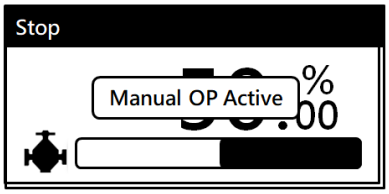
c. Reverse the lever to engage handwheel for manual operation. Meanwhile, the LCM screen displays “Manual OP Action” and local operation or setting by push button will not be possible.

Display Indication

Standby



Local Control



d. Turn the handwheel in desired direction.

⚠ **Clockwise turning of handwheel leads to close the valve.**

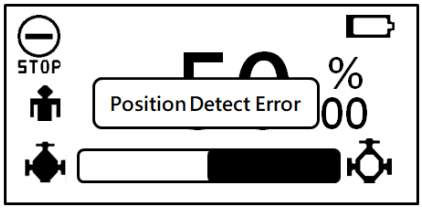
Handwheel CCW
Output Drive Shaft CW

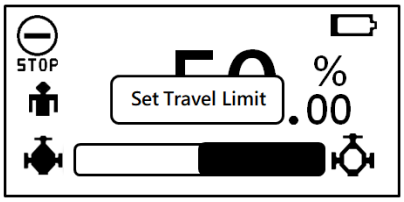
Handwheel CW
Output Drive Shaft CCW

e. Disengage manual operation

- Turn the handwheel lever back to initial position. Rotate the handwheel back and forth until a click is heard. Meanwhile, the LCM screen **NOT** displays "⊛" and "Manual OP Action". Put the lock back after disengaging the manual override.
- No matter the actuator is powered or not, manual operation is always possible. To prevent misuse after using the manual operation, it is needed to turn the handwheel lever back and lock up.

  ⚠ **It is needed to reset the limit position if manual operation without main power supply or battery dead. Refer section 8.7.4 to reset the limit positon if the display shows warning messages below.**

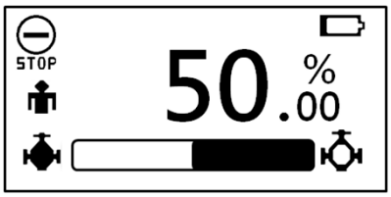




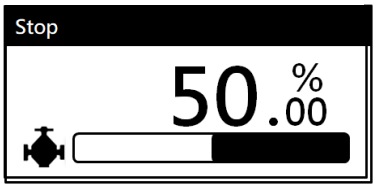
- The handwheel won't rotate while the actuator is activated by motor to prevent personal injury.

Display Indication

Standby



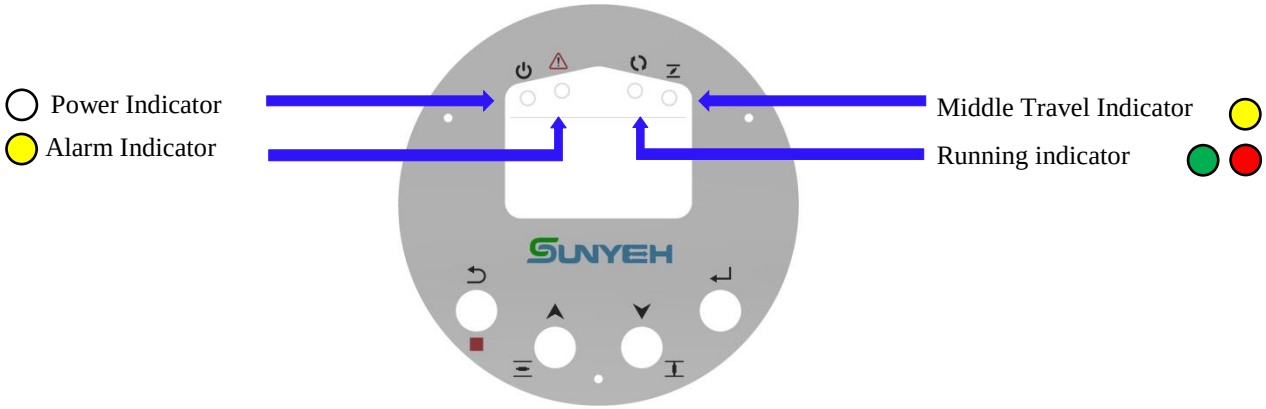
Local Control



8 Electrical Operation

8.1 Introduction

8.1.1 Push Button and Display Indication



- The instruction table of the LED Indicator:

Symbol	Instruction
⏻	Power.
⚠	Alarm.
↻	Opening direction or closing direction.
Z	Operating to middle travel.

- The setting symbol corresponds to the function in below table:

Push Button	Instruction
↩	Back to previous level.
▲	Switch the menu item / Enter an incremental value for the parameter.
▼	Switch the menu item / Move to next position in setting parameter.
↵	Confirm selection / Save / Go to next level.

- The valve operation symbol corresponds to the function in below table:

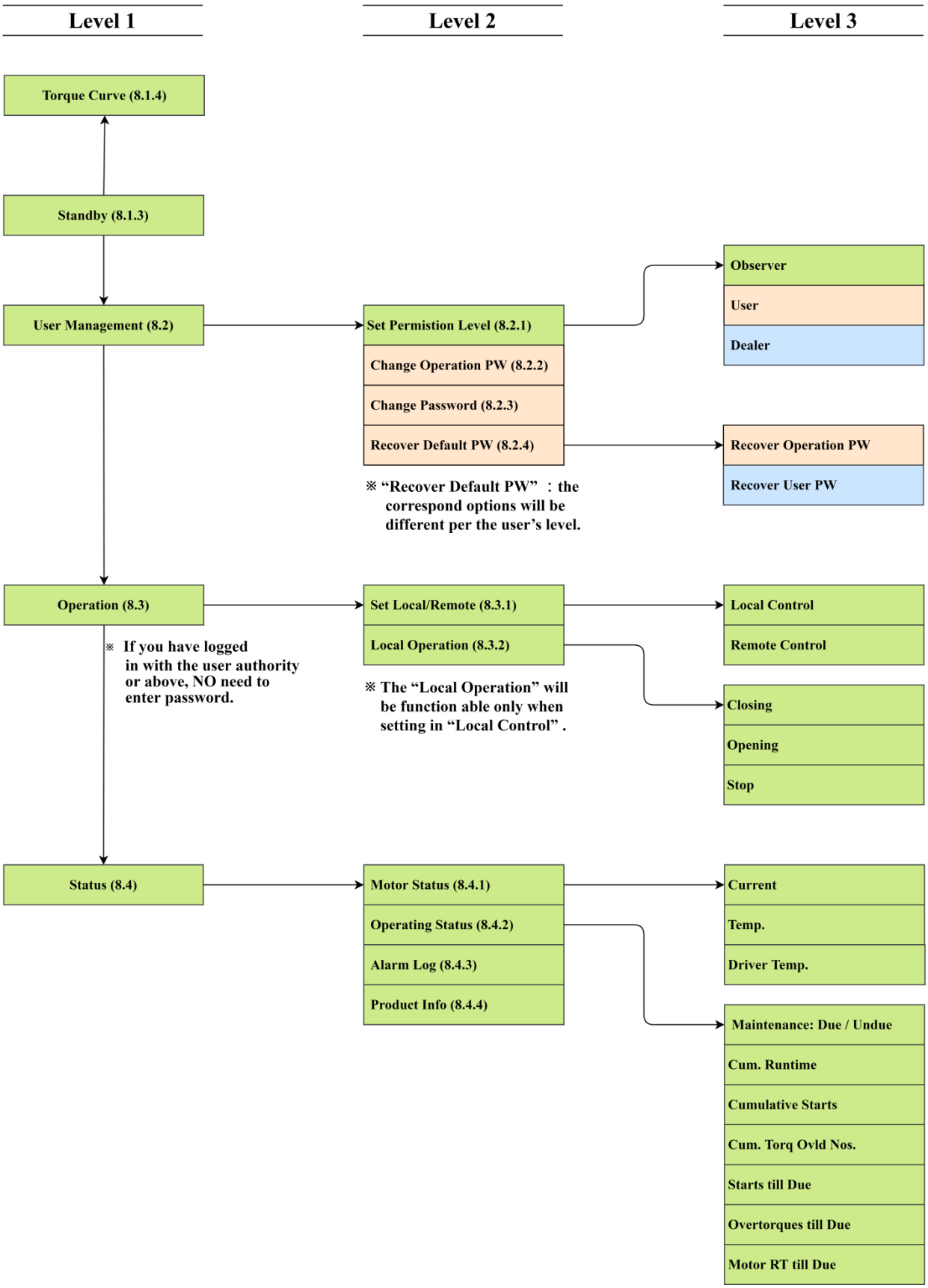
Push Button	Instruction
I	Closing direction.
=	Opening direction.
■	Stop.

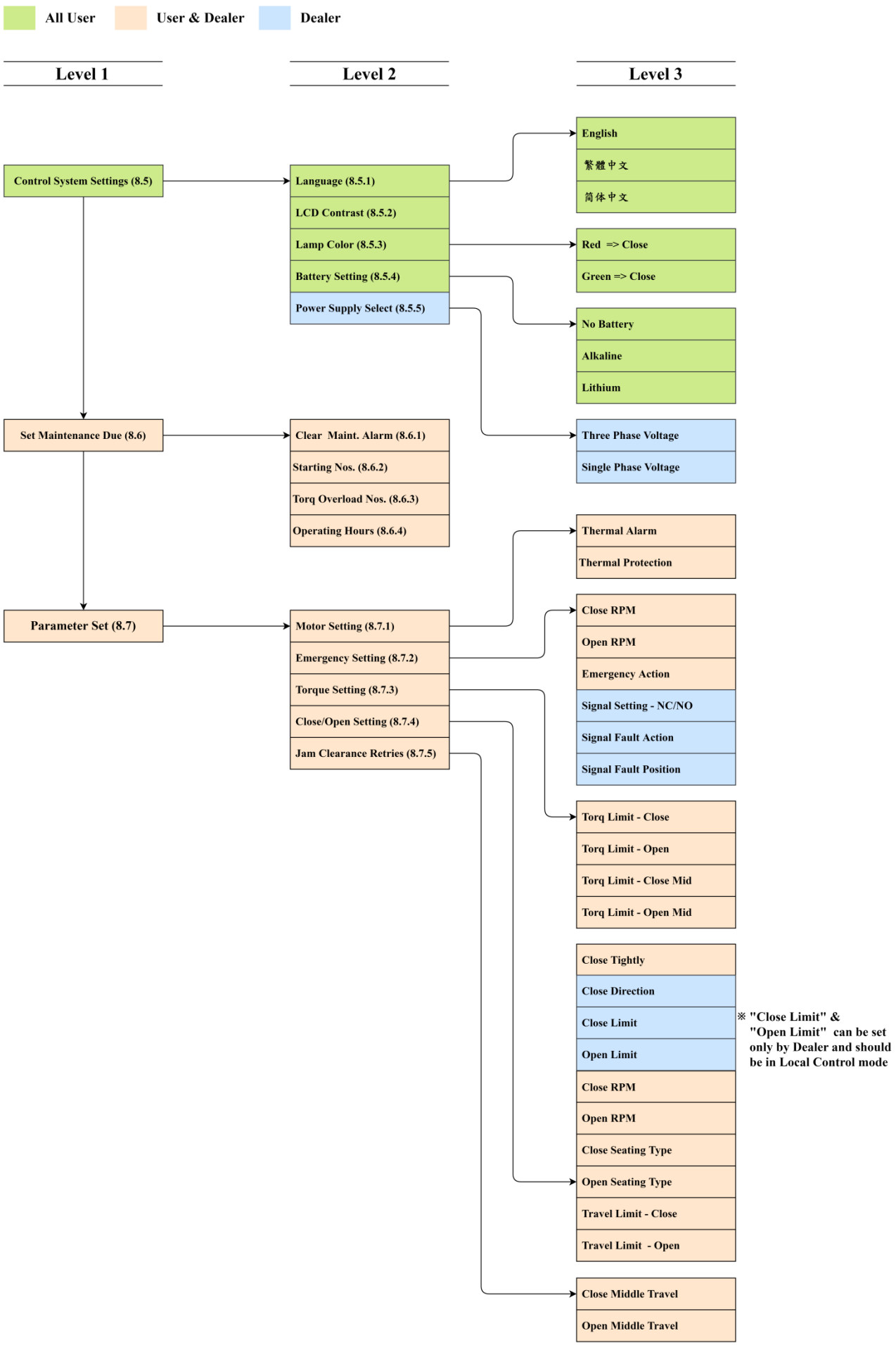
- The shortcut key symbol corresponds to the function in below table:

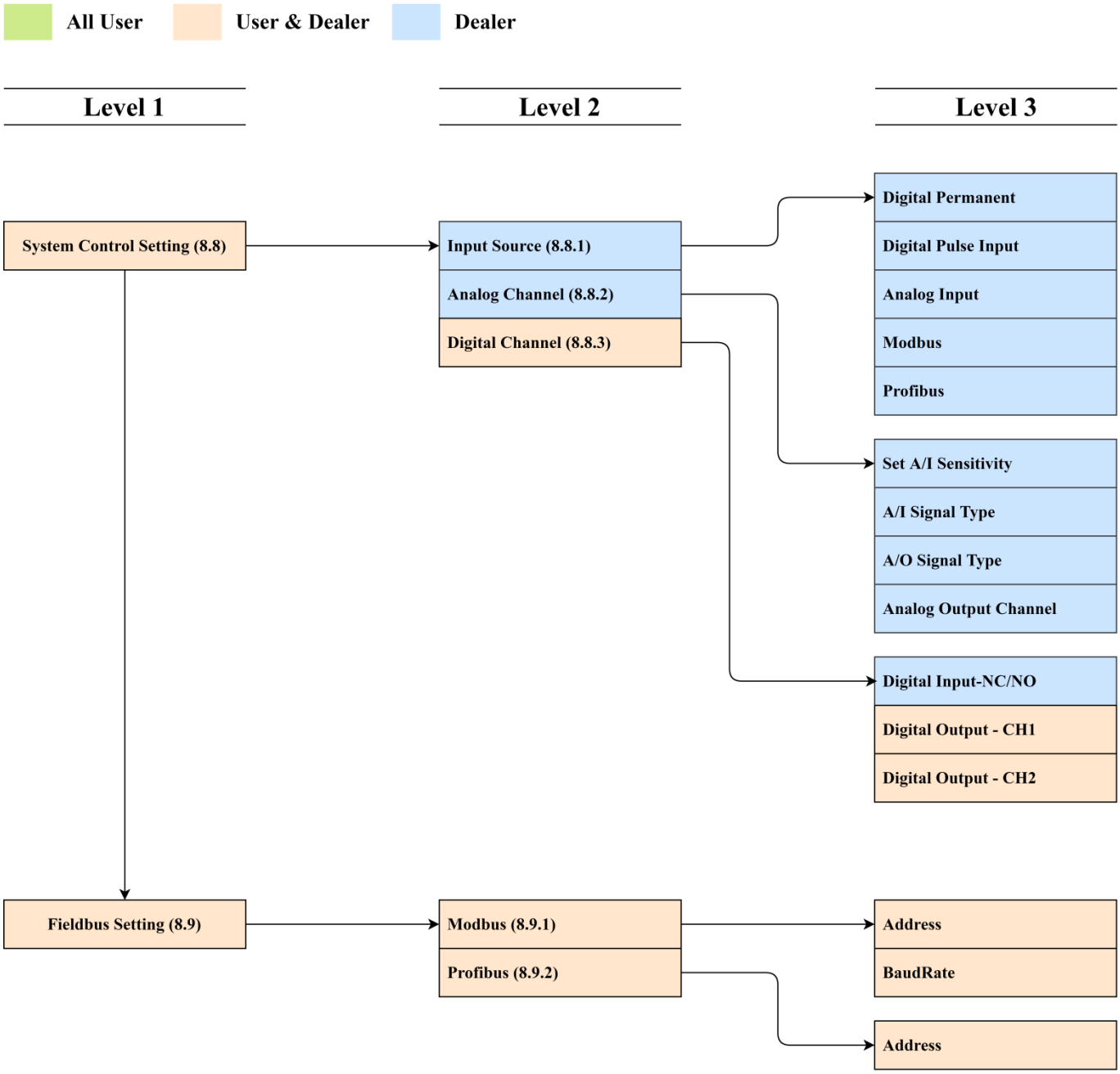
Push Button	Instruction
↩ ↵	Press ↩ and ↵ at the same time to return to the standby screen.

8.1.2 Settings Menu

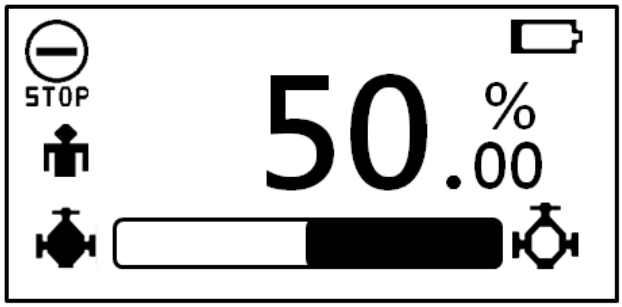
All User | User & Dealer | Dealer




All User
User & Dealer
Dealer
Level 1
Level 2
Level 3
Control System Settings (8.5)
Language (8.5.1)
LCD Contrast (8.5.2)
Lamp Color (8.5.3)
Battery Setting (8.5.4)
Power Supply Select (8.5.5)
English
繁體中文
简体中文
Red => Close
Green => Close
No Battery
Alkaline
Lithium
Three Phase Voltage
Single Phase Voltage
Set Maintenance Due (8.6)
Clear Maint. Alarm (8.6.1)
Starting Nos. (8.6.2)
Torq Overload Nos. (8.6.3)
Operating Hours (8.6.4)
Parameter Set (8.7)
Motor Setting (8.7.1)
Emergency Setting (8.7.2)
Torque Setting (8.7.3)
Close/Open Setting (8.7.4)
Jam Clearance Retries (8.7.5)
Thermal Alarm
Thermal Protection
Close RPM
Open RPM
Emergency Action
Signal Setting - NC/NO
Signal Fault Action
Signal Fault Position
Torq Limit - Close
Torq Limit - Open
Torq Limit - Close Mid
Torq Limit - Open Mid
Close Tightly
Close Direction
Close Limit
Open Limit
Close RPM
Open RPM
Close Seating Type
Open Seating Type
Travel Limit - Close
Travel Limit - Open
※ "Close Limit" & "Open Limit" can be set only by Dealer and should be in Local Control mode
Close Middle Travel
Open Middle Travel


All User
User & Dealer
Dealer
Level 1
Level 2
Level 3
System Control Setting (8.8)
Input Source (8.8.1)
Analog Channel (8.8.2)
Digital Channel (8.8.3)
Digital Permanent
Digital Pulse Input
Analog Input
Modbus
Profibus
Set A/I Sensitivity
A/I Signal Type
A/O Signal Type
Analog Output Channel
Digital Input-NC/NO
Digital Output - CH1
Digital Output - CH2
Fieldbus Setting (8.9)
Modbus (8.9.1)
Profibus (8.9.2)
Address
BaudRate
Address

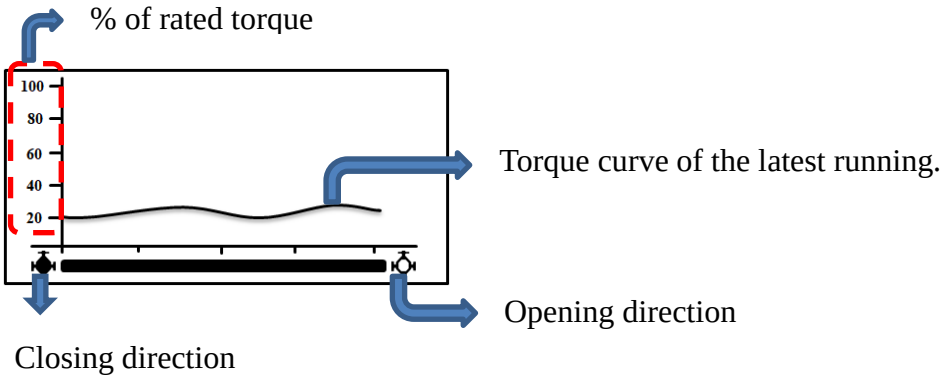
8.1.3 Instruction for Standby Mode



Symbol			
Description	Local Mode	Remote Mode	Manual Mode
Maintenance	Valve Open	Valve Close	Connecting with Bluetooth
Motor Stop	Run in CW	Run in CCW	Motor Overheated
Low battery	No Battery or Abnormal Battery	Run in CW (In set limit page)	Run in CCW (In set limit page)

- If the push buttons are not operated for more than 300 seconds, the display backlight will turn off and back to the previous level.
- The LCD will be turned off if only supply power with battery and press any push button or turn handwheel to turn on the LCD, but the backlight will not light. If the handwheel is continuously operated, the LCD will remain on. If the handwheel is not operated and the push buttons are not operated for more than 30 seconds, the LCD will turn off again for power saving.

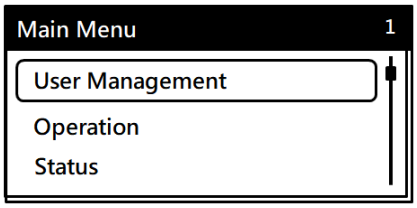
8.1.4 Torque Curve



- In standby mode, Press "↩" button to enter the torque curve page. Press the "↩" button again to back to standby mode.

8.1.5 Main Menu Instruction

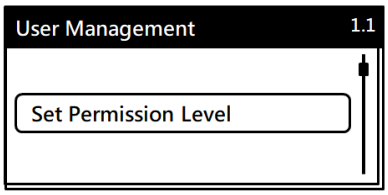
[Main Menu]



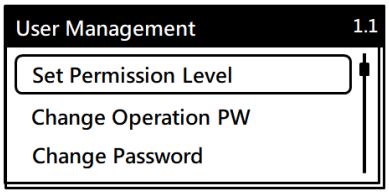
- The main menu includes 8 parts, of which parts 5 to 8 will be displayed only to User and above.

Item	Function	Permission		
		Observer	User	Dealer
1	User Management	◎	◎	◎
2	Operation	◎	◎	◎
3	Status	◎	◎	◎
4	Control System Settings	◎	◎	◎
5	Set Maintenance Due		◎	◎
6	Parameter Setting		◎	◎
7	System Control Setting		◎	◎
8	Fieldbus Setting		◎	◎

8.2 User Management



The screen displayed with “Observer” level.

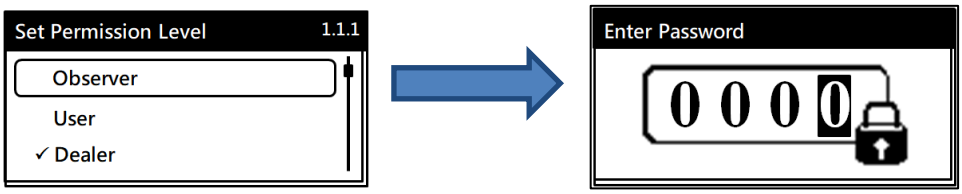


The screen displayed with “User” or “Dealer” level.

- The selection parameters will be differing by different user level.

User Level	No.	Menu
Observer	1.1	Set Permission Level
User / Dealer	1.1	Set Permission Level
	1.2	Change Operation PW
	1.3	Change Password
	1.4	Recover Default PW

8.2.1 Set Permission Level

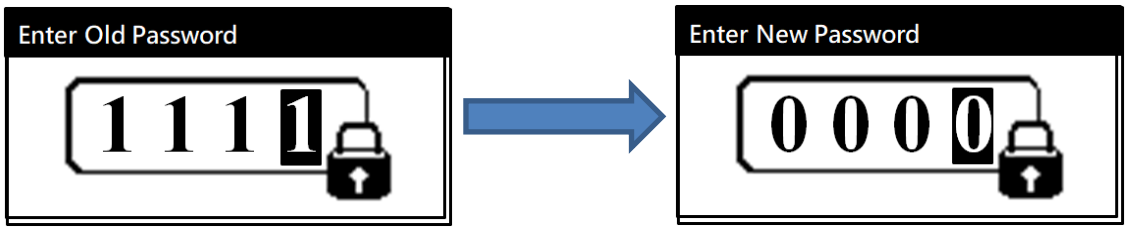


- According to the user level that you choose to enter default password as below and refer to section 8.2.2 and 8.2.3 to change the password.

User Level		Default password	Note
Observer	User Management Status Control System Settings	None	If you have logged in to the User or above, you do not need to enter the password again.
	Operation	1111	
User		2222	
Dealer		3333	

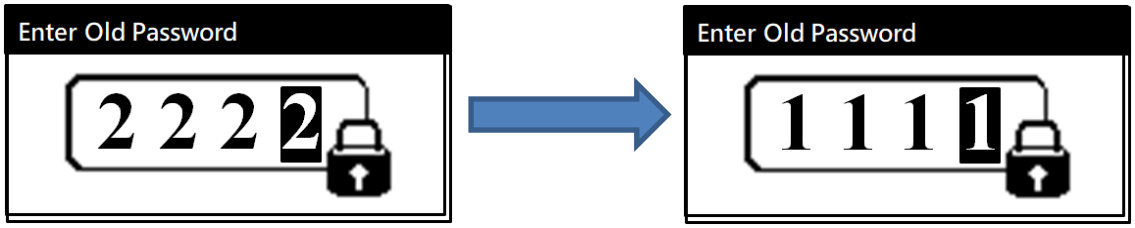
⚠ **After the user logs in, if the push button is not operated for more than 300 seconds and the LCD screen is in "Standby Mode", it will be automatically logged out.**

8.2.2 Change Operation PW



- Entering the old operation password before entering the new password.

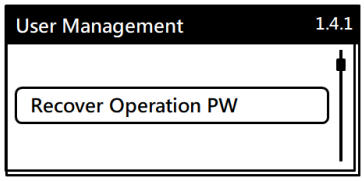
8.2.3 Change Password



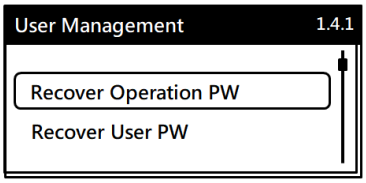
- Entering the old password base on the user level before entering the new password.
- The setting symbol corresponds to the table description below :

Push Button	Function
↩	Back to previous level to quit or enter the password.
▲	Enter figures from 0 to 9.
▼	Move to different digits.
↵	Save the change.

8.2.4 Recover Default PW



The screen displayed with “User” level.

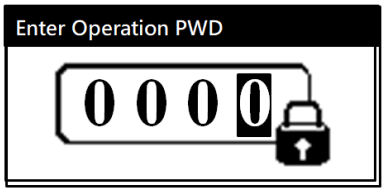


The screen displayed with “Dealer” level.

User Level	Recoverable Password
User	Operation password (Observer)
Dealer	Operation password (Observer), User password

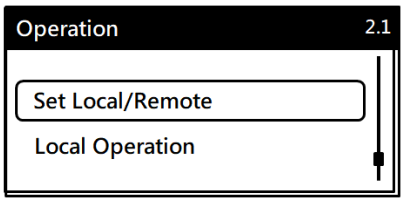
- Can only recover password for permission lower than login level.

8.3 Operation



⚠ **A password will be required for observer level user. No need for other level users.**

[Operation]

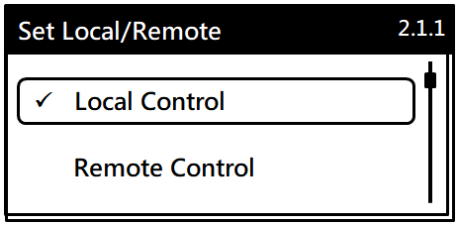


⚠ In operation section, the operating status must be set in the "Local Control" for local operation.

⚠ Before the actuator is put into service, the following basic setting must be made.

- Power Supply Select Control System Settings → Power Supply Select
- Battery Setting Control System Settings → Battery Setting
- Close (Open) Limit Parameter Setting → Close/Open Setting → Close Limit
  Parameter Setting → Close/Open Setting → Open Limit

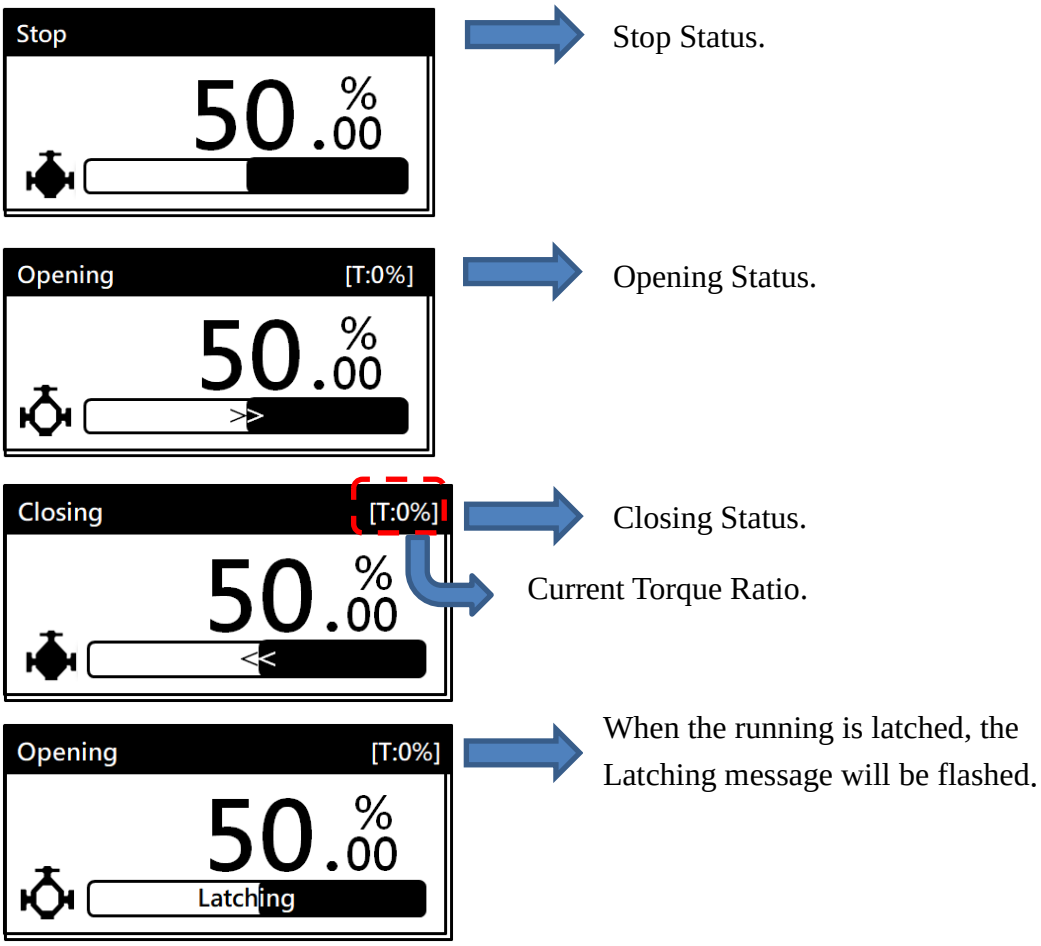
8.3.1 Set Local / Remote



- Select Local Control or Remote Control mode then press 「↵」 button and the display shows "Save". The setting is completed when the "Save" message is disappeared.

Push Button	Function
↩	Back to previous level to quit.
▲	Select menu item (up).
▼	Select menu item (down).
↵	Save the Change.

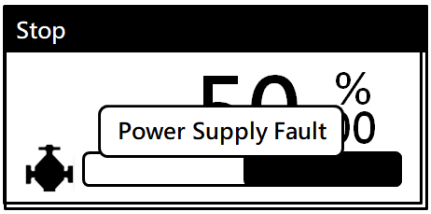
8.3.2 Local Control



⚠ **Local Operation" will be available only when the operating status is set in "Local Control" mode.**

Push Button	Symbol	Function
↩	■	• Back to previous level and stop operating. • In operating condition, push the button to stop operating and push again, it will be back to previous level.
▲	⊼	• Operating in **OPEN** direction. • Push the button to operate in **OPEN** direction and release the button to stop operating. • Push and hold the button for more than 5 secs and "Latching" is shown, which means the actuator is in automatic running state. Push the button again to stop operating.
▼	⊽	• Operating in **CLOSE** direction. • Push the button to operate in **CLOSE** direction and release the button to stop operating. • Push and hold the button for more than 5 secs and "Latching" is shown, which means the actuator is in automatic running state. Push the button again to stop operating.
↵		Not applicable.

[Stop]



- The actuator is not operated in the following condition and warning message will be shown on the display.

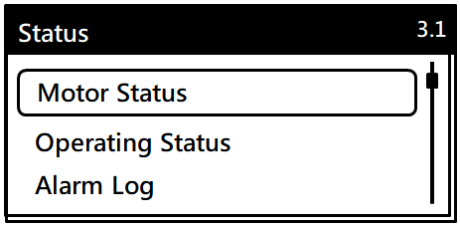
	Warning Message	Description
a	Power Supply Fault	Main power failure (AC power failure).
b	Set Travel Limit	Abnormal Open / Close Limit setting or Open / Close limits are not set.
c	Manual OP Fault	Handwheel sensor signal failure.
d	Manual OP Active	Handwheel lever open. (At Manal Operation status)
e	Encoder Fault	Encoder sensor signal failure.
f	Driver Comm. Error	Abnormal motor driver module.
g	Motor Drive Fault	Abnormal motor running.
h	Motor Temp. Fault	Motor temperature sensing signal failure.
i	Motor OH-Stop	Motor temperature higher than 135℃ (275℉).
j	Driver Overheat	Motor power module (IGBT) temperature higher than 125℃ (257 ℉).
k	EEPROM Fault	The PCBA module failure to save the data.

- The following warning messages will be shown on the display but the motor still can be operated.

	Warning Message	Operating Condition
a	Over Limit Range	When actuator exceeds the limit value set in the running direction, it needs to be operated in the opposite direction.
b	Motor OH - RPM Limit	Motor temperature is higher than the setting value thus the actuator is running at the lowest speed.
c	Close Overload Open Overload	When the torque switch is activated, the motor will be stopped. The actuator could be operated "Only" in the opposite direction.

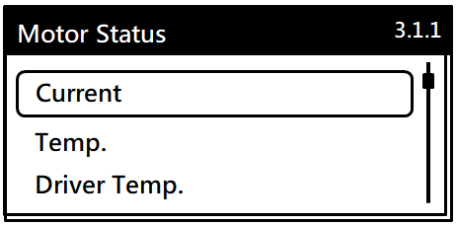
- When Encoder failure, the backup Encoder will start running to keep saving the travel position during manual operation.

8.4 Status



No.	Menu
3.1	Motor Status
3.2	Operating Status
3.3	Alarm Log
3.4	Product Info

8.4.1 Motor Status



No.	Menu
3.1.1	Current
3.1.2	Temp.
3.1.3	Driver Temp.

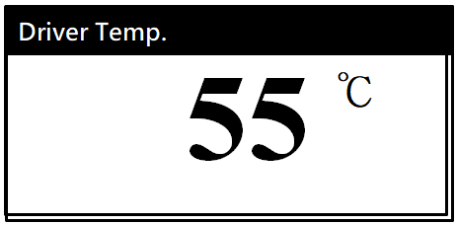
[Current]

This value will only be displayed when the motor is running.

[Temp.]

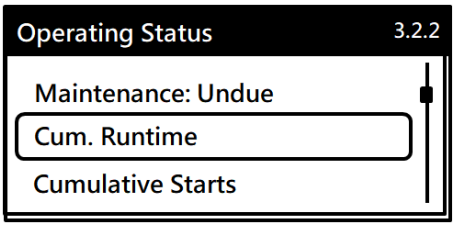
Motor internal temperature

[Driver Temp.]



Motor Driver Module temperature.

8.4.2 Operating Status

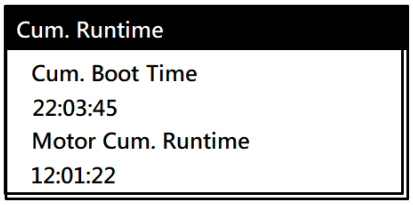


No.	Menu
3.2.1	Maintenance : Undue / Due
3.2.2	Cum. Runtime
3.2.3	Cumulative Starts
3.2.4	Cum. Torq Ovld Nos.
3.2.5	Starts till Due
3.2.6	Overtorques till Due
3.2.7	Motor RT till Due

[Maintenance]

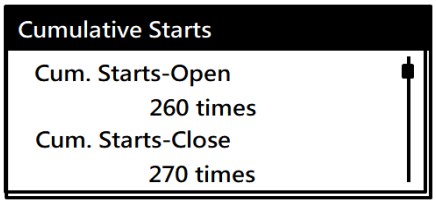
- Display shows whether the actuator need to do maintenance or not.

[Cum. Runtime]

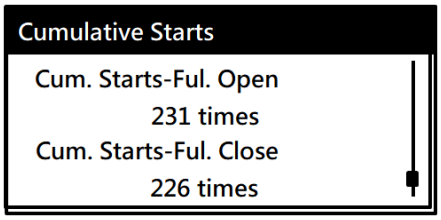


- Cum. Boot time : total **Actuator** operating time
- Motor Cum. Runtime: total **Motor** operating time.

[Cumulative Starts]



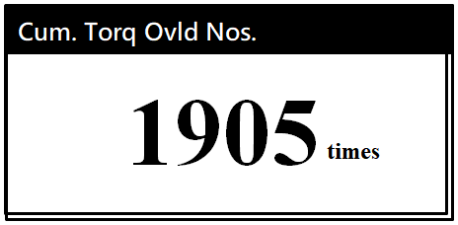
- The starting times for OPEN and CLOSE direction.



- The total times for operating to fully- open or fully-closed position. Only calculate the times when the actuator operating to 0% or 100% position.

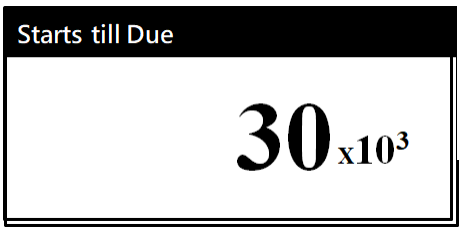
Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Not applicable.

[Cum. Torq Ovld Nos.]



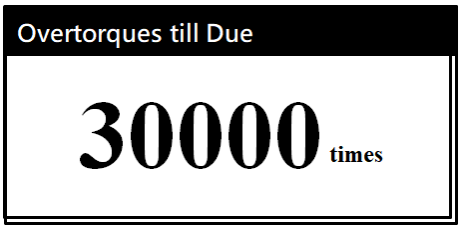
- The value shows the times of actuator overload and stop running.

[Starts till Due]



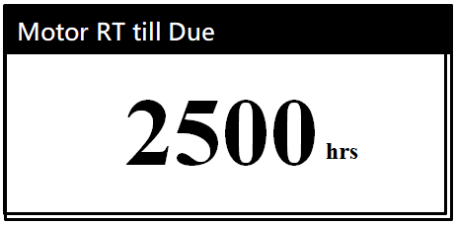
- The value shows the remaining cycle times before maintenance.

[Overtorques till Due]



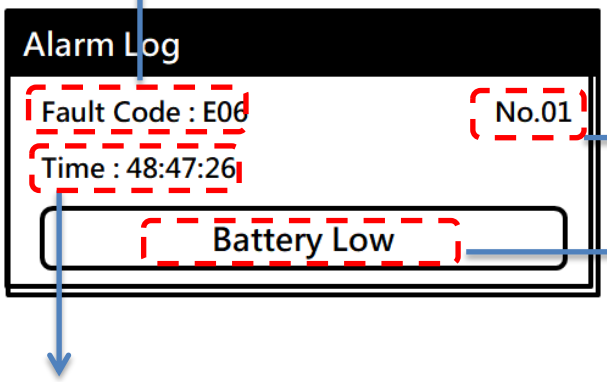
- The value shows the remaining overload times before maintenance.

[Motor RT till Due]



- The value shows the remaining operating hours before next maintenance.

8.4.3 Alarm Log



Fault code for the fault event. Refer to troubleshooting for more information and soloutions.

Alarm No. for the number of alarm event. The max. number of events is 99. The oldest data will be coveredd if it is more than 99. The smallest figure means the latest message.

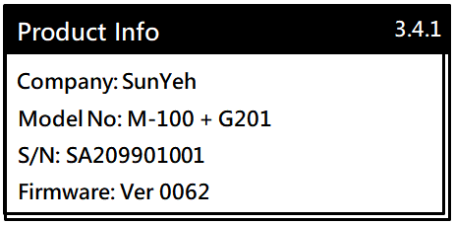
Short description of the Fault code.

Time for fault occurred.
The time is based on th actuator boot time.
(hour : minute : second)

Push Button	Function
↩	Back to previous level to quit.
▲	Switch to previous fault message.
▼	Switch to next fault message.
↵	Not applicable.

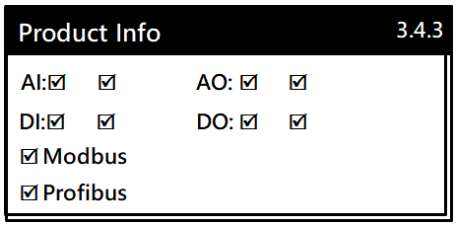
8.4.4 Product Info

[Product Info]



- Except-Firmware, the other information can be modified by Modbus, Profibus and Bluetooth protocol. G201 stands for the gearbox. It will not be shown if external gearbox is not assembled in manufactory.

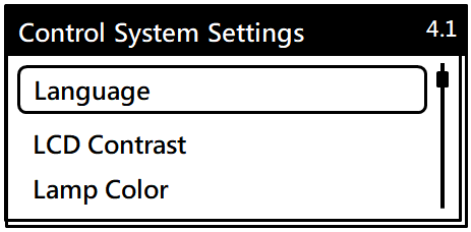
[Product Info]



- ☑ The module is installed.
- ☐ The module is not installed.
- A/I, A/O, D/I and D/O can be installed in channel 1 (left column) or 2 (right column).

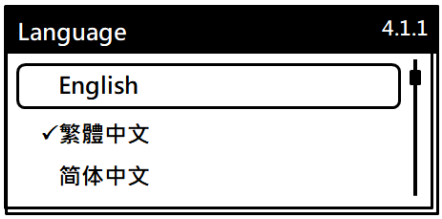
Push Button	Function
↩	Back to previous level to quit.
▲	Switch to Product Info (up).
▼	Switch to Product Info (down).
↵	Not applicable.

8.5 Control System Settings



No.	Menu	Lowest User Level
4.1	Language	User
4.2	LCD Contrast	User
4.3	Lamp Color	User
4.4	Battery Setting	User
4.5	Power Supply Select	Dealer

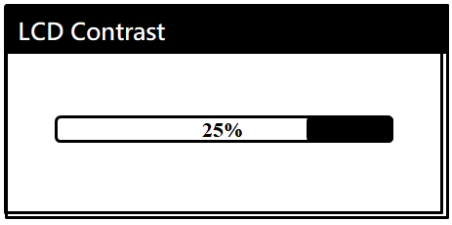
8.5.1 Language



- Set the language displayed on the LCD interface.

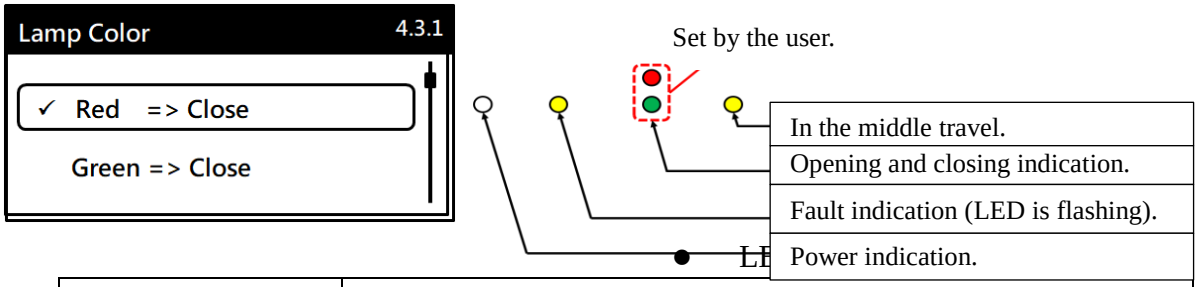
Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

8.5.2 LCD Contrast



Push Button	Function
↩	Back to previous level to quit.
▲	Contrast increase.
▼	Contrast reduction.
↵	Save the change.

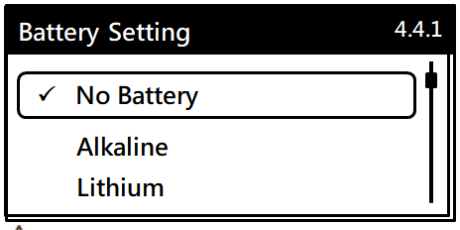
8.5.3 Lamp Color



LED	Description
Power	The LED indication will stay ON after power is supplied.
Fault	The LED indication will keep blinking when the fault is detected.
Opening and Closing Direction	**The lamp colors can be set by the user. The LED indication will keep blinking when the actuator runs to opening or closing direction.** The LED indication will stay ON when the actuator runs to fully-open or fully-close direction.
Middle Travel	The LED indication will stay ON when the actuator runs to middle travel no matter it is running or stops.

Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

8.5.4 Battery Setting

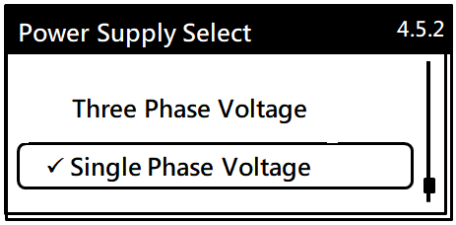


⚠ **If the actual battery specification is different from the "Battery Setting", it will cause the wrong battery warning message.**

- Two types of batteries, "alkaline battery" or "lithium battery" , could be installed in the actuator, and setting the correct type depending on the installation.

Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

8.5.5 Power Supply Select

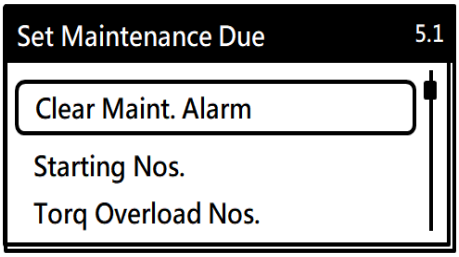


⚠ **If the actual supply voltage is different from the setting on "Power Supply Select", it will cause the wrong warning message.**

- Set the power supply based on the power supply and press 「↵」 to save the selection.

Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

8.6 Set Maintenance Due



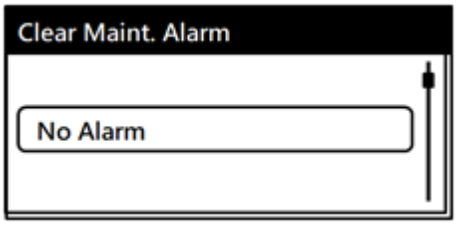
No.	Menu	Lowest User Level
5.1	Clear Maint. Alarm	User
5.2	Starting Nos.	Dealer
5.3	Torq Overload Nos.	Dealer
5.4	Operating Hours	Dealer

- Set Starting Nos., Torque Overload Nos. and Operating Hours based on the user's need for maintenance.
- The Maintenance message will be displayed when one of the maintenance setting (Starting Nos., Torque Overload Nos. or Operating Hours) is reached. All Maintenance Setting will be re-accumulated after clearing alarm.

8.6.1 Clear Maint. Alarm

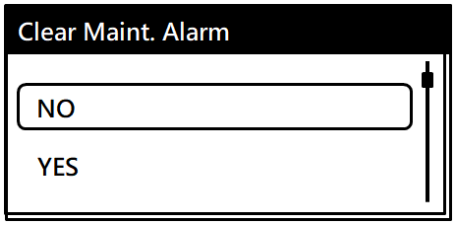
The display shows difference menu based on the Maintenance Signal.

[No Maintenance Signal]



- No Maintenance Signal and press [↵] to quit.

[Maintenance Signal]



- Select YES and press [↵] to clear all maintenance messages.

Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

8.6.2 Starting Nos.

Push Button	Function
↩	Back to previous level to quit.
▲	Enter an incremental value for the parameter.
▼	Move to next digit.
↵	Save the change.

- Setting range is from 3 to 10,000 thousand times. For example, 30 x 10^3= 30,000 times.

8.6.3 Torq Overload Nos.

Push Button	Function
↩	Back to previous level to quit.
▲	Enter an incremental value for the parameter.
▼	Move to next digit.
↵	Save the change.

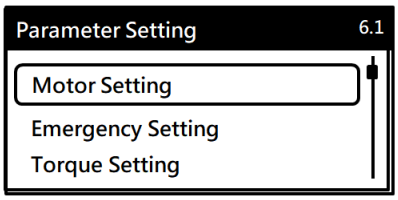
- Setting range is from 3,000 to 10,000 times.

8.6.4 Operating Hours

Push Button	Function
↩	Back to previous level to quit.
▲	Enter an incremental value for the parameter.
▼	Move to next digit.
↵	Save the change.

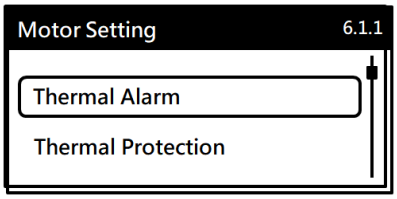
- Setting range is from 100 to 2,500 hours.

8.7 Parameter Setting



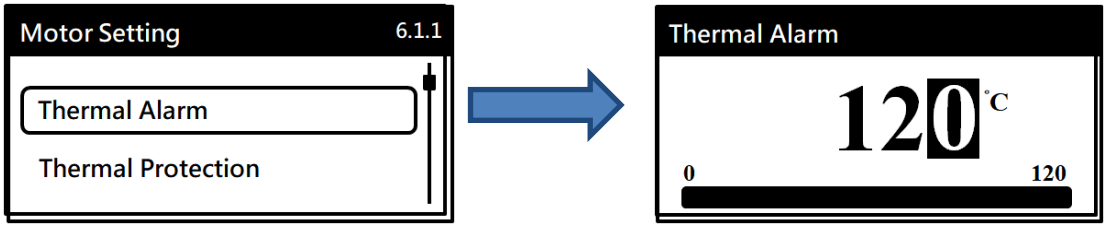
No.	Menu
6.1	Motor Setting
6.2	Emergency Setting
6.3	Torque Setting
6.4	Close/Open Setting
6.5	Jam Clearance Retries

8.7.1 Motor Setting



No.	Menu	Lowest User Level
6.1.1	Thermal Alarm	User
6.1.2	Thermal Protection	User

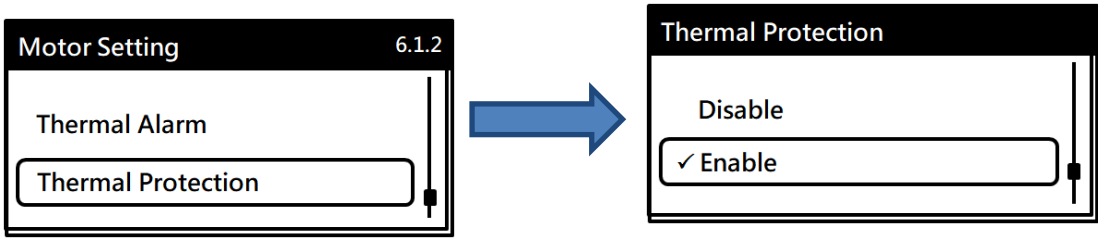
[Thermal Alarm]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch figures from 0 to 9.
▼	Move to next digit.
↵	Save the change.

- The value could be set from 0 to120 (Unit: ℃) and default setting is 120 ℃.
- When the motor temperature exceeds setting value, actuator will have warning message and an alarm log “Motor OH-RPM Limit”.

[Thermal Protection]

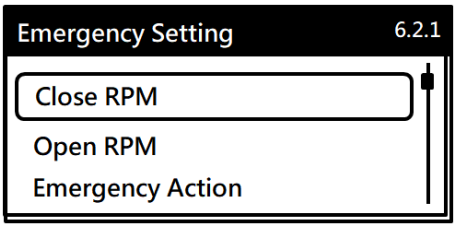


- If the motor temperature exceeds the value set in “Thermal Alarm” and the "Thermal Protection" is set at Enable, the motor will be operated at the lowest speed. After temperature is lower than the value set in “Thermal Alarm”, the actuator run at the set speed again.
- Default: Enable.

Motor High Temperature Protection

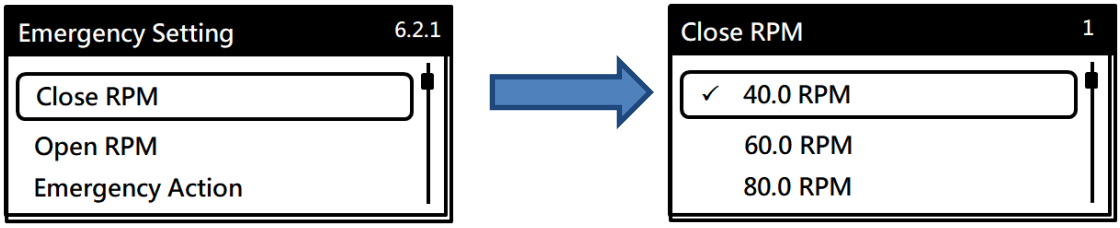
- When the motor temperature is higher than 135℃ (275℉), the protection function will be activated automatically to stop the motor running.
  After the motor temperature is lower than 135℃ (275℉), the protection function will be based on the setting in “ Thermal Alarm “ and “Thermal Protection”.

8.7.2 Emergency Setting



No.	Menu	Lowest User Level
6.2.1	Close RPM	User
6.2.2	Open RPM	User
6.2.3	Emergency Action	User
6.2.4	Signal Setting-NC/NO	Dealer
6.2.5	Signal Fault Action	Dealer
6.2.6	Signal Fault Position	Dealer

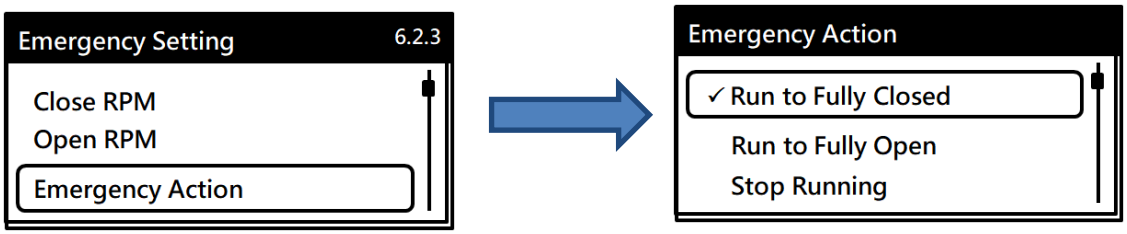
[Close / Open RPM]



- The function is to set for Close and Open operating speed in emergency condition.
- Speed setting refers to section 8.7.4 Close / Open Settings.

Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

[Emergency Action]

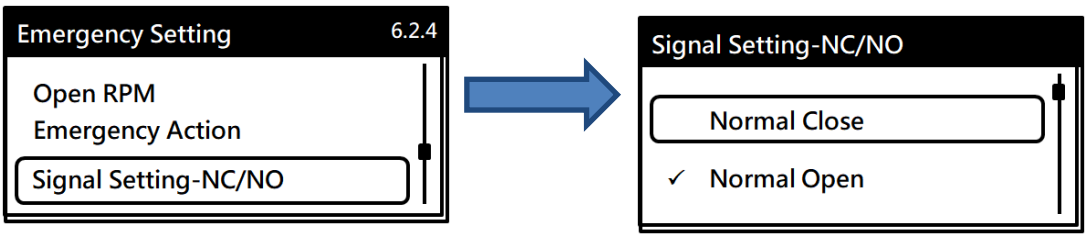


Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- When an ESD signal is received, the actuator will run to the desired position based on the setting of "Emergency Action". There are 4 actions can be set as following table.
- Default: Disable ESD Signal.

Menu	Description
Run to Fully Closed	Once the ESD signal is received, the actuator will run to the fully-closed position.
Run to Fully Open	Once the ESD signal is received, the actuator will run to the fully-open position.
Stop Running	Once the ESD signal is received, the actuator will stop running.
Disable ESD Signal	Once the ESD signal is received, the actuator will keep running normally.

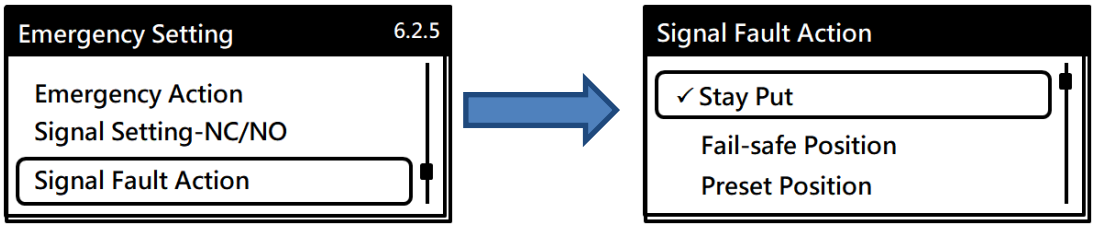
[Signal Setting -NC/NO]



- Set the wiring type of emergency signal input for Normal Close or Normal Open.
- Default: Normal Open.

Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

[Signal Fault Action]

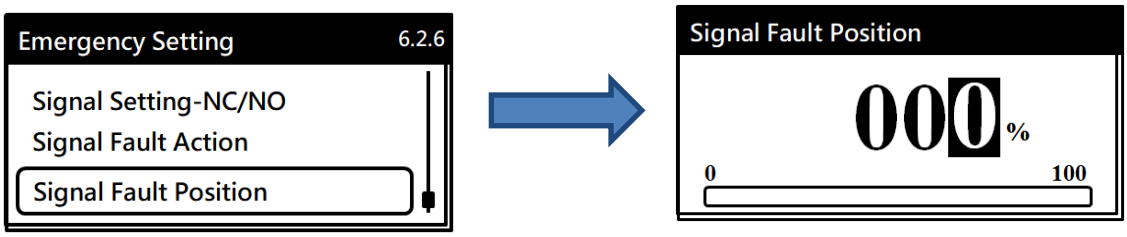


Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- When the emergency input signal is failed (Analog Input, Digital Input, Profibus or Modbus control modes), refer to the table below to check the corresponding action of the actuator.
- The function for Analog Input Control is only available for 4 - 20mA, 1 - 5V, 2 - 10V.
- Default : Stay Put

Menu	Description
Stay Put	Once the input signal is failed, the actuator will stop running.
Fail-safe Position	Once the input signal is failed, the actuator will operate to the position set in the “Signal Fault Position”.
Preset Position	Once the input signal is failed, the actuator will keep running to the position per the input signal. Note: The function is only available for 4-20mA control.

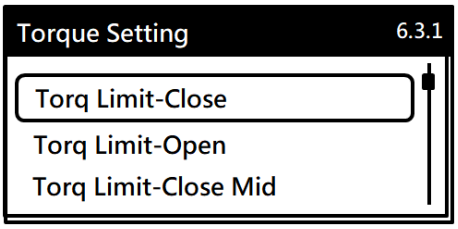
[Signal Fault Position]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

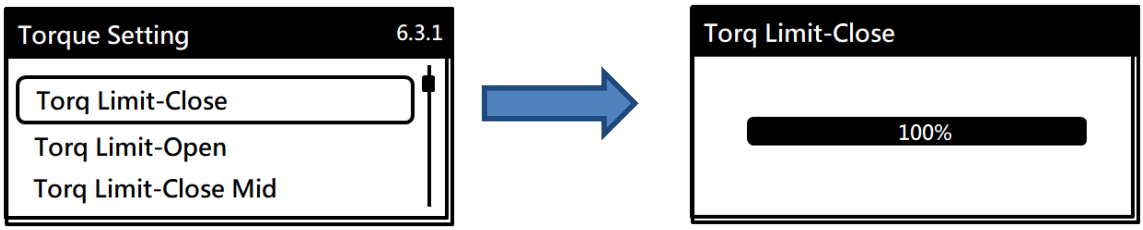
- While the input signal is failed and the "Signal Fault Action" is set in "Fail-safe Position". The actuator will run to the position set in "Signal Fault Position".
- Setting range is from 0 to 100% and default setting is 0%.

8.7.3 Torque Setting



No.	Menu	Lowest User Level
6.3.1	Torq Limit-Close	User
6.3.2	Torq Limit-Open	User
6.3.3	Torq Limit-Close Mid	User
6.3.4	Torq Limit-Open Mid	User

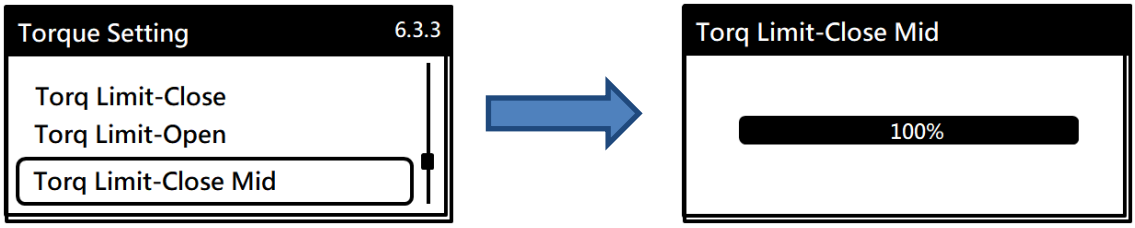
[Torque Limit-Close / Open]



Push Button	Function
↩	Back to previous level to quit.
▲	Adjust tripping torque in end position. One push corresponds to 10% reduction.
▼	Adjust tripping torque in end position One push corresponds to 10% increase.
↵	Save the change.

- The tripping torque in end position of CLOSE / OPEN could be set from 30% to 100% and default settings are 100% for Close and 50% for Open.
- The function must be applied with “Close / Open Seating Type” and “Travel Limit-Close / Open”. And, the Seating Type is set in “Torque Seating” priority.

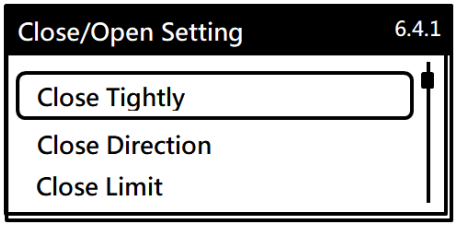
[Torq Limit-Close Mid / Open Mid]



Push Button	Function
↩	Back to previous level to quit.
▲	Adjust tripping torque in mid-travel. One push corresponds to 10% reduction.
▼	Adjust tripping torque in mid-travel. One push corresponds to 10% increase.
↵	Save the change.

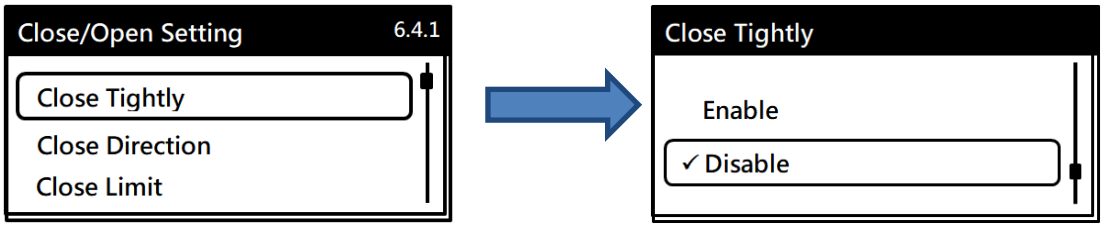
- The tripping torque in CLOSE and OPEN mid-travel. If the actuator is stuck in the mid-travel (per tripping torque setting), the actuator will perform the Retry function until programmed number of tries set in “Jam Clearance Retries” is reached.
- The function must be used with “Jam Clearance Retries”.
- Default: 50%.

8.7.4 Close/Open Setting



No.	Menu	Lowest User Level
6.4.1	Close Tightly	User
6.4.2	Close Direction	Dealer
6.4.3	Close Limit	Dealer
6.4.4	Open Limit	Dealer
6.4.5	Close RPM	User
6.4.6	Open RPM	User
6.4.7	Close Seating Type	User
6.4.8	Open Seating Type	User
6.4.9	Travel Limit-Close	User
6.4.10	Travel Limit-Open	User

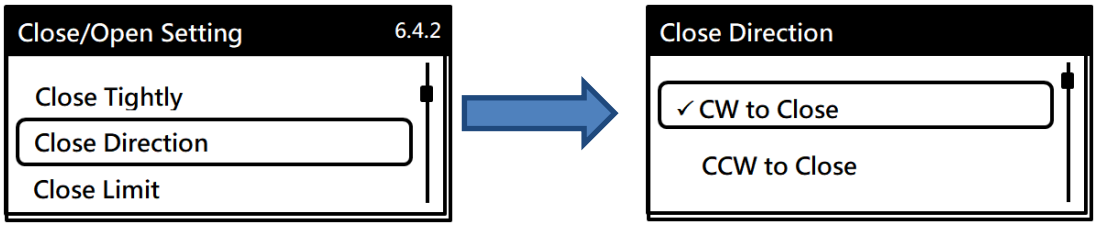
[Close Tightly]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- As long as the actuator runs to the desired end position, the actuator will continue to run whether the end position command is cancelled or the STOP command from remote control system is received until a torque overload occurs, 0% position has been reached or a reversal operation command is received and either OPEN or CLOSE direction can be chosen.
- Default: Disable.

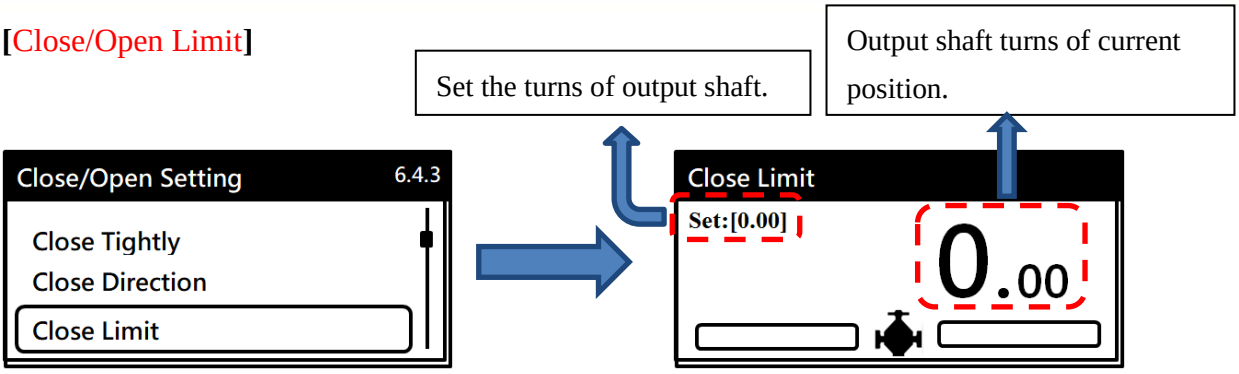
[Close Direction]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

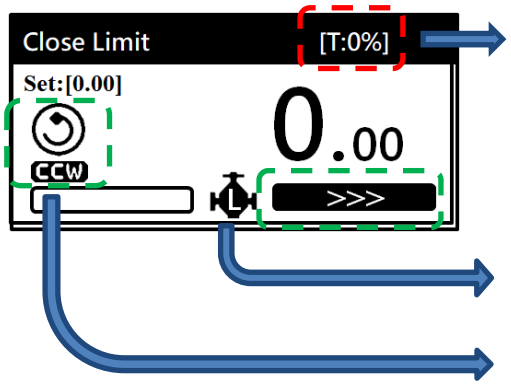
- Define the rotation direction of the output shaft and either "CW to Close" or "CCW to Close" can be chosen.
- Default : CW to Close

[Close/Open Limit]



Push Button	Function
↩	Back to previous level to quit.
▲	Push the button to operate in direction CCW and release the button to stop running.
▼	Push the button to operate in direction CW and release the button to stop running.
↵	Save the change.

- The "Close/Open limit" can be set only when the operating status is set in "Local Control" mode.
- Output shaft turns and related info will be displayed as shown below under " Close Limit" and "Open Limit".



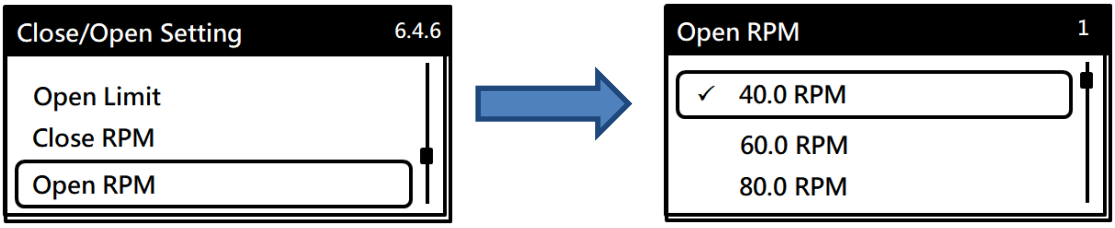
Real-time percentage of torque when the actuator is running.

Press and hold the button for more than 5 secs and "L" is displayed which means the actuator is in automatic running state. Press the button once to stop running.

The operation direction is displayed as below conditions:

- CW means the output shaft turns in clockwise direction and CCW means in counter-clockwise direction.
- Operating direction icon in CW or CCW.
- Arrow icon in right or left direction.

[Close/Open RPM]



Push Button	Function
↩	Back to previous level to quit
▲	Switch menu item (up)
▼	Switch menu item (down).
↵	Save the change.

- The setting of Close/Open RPM as shown below:

Actuator

Model	Running Speed（RPM）	Default（RPM）
M - 41	120, 100, 80, 60, 40	40
M - 55	90, 75, 60, 45, 30	30
M - 80	60, 50, 40, 30, 20	30
M - 100	45, 37, 30, 22, 15	30

Actuator with external gearbox

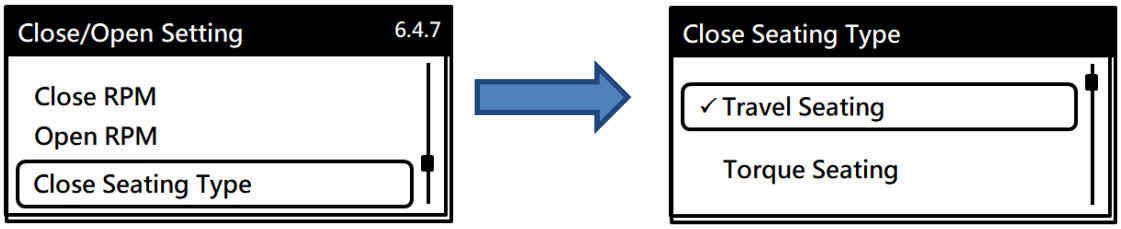
⚠ **The RPM value for actuator with external gearbox must be preset be fore shipping or be modified via Modbus, Profibus or Bluetooth. Otherwise, the RPM value will be based on below default value.**

Actuator	Gearbox	Running Speed（RPM）	Default（RPM）
M-41	G201	40, 33, 27, 20, 13	13
M-55	G201	30, 25, 20, 15, 10	10
M-80	G201	20, 17, 13, 10, 7	10

Actuator	Gearbox	Running Speed（RPM）	Default（RPM）
M-41	G202	24, 20, 16, 12, 8	8
M-55	G202	18, 15, 12, 9, 6	6
M-80	G202	12, 10, 8, 6, 4	6

Actuator	Gearbox	Running Speed（RPM）	Default（RPM）
M-41	G203	17.1, 14.3, 11.4, 8.6, 5.7	5.7
M-55	G203	13, 11, 9, 6, 4.3	4.3
M-80	G203	8.6, 7, 6, 4, 2.8	4
M-100	G203	6.4, 5, 4, 3, 2.1	4

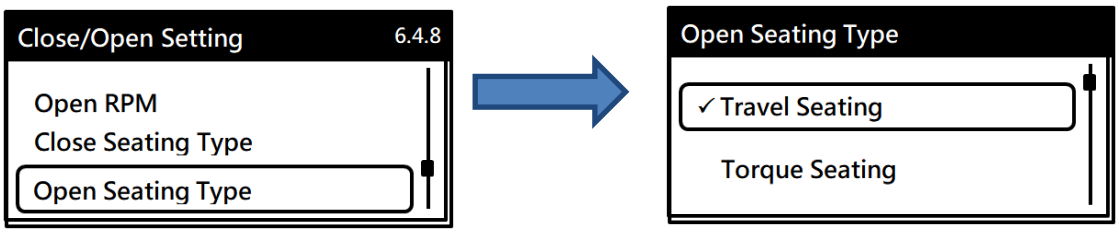
[Close Seating Type]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- The actuator in CLOSE end position can be set to trip by Position or Torque.
- Position: After entering the travel limit, the tripping torque will be set automatically at 100% and the actuator will run to fully-closed position (0%) when the torque is lower than 100%.
- Torque: After entering the travel limit, the tripping torque will be set per the setting value at “Torque Limit-Close” and the actuator will stop running immediately when the torque is higher than the setting value. Besides, the actuator will run to fully-closed position (0%) when the torque is lower than setting value.
- Default: Position.

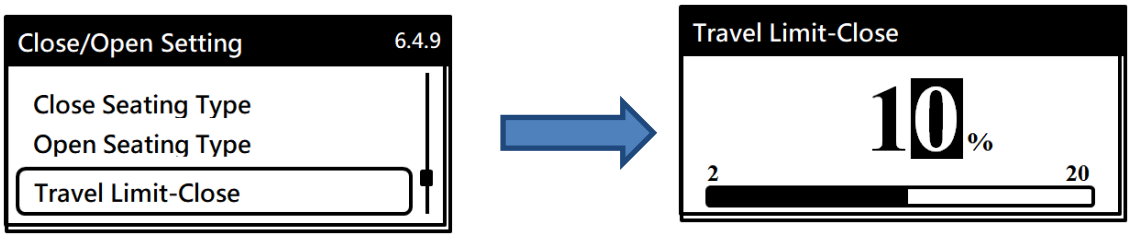
[Open Seating Type]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- The actuator in OPEN end positions can be set to trip by Position or Torque.
- Position: After entering the travel limit, the tripping torque will be set automatically at 100% and the actuator will run to fully-open position (100%) when the torque is lower than 100%.
- Torque: After entering the travel limit, the tripping torque will be set per the setting value at "Torque Limit-Open" and the actuator will stop running immediately when the torque is higher than the setting value. Besides, the actuator will run to fully-open position (100%) when the torque is lower than setting value.
- Default: Positon

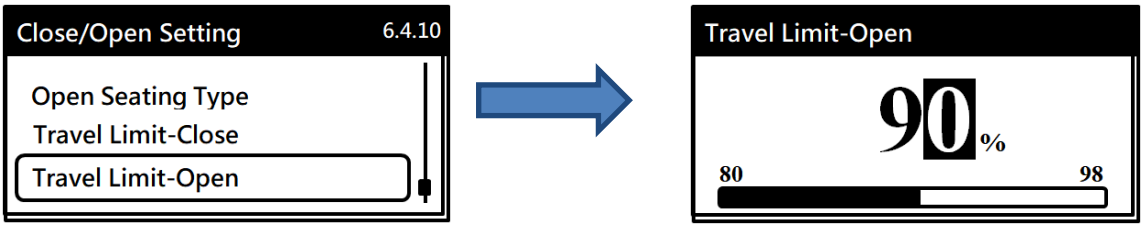
[Travel Limit-Close]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- Set the Travel Limit-Close and the setting range is from 2% to 20%.
- After entering the travel limit, the functions of the "Close Seating Type" and "Torque Limit-Close" will be activated.
- Default : 10%.

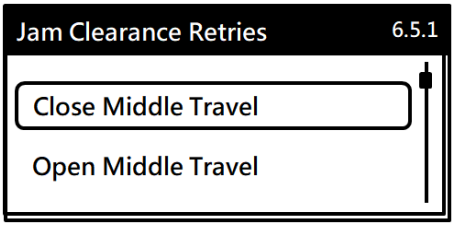
[Travel Limit-Open]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

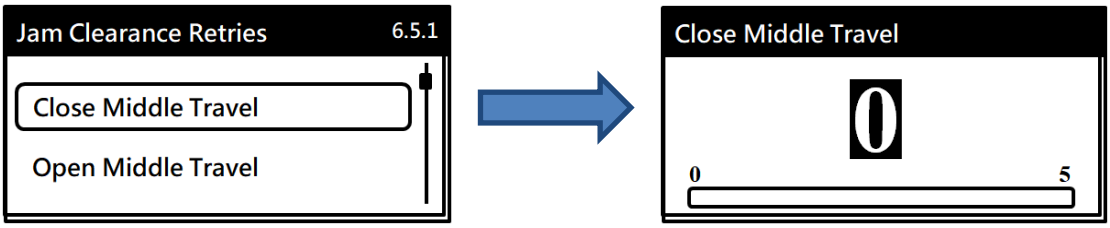
- Set the Travel Limit-Open and the setting range is from 80% to 98%.
- After entering the travel limit, the functions of the " Open Seating Type" and "Torque Limit-Open" will be activated.
- Default: 90%.

8.7.5 Jam Clearance Retries



No.	Menu	Lowest User Level
6.5.1	Close Middle Travel	User
6.5.2	Open Middle Travel	User

[Close Middle Travel]



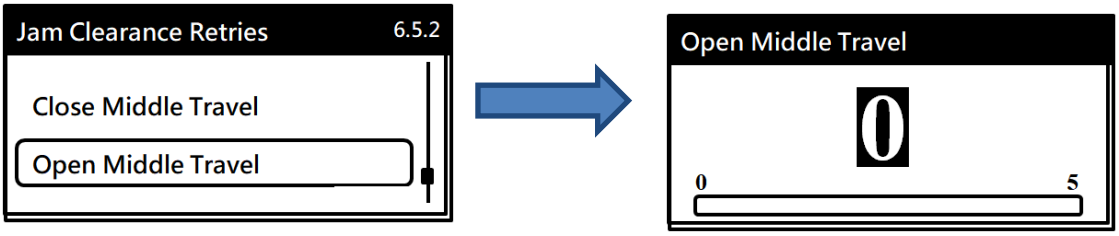
Push Button	Function
↩	Back to previous level to quit.
▲	Enter an incremental value for the parameter.
▼	Not applicable.
↵	Save the change.

- The actuators provide jammed valve protection by torque sensing. If the actuator stops because of overload during intermediate travel in closing the valve. A retry sequence can be initiated by setting the parameter from 0 to 5 to achieve the number of retries as per application requirements. Zero stands the retry is not implemented.

- When a torque overload occurs, a retry sequence will be initiated by setting the parameters as following:
  - Set to 0: The actuator will stay put and send a warning message when a torque overload occurs.
  - Set to 1 2, 3, 4, or 5: The actuator will move back for 3% of the entire travel and then move forth to attempt to fix the jammed valve repeatedly by 1, 2, 3, 4, or 5 tries. In case of failure to pass the block, the actuator will run to opposite direction about 3% of stroke and stop running to send a warning message.
- Default: 0.

Note: If the operating time of moving back for 3% of the entire travel is less than 3 seconds, the actuator will increase it to more than 3 seconds to ensure effectiveness of the jammed valve protection.

[Open Middle Travel]



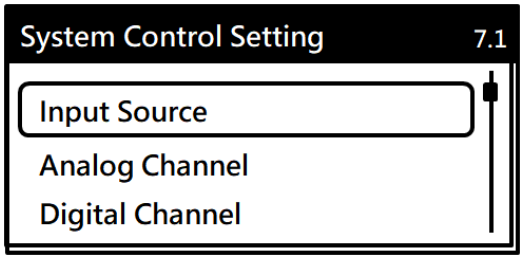
Push Button	Function
↩	Back to previous level to quit.
▲	Enter an incremental value for the parameter.
▼	Not applicable.
↵	Save the change.

- The actuators provide jammed valve protection by torque sensing. If the actuator stops because of overload during intermediate travel in opening the valve. A retry sequence can be initiated by setting the parameter from 0 to 5 to achieve the number of retries as per application requirements. Zero stands the retry is not implemented.
- When torque overload, a retry sequence will be initiated by setting the parameters as the following:
  - Set to 0: The actuator will stay put and send a warning message when a torque overload occurs.
  - Set to 1, 2, 3, 4, or 5: The actuator will move back for 3% of the entire travel and then move forth to attempt to fix the jammed valve repeatedly by 1, 2, 3, 4, or 5 tries. In case of failure to pass the block, the actuator will run to opposite direction about 3% of stroke and stop running to send a warning message.

- Default: 0.

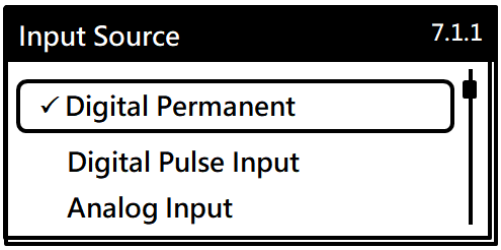
Note: If the operating time of moving back for 3% of the entire travel is less than 3 seconds, the actuator will increase it to more than 3 seconds to ensure effectiveness of the jammed valve protection.

8.8 System Control Setting



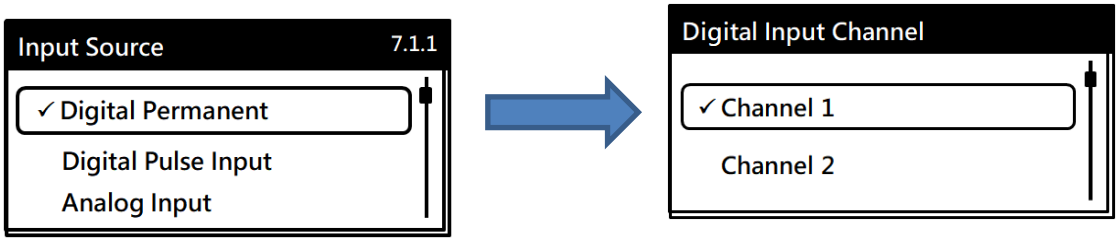
No.	Menu
7.1	Input Source
7.2	Analog Channel
7.3	Digital Channel

8.8.1 Input Source

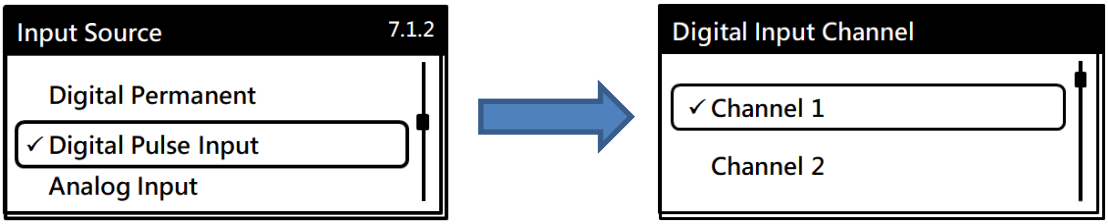


No.	Menu	Lowest User Level
7.1.1	Digital Permanent	Dealer
7.1.2	Digital Pulse Input	Dealer
7.1.3	Analog Input	Dealer
7.1.4	Modbus	Dealer
7.1.5	Profibus	Dealer

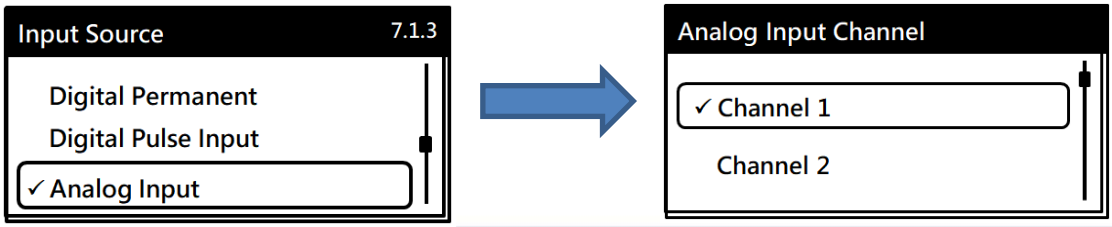
[Digital Permanent]



[Digital Pulse Input]



[Analog Input]



Push Button	Function
⮌	Back to previous level to quit.
⮝	Switch menu item (up).
⮟	Switch menu item (down).
↵	Save the change.

- Symbol "✓" in front of the item represents current setting.
- Only "Digital Permanent", "Digital Pulse Input" and "Analog Input" Channels need to set channel 1 or 2. Modbus and Profibus do not need to set.
- After setting the channel of "Analog Input", "Analog Channel" (refer to section 8.8.2) need to be set as well.
- Two signal types for Digital Control: "Digital Permanent" and "Digital Pulse Input".

Function	Digital Control	
	Digital Permanent	Digital Pulse Input
Run Close	V	V
Stop	V	V
Run Open	V	V
ESD	V	Δ
Disable Close	V	Δ
Disable Open	V	Δ

Δ: It is needed to have a continuous signal to activate. When "Digital Pulse Input" is selected, it only works in the pulse rise time.

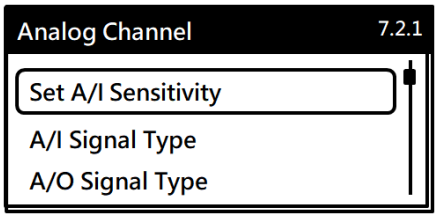
"Digital Permanent" is a continuous signal type, which means that actuator will operate when a continuous signal is present.

- It is needed to set "NO" (Normal Open) or "NC"(Normal Close) (refer to section 8.8.3) as well.

"Digital Pulse Input" is a trigger mode, which means that actuator will operate when a pulse signal is present.

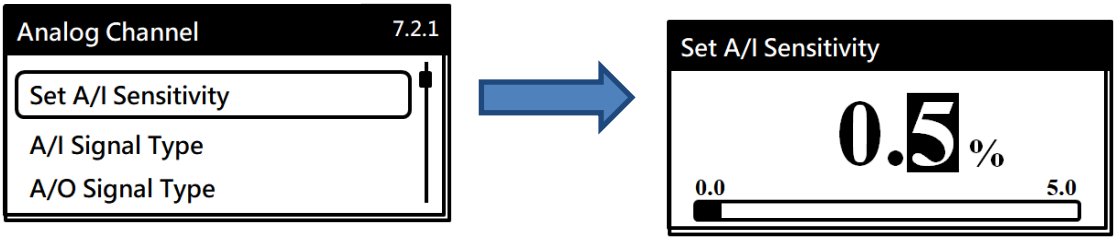
- A signal will be trigged when the pulse rise edge is received.
- Once any stop signals are received such as manual override enable, torque overload and so on, a pulse signal needs to be present again to continue the operation.
- While the "ESD", "Disable Close" or "Disable Open" is active, the "Run Close", "Stop" and "Run Open" functions will be invalid.

8.8.2 Analog Channel



No.	Menu	Lowest User Level
7.2.1	Set A/I Sensitivity	Dealer
7.2.2	A/I Signal Type	Dealer
7.2.3	A/O Signal Type	Dealer
7.2.4	Analog Output Channel	Dealer

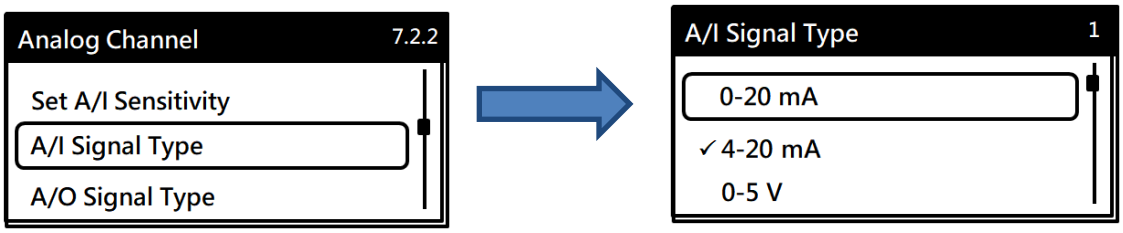
[Set A/I Sensitivity]



Push Button	Function
↩	Back to previous level to quit.
▲	Enter figures from 0 to 9.
▼	Move to next digit.
↵	Save the change.

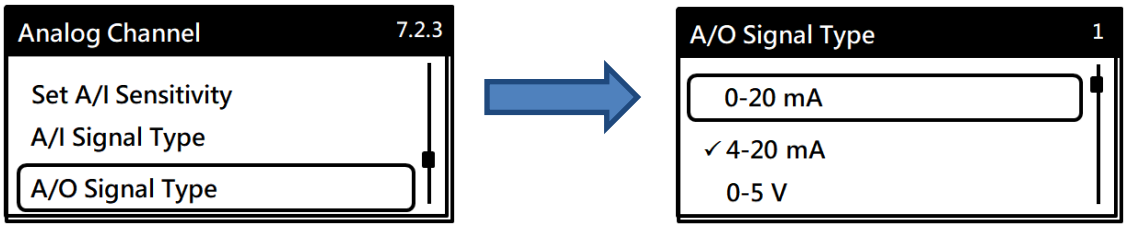
- When the sensitivity setting is higher, the resolution of the input signal will be higher, and the dead band will be smaller.
- The sensitivity setting range is 0.0~5.0%. When 0.0% is set, the allowable tolerance is 0%, which is the most sensitive state. When 5.0% is set, the allowable tolerance is ±5%, which is the most insensitive state.
- Default: 0.5 %.

[A/I Signal Type]



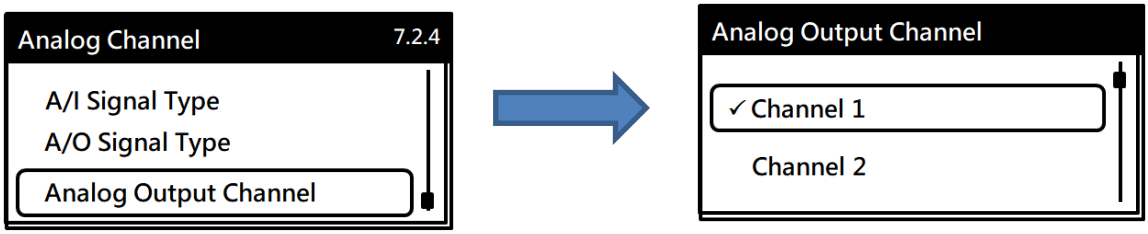
Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

[A/O Signal Type]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

[Analog Output Channel]

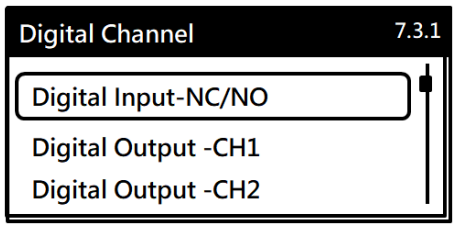


Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- There are six signal types for A/I Signal Type and A/O Signal Type as shown below and different signals can be set for A/I and A/O.

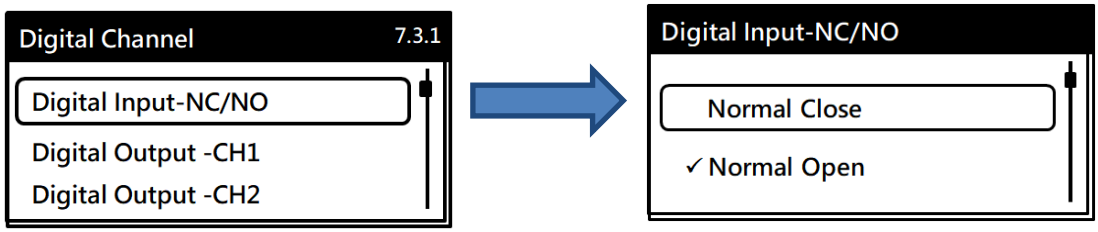
Signal Type
0 - 20 mA
4 - 20 mA
0 - 5 V
1 - 5 V
0 - 10 V
2 - 10 V

8.8.3 Digital Channel



No.	Menu	Lowest User Level
7.3.1	Digital Input-NC/NO	Dealer
7.3.2	Digital Output-CH1	User
7.3.3	Digital Output-CH2	User

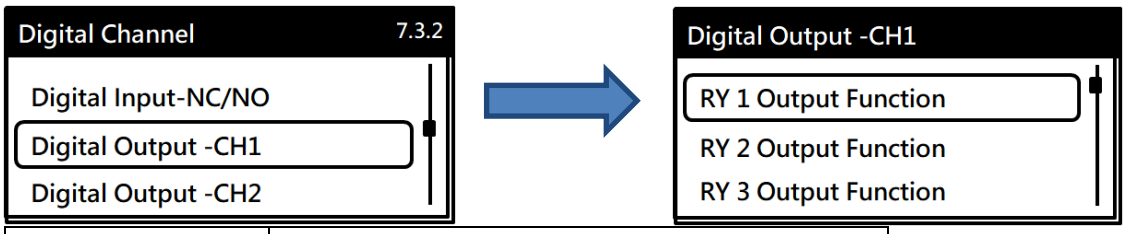
[Digital Input-NC/NO]



- Set “Normal Close” or “Normal Open” for the wiring of digital input.

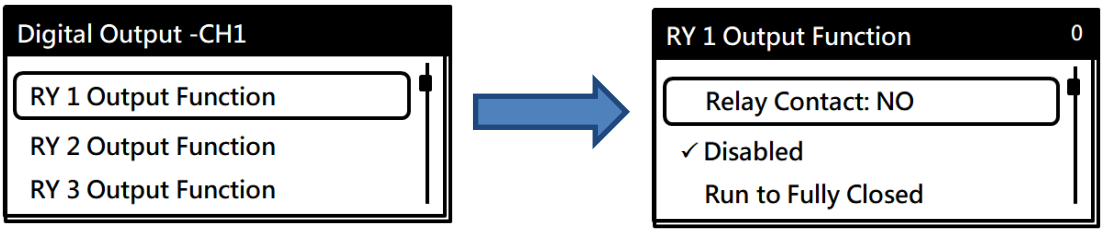
Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

[Digital Output-CH1 / CH2]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- Channel 1 and channel 2 for Digital output: There are 4 output contacts for each channel.

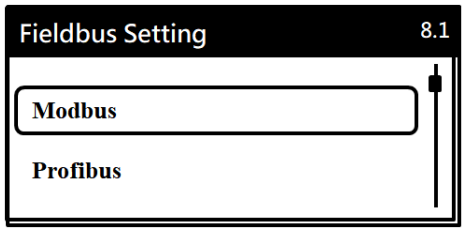


Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- Each relay contact can be assigned to different Relay Mode, Normal Close or Normal Open. There are 17 relay output modes could be chosen and default setting is Disable. The function of each mode is as shown below table.

Relay Output Mode		
No.	**Function**	**Description**
1	Disable	Relay has no function.
2	Run to Fully Closed	Fully-closed position.
3	Run to Fully Open	Fully-open position.
4	Torque Trip-CL Mid	Torque overload in CLOSE Direction and stops running.
5	Torque Trip-OP Mid	Torque overload in OPEN Direction and stops running.
6	Torque Trip	Torque overload in either OPEN or CLOSE Direction and stops running.
7	Fault	Error has occurred.
8	Signal Flash	Relay contact is activated every second.
9	Ready	Motor is normal, handwheel lever disables and limit position setting is completed, which means the actuator is ready for electrical operation.
10	Remote Selected	Output signal for remote control.
11	Motor Overheat-Stop	The motor will stop running when its temperature is higher than 135℃ (275°F).
12	Motor Overheat	If the motor temperature exceeds the setting value, the motor will run at the lowest speed until its temperature is lower than the setting value.
13	Maintenance Due	One of maintenance settings is detected.
14	Closing	The valve is running to close direction.
15	Opening	The valve is running to open direction.
16	D/I Module Fault	Input Signal Not Found.
17	A/I Module Fault	Input Signal Not Found.

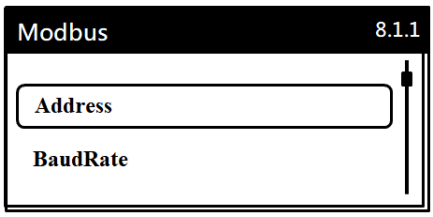
8.9 Fieldbus Setting



No.	Menu
8.1	Modbus
8.2	Profibus

- The Fieldbus Setting includes Modbus and Profibus.

8.9.1 Modbus



No.	Menu	Lowest User Level
8.1.1	Address	User
8.1.2	BaudRate	User

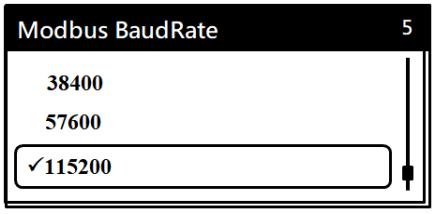
- Address: Set the bus address for Modbus and the setting range is from 1 to 247.
- BaudRate: Set the transmission rate for Modbus. There are 5 rates could be chosen. Refer to the following instructions.

[Modbus Address]

- The LCD display shows the default value or the setting value when entering “Modbus Address” function.

Push Button	Function
↩	Back to previous level to quit.
▲	Enter figures from 0 to 9.
▼	Move to next digit.
↵	Save the change.

[Modbus BaudRate]



Push Button	Function
↩	Back to previous level to quit.
▲	Switch menu item (up).
▼	Switch menu item (down).
↵	Save the change.

- Symbol "✓" in front of the item represents current setting.

BaudRate
9600
19200
38400
57600
115200

- Default: 115200.

8.9.2 Profibus Address

No.	Menu	Lowest User Level
8.2.1	Address	User

- The LCD display shows the default value or the setting value when entering "Profibus Address "function and the setting range from 2 to 125.

Push Button	Function
↩	Back to previous level to quit.
▲	Enter figures from 0 to 9.
▼	Move to next digit.
↵	Save the change.

9 Servicing and Maintenance

9.1 Battery Maintenance

Definition: The battery supports to record the position variation when using the manual override under power outage.

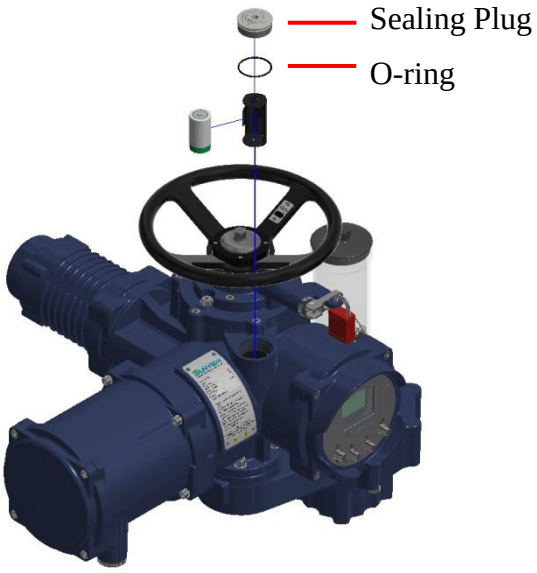
Types:

Battery Type Detail	Spec.	Quantity
Primary Alkaline battery	AA	3 PCS
Primary lithium Battery	LS 33600	1 PCS

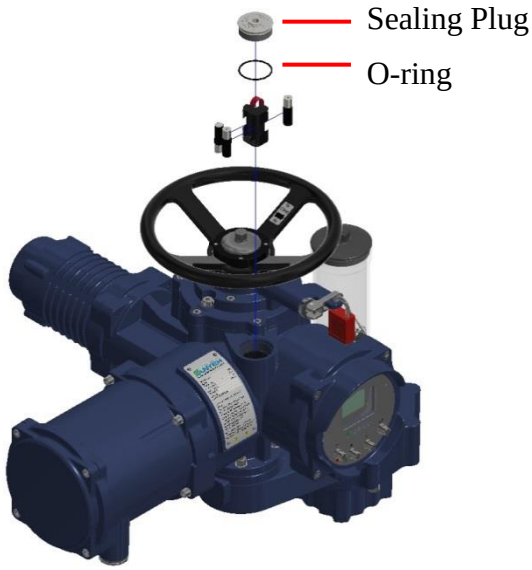
Notices:

- Replace the battery when the main power is energized.
  ⚠ **Replacing the battery under power outage will cause the error of the data logger records.**
- In normal condition, the battery needs to be replaced every 3 years. The ambient temperature and operating conditions may affect battery life.
- Remove the sealing plug with a 10 mm Alley key to ensure the O-ring exists when power is energized.
- If the actual battery specification is different from 8.5.4 Battery Setting, the "Battery Low" alarm will be displayed.

Battery Replacement:



Primary lithium Battery
Type: LS 33600



Primary Alkaline battery
Type: AA

a. Remove the sealing plug with 10mm Allen key.

b. Pull out the battery case.

⚠ **Do Not pull it out too hard to cause the wires loosed.**

c. Tighten the sealing plug after replacing the battery.

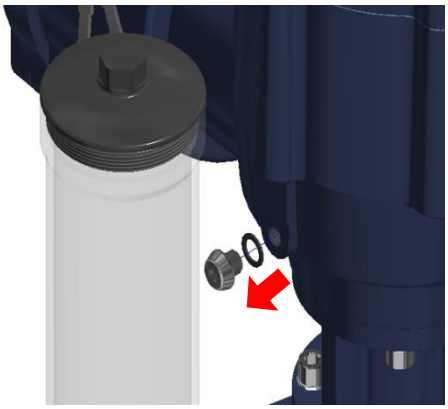
d. Set the battery type via LCD interface (Refer to section 8.5.4).

9.2 Oil Replacement

- Model: 75W80.
- Oil Capacity: 1L.
- Replacement cycle: 5 years.

a. Remove the top oil plug with a 8mm Allen key.

b. Use a 8 mm Allen key to remove the oil plug when is located at the lower right side of the LCD panel and drain the oil completely.



c. Tighten the oil plug back after draining the oil completely.

d. Filled with the oil from the top oil hole. The oil capacity is 1 liter.

e. Tighten the oil plug back to the top oil hole.

9.3 Maintenance

⚠ **Damage might be caused by inappropriate maintenance!**

- Maintenance and repair works must be performed by trained personnel.
- Turn power off before maintenance or repair.
- Carry out visual inspection every year to ensure no damage or changes.
- Ensure the wiring no damage or loose and correct wiring.
- If the paint was peeled off, the housing needs to be touched up with the paint to prevent corrosion.
- Check if the water-proof cable glands, blanking plugs and adapter are tightened and sealed.
- Check if the wiring and the terminals fade to prevent the short circuit and the failed PCBA caused by the temperature rise.
- Ensure the seals are placed correctly without hardening or damage.
- Ensure all housing screws are tightened.
- If any safety problems are detected during maintenance, the actuator must be repaired immediately without delay.
- Using the original or equivalent to replace the seals, and etc.

9.4 Operation Protection

⚠ **The following actions are required to ensure safe device operation:**

- Perform the operating test every 6 months.
- Check if the cable, cable glands, blanking plugs, and etc. are tightened and sealed.
- Operate the actuator per the rated torque, or the product may be damaged under torque overload.
- If the screws which combine the actuator with the gearbox are tightened per the rec ommend torque value.
- Lubricate the valve stem and connection parts.

10 Troubleshooting

- **Troubleshooting for Fault codes of the alarm log are listed as below table.**

Code	Warring Message	Possible Problems	Solution
03	Motor OH- RPM Limit	a. The temperature inside the motor is higher than the setting value and the motor will run at the reduced speed to avoid overheating. b. The temperature setting of “Motor Tem Warning” is too low. c. The duty cycle exceeded the rating or torque is overload.	a. Confirm if the torque of the valve suits for the actuator. b. Confirm if the temp. setting value not too low. c. Motor stops running until it cools down.
04	Motor OH-Stop	a. The temperature inside the motor is higher than 135℃ (275°F) and stops running. b. The duty cycle exceeded the rating or torque is overload.	a. Confirm if the torque of the valve suits for the actuator. b. Motor stops running until it cools down.
05	Driver Overheat	The duty cycle exceeded the rating or torque is overload.	Confirm if the torque of the valve suits for the actuator.
06	Battery Low	a. Battery capacity is low. (Lithjum battery less than 2 to 2.5V and alkaline battery less than 3 to 3.7V). b. The ambient temperature is over the rated temperature of the battery.	a. Replace a new battery. b. Confirm the ambient temperature and change to a suitable battery.
07	Battery Missing	a. Incorrect battery installation. b. Low battery power. (Both lithjum battery and alkaline battery less than 2V).	a. Re-install the battery. b. Replace new battery.

Code	Warring Message	Possible Problems	Solution
08	Power Supply Fault	a. Power failure. b. PCBA failure.	a. Check if the power supply is correct or not. b. Check if the wiring is secured. c. Replace a new power module. d. Contact the seller.
09	Phase Loss	a. Phase loss for three-phase power supply. b. Wrong actuator specification.	a. Check if the power supply is correct. b. Reset the voltage according to actuator specification.
12	Over Limit Range	The actuator runs over the OPEN or CLOSE limited position at the range of higher than 100% + 216° or lower than 0%	Adjust to the normal range.
13	Torque Overload	a. Valve is blocked or stuck by foreign objects. b. The valve is stuck in the valve seat when the valve is inactive for a long time.	Operate the handwheel to confirm if the valve is stuck by foreign objects and remove them.
14	Encoder Fault	a. Encoder circuit is broken. b. Poor external wiring connection.	a. Confirm if the wiring is correct or not. b. Contact the seller.
15	Motor Temp. Fault	The temperature sensor is broken.	Replace a new motor.
18	Manual OP Fault	a. Handwheel wiring is not correct. b. Poor internal wiring connection.	a. Confirm if the wiring is correct or not. b. Contact the seller.

Code	Warring Message	Possible Problems	Solution
19	Digital Input Fault	a. Poor external wiring connection. b. The PCBA is broken.	a. Confirm if the wiring is correct or not. b. Replace a new PCBA (D/I).
20	Digital Output Fault	The PCBA is broken.	Replace a new PCBA (D/O).
21	Analog Input Fault	a. Poor external wiring connection. b. The PCBA is broken.	a. Confirm if the wiring is correct or not. b. Replace a new PCBA (A/I).
22	Analog Output Fault	The PCBA is broken.	Replace a new PCBA (A/O).
23	EEPROM Fault	a. Data access is error. b. The memory is broken.	Replace the main board.
24	Driver Comm. Error	PCBA is broken.	Replace a new motor driver.
25	Modbus Comm. Error	a. Poor external wiring connection. b. PCBA is broken. c. Control signal is not received for more than 2	a. Confirm if the wiring is correct or not. b. Replace a new Modbus module. c. Confirm if the control signal is correct or not.
26	Motor Drive Fault	a. Power supply is error. b. The motor is broken. c. The PCBA is broken.	a. Check if the power supply is correct or not. b. Contact the seller. c. Replace a new board (Motor Driver Board).
27	Ctrl. Power Fault	a. Power supply is error.	a. Check if the power supply is correct or not. b. Replace a new power module. c. Contact the seller.

Code	Warring Message	Possible Problems	Solution
28	Profibus Comm. Error	a. Poor external wiring connection b. The PCBA is broken. c. Control signal is not received for more than 2 secs.	a. Confirm if the wiring is correct or not. b. Replace a new Profibus module. c. Confirm if the control signal is correct or not.
29	Spare Encoder Fault	a. Encoder circuit is broken. b. Poor external wiring connection.	a. Confirm if the wiring is correct or not. b. Replace a new encoder module.
30	Position Detect Error	Operate the handwheel under power outage to cause the position record error.	Reset the limit position. (refer to 8.7.4)

11 Warranty

Sun Yeh Ele. Co. Ltd warrants that for a period of twelve months from the date of manufacture it will either repair or replace, at its option, any of its products which prove to be defective in material or workmanship. This warranty does not cover damage resulting from causes such as abuse, misuse, modification or tampering by users. This warranty is extended only to the immediate purchaser of the Sun Yeh product and is not transferable. To obtain service under this warranty, the purchaser must first acquire a return authorization from Sun Yeh. Products must be returned to Sun Yeh under freight prepaid.

This warranty is in lieu of all other obligations, liabilities or expressed warranties. Any implied warranties, including any implied warranty of merchantability are hereby expressly excluded. In no event shall Sun Yeh be liable for special, incidental or consequential damages arising in connection with the use of its products, or for any delay in the performance of this warranty due to cause beyond its control.

12 Disposal

Please obey the local environment regulation for equipment scrapping.

Service Unique Nice Youthful Energy Honesty

SUNYEH

SUN YEH ELECTRICAL IND. CO., LTD.

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