

Ontrac[®]

Keeping Your Process On Track



Multitrac

MME/MOE Intelligent Electric Actuator

Operation Instruction Manual

(for actuators with software release V5.43)



Ontracactuators.com

ACK25-02.1A

CONTENTS

01 Device Identification	1
1.1 Actuator ID Label	1
1.2 Legend	2
02 General	3
2.1 Application	3
2.1.1 Purpose of the Manual	3
2.1.2 Qualification and Training of the Personnel	3
2.1.3 Explosive Atmosphere Zones	3
2.2 Safety Advice	4
2.2.1 Introduction	4
2.2.2 Indications of Danger	4
2.3 Other Safety Advices	5
03 Receiving、Transportation and Storage	6
3.1 Condition When Supplied	6
3.2 Receiving Inspection	6
3.3 Transportation&Lifting Cautions	7
3.4 Storage	7
3.5 Warranty	8
3.6 Return to Factory	8
04 Main Components	9
4.1 Introduction of Main Components	9
4.2 Flange Structure and Valve Connection Size	10
4.3 Operation	11

05 General and Technical Data	12
5.1 Specifications	12
5.2 Mechanical Interfaces	13
5.3 Technical Data	14
5.3.1 Multi-turn On-Off, Electric Actuators (MOE)	14
5.3.2 Multi-turn Modulating, Electric Actuators (MME)	15
5.3.3 Linear Modulating, Electric Actuators	16
5.3.4 Linear On-Off, Electric Actuators	16
5.3.5 Part-turn Modulating, Electric Actuators	17
5.3.6 Part-turn On-Off, Electric Actuators	17
5.4 Model and Weight	19
5.5 Mechanical Dimensions	20
MME806/MOE706/MME808/MOE708/ MME812/MOE712	20
MME850/MOE750/MME825/MOE725	22
MME890/MOE790	23
LE Series Linear Thruster	24
Direct Connected ASNG Reducer	25
Direct Connected ASNG Reducer (with Additional Reduction Gearbox)	26
ASNG Reducer with Base	27
ASNG Reducer with Base (with Additional Reduction Gearbox)	28
PG Multi Rotary Stroke Wheel Reducer	29
PG Multi Turn Bevel Gear Reducer	29
PGZ Multi Turn Bevel Gear Reducer	30
5.6 Key Features	31
5.7 Position Sensing	31
5.8 Sensitivity Control	32
5.9 Remote Controller	32
5.10 Serial Communications	33
5.11 Smartrac for Asset Management	33
5.12 Cloudtrac for Asset Management	34
5.13 Actuator Protection	35
5.14 Motor Control Type	35

06 Installation	37
6.1 Actuator Check	37
6.2 Installation Hints	37
6.3 Hand Crank Force	38
6.3.1 Operation of the Hand Crank	38
6.3.2 Hand Crank Force	38
6.3.3 Assembly of the Hand Crank	39
6.4 Special Assembly	40
07 Electrical Connection	41
7.1 Functional Block	41
7.2 Electrical Wiring Diagram	42
7.2.1 Equipment Wiring Diagram	42
7.2.2 Profibus DP Wiring Diagram	44
7.2.3 Foundation Fieldbus Wiring Diagram	45
7.2.4 Hart Wiring Diagram	45
7.2.5 Split Wiring Diagram (Electronic Unit and Actuator)	46
7.3 Cable Entries	46
7.4 Wiring Steps	46
7.4.1 Electrical Wiring	46
7.4.2 Wiring Installation of Bus Board (optional)	47
7.4.3 Wiring Installation of Frequency Conversion Board	48
7.4.4 Wiring Installation of Channel Expansion Board	49
7.4.5 Wiring Installation of Electric Motor	49
7.5 Anti-condensation Heater	50
7.6 Wire Cross Section	50
7.6.1 Wire Cross Section (Terminal Connection)	50
7.6.2 Wire Cross Section (Plug)	50
7.7 Thread Size for Cable Glands	50

08 Adjustment	51
8.1 Mode Selector Switch Instruction	51
8.2 Panel Instruction	52
8.3 Operation Menu	53
8.3.1 Introduction to Menu Operation	53
8.3.2 Menu Structure	53
09 Alarms and Failures	61
9.1 Failure Messages	61
9.2 Alarm Messages	62
10 Product Maintenance	63
10.1 General	63
11 Lubrication and Vent Valve	63
11.1 Lubricating Oil	63
11.2 Vent Valve	64
12 Service	64

01 Device Identification

1.1 Actuator device identification

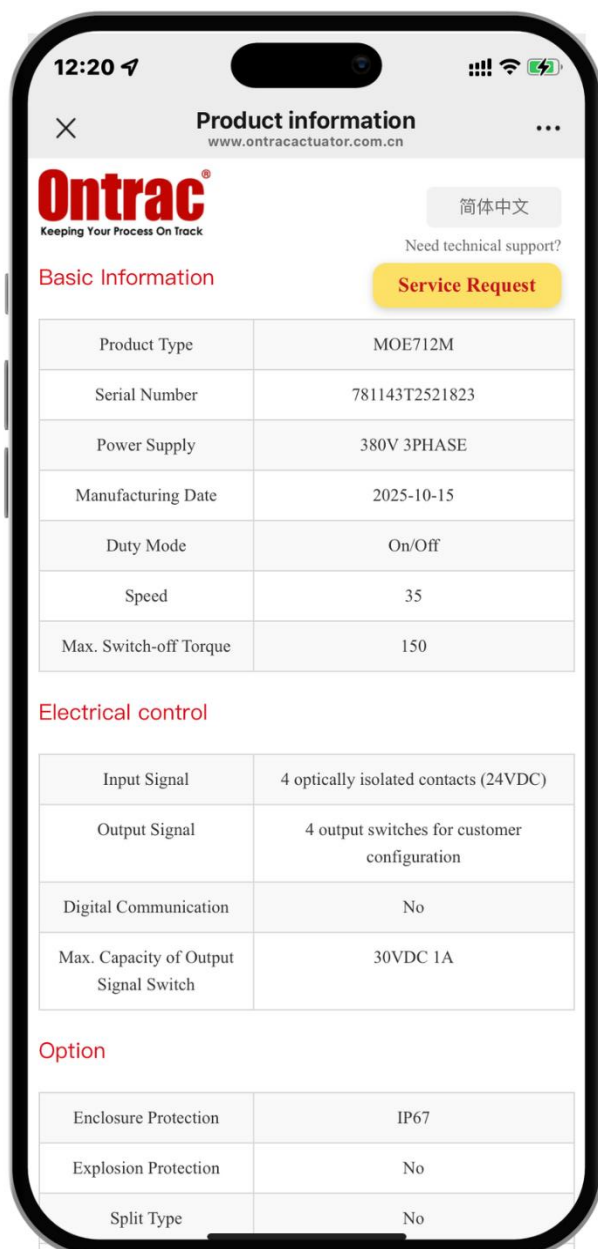
1.1.1 Actuator ID Label

Ontrac [®]		Actuator [Actuator type]
No: [Serial NO.]	Year [Year of construction]	
M= [Switch-off torque]	n= [Output speed]	
T= [Permissible ambient temperature]	[Protection classification]	
Oil: [Oil type]		
U= [Rated voltage range]	f= [perm. mains frequency]	
P= , I = [Power&Current input]	[Perm. operating mode]	
Fuse [External fuse]		
SW Version [Software version]		
[Ex-classification data (if available)]		
Factory setting of M max= , n max=		[Switch-off torque&speed (factory setting)]
M open= [Operating torque for OPEN (factory setting)]	M close= [Operating torque for CLOSE (factory setting)]	
n open= [Operating speed for OPEN (factory setting)]	n close= [Operating speed for CLOSE (factory setting)]	
[Product type]		
Made by Ontrac		

1.1.2 Cloudtrac for Asset Management

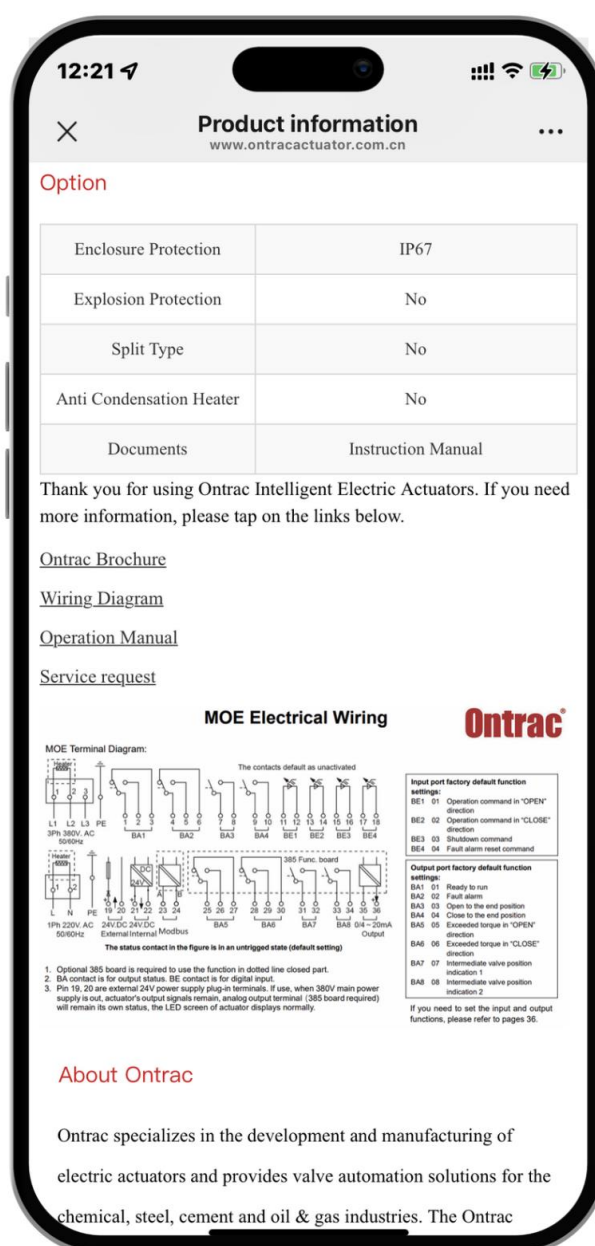
The Ontrac Cloud allows you complete global access to our actuator database to provide specific, as-built technical details and parameters without the use of special tools or proprietary software. Every Ontrac actuator comes with a permanent QR code attached to the outside body of the actuator case. Simply scanning the QR (Quick Response) code on your actuator from your phone connects you to Cloudtrac.





You will then be able to download instruction and data sheets as well as wiring diagram.

The QR code provides access to product identification information **corresponding to the data shown on the label**



1.2 Legend

Warning symbols



ELECTRICAL WARNING

An instruction with reference to electrical components or equipment. It draws attention to the risk of injury or death to persons or damage to the product, process or surroundings



WARNING

General instruction that draws attention to the risk of injury or death to persons or damage to the product, process or surroundings



INFORMATION

Further reference for more detailed information or technical details.



We remind the installer that the classification of the zone (REF. ATEX 2014/34/EU formerly 94/9/CE directive) for potentially explosive atmosphere zones has to be done by the operator of the actuator and communicated to Ontrac and/or approved agent for the right choice of classification of the equipment to work in these zones.



This symbol signals a danger or a situation that requires the maximum attention of the personnel. It's important to respect the instructions stated at the margin of this symbol and proceed very carefully.

It's necessary to inform all the personnel and/or users that the instructions prevent injuries.

02 General

2.1 Application

2.1.1 Purpose of the Manual

The main purpose of this manual is to assure that the activities of installation, operation and maintenance of the actuator is executed in a correct and safe way by all the personnel in charge of these operations. This document offers also indications useful for the customer to solve the problems, order spare parts and contact Ontrac service.

 **ATTENTION:** check on our website www.ontracactuators.com for future revisions to this manual.

Actuators are exclusively used for the operation of final control elements (valves, flaps, etc.). If they are used for other purposes, people may be injured or the actuator may be damaged. This instruction contains all necessary information concerning the operating elements, handling, start-up and maintenance and repair work, as well as relevant technical data. The operating instructions are a component of the machine.

Therefore, keep the instructions ready on hand to ensure easy access to the necessary information at all times. Read the operating instructions thoroughly. All of the points presented in these instructions must be understood and observed by those persons responsible for the installation, operation, maintenance and repair of the machine. Ontrac does not accept any liability for damage resulting from failure to comply with these maintenance and operating instructions.

2.1.2 Qualification and Training of the Personnel

Those in charge of the installation, operation and maintenance of the actuator have to be qualified to carry out the actions indicated in this manual. Ontrac is not responsible for the inadequate qualification and training of the customer's staff or for the lack of information of the staff regarding the contents of this manual. It is compulsory to always show this manual to the personnel in charge of the installation, operation and maintenance of the actuator. Assembly, electrical connection, commissioning, operation, and maintenance must be carried out by suitably qualified personnel authorized by the end user or contractor of the plant only. Prior to working on this product, the staff must have thoroughly read and understood these instructions and, furthermore, know and observe officially recognized rules regarding occupational health and safety. Keep this manual in a safe place for future consultations.

2.1.3 Explosive Atmospheric Zones



The use in potentially explosive atmospheres require special models that Ontrac manufactures with particular materials and precautions. Customers who want to use actuator in these kinds of zones have to contact Ontrac technical office for the correct choice of the product. The actuator manufactured by Ontrac for these kinds of applications belong to the series EX-Proof Version. We remind you that the classification of the zone (REF. ATEX 2014/34/EU former 94/9/CE directive) for potentially explosive atmosphere zones has to be done by the customer and communicated to Ontrac for the right choice of the kind of actuator suitable to work in these zones.

2.2 Safety Advice

Preliminary remarks

All the references to the manual have to be considered applicable also to environment and system that use these actuators unless it's specified otherwise.

2.2.1 Introduction



ATTENTION: the non-observance of the indications stated in this manual or the inappropriate use of the equipment by unqualified or unauthorized staff, can cause serious personal injuries or death and damage to the equipment! The technical assistance office is at complete disposal; in case of doubts or problems you can contact us at www.ontracactuators.com If these warnings are not observed and followed, the certification and the warranty of the actuator may be invalidated.

2.2.2 Indications of Danger



For the safety of those in charge of the installation of the actuator, it's necessary to use safety clothing and individual safety devices approved by the current provisions of the law and regulations (e.g. Safety glass, gloves and safety insulating-shoes).



Always shut down the power to actuator before touching or proceeding with any intervention such as wiring the circuit of installation. Make sure that the electrical system to which the actuator will be connected to has adequate power and has the correct protection devices (e.g. grounding, life safe). Always switch off the electrical supply before working on the actuator for open box maintenance or part substitution.



Actuators are exclusively used for the operation of final control elements (valves, flaps, etc.). If they are used for other purposes, people may be injured or the actuator may be damaged. The responsible institution should take protective measures if the actuator is installed in an area where non-authorized personnel might have access to it.

- Metallic components can become hot at high ambient temperatures. To avoid injuries, the operating personnel should use suitable gloves
- Depending on the intended purpose, actuators make swiveling movements to drive flaps, valves etc. Improper operation of the actuator can endanger the operating person.
- Oil which may have spilled during an oil change must be carefully cleared away to avoid accidents. Waste oil must be disposed of according to local regulations.
- All installation and setup work as well as making electrical connections may only be carried out by qualified persons.
- Take care of safety rules and regulations for set-up of electric equipment while working on the actuator. Switch off the voltage supply prior to any work on electrical components. Protect the connection against inadvertent powering on

2.3 Other Safety Advice:

1. If the content of this manual conflicts with laws and regulations of local country or area, then follow relevant local and area laws and regulations.
2. Appropriate protection is needed in poor operating environments.
3. All installation and commissioning work as well as electrical connections may only be carried out by trained technicians and qualified personnel.
4. Installation or maintenance cannot be carried on when actuator is powered on, prior to any work at actuator. switch off the power.
5. Please be particularly cautious when the actuator is installed in high and/or in confined spaces.
6. Please do not operate hand crank when not necessary.
7. The temperature of a motor's surface can exceed 70° C under normal working conditions. Please do not touch it to avoid personal injury.
8. The main power supply may be supplied as three phase or single phase voltage. Please apply caution when wiring.
9. Before commissioning, check whether all settings meet the requirements. Incorrect settings may be dangerous.
10. Consult the vendor of the equipment or Ontrac before making any physical changes to the equipment.



03 Receiving, Transportation and Storage

3.1 Condition When Supplied

The actuators feature protection class IP 40 when supplied. Protection class IP 67 can be guaranteed once the cable glands and the cable entries are installed.

If not otherwise specified, Ontrac actuators are supplied with the following standard configuration:

Local operate mode: Inching Mode (In the local state, the knob is in inching mode. Once the knob is released, the equipment stops running.)

Remote operate mode: Inching Mode (In the remote state, the port is level driven. Once the actuator BE Port does not receive the level signal, the equipment stops running)

BE1 Operation command in "OPEN" direction

BE2 Operation command in "CLOSE" direction

BE3 Shutdown command

BE4 Fault alarm reset command

BA1 Ready to run

BA2 Fault alarm

BA3 Open to the end position

BA4 Close to the end position

BA5 Exceeded torque in "OPEN" direction

BA6 Exceeded torque in "CLOSE" direction

BA7 Intermediate valve position indication 1

BA8 Intermediate valve position indication 2

Digital input ports (BE1 ~ BE4) and digital output ports (BA1-BA4) are standard configurations;

Digital output ports (BA5 ~ BA8) are optional.

3.2 Receiving Inspection

Upon receiving, check whether the outer package is unsealed, damaged or damp, and open the package to check whether any parts are missing. If the above conditions are found, please be sure to contact the factory within one week after receiving the actuators.

Our products have been packed in special packing boxes before ex factory delivery. We use the following packaging materials: Wood + anti-collision film. If you need to dispose of packaging materials, we recommend sending them to a local waste recycling center.

3.3 Transportation & Lifting Cautions

Use sturdy packaging to transport the product to the installation site. Suspended heavy object!
There is a risk of death or serious injury.



1. It is strictly prohibited to stand under the suspended electric actuator.
2. When lifting the equipment, it should not be fixed on the handwheel, refer to the attachment, the rope or hook should be fixed on the lifting hole of the casing
3. When assembled with gear box, do not fix on the actuator, the rope or hook should be fixed on the gearbox.
4. When assembled with valves and control devices, do not fix the actuator, but fix the ropes or hooks on the valves and control devices.
5. Take into account the cumulative mass of all parts of the actuator, its control unit, the gearbox and the valves and ensure that the load-bearing capacity is sufficient to prevent any form of falling, slipping or unbalancing.
6. Pre-execution of the lifting and lowering operations in a lower position, with the aim of identifying and eliminating any safety hazards such as tilting.

Attachment: Actuator Lifting



3.4 Storage



1. Improper storage will risk of equipment corrosion!
2. Store in a well ventilated and dry room.
3. Store on shelves or wooden pallets to prevent contact with moisture on the ground.
4. Cover the equipment to prevent dust and dirt ingress.
5. Wipe the uncoated surface with a suitable cleanser.
6. If the temperature is lower than the allowable range, the display screen will be damaged!
Ontrac actuators' control devices cannot be stored at temperatures below – 30°C.

Long term storage

If the equipment needs long-term storage (more than 6 months), the following points shall also be followed:

1. Before storage:
Wipe uncoated surfaces, especially output drive components and assembly surfaces, with long term corrosion inhibitor.
2. After every 6 months:
Check for oxidation.

3.5 Warranty

The warranty period is 12 months after putting the actuator into operation or 18 months after shipping from factory. This actuator has been designed and manufactured to be used in specific conditions and within defined limits. The use outside these specifications has to be agreed and approved by Ontrac. It must be considered also that, if the actuators are used outside their technical specifications, the factory warranty is no longer valid.

The actuator may be used only for the applications specified in the order for which Ontrac has selected the model and the materials of construction. Ontrac has tested the actuator with to respect the specifications. For uses different from those stated in the order, the customer has to always send a written request to the Ontrac technical office, which will reply in a written response. Warranty will not cover repairs or alterations on the product done by the user or third parties not specifically authorized by Ontrac.



3.6 Return to Factory

Please send your request to service@ontracactuator.com for return approval from factory prior to any action.

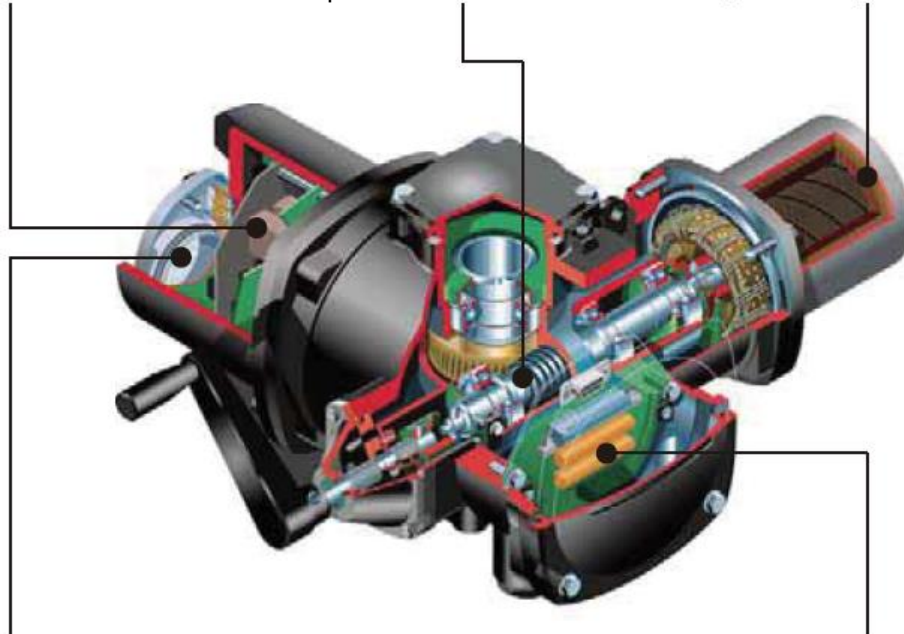
04 Main Components

4.1 Introduction of main components

Advanced frequency converter and electronic technologies

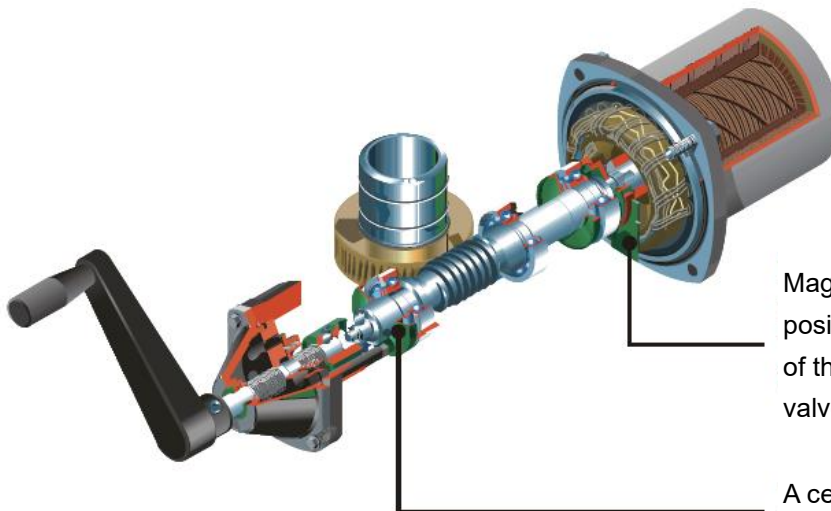
The gear unit provides high efficiency, maintenance free operation.

Motor in insulation class F. Measuring and monitoring of both current and temperature provide full protection.



Introduction of efficient Man-machine interface simplifies commissioning with user guidance.

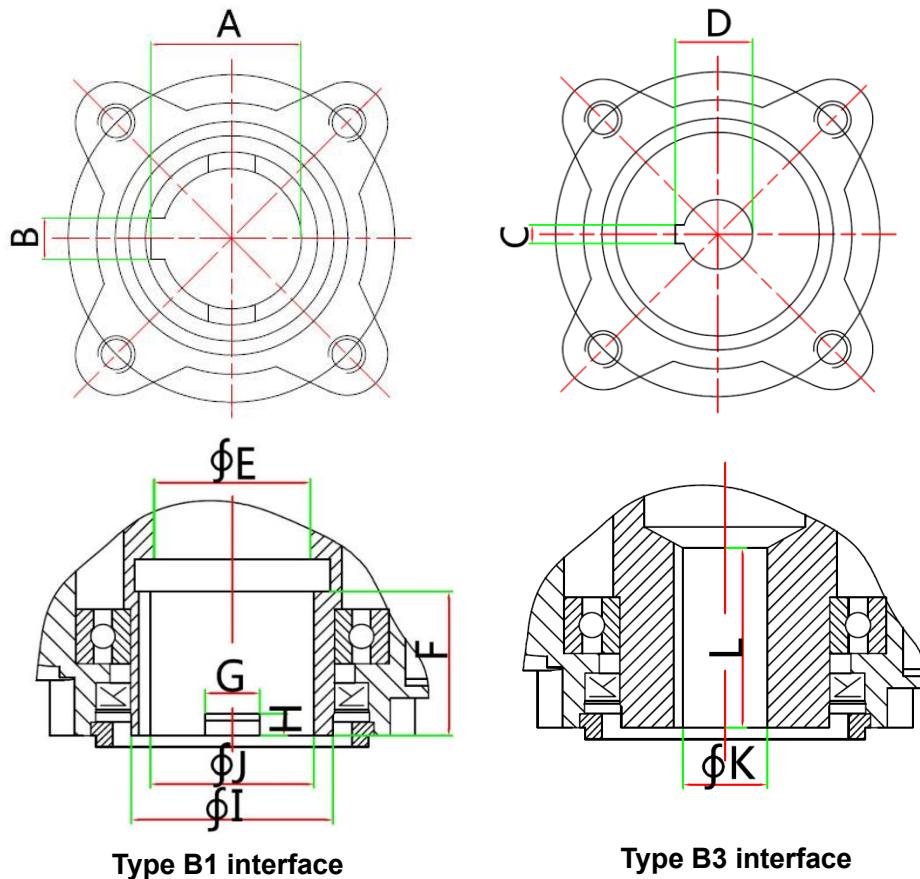
Motor and control cables are connected by using screw type terminals or PCB plug-in terminals to ensure reliable electrical contact.



Magnetic angle sensors for contact-less position detection, are operated by means of the signaling gear to detect the current valve position and torque.

A centrifugal lock prevents the hand wheel from engaging before the motor has come to a standstill.

4.2 Flange Structure and Valve Connection Size



Type B1 interface

Type B3 interface

The output axis has two interface modes:

- 1、Type B1 interface
- 2、Type B3 interface

Application:

- 1、For rotating, non-rising stem
- 2、Cannot bear thrust, rotational load only

The connecting flange shall comply with the standard ISO 5210

Model	MOE706 MME806	MOE708 MME808	MOE712 MME812	MOE725 MME825	MOE750 MME850	MOE790 MME890	MOE790L
Connecting flange	F10	F10	F10	F14	F14	F16	F16

Note: 1. Bosses on flanges shall be clearance fit.

2. The flange specification and interface mode have been determined in the procurement stage.

Interface size: (unit: mm)

	A	B	C	D	E	F	G	H	I	J	K	L
F10	45.3	12	6	24.3	40	50	14	7	54	42	20	64
F14	64.4	18	8	33.3	57.5	53	20	8	74	60	30	65
F16	74.9	20	12	43.3	70	93	24	12	98	70	40	80

ACK25-02.1A

4.3 Operation

The power electronic controlled motor drives the worm shaft, which is mounted on a hollow shaft. This can be coupled to the valve either directly or using additional gearing.

A position sensor next to the worm shaft detects speed and the direction of rotation.



A hand crank is provided for manual operation. Please refer to 6.3 for specific operation steps.

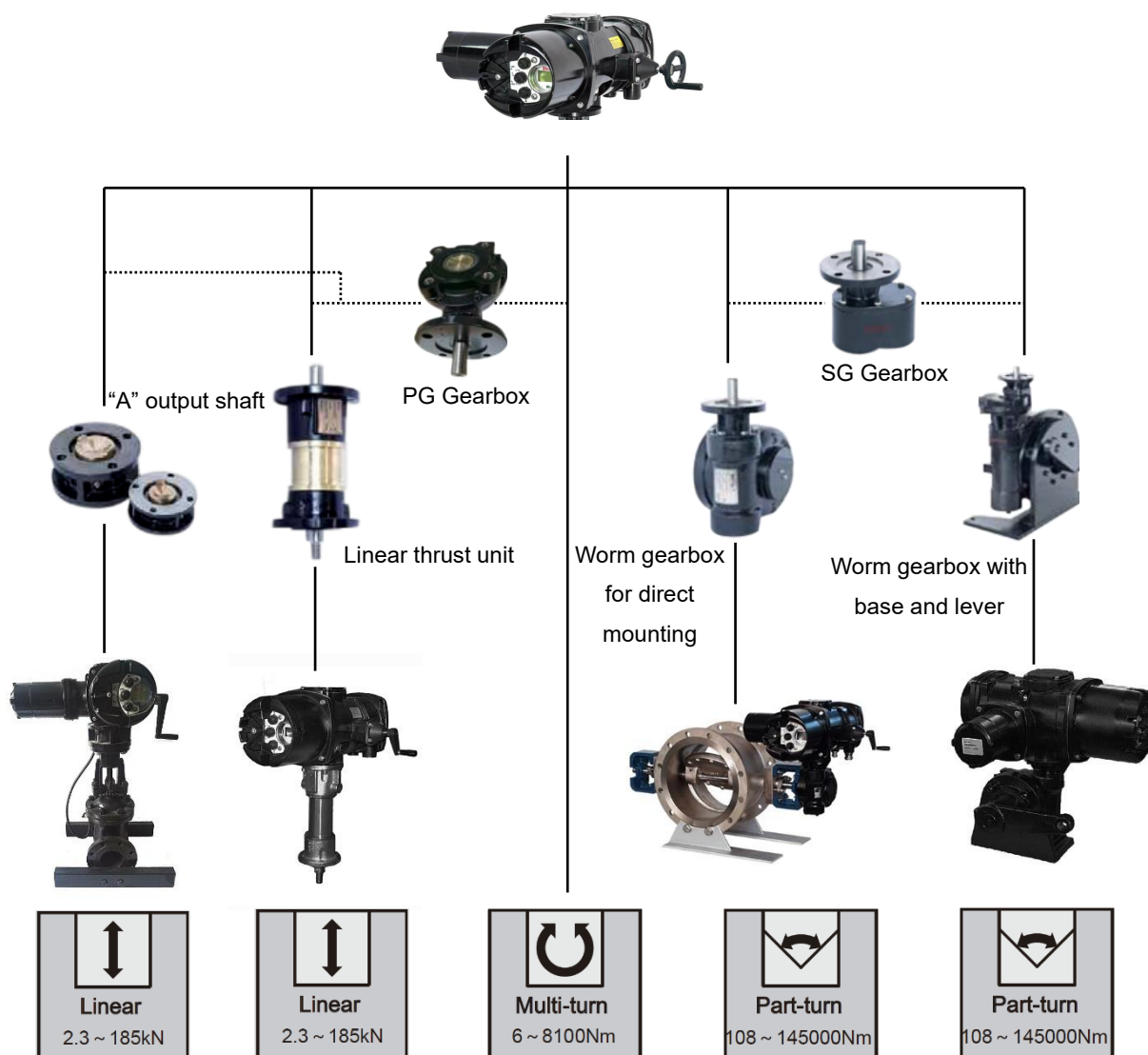
The actuator is equipped with a local control panel with various elements for operation and display. Switch the mode selector switch to LOCAL to drive the actuator with the + / - push buttons.

05 General and Technical Data

5.1 Specifications

Voltage supply	3-phase: $\leq 500\text{VAC} \pm 10\%$, 50/60Hz; 550/600/660VAC optional 1-phase: $110/220\text{V} \pm 10\%$, 50/60Hz
Duty mode	On-off (MOE series), S2:15min Modulating (MME series), S4-25%, numbers of starts $\leq 1200/\text{h}$
Motor control	Variable frequency control technology
Add. control supply	24V.DC, max 40mA, with short-circuit protection function 120VAC (optional)
Digital output switch capacity	24V.DC (18~33V), 250VAC 5A
Input Signal	1) 4, Pulse width $\geq 50\text{ms}$, the number 0 is -3 ~ +5V or open circuit, and the number 1 is +12 ~ +35V 2) Profibus-DP, Modbus, Hart, Ethernet, Foundation Fieldbus (Optional)
Output Signal	1) 4 digital potential-free contacts 2) Additional 10 digital contacts and two 4-20 mA optional according to customer needs 3) Profibus-DP, Modbus, Hart, Ethernet, Foundation Fieldbus (Optional)
Torque tripping	40% ~ 100% adjustable, step 5%
Output speed	40% ~ 100% adjustable, step 5%
Accuracy	1) Multi-turn(stroke ≥ 1 turn) $\leq \pm 0.5\%$ 2) Part-turn $\leq \pm 0.5\%$ 3) Linear(Stroke $\geq 25\text{mm}$) $\leq \pm 0.5\%$
Dead zone	1% (0.5 ~ 10% adjustable)
Intermediate position Setting	Standard
Enclosure protection	IP67 (IP68 optional)
Explosive protection	ATEX, Exd II CT4 optional
Safety Integrity level	SIL2&3 optional
Ambient conditions	Standard Temperature: On-off duty, MOE series, -25°C ~ +70°C Modulating duty, MME series: -25°C ~ +60°C -40C, -60C optional Standard for split type, MOE series, -40°C ~ +85°C, -60C optional 2) Humidity: The multitrac actuator can operate up to 100% humidity 3) Standard Ambient: no corrosive, flammable and explosive gas
Heater	Optional for low temperature working condition
Anti-condensation	Anti-condensation heater builtin
Coating	Double layer powder coating, C5-M (ISO12944 Marine Optional)
Color	Ontrac standard is black RAL9005, available colors on request
CE standard 	1) EN 61000-6-4: 2007, EN 61000-6-2: 2005 2) EN 61000-3-2: 2006 +A1:2009+A2: 2009, EN 61000-3-3: 2008 3) EN 60204-1: 2006+A1: 2009 4) ATEX: CML 14ATEX1108
Installation direction	4 different orientations
Fatigue strength	0.75g sine wave within 5 ~ 200Hz or 2g sine wave within 5 ~ 150Hz
Cable connection	1*M32x1.5 for $\Phi 13 \sim \Phi 18$, 2*M25x1.5 for $\Phi 10 \sim \Phi 16$

5.2 Mechanical Interfaces



Ontrac electric actuators are divided into three mechanical interface categories:

1、 Multi-turn:

Actuator outputs at least 360° of angular displacement and torque. If equipped with A type output shaft can realize a linear thrust motion

2、 Linear:

Equipped with a linear thrust, actuator can output linear displacement and thrust, and valve stem directly connected to the linear thrust rod

3、 Part-turn:

Equipped with worm gear, actuator can output 90° of angular displacement and torque. The part-turn category is divided into two categories according to their installation.

3.1 Direct mounting: Worm gearbox is connected to the flange and output shaft hole.

3.2 With base and level: Worm gearbox is mounted on the base, and valve is driven by the level and rod.

5.3 Technical Data

5.3.1 Multi-turn On-Off, Electric Actuators (MOE,380VAC)

Combination	Switch-Off Torque (nm)	Max. Speed (r.p.m)	Rising Valve Stem (mm)	Flange (ISO5210)	Power (kw)	Current (A)	Fuse (A)	Weight (kg)
MOE706S	6...15	72-180	38	F10	0.5	0.84	3×16A	24
MOE706R	10...25	37-95 64-160	38	F10	0.5	0.84	3×16A	24
MOE706M	25...50	14-35	38	F10	0.24	0.41	3×16A	24
MOE708S	12...30	72-180	38	F10	1.0	1.69	3×16A	24
MOE708R	20...50	37-95 64-160	38	F10	1.0	1.69	3×16A	24
MOE708M	32...80	14-35	38	F10	0.48	0.81	3×16A	24
MOE712S	24...60	72-180	38	F10	1.76	2.97	3×16A	29
MOE712R	40...100 36...90	37-95 64-160	38	F10	1.76	2.97	3×16A	29
MOE712M	60...150	14-35	38	F10	0.85	1.43	3×16A	29
MOE725S	50...125	72-180	55	F14	3.52	5.94	3×16A	39
MOE725R	80...200	37-95 56-140	55	F14	3.52	5.94	3×16A	39
MOE725M	120...300	14-35	55	F14	1.71	2.89	3×16A	39
MOE750R	120...300	37-95 56-140	55	F14	4.10	6.92	3×16A	41
MOE750P	160...400	29-72	55	F14	4.10	6.92	3×16A	41
MOE750M	240...600	14-35	55	F14	2.72	4.59	3×16A	41
MOE790P	320...800	24-60	68	F16	11.0	18.57	3×25A	63
MOE790R	200...500 220...550	37-95 62-156	68	F16	11.0	18.57	3×25A	63
MOE790M	400...1000	13-32	68	F16	6.7	11.31	3×25A	63
MOE790RL	280...700 232...580	37-95 62-156	68	F16	14.70	24.82	3×25A	63
MOE790PL	400...1000	24-60	68	F16	14.70	24.82	3×25A	63
MOE708S+PG80/4S-1	41...102	18-45	41.8	F12/F14	1.0	1.69	3×16A	36
MOE708R+PG80/4S-1	68...170	9.2-23	41.8	F12/F14	1.0	1.69	3×16A	36
MOE708M+PG80/4S-1	109...272	3.52-8.8	41.8	F12/F14	0.48	0.81	3×16A	36
MOE712S+PG80/4S-1	82...204	18-45	41.8	F12/F14	1.76	2.97	3×16A	41
MOE708R+PG80/6S-1	100...250	6-15.33	41.8	F12/F14	1.0	1.69	3×16A	36
MOE708M+PG80/6S-1	160...400	2.32-5.8	41.8	F12/F14	0.48	0.81	3×16A	36
MOE712S+PG80/6S-1	120...300	14.4-36	41.8	F12/F14	1.76	2.97	3×16A	41
MOE712R+PG80/4S-1	136...340	9.2-23	41.8	F12/F14	1.76	2.97	3×16A	41
MOE712M+PG80/4S-2	204...510	3.52-8.8	48.1	F14/F16	0.85	1.43	3×16A	47
MOE712R+PG80/6S-2	200...500	6-15.33	48.1	F14/F16	1.76	2.97	3×16A	47
MOE725S+PG80/4S-2	170...425	18-45	48.1	F14/F16	3.52	5.94	3×16A	57
MOE712M+PG80/6S-2	300...750	2.32-5.8	48.1	F14/F16	0.85	1.43	3×16A	47
MOE725S+PG80/6S-2	250...625	12-30	48.1	F14/F16	3.52	5.94	3×16A	57

ACK25-02.1A

5.3.2 Multi-turn Modulating, Electric Actuators (MME,380VAC)

Multi-turn Actuators (Modulating)									
Combination	Tripping torque (Nm)	Switch-off torque (Nm)	Speed (r.p.m)	Rising valve stem (mm)	Flange (ISO5210)	Power (kW)	Current (A)	Fuse (A)	Weight (kg)
MME806	25	20...50	14-35	38	F10	0.24	0.41	3×16A	24
MME808	40	32...80	14-35	38	F10	0.48	0.81	3×16A	24
MME812	75	60...150	14-35	38	F10	0.85	1.43	3×16A	29
MME825	150	120...300	14-35	55	F14	1.71	2.89	3×16A	39
MME850	300	240...600	14-35	55	F14	2.72	4.59	3×16A	41
MME808+PG80/4S-1	136	109...272	3.52-8.8	41.8	F12/F14	0.48	0.81	3×16A	36
MME808+PG80/6S-1	200	160...400	2.32-5.8	41.8	F12/F14	0.48	0.81	3×16A	36
MME812+PG80/4S-2	255	204...510	3.52-8.8	48.1	F14/F16	0.85	1.43	3×16A	47
MME812+PG80/6S-2	375	300...750	2.32-5.8	48.1	F14/F16	0.85	1.43	3×16A	47
MME890	500	480...1000	13-32	68	F16	6.7	11.31	3×25A	63
MME825+PGZ/4	750	600...1500	2.32-5.8	54	F16/F25	1.71	2.89	3×16A	81
MME850+PGZ/4	1020	816...2040	3.52-8.8	54	F16/F25	2.72	4.59	3×16A	83
MME850+PGZ/6	1500	1200...3000	2.32-5.8	60	F25/F30	2.72	4.59	3×16A	115
MME890+PGZ/8	2550	2040...5100	2.32-5.8	82.55	F30/F35	6.7	11.31	3×25A	218

Note 1: All actuators are self-locking except MOE7...S.

Note 2: Switch-off torque 10% variations due to mechanical efficiency alteration, 40% to 100% adjustable.



Equipped with "A" output shaft, the actuator can drive the valve rod to have a linear motion. All axial forces are sustained by the "A" output shaft. The following table is the transmission factor for stem trapezoidal thread.

Valve transmission factors (Output torque=Axial forces*Factor)							
Thread size	Factor	Thread size	Factor	Thread size	Factor	Thread size	Factor
Tr18x4	0.00190	Tr32x6	0.00323	Tr46x8	0.00457	Tr70x10	0.00666
Tr20x4	0.00205	Tr34x6	0.00339	Tr48x8	0.00472	Tr75x10	0.00704
Tr22x5	0.00234	Tr36x6	0.00354	Tr50x8	0.00487	Tr80x10	0.00741
Tr24x5	0.00250	Tr38x6	0.00369	Tr52x8	0.00502	Tr85x12	0.00806
Tr26x5	0.00265	Tr40x6	0.00384	Tr55x8	0.00525	Tr90x12	0.00844
Tr28x5	0.00279	Tr42x6	0.00399	Tr60x8	0.00563	Tr95x12	0.00882
Tr30x6	0.00309	Tr44x8	0.00441	Tr65x10	0.00628	Tr100x12	0.00920

Note: For inside screw non-rising gate valve, factors will be multiplied by 1.5, and the sluice, factors be multiplied by 1.25, to ensure that the thrust 3 times larger than the weight of valve.

5.3.3 Linear Modulating, Electric Actuators

Linear Actuators (Modulating)							
Combination	Modulating force (N)	Switch-off force (N)	Factory force setting	40% Switch-off force (N)	Full speed	Max. stroke (mm)	※ Weight (kg)
MME806+LE12.1	5768	11536	100%	4614	2.92mm/s	50/100/200/400/500	36
MME808+LE25.1	11536	23072	100%	9229	2.92mm/s	50/100/200/400/500	36
MME812+LE50.1	18749	37498	100%	14999	3.5mm/s	63/100/200/400	42
MME825+LE70.1	32051	64102	100%	25641	4.08mm/s	100/160/320/400	68
MME850+LE100.1	50000	100000	100%	41025	4.08mm/s	100/160/320/400	71
MME890+LE200.1	92391	184782	100%	73913	4.66mm/s	100/200/400/500	97

※Note: The marked weight is the weight of the minimum stroke, and other strokes shall be subject to the actual weight

5.3.4 Linear On-Off, Electric Actuators

Linear Actuators (On-Off)						
Combination	Switch-off force (N)	Factory force setting	40% Switch-off force (N)	Full speed	Max. stroke (mm)	※Weight (kg)
MOE706S+LE12.1	5768	100%	2307	15mm/s	50/100/200/400/500	36
MOE706R+LE12.1	9613	100%	3845	7.67mm/s	50/100/200/400/500	36
MOE706M+LE12.1	11536	100%	4614	2.92mm/s	50/100/200/400/500	36
MOE708S+LE12.1	11536	100%	4614	15mm/s	50/100/200/400/500	36
MOE708R+LE25.1	19227	100%	7691	7.67mm/s	50/100/200/400/500	36
MOE708M+LE25.1	23072	100%	9229	2.92mm/s	50/100/200/400/500	36
MOE712S+LE25.1	23072	100%	9229	15mm/s	50/100/200/400/500	41
MOE712R+LE50.1	31248	100%	12499	9.2mm/s	63/100/200/400	42
MOE712M+LE50.1	37498	100%	14999	3.5mm/s	63/100/200/400	42
MOE725R+LE70.1	51282	100%	20513	10.73mm/s	100/160/320/400	68
MOE725M+LE70.1	64102	100%	25641	4.08mm/s	100/160/320/400	68
MOE750R+LE70.1	69230	90%	30769	10.73mm/s	100/160/320/400	70
MOE750R+LE100.1	76922	100%	30769	10.73mm/s	100/160/320/400	71
MOE750P+LE100.1	100000	100%	41025	8.4mm/s	100/160/320/400	71
MOE790R+LE200.1	147826	100%	59130	8mm/s	100/200/400/500	97
MOE790M+LE200.1	184782	100%	73913	4.66mm/s	100/200/400/500	97

※Note: The marked weight is the weight of the minimum stroke, and other strokes shall be subject to the actual weight



Note 1: Switch-off force and speed adjustable, from 40% to 100%, at 5% step.

Note 2: Linear units are entirely encapsulated units.

Note 3: We can provide customized products if the models listed in the tables above do not meet your requirements.

5.3.5 Part-turn Modulating, Electric Actuators

Part-turn Actuators (Modulating)					
Combination	Modulating Torque (Nm)	Max Switch-off Torque (Nm)	Minimum Switch-off Torque (Nm)	Full Travel Time (s)	Weight (kg)
MME806+ASNG50	248	495	198	19-26.6	60
MME808+ASNG50	400	800	320	26-36.4	60
MME808+ASNG100	840	1680	672	30-42	60
MME808+ASNG200	850	1700	680	56-78.4	60
MME808+SG65/2+ASNG300(129:1)	1290	2580	1032	55-77	86
MME812+ASNG300	1500	3000	1200	30-42	81
MME808+SG65/2+ASNG600 (216:1)	2160	4320	1728	92-128.8	117
MME812+SG65/2+ASNG600 (132:1)	2475	4950	1980	57-79.8	122
MME808+SG65/2+ASNG600 (284:1)	2840	5680	2272	121-169.4	117
MME825+ASNG600	3150	6300	2520	30-42	122
MME812+SG65/2+ASNG600 (216:1)	3500	7000	2800	92-128.8	122
MME850+ASNG1000	5400	10800	4320	26-36.4	198
MME825+SG65/3+ASNG1000 (181:1)	6750	13500	5400	78-109.2	206
MME812+SG65/3+ASNG1000 (310:1)	5800	11600	4640	133-186.2	196
MME812+SG80/2+ASNG2000 (420:1)	7875	15750	6300	180-252	319
MME825+SG80/2+ASNG2000 (251:1)	9400	18800	7520	108-151.2	329
MME850+SG80/2+ASNG2000 (113:1)	8475	16950	6780	48-67.2	331
MME890+ASNG2000	8700	17400	6960	26-36.4	343
MME850+SG80/2+ASNG3500 (181:1)	13575	27150	10860	78-109.2	394
MME825+SG80/2+ASNG3500 (310:1)	11625	23250	93	133-186.2	392
MME825+SG80/2+ASNG3500 (420:1)	15750	31500	12600	180-252	392
MME850+SG80/2+ASNG3500 (251:1)	18825	37650	15060	108-151.2	595
MME850+SG80/3+ASNG6500 (304:1)	22800	45600	18290	130-182	595
MME850+SG80/3+ASNG6500 (367:1)	27500	55000	22000	157-219.8	595
MME890+SG80/3+ASNG6500 (304:1)	32500	65000	26000	130-182	617
MME890L+SG80/6+ASNG13500 (419:1)	50000	100000	40000	180-252	1111

5.3.6 Part-turn On-Off, Electric Actuators

Part-turn Actuators (On-Off)				
Combination	Max. Switch-off Torque (Nm)	Min. Switch-off Torque (Nm)	Full Travel Time (s)	Weight (kg)
MOE706S+ASNG50	270	108	5-7	60
MOE706R+ASNG50	450	180	10-14	60
MOE706M+ASNG50	800	320	26-36.4	60
MOE708R+ASNG50	800	320	10-14	60
MOE708S+ASNG50	540	216	5-7	60
MOE708M+ASNG50	800	320	26-36.4	60

Part-turn Actuators (On-Off)				
Combination	Max. Switch-off Torque (Nm)	Min. Switch-off Torque (Nm)	Full Travel Time (s)	Weight (kg)
MOE708M+ASNG100	1680	672	30-42	60
MOE712S+ASNG100	1260	504	6-8.4	65
MOE708R+ASNG100	1050	420	11.4-16	60
MOE708R+ASNG200	1600	640	21-29.4	60
MOE708M+ASNG200	1700	680	56-78.4	60
MOE712S+ASNG200	1700	680	11-15.4	65
MOE712R+ASNG300	2100	840	11.4-16	81
MOE712M+ASNG300	3000	1200	30-42	81
MOE725S+ASNG300	2625	1050	6-8.4	91
MOE725R+ASNG300	3000	1200	11.4-16	91
MOE708S+SG65/2+ASNG300 (210:1)	1575	630	17.5-24.5	86
MOE708R+SG65/2+ASNG300 (275:1)	3000	1200	44.8-62.7	86
MOE708S+SG65/2+ASNG300 (275:1)	2000	800	23-32.2	86
MOE712S+SG65/2+ASNG300 (210:1)	3000	1200	17.5-24.5	91
MOE708R+SG65/2+ASNG600 (353:1)	4400	1760	57.5-80.5	117
MOE712R+SG65/2+ASNG600 (132:1)	3300	1320	21.5-30.1	122
MOE725R+ASNG600	4200	1680	11.4-16	132
MOE712M+SG65/2+ASNG600 (132:1)	4950	1890	57-79.8	122
MOE725M+ASNG600	6300	2520	30-42	132
MOE708R+SG65/2+ASNG600 (419:1)	5238	2095	68.3-27.3	117
MOE712S+SG65/2+ASNG600 (419:1)	6285	2514	35-49	122
MOE725R+SG65/2+ASNG600 (132:1)	6600	2640	21.5-30.1	132
MOE712R+SG65/3+ASNG1000 (310:1)	7750	3100	50.5-70.7	196
MOE712S+SG65/3+ASNG1000 (485:1)	7275	2910	40-56	196
MOE725S+SG65/3+ASNG1000 (251:1)	7844	3138	21-29.4	206
MOE712R+SG65/3+ASNG1000 (359:1)	8975	3590	58.5-81.9	196
MOE750M+ASNG1000	10000	4000	26-36.4	198
MOE712R+SG65/3+ASNG1000 (420:1)	10500	4200	68.4-95.8	196
MOE725S+SG65/3+ASNG1000 (359:1)	11218	4487	30-42	206
MOE725S+SG80/2+ASNG2000 (566:1)	17000	6800	47-65.8	329
MOE725R+SG65/3+ASNG1000 (251:1)	12550	4900	41-57.4	206
MOE712R+SG65/3+ASNG1000 (485:1)	12125	4850	79-110.6	196
MOE725R+SG65/3+ASNG1000 (310:1)	15500	6200	50.5-70.7	206
MOE750R+SG80/3+ASNG6500 (711:1)	46900	18760	116-162.4	595
MOE750P+SG80/3+ASNG6500 (612:1)	53800	21520	127-177.8	595
MOE790R+SG80/3+ASNG6500 (561:1)	61710	24684	91-127.4	617
MOE790P+SG80/3+ASNG6500 (419:1)	65000	26000	105-147	617
MOE790P+SG80/6+ASNG13500 (711:1)	113000	45000	178-249.2	1111
MOE790PL+SG80/6+ASNG13500 (711:1)	145000	58000	178-249.2	1111

Note 1: Switch-off variations of 10% due to mechanical efficiency alteration, and switch-off torque adjustable from 40% to 100%.

Note 2: Speed adjustable from 40% to 100%.

Note 4: We can provide customized products if the models listed in the table above do not meet your requirements.

5.4 Model and Weight

Table 1:

Weight of basic product							
Model	MOE706 MME806	MOE708 MME808	MOE712 MME812	MOE725 MME825	MOE750 MME850	MOE790 MME890	MOE790L
Weight (Kg)	24	24	29	39	41	63	63

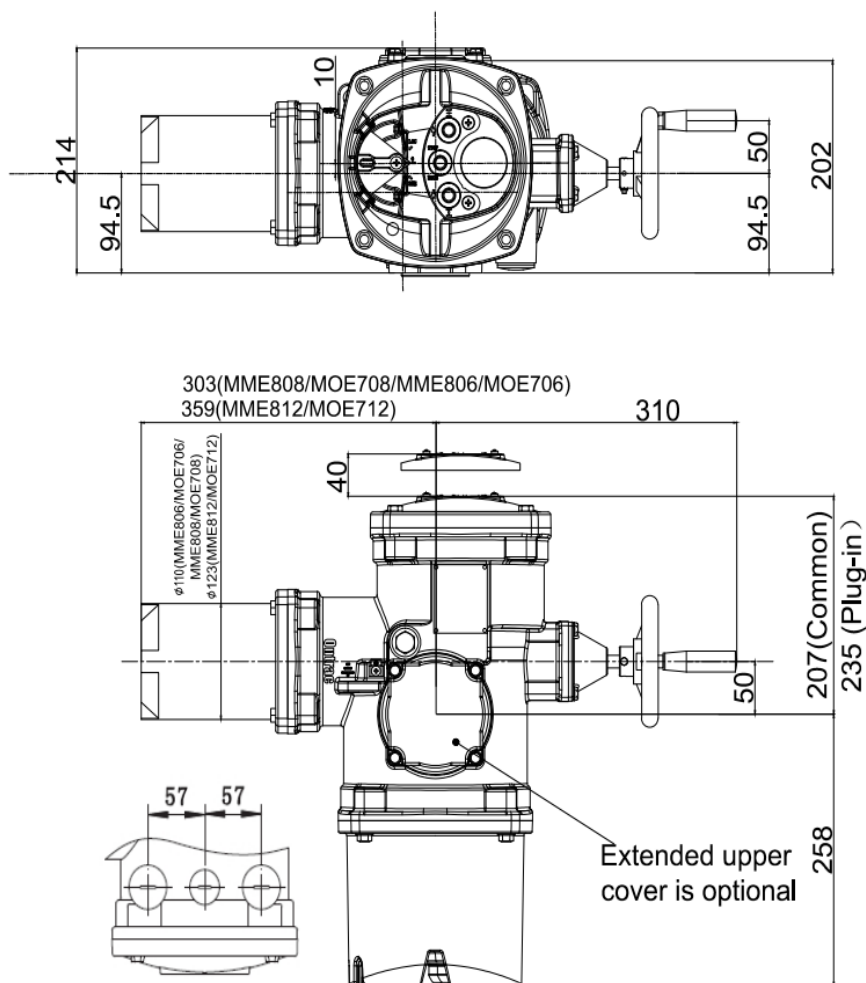
Table 2:

Weight and additional height of PG gearbox				
Model	PG/4 F10 interface	PG/4 F14 interface	PG/5 F10 interface	PG/5 F14 interface
Weight (Kg)	14	22	21	32
Height (mm)	181.5	198	181.5	200.5

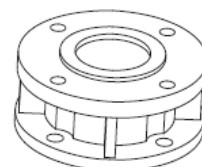
Table 3:

Weight of LE series linear thruster		
LE12.1	LE25.1	LE50.1
50mm stroke: 10kg	50mm stroke: 10kg	63mm stroke: 11kg
100mm stroke: 12kg	100mm stroke: 12kg	100mm stroke: 13kg
200mm stroke: 13kg	200mm stroke: 13kg	250mm stroke: 16kg
400mm stroke: 16kg	400mm stroke: 16kg	400mm stroke: 19kg
500mm stroke: 17kg	500mm stroke: 17kg	
LE70.1	LE100.1	LE200.1
100mm stroke: 25.5kg	100mm stroke: 27kg	100mm stroke: 45kg
160mm stroke: 28.5kg	160mm stroke: 30kg	200mm stroke: 50kg
320mm stroke: 34.5kg	320mm stroke: 36kg	400mm stroke: 62kg
400mm stroke: 37.5kg	400mm stroke: 39kg	500mm stroke: 68kg

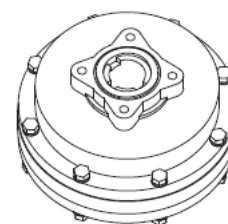
5.5 Mechanical Dimensions (Unit: mm)



MME806 MOE706
MME808 MOE708
MME812 MOE712



A1 output shaft

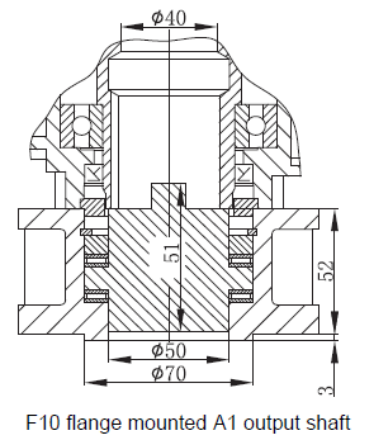
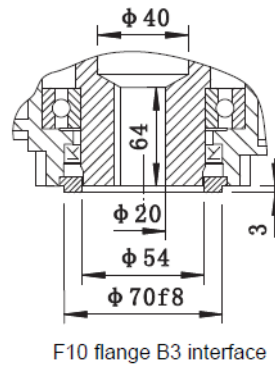
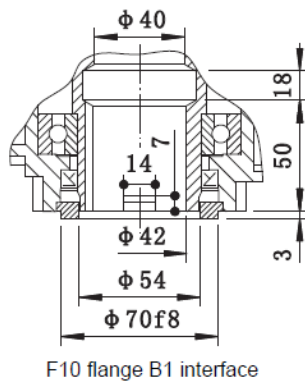
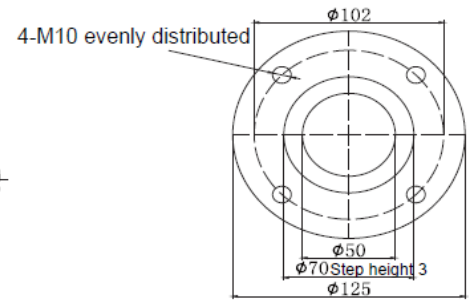
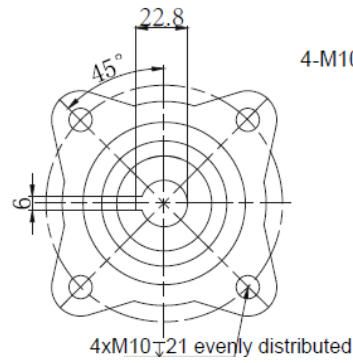
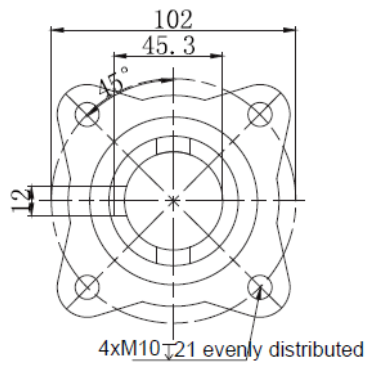


PG multi-turn reduction gearbox

See the following table for interface parameters:

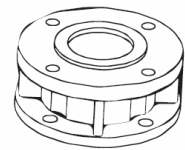
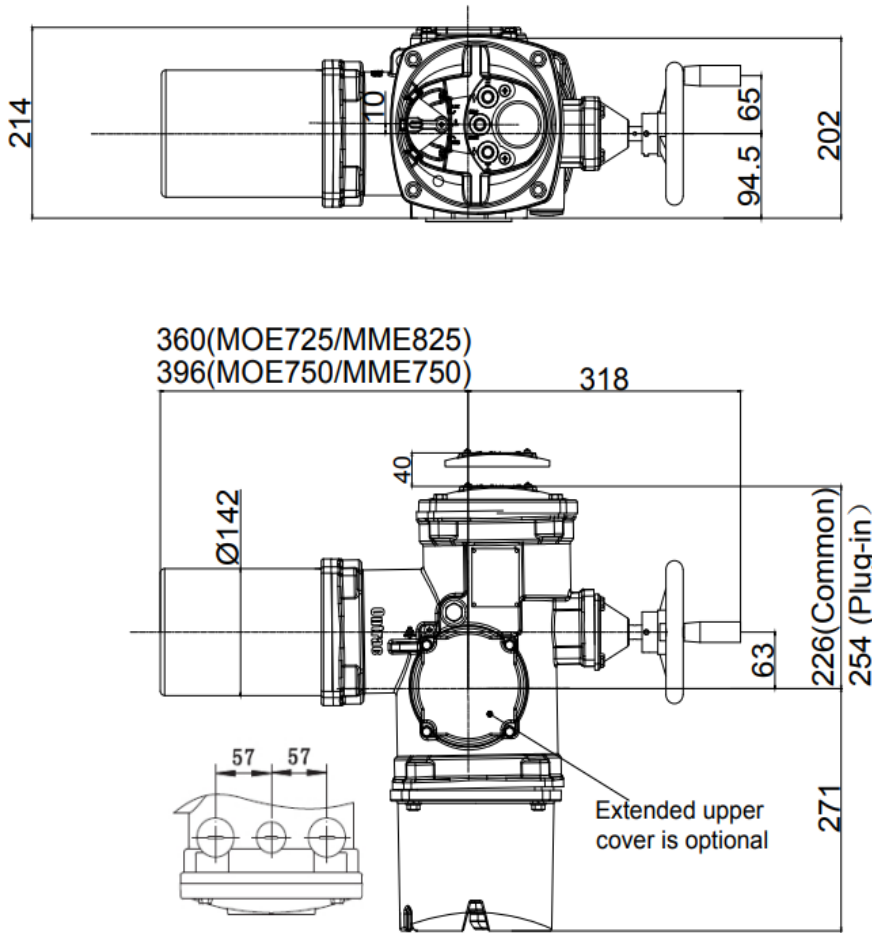
Table 4:

Weight and additional dimensions of PG multi rotary stroke wheel reducer													
Model / Size	A	ØB	ØC	ØD	ØE	ØF	a	b	Øc	d	e	L	Weight (Kg)
PG80/4 F10 interface	14	42	54	70	102	247	4	7	12	2	12	182	14
PG80/4 F14 interface	20	60	76	100	140	300	4	7	18	2	18	200	22
PG80/5 F10 interface	14	42	54	70	102	300	4	7	12	2	12	182	21
PG80/5 F14 interface	20	60	76	100	140	400	4	7	18	2	18	200	32

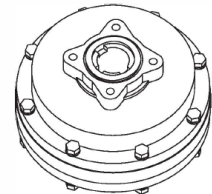


Note: The user processes according to the actual connection needs

MME850 MOE750
MME825 MOE725

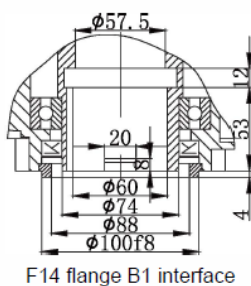
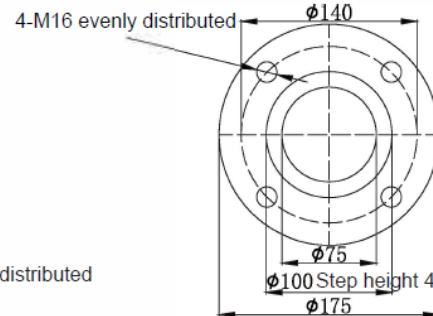
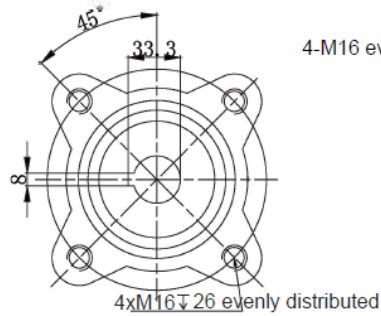
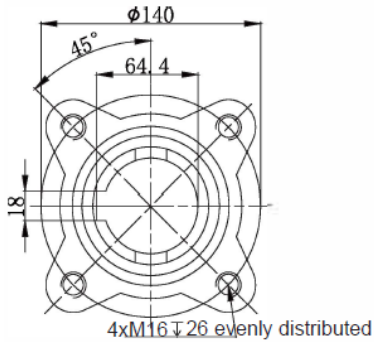


A2 output shaft

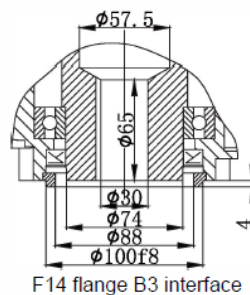


PG multi-turn reduction gearbox

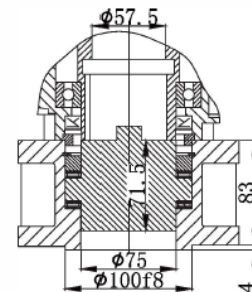
Note: interface parameters please refer to table 4.



F14 flange B1 interface

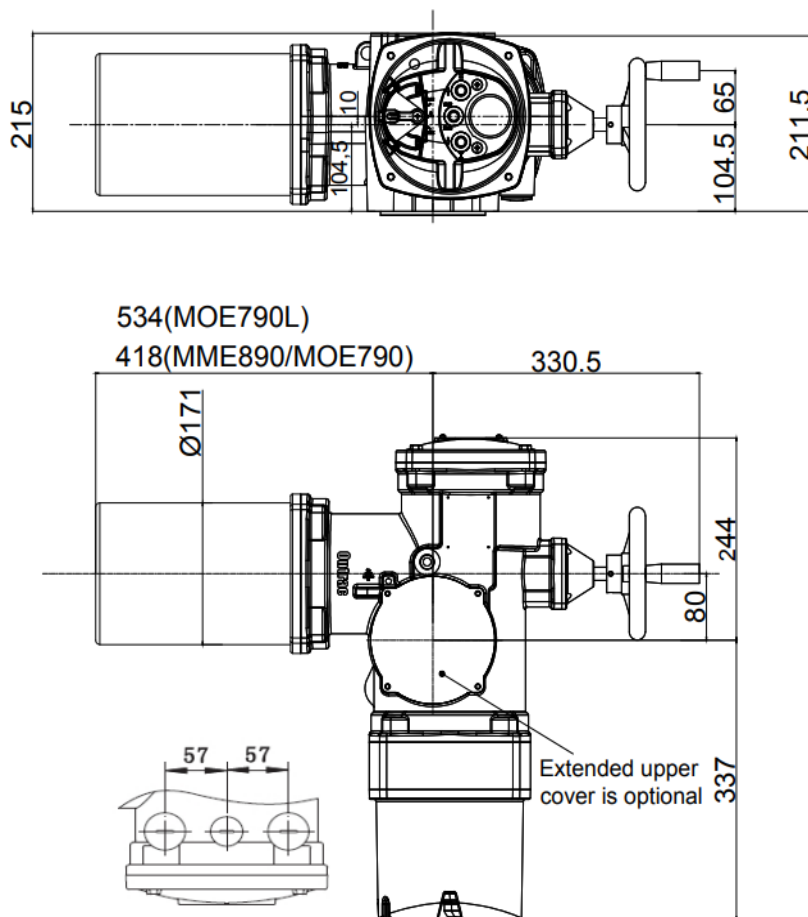


F14 flange B3 interface

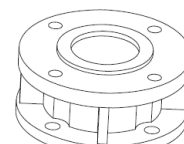


F14 flange mounted A2 output shaft

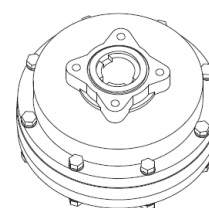
Note: The user processes according to the actual connection needs



MME890
MOE790

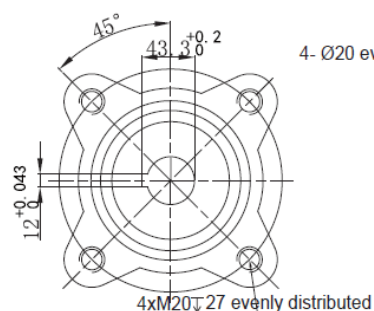
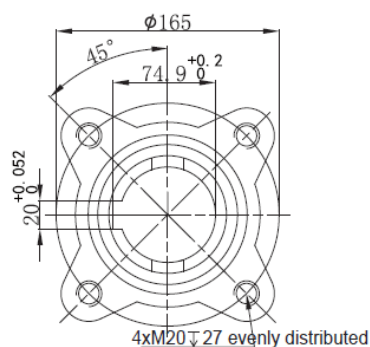


A3 output shaft

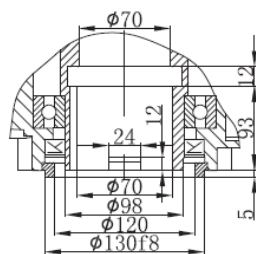
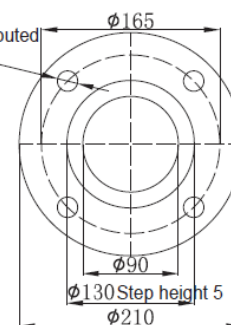


PG multi-turn reduction gearbox

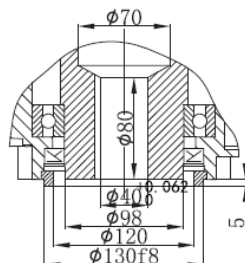
Note: For interface parameters please refer to table 4.



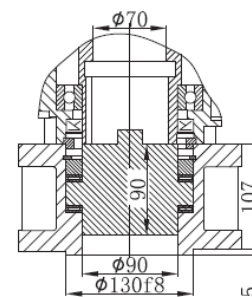
4- Ø20 evenly distributed



F16 flange B1 interface



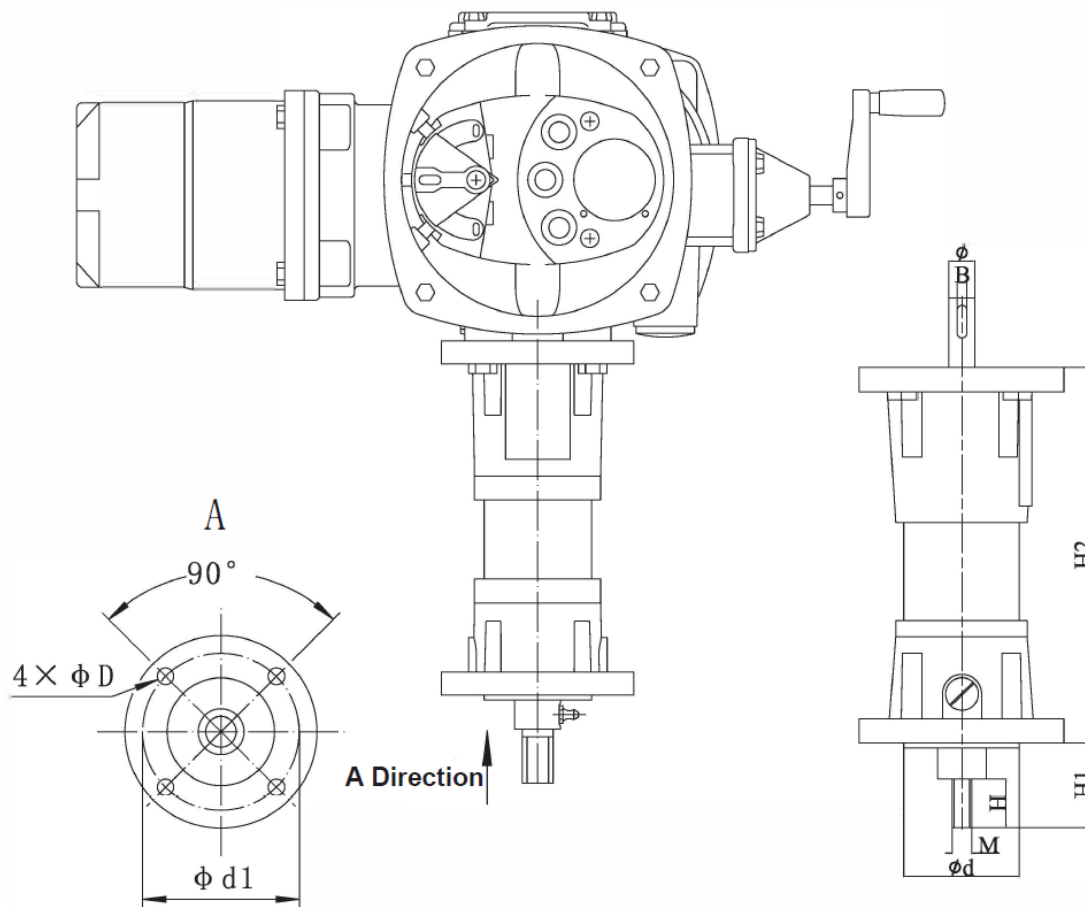
F16 flange B3 interface



F16 flange mounted A3 output shaft

Note: The user processes according to the actual connection needs.

LE Series Linear Thruster

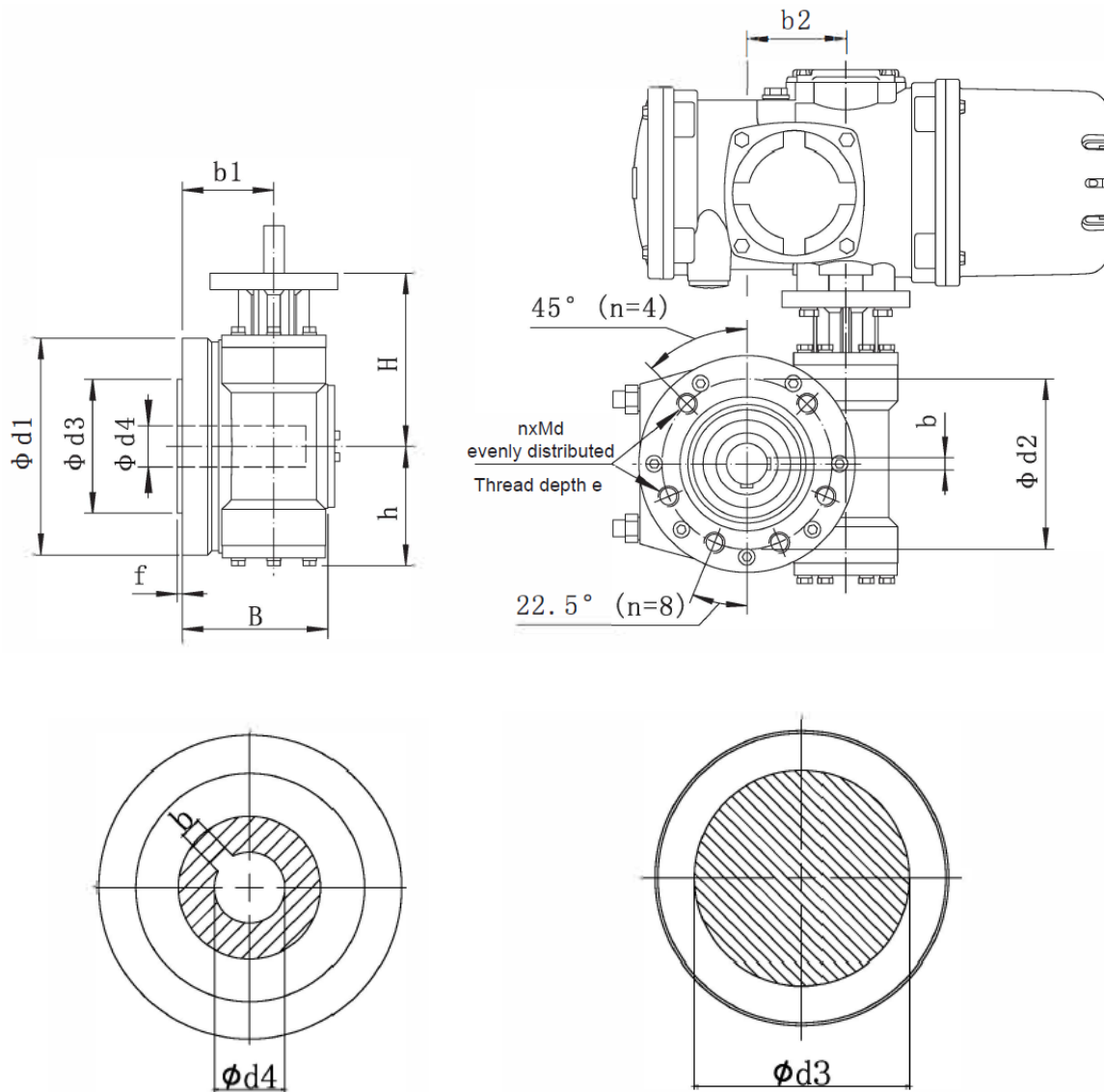


1. LE series linear thrusters are fully sealed and lubricated, to give them long service life and high precision. They do not require regular maintenance.
2. The shutdown thrust can be adjusted in the range of 40% ~ 100% on site according to specific conditions;
3. The linear speed of all products can be adjusted within the range of 40% ~ 100%;
4. If you have special requirements, please contact us and we will customize the products for you.

Specifications	Stroke	Maximum allowable thrust (kN)
LE12.1	50/100/150/200/400	11.5
LE25.1	50/100/150/200/400	23
LE50.1	50/100/150/200/400	39
LE70.1	100/160/320/400	64
LE100.1	100/160/320/400	128

Note: The default maximum stroke of all LE linear thrusters is 100mm, and for the weight please refer to 5.3 table 3.

Direct Connected ASNG Reducer

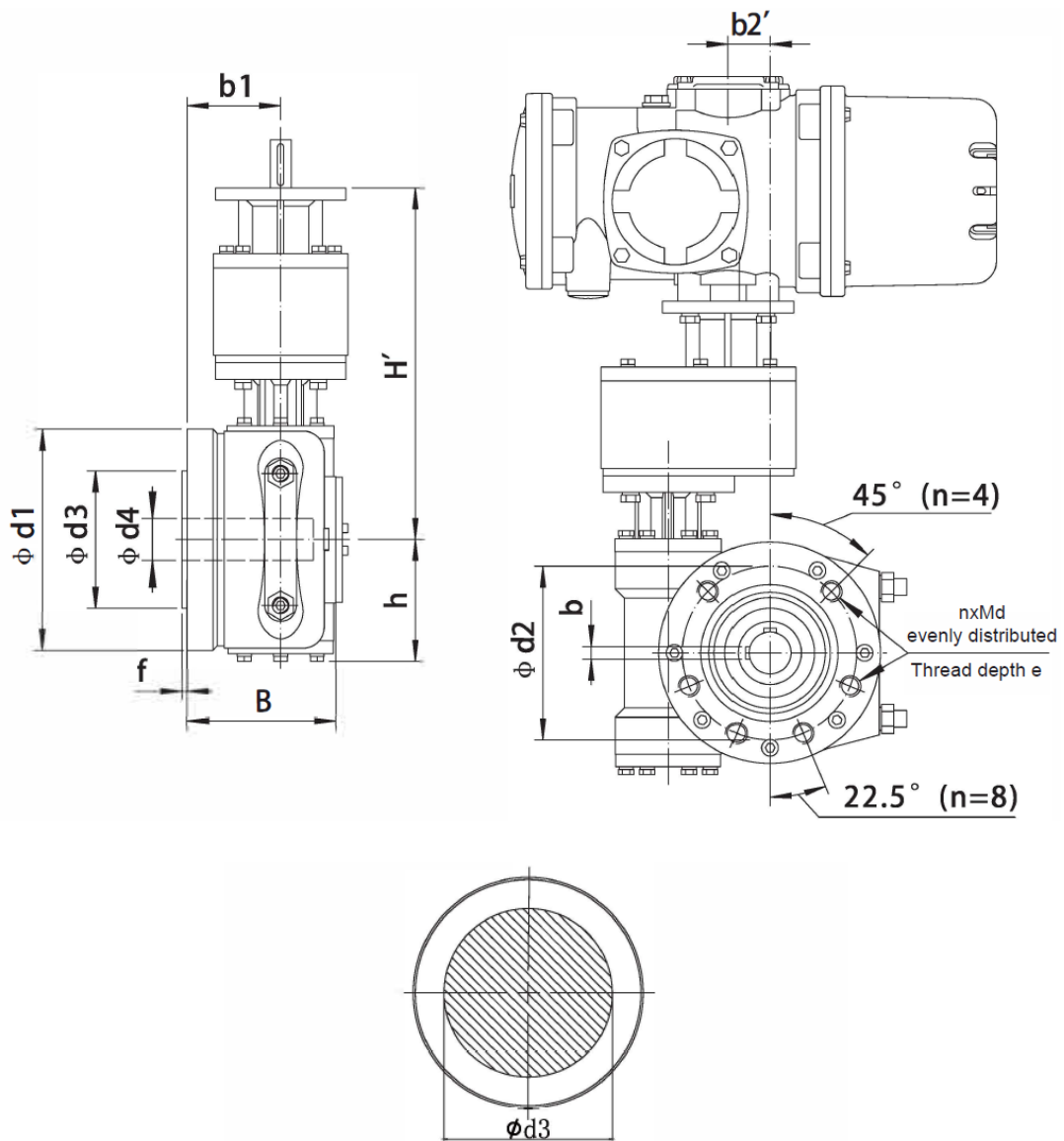


Standard straight shaft

Solid straight coupling shaft (ASNG 300 / D and above)
(The user processes according to the actual connection needs)

Note: ASNG 50/D and ASNG 100/D only have standard direct coupling shafts. If you want solid shafts or other connection methods, you need to select accessories. Please contact the manufacturer for details.

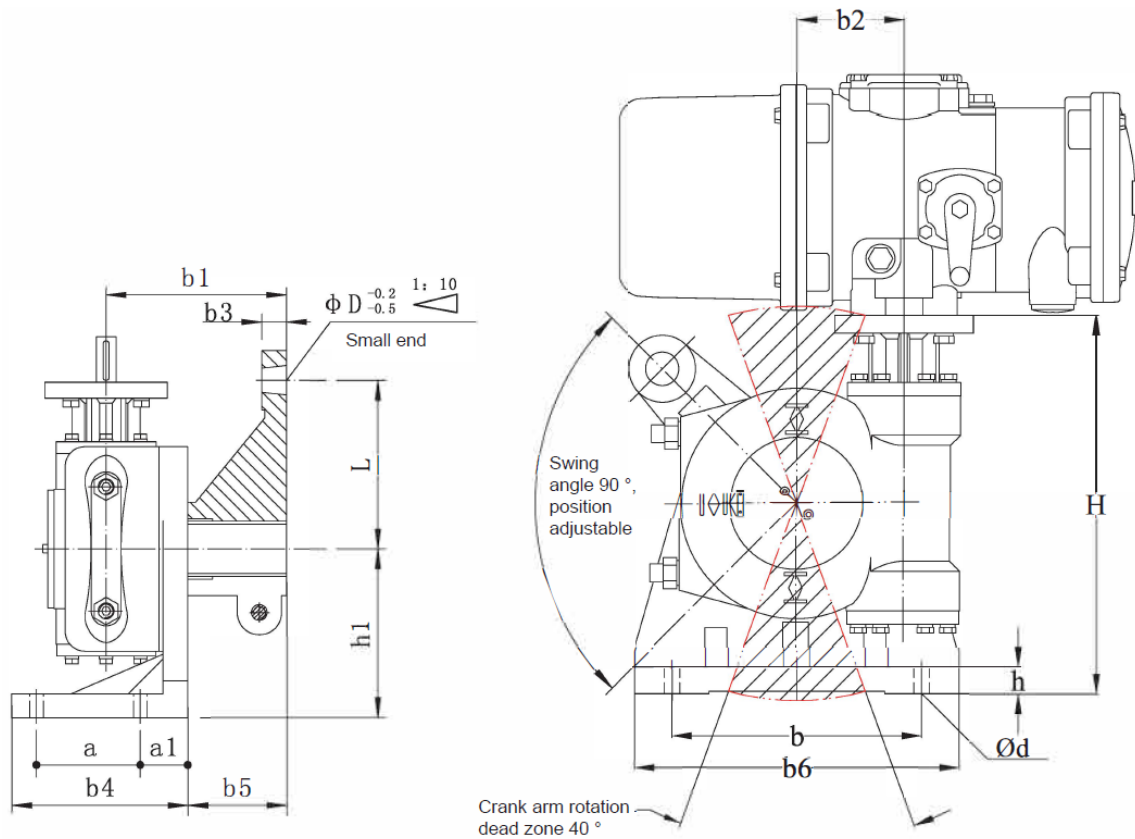
**Direct Connected ASNG Reducer
(with Additional Reduction Gearbox)**



Solid straight coupling shaft
(The user processes according to the actual connection needs)

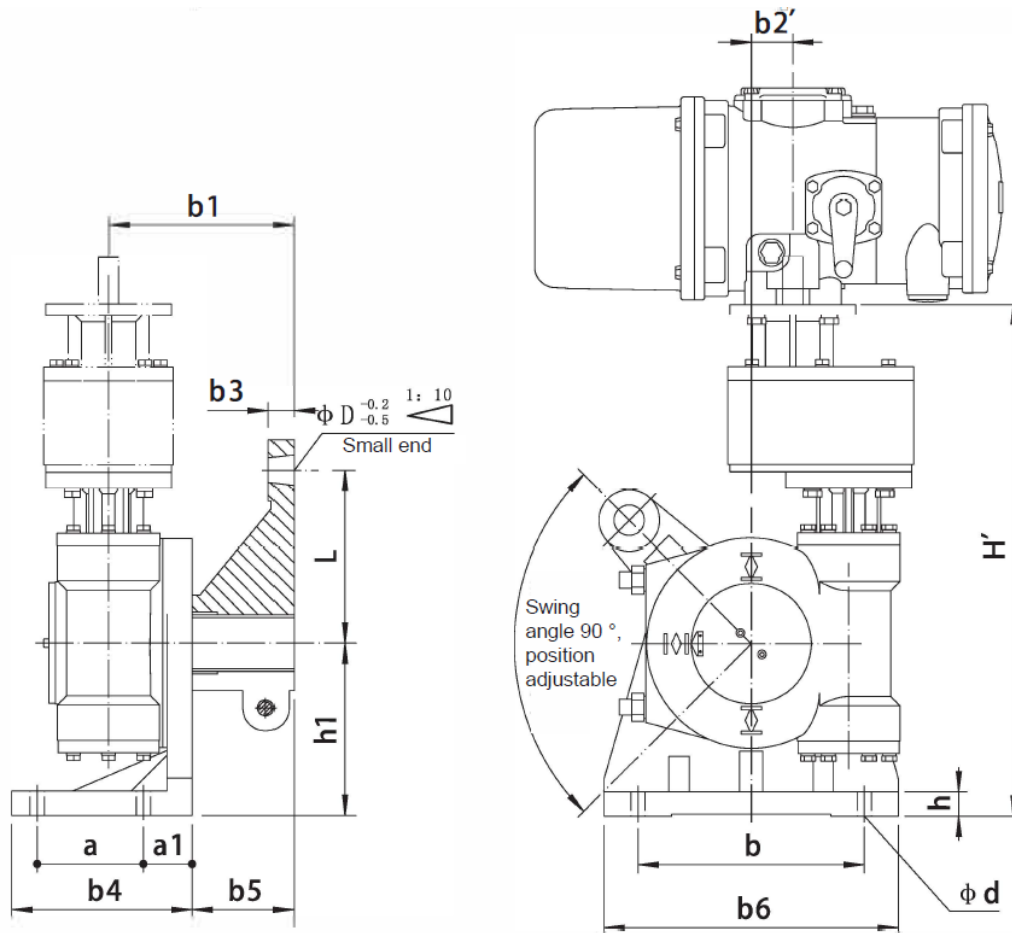
Note: Please contact the manufacturer for details.

ASNG Reducer with Base

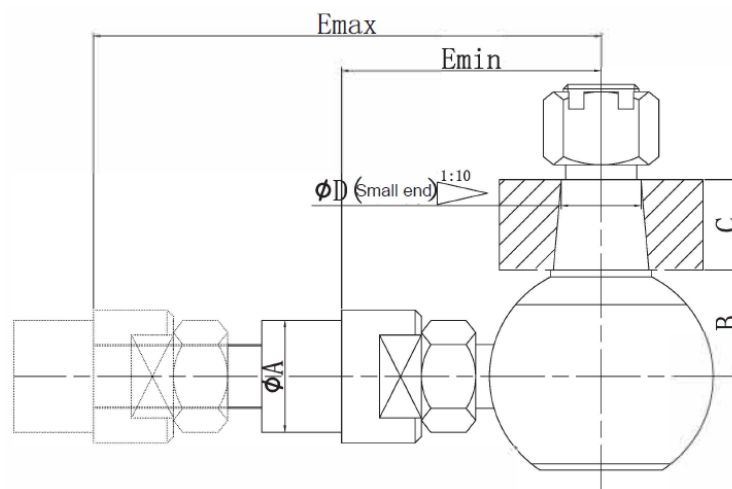


Note: The base shall be installed with enough swing arm space. If the crank arm needs to swing within the dead zone, the base shall be installed on the platform or equipped with optional connectors. Please contact the manufacturer for details.

**ASNG Reducer with Base
(with Additional Reduction Gearbox)**



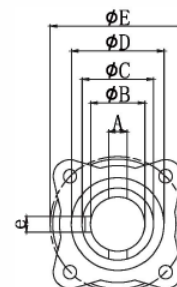
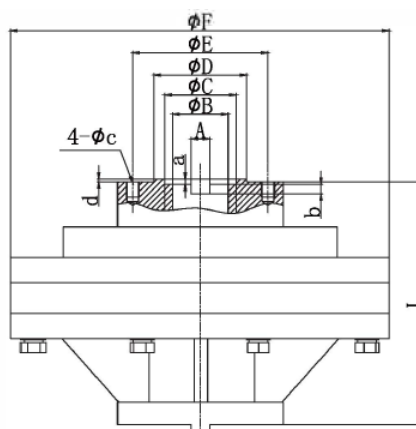
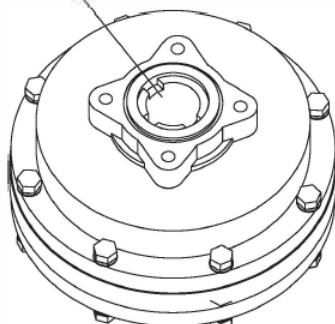
Note: The base shall be installed with enough swing arm space. If the crank arm needs to swing within the dead zone, the base shall be installed on the platform or equipped with optional connectors. Please contact the manufacturer for details.



Note: Please contact the manufacturer for details.

PG Multi Rotary Stroke Wheel Reducer

Two claw one key slot connection



Note: interface parameters please refer to page 20 table 4.

PG Multi Turn Bevel Gear Reducer

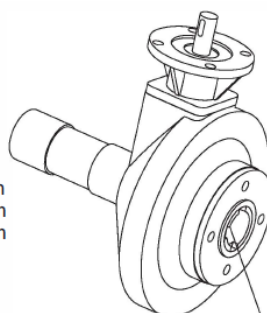
PG80/3 S-1

Reduction ratio code
3, 4, 6 and 8 codes are optional
The code value is the speed ratio

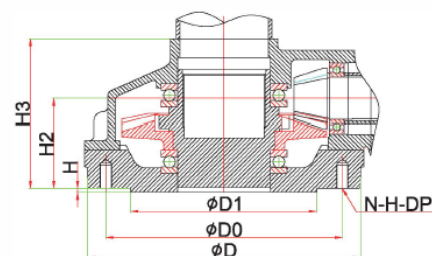
Bevel gear

Maximum output torque code
1, 2 and 3 codes are optional

Code 1: maximum output torque 450Nm
Code 2: maximum output torque 700Nm
Code 3: maximum output torque 900Nm



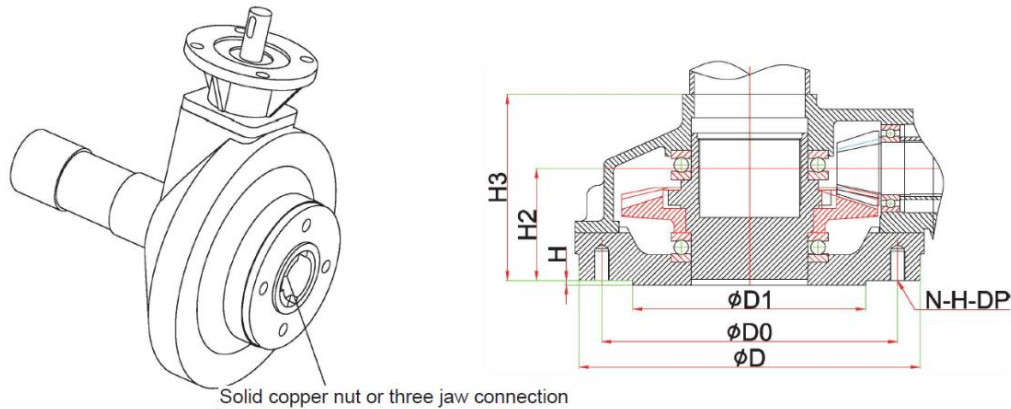
Solid copper nut or three jaw connection



Additional dimensions of PG multi turn bevel gear reducer								
Model/Size	D	D0	D1	H	H2	H3	N-H-DP	Maximum stem diameter
PG80/*S-1	175	140	100	3	75	125	4-M16-24	32
PG80/*S-2	210	165	130	3	85	135	4-M20-30	40
PG80/*S-3	210	165	130	4	75	145	4-M20-30	40

Note: * the interface dimensions of reduction ratio 3:1, 4:1, 6:1 and 8:1 are universal

PGZ Multi Turn Bevel Gear Reducer



Additional dimensions of PGZ multi turn bevel gear reducer										
Model /Size	D	D0	D1	H	H2	H3	N-H-DP	Maximum stem diameter	Reduction ratio optional	Maximum output torque (Nm)
PGZ/4	300	254	200	5	97	175	8-M16-24	52	3、4、6、8、10、12:1	1470
PGZ/6	350	298	230	5	142	210	8-M20-30	70	3、4、6、8、10、12:1	2940
PGZ/8	415	356	260	5	160	280	8-M30-45	90	4、6、8、10、12:1	6000
PGZ/10	415	356	260	5	155	280	8-M30-45	100	6、8、12、16、20:1	8500

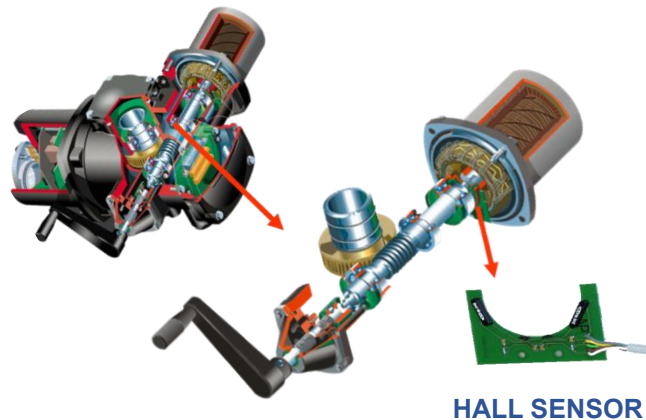
5.6 Key Features

- ✓ **Explosion proof**
---Multitrac actuators are certified to ExdIIBT4 and ExdIICT4.
- ✓ **Non-Intrusive Setup**
--- Actuators can be set up using control knobs or IR controller or with Smartrac control software.
- ✓ **Split/Remote Head Version**
--- The Multitrac electronics, including starter circuitry can be detached and moved to a less harsh environment.
- ✓ **Modular Design**
--- Utilizing a base Multitrac unit with quarter turn and linear variants, the modular design allows for increased flexibility, stock ability and reduced spares

- ✓ **Variable Frequency Drive**
 - Allows complete and accurate valve control, increasing valve performance and decreasing wear on the valve.
- ✓ **Data Logging**
 - Provides detailed information for diagnosis and trending analysis of valve and actuator performance.
- ✓ **On/Off Modulation**
 - Multitrac actuators come in S2 On/Off or S4-50% modulating configuration for both on/off and process control applications.
- ✓ **Ingress Protection**
 - Allows submersion to 10m.

5.7 Position Sensing

Ontrac contactless Hhall sensor: outstanding performance and proven reliability



5.8 Sensitivity Control

- Response time sensitivity: Responding to control signal, this determines how fast the actuator should respond to an external control command. The user can choose up to a 5% rate of change, with a 0.5% rate of change as a step.
- Dead band: Actuator position accuracy: to determine how accurate actuator should be, there is a balance, if it is too accurate, it is difficult for the actuator to settle, the user can choose 0.5% rate of change as a step

5.9 Remote Controller

User-friendly local menu operation

- Infra-red communication, recommend using within 1m from actuator
- General purpose, or Intrinsically safe for hazardous environment (Exia IIC T4 Ga)



5.10 Serial Communications

Serial communications allow for a much greater information transfer capability than traditional 4 – 20 mA signaling. Ontrac produces a wide range of serial communication options using an optional communications board. The communications cards are fitted internally to the actuator.

These serial communication options include:

■ Profibus:

Ontrac offers Profibus DP (Decentralized Peripherals) up to a baud rate of 1.5Mbit/s. Our actuators are supplied with active bus termination. The electrical connections are via RS485 type A.

■ Foundation Fieldbus:

Ontrac offers Foundation Fieldbus card designed for use on a communications bus operating at 31.25 Kbit/s

■ Modbus:

Ontrac offers RTU protocol communications at a baud rate up to 38.4kbits/s. Our factory default speed is 9.6kbits/s giving a 1.5km maximum distance between nodes. We use a master / slave query response polling cycle with CRC (Cyclic Redundancy Check).

■ **Hart:**

Ontrac can provide HART Communication Protocol (Highway Addressable Remote Transducer) connectivity. HART allows the use of conventional 4 – 20 mA wiring.

■ **Ethernet:**

Ontrac offers a Ethernet, via a standard RJ45 interface, allowing connection to host systems or controllers. Using the Modbus TCP protocol, users can remotely monitor, configure parameter

5.11 Smartrac for Asset Management

Smartrac is our PC-based system for digitally communicating directly to our actuators. It will provide you with an engineer level access to all of the settings and data that your actuator contains.

Smartrac requires a standard PC (Windows 10 or above) and a dedicated RS485 standard cable to connect to the actuator.



Features include:

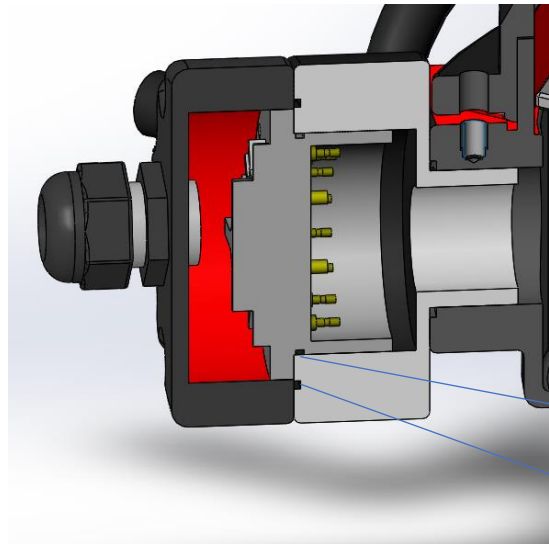
- ✓ Settings – actuator settings can be saved, uploaded, or downloaded to the actuator
- ✓ Ports – serial communication ports can be configured and allocated
- ✓ Operate – the actuator can be operated to set the running times, valve positions and stroke and facilitate fault finding.
- ✓ Configure – parameters can be set including; control modes, analogue settings, indications, speed and torque, limit switches and ports.
- ✓ Diagnosis – comprehensive alarm and failure logs and historic data logs are all accessible.

5.12 Actuator Protection

Multitrac provides an option for double sealing for even more protection against ingress. Two seals are provided which gives additional protection when the actuator terminal compartment is open.

Ontrac enhanced IP68 meets the following requirements:

- Depth of water: maximum 10 m head of water
- Duration of continuous immersion in water: Max. 72 hours
- During continuous immersion, Up to 10 operations



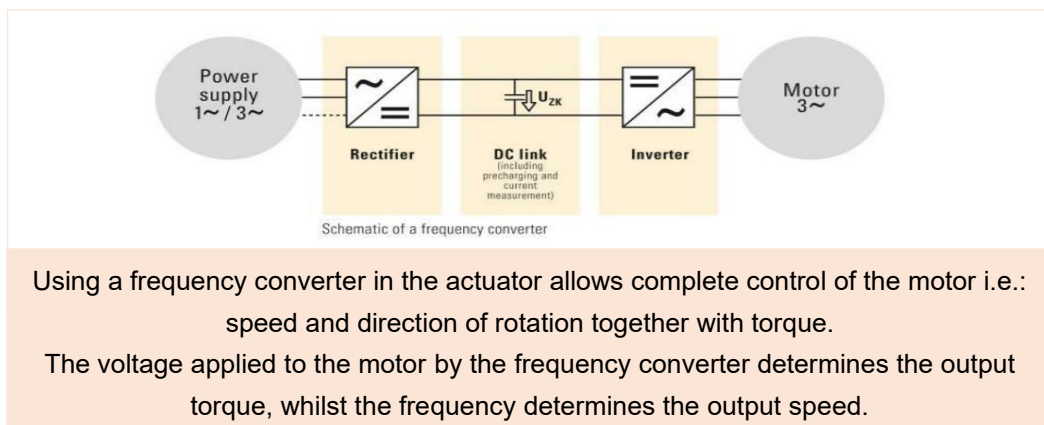
Double Seal:

- 1、 Seal for internal chamber
- 2、 Seal for wiring terminal chamber

5.13 Motor Control Type

All Multitrac actuators utilize a variable frequency drive. A variable frequency drive (VFD) is an electronic system used to control the speed (and torque) of AC induction motors. The VFD does this by using the voltage and frequency of the motor supply. Speed control is achieved by the variation of frequency. Torque control is achieved by varying the voltage.

We use a robust pulse width modulation design to achieve this. This advanced technology allows us to control and change the rate of increase or decrease of motor speed and hence the actuator output. This ultimately allows exact matching of valve and process requirements, saving energy, decreasing wear and eliminating process disruptions.



1. Valve Protection

Ontrac actuator moves to its end position at a fixed low speed, therefore over-torque is avoided due to the low kinetic energy of the motor and gears.

2. High torque when it matters

Moderate blockages pose no problem for Ontrac. By running at low speed with high torque, the actuator is able to overcome valve blockage without risk of valve damage.

3. Planning flexibility

Sometimes during the planning stage, it is good to have a little free play in terms of output speed and torque - there may be unexpected conditions on-site. Adjustable speed & torque offers many possibilities for process optimization at a later stage.

4. Reduced spare-parts stock

The ability to configure speed and cut-off torque means that the whole actuator range can be covered by a small number of variants. This simplifies stock keeping of spare actuators and components.

5. Optimum position control

The positioner integrated into the Ontrac actuator utilizes the different speed control capability of the frequency converter: this means that large position changes result in high-speed correction, whereas small deviations are adjusted more slowly.

6. Automatic phase correction

The integrated rectifier works independently of the supply phase sequence and automatically corrects phase variation.

06 Installation

6.1 Actuator Check

- Does the actuator fit to the valve?

Fitting to a valve:

- Ontrac actuators are supplied in a closed position.
- The units are standard configured to give clockwise output on a close command.
- The handwheel can be supplied to give clockwise or anticlockwise output, this needs to be verified at ordering stage, it cannot easily be changed on site!
- For setting up on a quarter turn valve it is recommended to also put the valve in a closed position and then fit the actuator. Note that the splined adaptor between actuator and valve adaptor allows for easy re-positioning.

6.2 Installation Hints



- Actuators can only be installed with solid mounted valves, in special cases, it is necessary to reinforce the valves and pipelines.
- If necessary, lifting equipment can be used to install, actuator weight is listed in the table (Refer to 5.4 table 1).
- If actuators are assembled to the valves or heavier components, lifting the actuator is prohibited, only lifting valves and gearing is allowed.
- Ensure the actuator weight is fully supported by the valve mounting flange, not by the valve stem.
- After the actuator is installed, if it cannot be connected immediately, please do not open the terminal cover or unscrew the sealing cover at the cable inlet, otherwise the protection grade of the actuator may be reduced to IP43
- When lifting the equipment, use ropes around the assembly of the unit, avoiding contact with the handwheel and/or hand level.
- During hoisting, please do not lift the actuator by using a hook at the position of hand wheel or manual switch handle
- After the actuator is connected to the valve, replace the sealing oil plug at the upper position with the red one-way vent valve in the attached accessories (See figures below).



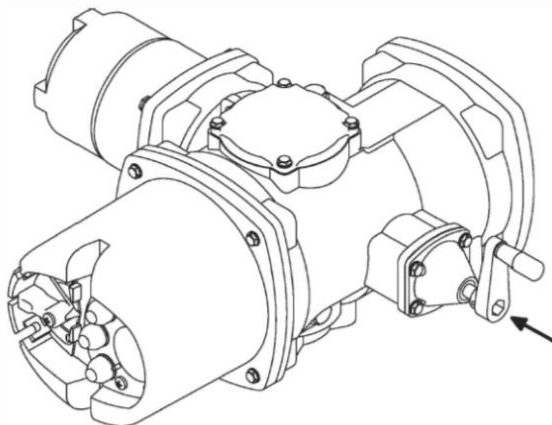
Note: The manufacturer shall not be liable for the consequences of transportation, installation and operation not in accordance with the above methods

6.3 Hand Crank Force

6.3.1 Operation of the Hand Crank

A hand crank is provided for manual operation.

Push this crank towards the actuator to engage it to the worm shaft. Electrical contacts avoid or interrupt the motor operation, as soon and as long as the hand crank is engaged. Self-locking will be maintained in hand operation.



Please do not try to use hand crank when actuator is in motor driven operation mode. Even if the interlocking device is installed inside the hand wheel, the motor will not stop immediately due to inertia, so as to avoid casualties.

6.3.2 Hand Crank Force

The following hand crank forces are required to provide the max. switch-off torque		
Actuator	Max. switch-off torque (Nm)	Perm. Hand crank force (N)
MOE 706	50	42
	25	28
	15	34
MOE 708	80	68
	50	58
	30	66
MOE 712	150	128
	125	144
	60	134
MOE 725	300	256
	200	222
	125	278
MOE 750	400	342
	300	334
	223	496
MOE 790	800	444(1:4)
	500	432(1:4)
	520	896(1:4)
MOE790L	1100	610(1:4)
	700	604(1:4)
	570	982(1:4)

The following hand crank forces are required to provide the max. switch-off torque		
Actuator	Max. switch-off torque (Nm)	Perm. Hand crank force (N)
MME 806	50	42
MME 808	80	68
MME812	150	128
MME 825	300	256
MME 850	600	512(1:4)
MME 890	1200	770(1:4)



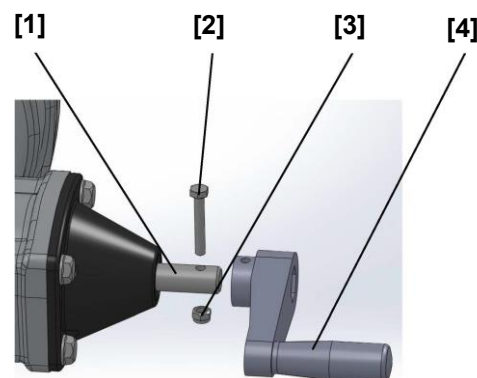
Exceeding the permissible hand crank force, required for the max. switch-off torque, can damage the actuator and / or the valve.

6.3.3 Assembly of Hand Crank & Handwheel

● Hand Crank

- [1] Input shaft
- [2] Fixation screw
- [3] Anchor nut
- [4] Hand crank

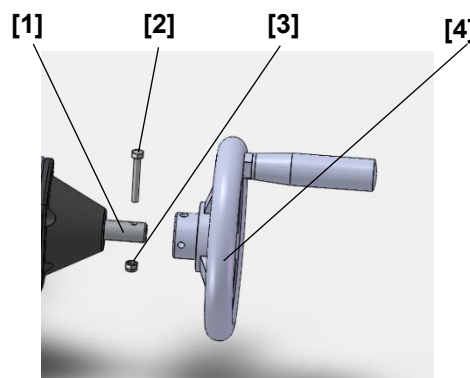
1. First remove [2] fixation screw and [3] anchor nut from [4] hand crank.
2. Install the [4] hand crank onto the [1] input shaft and align the mounting holes of both.
3. Install the [1] input shaft through the [4] hand crank with the [2] fixation screw, and then screw the nut and pre tighten it with a tool.



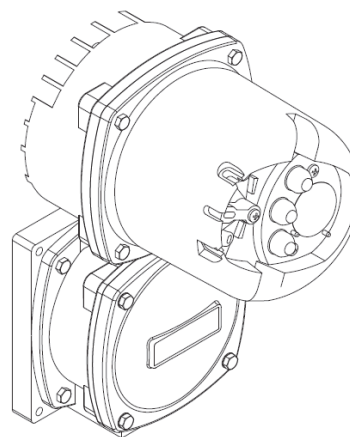
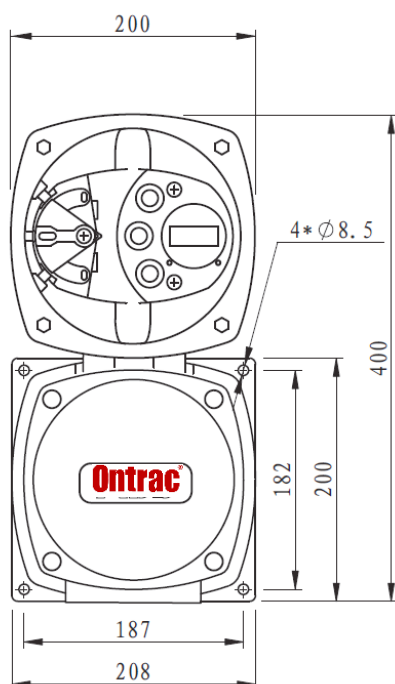
● Handwheel

- [1] Input shaft
- [2] Fixation screw
- [3] Anchor nut
- [4] Handwheel

1. First remove [2] fixation screw and [3] anchor nut from [4] handwheel.
2. Install the [4] handwheel onto the [1] input shaft and align the mounting holes of both.
3. Install the [1] input shaft through the [4] handwheel with the [2] fixation screw, and then screw the nut and pre tighten it with a tool.



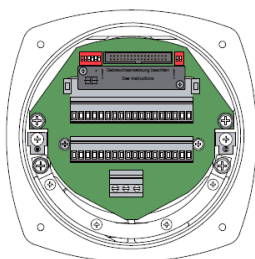
6.4 Special Assembly, Split-head



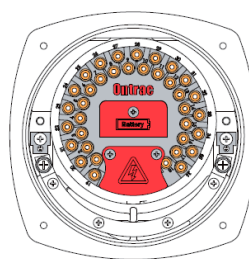
In some strong vibration or very high/low temperature environments, the Ontrac split actuator is recommended, to ensure the normal operation.

6.5 Terminal connections

We offer two terminal connections as depicted in the following pictures Standard terminal connections are fast and reliable and screw terminals are used for explosion-proof products.

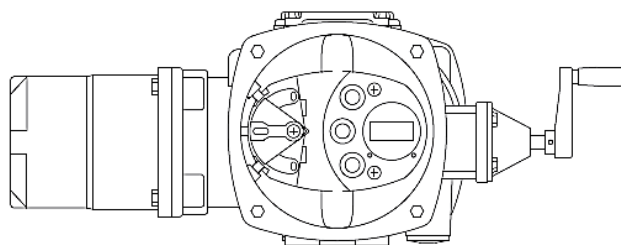


Standard terminals

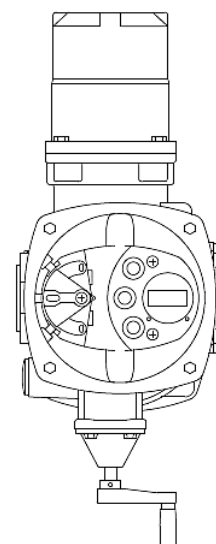


Screw terminals

6.6 Installation sites

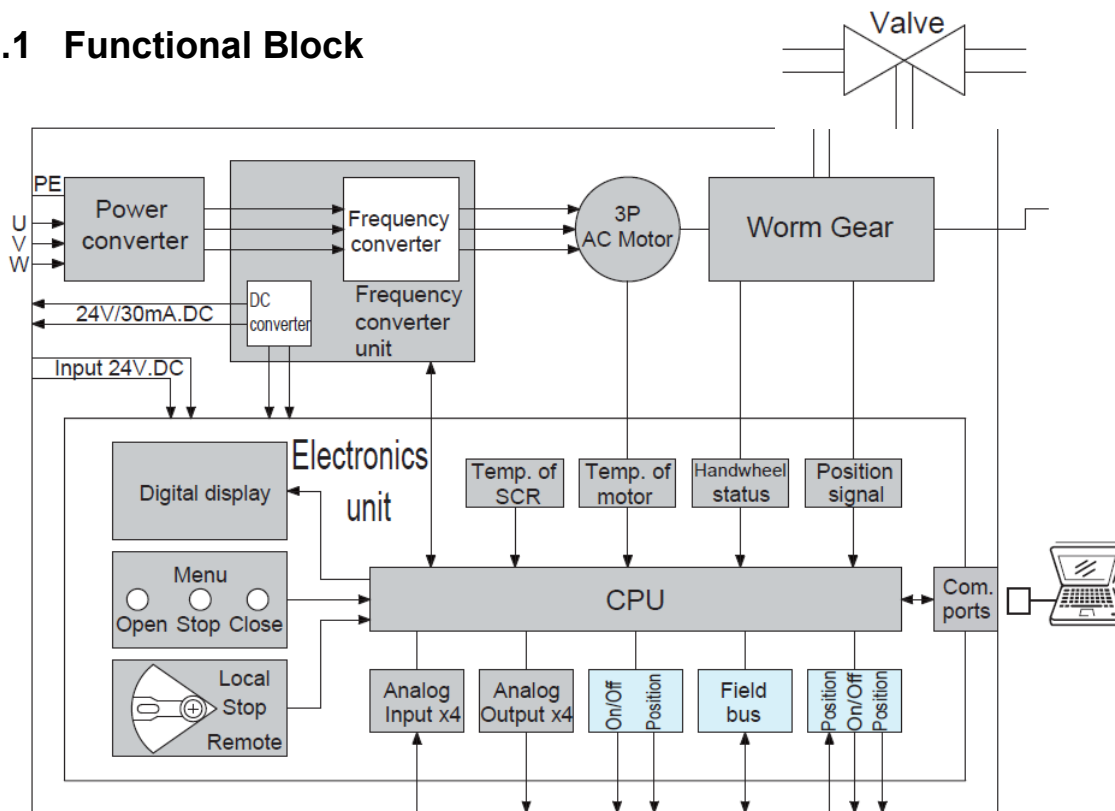


For different installation sites, Multitrac's operation panel is designed to be rotatable four directions. See the pictures above. When actuator is side-mounted, the operation panel still faces to the operator.



07 Electrical Connection

7.1 Functional Block



Note: The blocks in light blue are optional, and order no. are 385, 386 and 387 respectively.

BE1 ~ BE4 digital input ports can be set from "01" to "10" function. See table below.

BE Menu
Open
Close
Shutdown
Alarm reset
Allow to open
Allow to close
Local lock
Analog/On/Off Control switch
ESD
Fast run

Input Ports
BE1
BE2
BE3
BE4

Status Output
BA1
BA2
BA3
BA4
BA5
BA6
BA7
BA8

BA1 ~ BA8 digital output ports can set from "01" to "20" function. See table right.

BA Menu
Ready to run
Failure alarm
Open to end position
Close to end position
Exceeded torque in OPEN
Exceeded torque in CLOSE
Intermediate position 1
Intermediate position 2
Remote control
Local control
Continuous signal
Pulse signal
OPEN (pulse signal) end (continuous signal)
CLOSE (pulse signal) end (continuous signal)
Analog/digital control
"OPEN" indication
"CLOSED" indication
ESD indication
Manual/automatic state
Alarm if analog failure

Basic: Four digital output ports.

385: Four digital output ports and one analog output for valve position.

386: Fieldbus system, Profibus-DP or MODBUS.

387: Analog input and output of valve position and three digital output.

7.1.1 Electrical characteristics-BE (Input Ports)

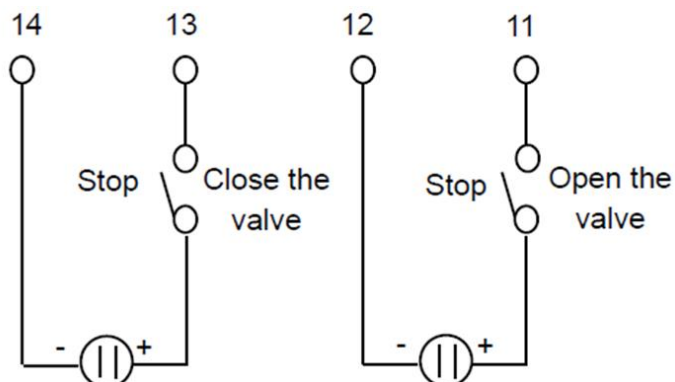
Standard Digital Control Inputs

Number of inputs	4
Input voltage – Logic 0	–3 to +5 V DC, or open circuit
Input voltage – Logic 1	+12 to +35 V DC
Minimum pulse width	≥ 50 ms
Input type	Voltage / dry contact input
Electrical reference	Common internal reference

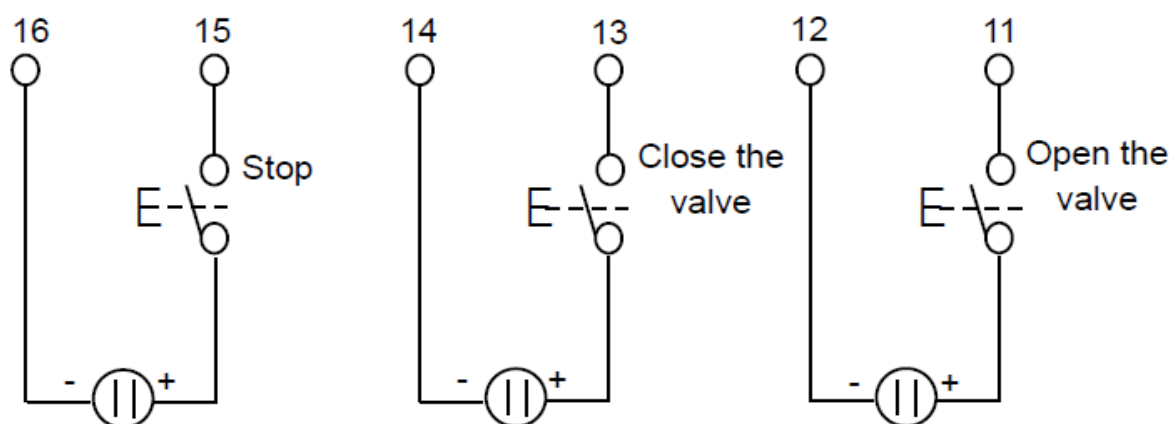
Optional High-Voltage Control Interface

Control voltage	110 V AC or 220 V AC (external supply)
Allowable voltage range	90–264 V AC
Rated frequency	50 / 60 Hz
Number of inputs	4
Minimum pulse width	≥ 50 ms
Input type	Isolated high-voltage control input
Electrical isolation	Provided between control input and internal circuits

External Power Supply Control Circuit- Remote Hold Control Mode:



External Power Supply Control Circuit- Remote Jog Control Mode:



Standard Outputs

Digital outputs	4×Potential-free (dry) contacts
Contact configuration	Normally open (NO)
Switching voltage(max.)	250 V AC/30V DC, 5A

Optional Outputs

Digital outputs	8 × potential-free contacts
Contact configuration	Normally open (NO)
Switching voltage(max.)	250 V AC/30V DC, 5A
Analog output	1×4~20 mA
Analog output type	Active current output

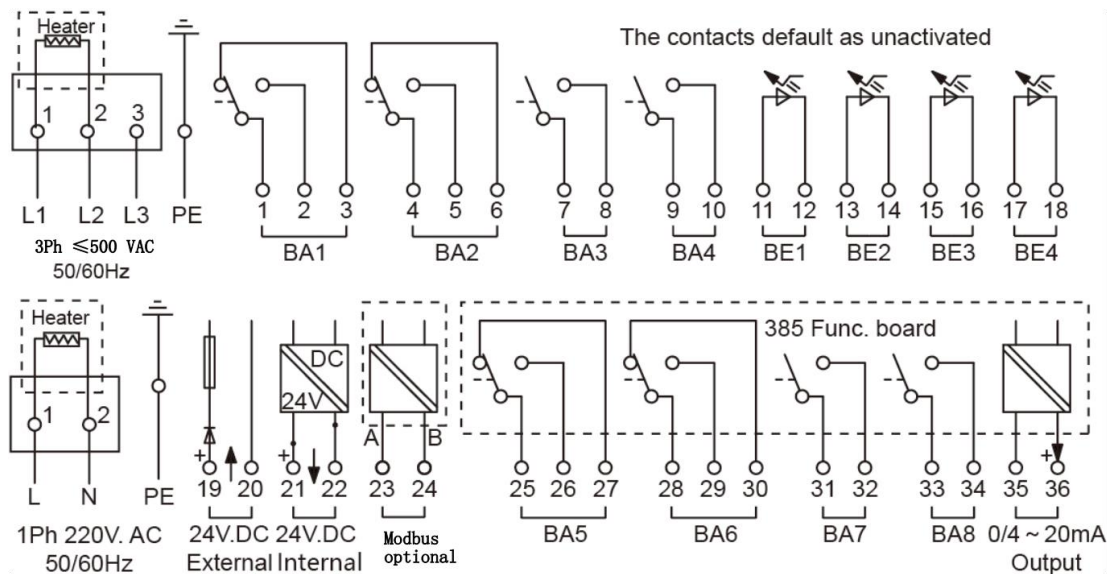
Additional Optional Outputs

Digital outputs	14 × potential-free contacts
Contact configuration	Normally open (NO)
Switching voltage(max.)	250 V AC/30V DC, 5A
Analog output	2×4~20 mA
Analog output type	Active current output

7.2 Electrical Wiring Diagram

7.2.1 Equipment Wiring Diagram:

Electrical wiring for digital signal input:



Input port factory default function settings:

- BE1 01 Operation command in "OPEN" direction
- BE2 02 Operation command in "CLOSE" direction
- BE3 03 Shutdown command
- BE4 04 Fault alarm reset command

Output port factory default function settings:

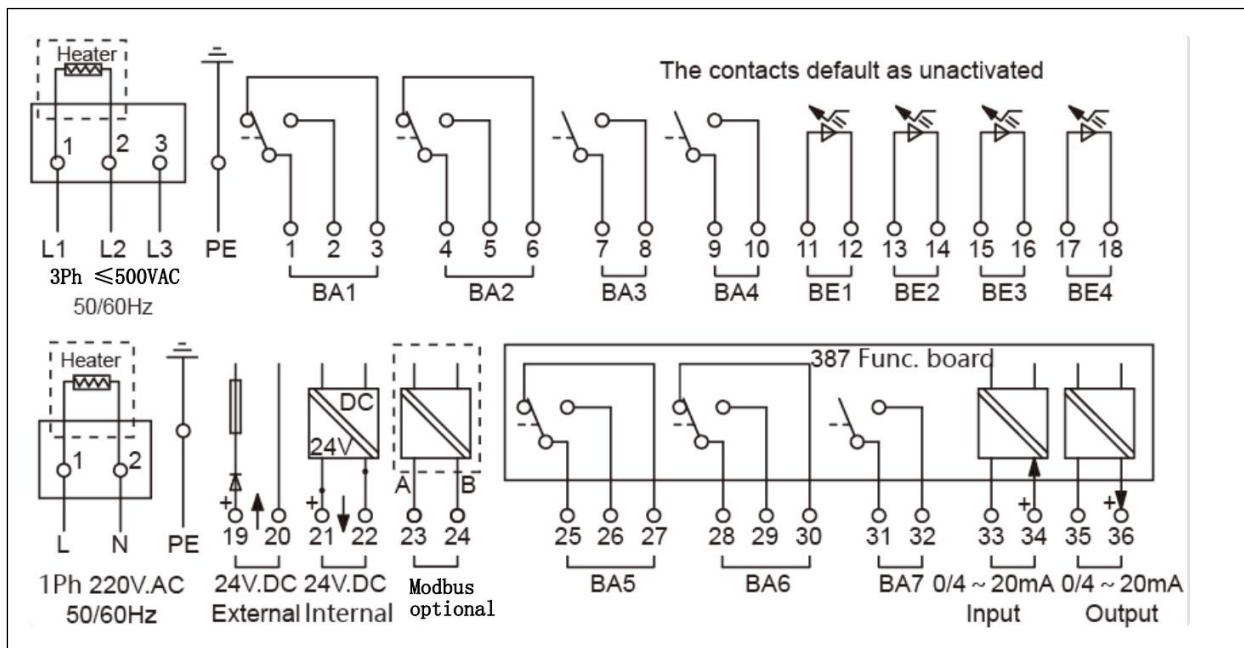
- BA1 01 Ready to run
- BA2 02 Fault alarm
- BA3 03 Open to the end position
- BA4 04 Close to the end position
- BA5 05 Exceeded torque in "OPEN" direction
- BA6 06 Exceeded torque in "CLOSE" direction
- BA7 07 Intermediate valve position indication 1
- BA8 08 Intermediate valve position indication 2

- ☐ 3Ph ≤ 500 V. AC ,550/600/660VAC optional
- ☐ 1Ph 220V. AC
- ☐ 385 Function board
- ☐ Modbus communication
- ☐ Heater

Note:

- This wiring diagram is only for this equipment
- The terminals in the dotted line box have corresponding functions only when corresponding modules are selected
- Choose either a three-phase or single-phase option

Electrical wiring for analog signal input:



Input port factory default function settings:

- BE1 01 Operation command in "OPEN" direction
BE2 02 Operation command in "CLOSE" direction
BE3 03 Shutdown command
BE4 04 Fault alarm reset command

- ☐ 3Ph $\leq 500V$. AC, 550/600/660VAC optional
☐ 1Ph 220V. AC
☐ Modbus communication
☐ Heater
☐ BA1-BA4 high-capacity relay

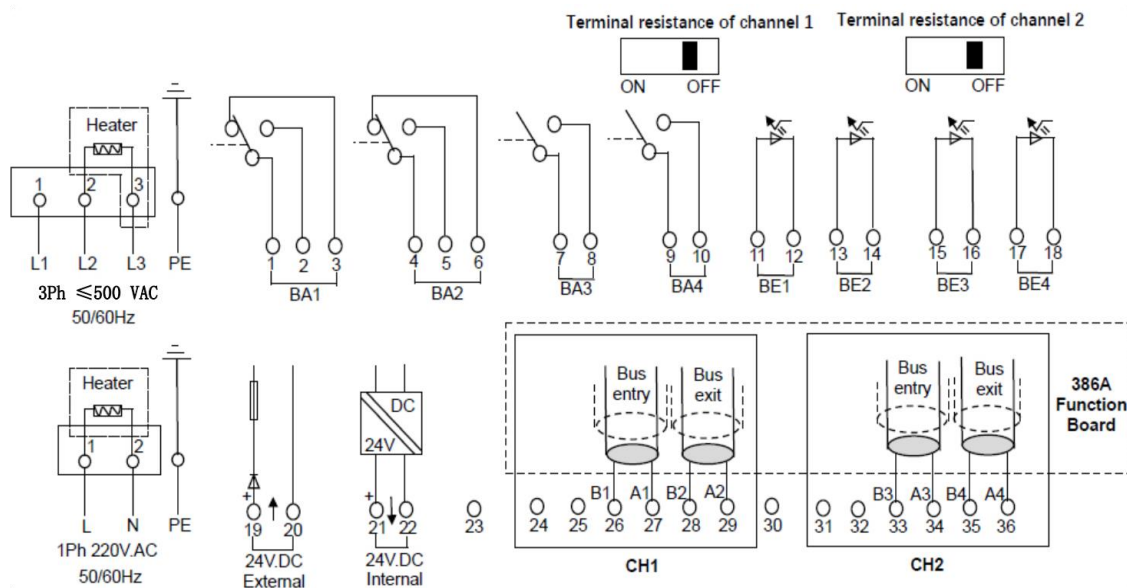
Output port factory default function settings:

- BA1 01 Ready to run
BA2 02 Fault alarm
BA3 03 Open to the end position
BA4 04 Close to the end position
BA5 05 Exceeded torque in "OPEN" direction
BA6 06 Exceeded torque in "CLOSE" direction
BA7 07 Intermediate valve position indication 1

Note:

- This wiring diagram is only for this equipment
- The terminals in the dotted line box have corresponding functions only when corresponding modules are selected
- Choose either a three-phase or single-phase option

7.2.2 Profibus DP Wiring Diagram:



Input port factory default function settings:

- BE1 01 Operation command in "OPEN" direction
- BE2 02 Operation command in "CLOSE" direction
- BE3 03 Shutdown command
- BE4 04 Fault alarm reset command

Output port factory default function settings:

- BA1 01 Ready to run
- BA2 02 Fault alarm
- BA3 03 Open to the end position
- BA4 04 Close to the end position

- ☐ 3Ph ≤500V. AC, 550/600/660VAC optional
- ☐ 1Ph 220V. AC
- ☐ Heater
- ☐ BA1-BA4 high-capacity relay

Note:

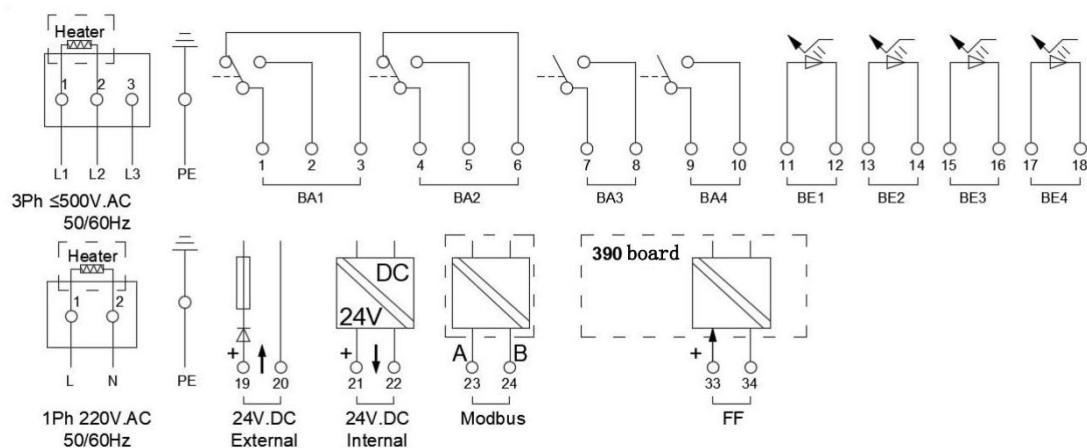
- This wiring diagram is only for this equipment
- The terminals in the dotted line box have corresponding functions only when corresponding modules are selected
- Choose either a three-phase or single-phase option
- Only class A cables conforming to RS485 standard can be used for PROFIBUS bus wiring

Multitrac electric actuators can support Profibus- DP fieldbus protocol with additional code of "386". A Profibus network segment can connect up to 32 Multitrac electric actuators. The transmission speed of Multitrac electric actuators can range between 9.6kbps ~ 1500kbps

Transmission rate and cable length	Baud rate (kbps)	Maximum cable length without repeater	Maximum cable length with repeater
	9.6	1200m	About 10km
	19.2	1200m	About 10km
	45.45	1200m	About 10km
	93.75	1200m	About 10km
	187.5	1000m	About 8km
	500	400m	About 4km
	1500	200m	About 2km

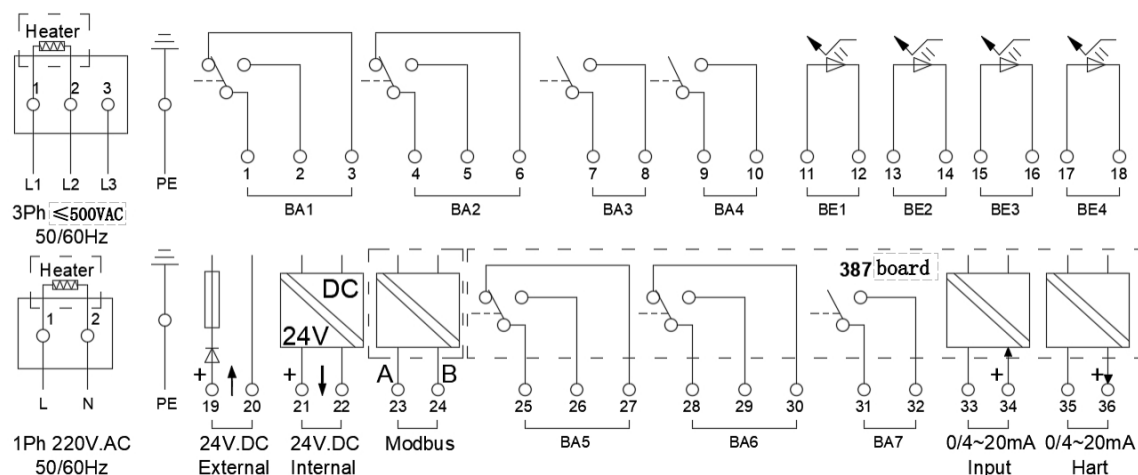
Number of bus type mechanism stations	Baud rate (kbps)	Maximum number of actuators
	9.6	32
	19.2	32
	45.45	32
	93.75	32
	187.5	16
	500	6
	1500	2

7.2.3 Foundation Fieldbus Wiring Diagram



1. The status contact in the figure is in an untriggered state (default setting), 3 phase 550/600/660VAC are optional
2. Optional 389 board is required to use the function in dotted line closed part.
3. BA contact is for output status. BE contact is for digital input.
4. Pin 19, 20 are external 24V power supply plug-in terminals. If use, when 380V main power supply is out, actuator's output signals remain, analog output terminal (389 board required) will remain its own status, the LED screen of actuator displays normally.
5. Pin 21, 22 are internal 24V power supply plug-in terminals. If used, they will be activated when the main power supply is disconnected.

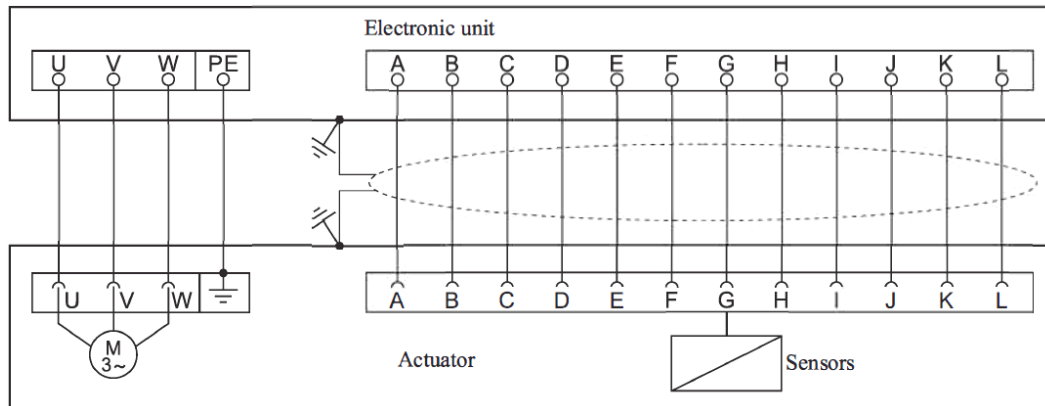
7.2.4 Hart Wiring Diagram



ACR25-02.1A

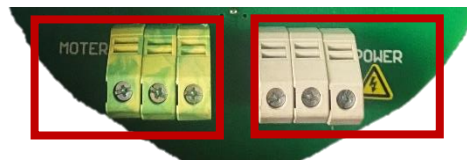
1. The status contact in the figure is in an untriggered state (default setting), 3 phase 550/660VAC are optional
2. Optional 387 board is required to use the function in dotted line closed part.
3. BA contact is for output status. BE contact is for digital input.
4. Pin 19, 20 are external 24V power supply plug-in terminals. If use, when 380V main power supply is out, actuator's output signals remain, analog output terminal (387 board required) will remain its own status, the LED screen of actuator displays normally.
5. Pin 21, 22 are internal 24V power supply plug-in terminals. If used, they will be activated when the main power supply is disconnected.

7.2.5 Split Wiring Diagram (Electronic Unit and Actuator):



1. The sensor signal cable shall be a shielded 12 core cable; The cross-sectional area of the line shall not be less than 0.5mm², and the length of the line shall not exceed 10m;
2. The motor connecting wire shall be a shielded wire with a cross-sectional area of not less than 2.5mm², and attention shall be paid to the connection between the electric unit and the actuator part;

(Note: The motor terminal of the electric unit is yellow green terminal, and the three-phase power input terminal is gray terminal)



3. In high-temperature environments, please use high-temperature rated cables, and incoming line fittings, (connectors), cable protection shell, etc. that meet the onsite requirements;
4. The figure above is only the wiring diagram between the electric unit and the actuator. Please refer to the wiring diagram of conventional products for control wiring.

7.3 Cable Entries

Waterproof cable connectors are provided in the attached zipper bag, protection class is IP67.

Please contact Ontrac when explosion-proof actuators are required.

There are several connectors available:

1	2	1 (2 for plug-in type end cover)	1	1 (none for plug-in type end cover)
				
M32×1.5	M25×1.5	M16×1.5	M32→M25	M25→M16
Applicable cable diameter Φ13 ~ Φ18	Applicable cable diameter Φ10 ~ Φ16	Applicable cable diameter Φ4.5 ~ Φ8	Waterproof connector converter	Waterproof connector converter

Note 1: Exclusively use same protection level cable connector with Multitrac actuators in order to ensure stated protection level.

Note 2: All of the signal cable must be shielded.

Note 3: The cable connecting separate type actuators should not exceed more than 10 meters.

Note 4: After wiring, please use the blank plugs provided in the attached zipper bag to screw the unused cable hole.

7.4 Wiring Steps

7.4.1 Electrical Wiring:



1. Use a hexagonal wrench to remove the wiring cover of the actuator
2. Unscrew the sealing end cap of the cable hole, replace it with a waterproof connector, please pay attention to the plug-in end cover, the cable hole is on the upper of cover
3. Remove arc shape metal article fasten on the cable (for plug-in end cover, remove three claps)
4. Thread the wiring cable through the waterproof connectors, for plug-in end cover, remove connector before wiring, and restore it after wiring
5. After wiring restore all items removed in step 3, tighten the screw ensure cable firmly fastened, not too tight to avoid damaging the external insulating layer of cable
6. Tighten the waterproof screw to seal the cable entrance
7. After check-up, put end cover back, please do not forget the O-ring to ensure proper sealing

7.5 Anti-condensation Heater

Automatically switch-on when the mains supply available, this will help to prevent condensation inside the chamber.

7.6 Wire Cross Section

7.6.1 Wire Cross Section (Terminal Connection)

Power cable (Standard 100-500V)	2.5 mm ²
Power cable (Optional 550-660V)	4-6 mm ²
Signal Cable	≥0.5mm ² inflexible or flexible

7.7 Thread Size for Cable Glands

	Standard	Option	
	METRIC	PG	NPT
Terminals (Standard)	2 x M32 X 1.5 1 x M25 X 1.5	1x PG 21 1x PG 16 1 x PG 13.5	2 x NPT 1" 1 x NPT 3/4"
The threaded holes for the cable glands are covered with a plug when delivered. The protection class can only be guaranteed with locally mounted cable glands.			



Note: Please use suitable certified material in hazardous areas.

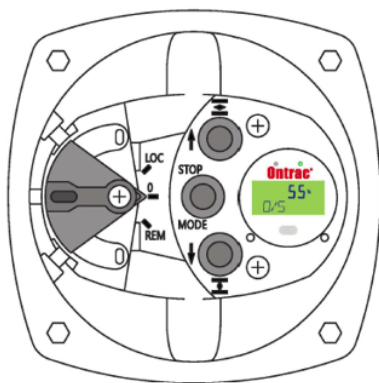
08 Menu Operation

8.1 Mode Selector Switch Instruction

The actuator is equipped with a local control panel with various elements for operation and display. Switch the mode selector switch to LOCAL to drive the actuator with the + / - push buttons. for parameter setting via the local control panel.

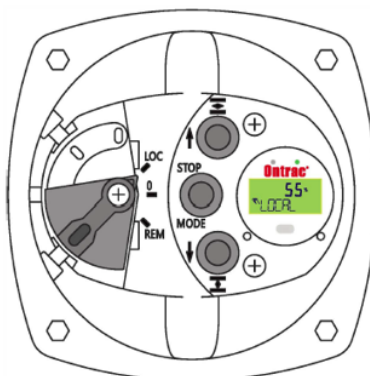
Onsite operation determined by MODE selection:

- Switch to REMOTE: read-only, remote control normal
- O/S (Out of Service): read-only, remote control signal ignored
- Local: on/close position setting, parameter setting/changing, alarm/failure reset, online diagnosis, etc.). Operate with push buttons



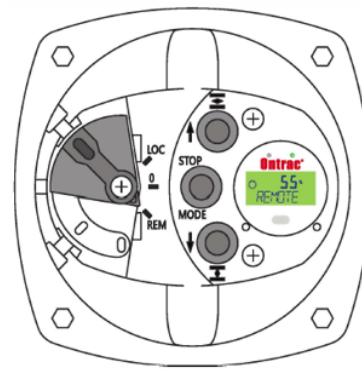
No Operation Mode

Actuator do not accept any local or remote commands, can enter the menu to view the actuator status or parameters only.



Local Control Mode

Locally open and close valve, stop the operation and menu operations (setting parameters).



Remote Control Mode

Actuator is accepting remote control signal, you may enter into the menu to view actuator's parameter and setting.

ESD signal override all above

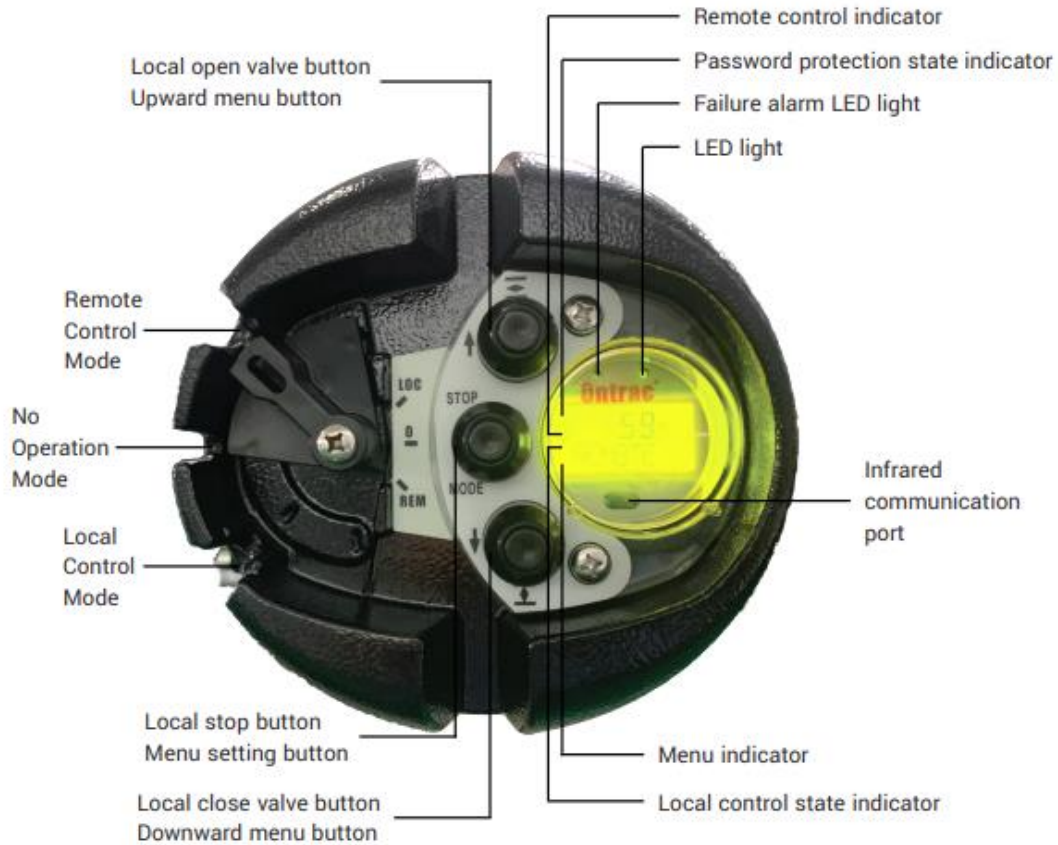
If user password enabled, read-only at local

8.2 Panel Instruction

LEDs:

One green LED for operation, and communication/blinking

One red LED for alarm/failure

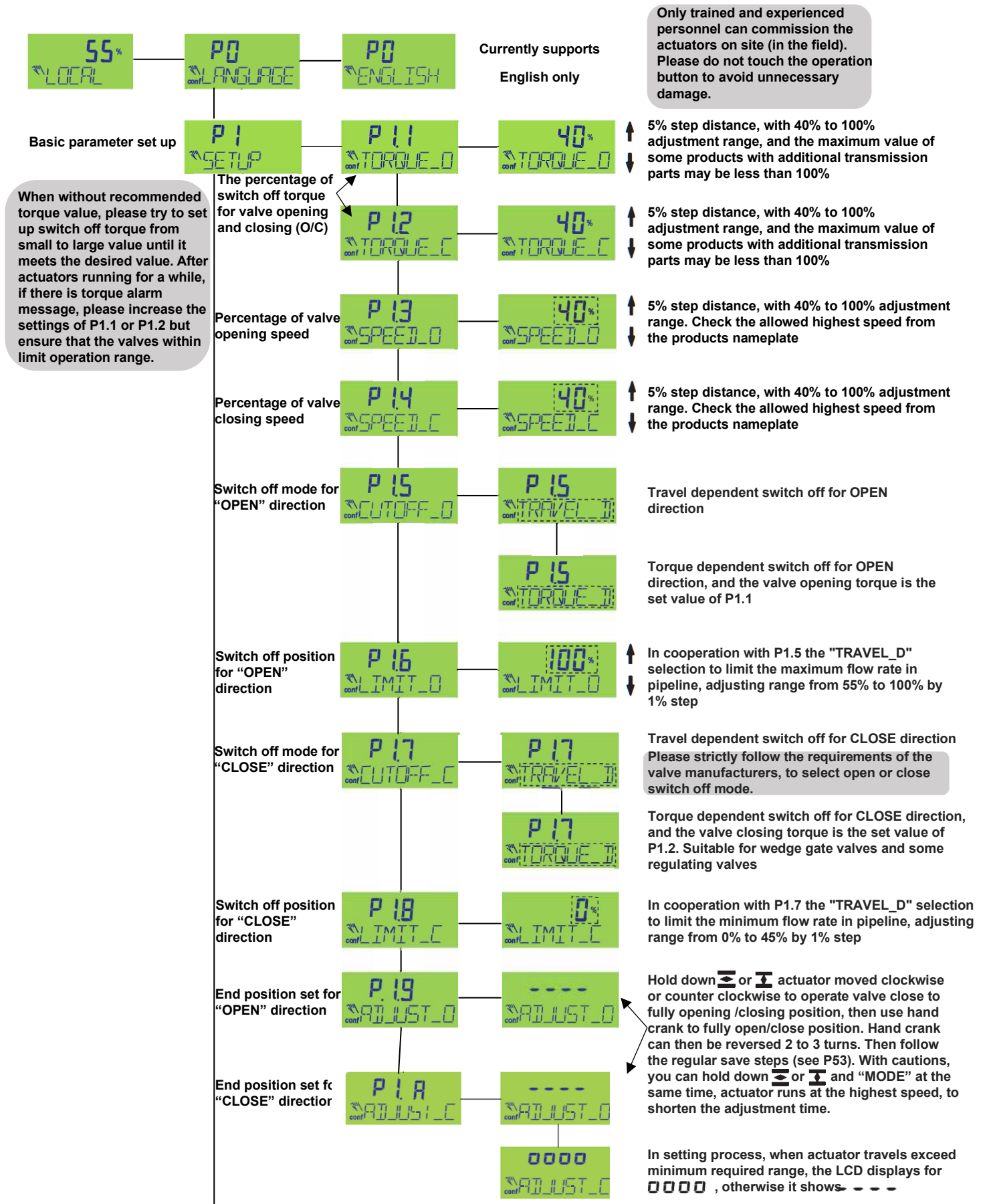


Actuator has three buttons, each button when in a different state has different functions.

Local operating mode (when mode selector switch turn to LOC position), and their functions are defined as: local valve opening (hold or short press), STOP (short press) and local valve closing (hold or short press. see Page 53).

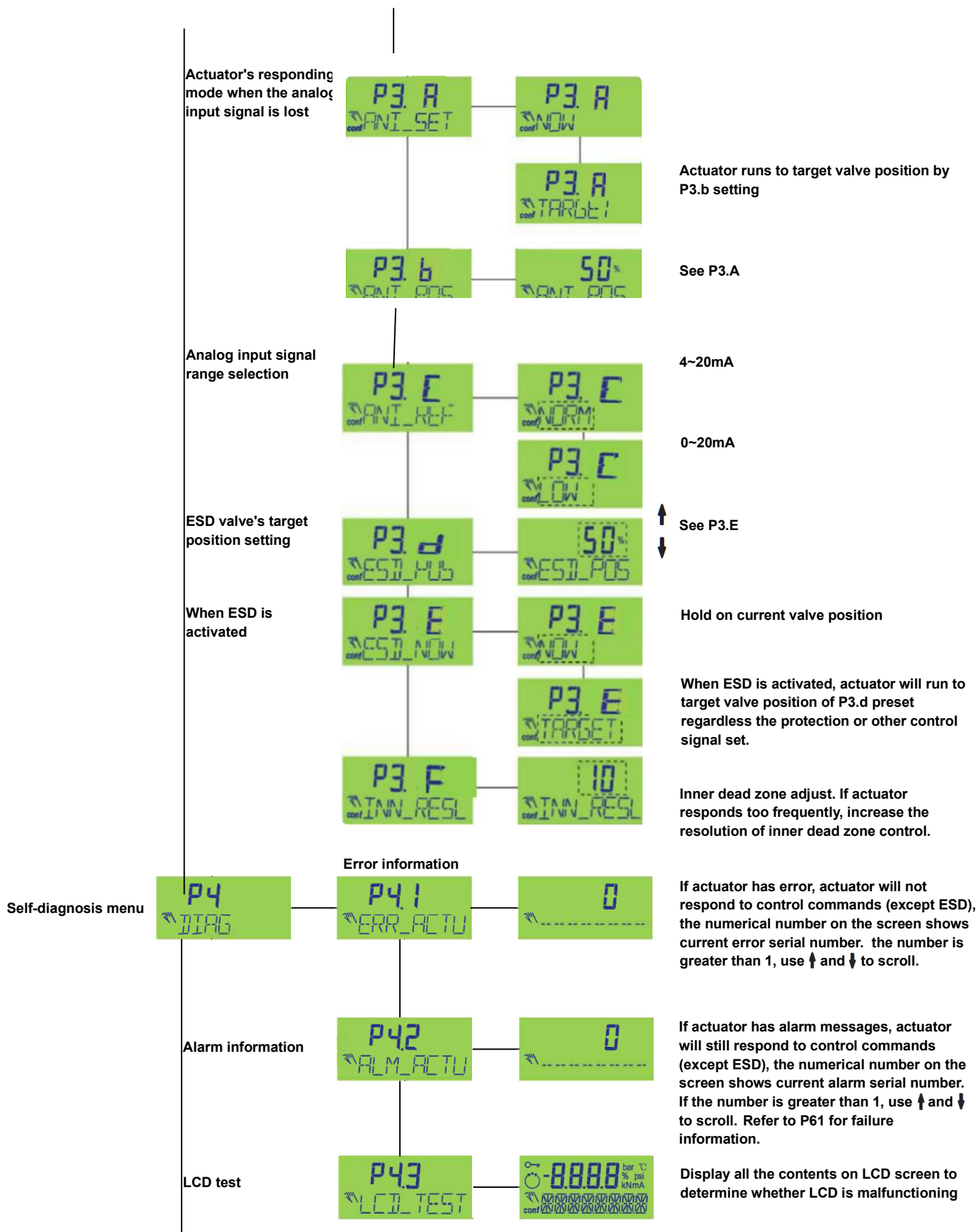
Menu mode (long press the middle button to enter the menu mode), their functions are defined as:

MODE	↑	Same menu level switch (short press)
		Parameters adjustment (hold or short press)
		One menu level ahead (long press)
		One menu level back (short press)
		Save changes or not (short press)
		Return to one menu level back (short press)
	↓	Same menu level switch
		Parameters adjustment (hold or short press)
		Code or password switch (short press)





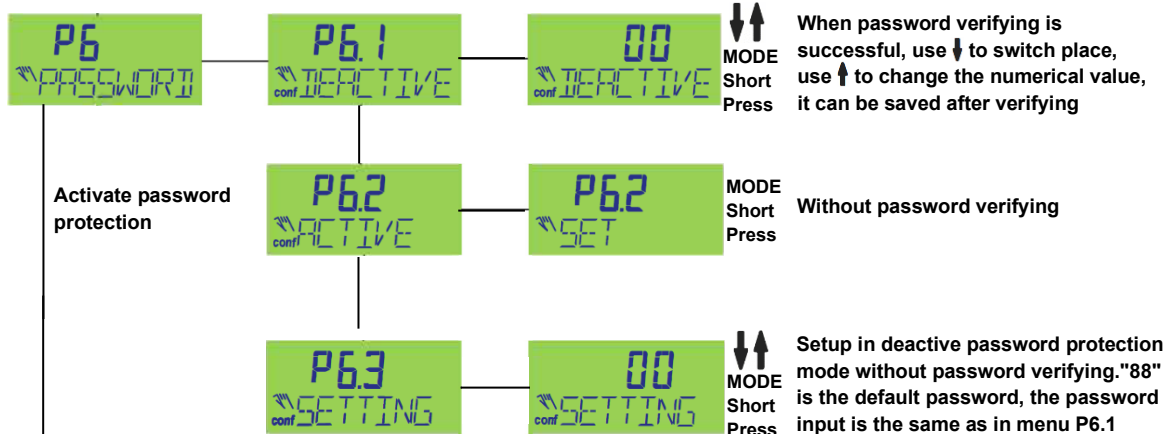




System information

P5 ACT_DATA	P5.1 TIME_OPE	8888 TIME_OPE	Unit: seconds
Travel time to end position in "OPEN" direction			P4 menu is read-only, you can not change it. Numerical number "8" on LCD is for display only.
Travel time to end position in "CLOSE" direction	P5.2 TIME_CLO	8888 TIME_CLO	Unit: seconds
Maximum switch off torque	P5.3 MAX_TRQ	8888 ^{Nm} MAX_TRQ	Nameplate match
Software version	P5.4 SW_REV	888 SW_REV	
Hardware version	P5.5 HW_REV	888 HW_REV	
Actuator type	P5.6 ACT_TYPE	8888 ACT_TYPE	Such as "8080", "7080" ..., nameplate match
Phases of AC power supply	P5.7 AC_PHASE	3 AC_PHASE	Or 1 AC_PHASE
Expanded functional board	P5.8 EXT_TYPE	888 EXT_TYPE	000: Base type, with a digital control function and 4 digital output ports 385: Additional 4 digital output ports and 1 valve-position analog output port 386: Profibus-DP Communication Board 386A: Profibus-DP with Slave Redundancy 387: Addition valve-position analog input and output ports and 3 digital output ports
Temperature of the electronic unit	P5.9 ELEC_TMP	88.8 ELEC_TMP	Electronic unit (electrical cavity) temperature, does not represent motor temperature
Display percentage of current opening range with on decimal point.	P5.A TRAVEL_P	888.8 TRAVEL_P	
Main chip temperature	P5.B CPU_TMP	888.8 ^{°C} CPU_TMP	
Product serial number of the actuator	P5.C DEVIC-SN	0000000000000000 DEVIC-SN	

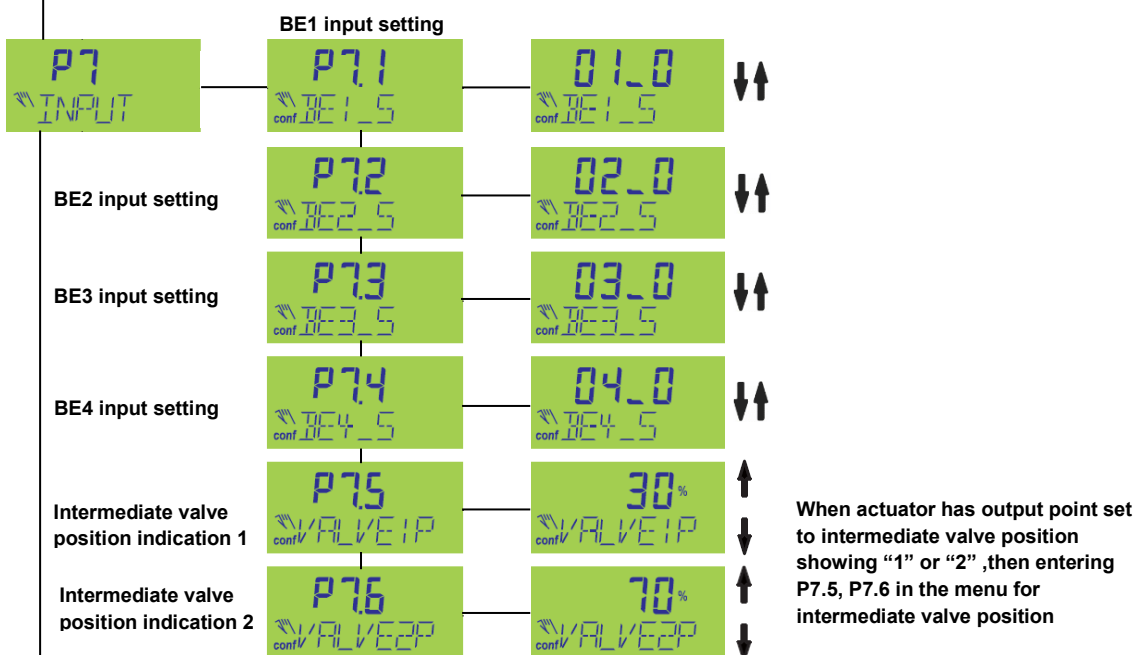
Parameter setting
password protection



If you would like to set up password-protection, please set the P6.3, and then set the P6.2, if you can not set the P6.3, password-protection may already active.

If actuator is set for deactive password protection as default (without password protection), if protection has been activated, you would like to deactivate, enter P6.1 for your password verifying, then it can be saved.

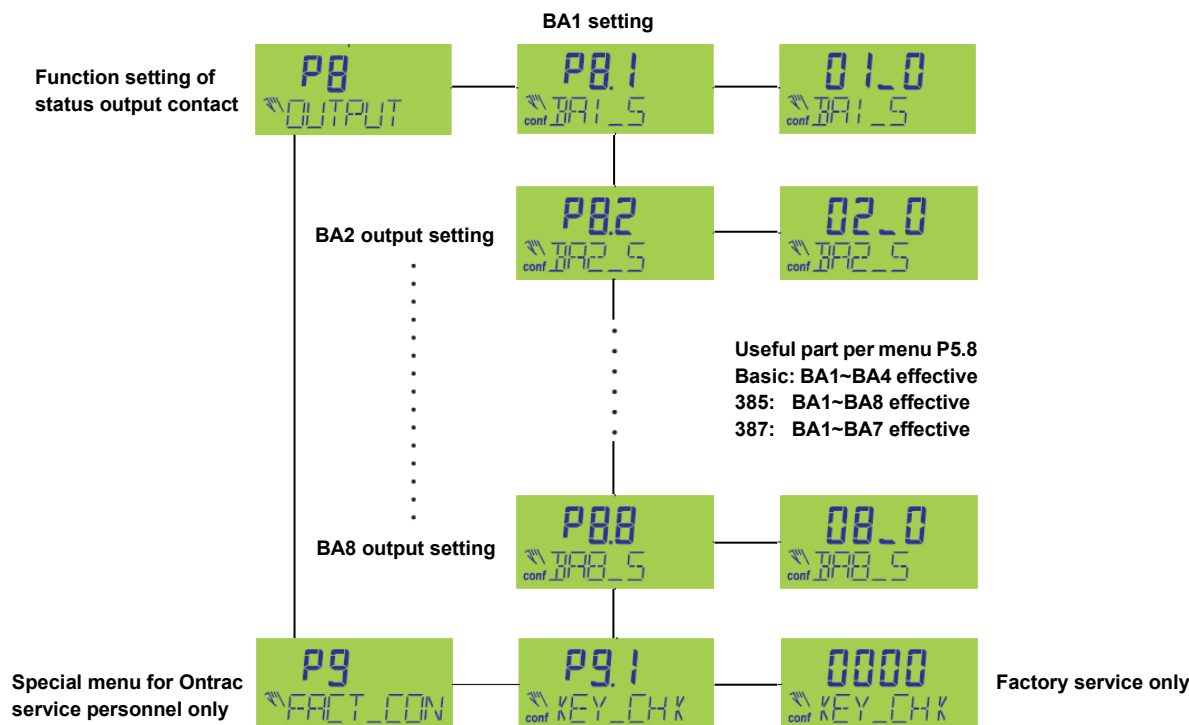
Input feature setup



The two digits on left side of "_" in the value area are the function code. The actuator has four switching value input ports BE1~BE4, and each port can be arbitrarily set to one of the nine functions of "01" ~ "09" function (see the table below), The right side of "_" can be set to "0" or "1", "0" represents low level when the contact is not triggered, and "1" presents high level when the contact is not triggered. Set the function with ↑ and set the trigger mode with ↓.

01 Operation command in "OPEN" direction
02 Operation command in "CLOSE" direction
03 Shutdown command
04 Alarm reset command
05 Allowed to open command
06 Allowed to close command
07 Local control panel lock command
08 Remote analog/digital control switch command
09 ESD command
10 Fast running (1.4 times setting speed)

ESD means Emergency Shutdown System in accordance with the principles of independent security level, higher than the DCS system



The two digits on left side of “_” in the value area are the function code. The actuator has up to eight switching value output ports BA1~BA8, and each port can be arbitrarily set to one of the 20 functions of “01” ~ “20” function (see the table below). The right side of “_” can be set to “0” or “1”, “0” represents the off state when the contact is not triggered, and “1” presents the on state when the contact is not triggered. Set the function with ↑ and set the trigger mode with ↓.

01 Ready to run
02 Failure alarm
03 Open to the end position
04 Close to the end position
05 Exceeded torque in “OPEN” direction
06 Exceeded torque in “CLOSE” direction
07 Intermediate valve position indication 1
08 Intermediate valve position indication 2
09 Remote control
10 Local control
11 Actuator operation (continuous signal)
12 Actuator operation (pulse signal)
13 Operation indication in “OPEN” direction (pulse signal)
Valve end position indication (continuous signal)
14 Operation indication in “CLOSE” direction (pulse signal)
Valve end position indication (continuous signal)
15 Analog / Digital value control indication
16 Operation indication in “OPEN” direction (continuous signal)
17 Operation indication in “CLOSE” direction (continuous signal)
18 ESD state indication (continuous signal)
19 Hand crank state indication (press in indication)
20 Analog signal loss alarm

09 Alarms and Failures

9.1 Failure Error

When conditions listed triggered, LED light on front panel will blinking red and BAE x switch will be triggered, indicating there is an failure actuator stopped working, immediate service required. At the same time, the corresponding failure message will be displayed in the upper-right corner of the interface.

NO.	Display Text	Error Description	Reason/Measure
1	ELECTR	Electronics failure	Need Ontrac technical personnel instruction or on-site service
2	PHASE	Phase of main power supply missing	Check main power supply
3	TEMP_MOT	Temperature limit for motor exceeded	Actuator will stop working until motor cools down
4	TEMP_ELC	Limit temperature for electronics exceeded	Actuator will stop working until motor cools down
5	HANDWHL	Handwheel failure	Check handwheel to see if it is damaged, Ontrac technical personnel may be needed or request on-site service
6	END_POS	Over run of end position	Use hand crank to operate the actuator to normal range or reset the range (P1.9 or P1.10 menu), alarm will disappear automatically
7	TORQUE_O	Switch off torque in Open direction	Try operating the actuator in opposite direction, if the alarm is still on, please increase the setting value in menu P1.1 with cautions
8	TORQUE_C	Switch off torque in Close direction	Try operating the actuator in opposite direction, if the alarm is still on, please increase the setting value in menu P1.2 with cautions
9	IPM_FLT	Power module protection of variable frequency control board	Exceeding current of temperature of frequency control board limit, use menu P3.1 to turn off the alarm, contact Ontrac technical personnel if same error is recurring
10	VOL_OVER	Over voltage protection of main power	Please make sure the main power voltage is within 342V~437V, when the power is recovered, the alarm will turn off automatically, if necessary Ontrac personnel maybe needed on site
11	VOL_UNDE R	Under voltage protection of main power	Please make sure the main power voltage is within 342V~437V, when the power is recovered, the alarm will turn off automatically, if necessary Ontrac personnel maybe needed on site
12	BLOCK_O	Blocking in Open direction	Try operate the actuator in opposite direction, if the alarm is still on, please increase the setting value in menu P1.1, but make sure valve within limited working condition
13	BLOCK_C	Blocking in Close direction	Try operate the actuator in opposite direction, if the alarm is still on, please increase the setting value in menu P1.2, but make sure valve within limited working condition
14	MOT_LINE	Wrong output wiring of motor	Need Ontrac technical personnel instruction or on-site service
15	RELAY	Relay malfunction of frequency conversion board	Need Ontrac technical personnel instruction or on-site service
16	BV-EXCPT	Abnormal bus voltage of frequency conversion board	Need Ontrac technical personnel instruction or on-site service
17	24-EXCPT	Abnormal power supply of main board	Need Ontrac technical personnel instruction or on-site service
18	Act_Init	Initialization Error	Check the three-phase power supply and phase sequence Settings

9.2 Alarm Error

When conditions listed triggered, LED light on front panel will blinking yellow and BAE x switch will be triggered, indicating there is a alarm warning service required. At the same time, the corresponding alarm message will be displayed in the upper-right corner of the interface.

NO.	Display Text	Error Description	Reason/Measure
1	BAT_CHANG	Battery discharged	Change battery and reset the actuator operating range
2	BAT_EMPT	Pre-alarm for discharged battery	Change battery as soon as possible reset actuator operating range after battery change
3	TORQUE_O	Torque alarm, OPEN	Check selected pre-alarm torque value, check actuator, value and rearing (if used) for increased friction and actuator probably used below permitted ambient temperature (oil viscosity)
4	TORQUE_C	Torque alarm, CLOSED	Check selected pre-alarm torque value, check actuator, value and rearing (if used) for increased friction and actuator probably used below permitted ambient temperature (oil viscosity)
5	TEMP_MOT	Critical motor temperature	Once motor-alarm temperature is achieved, the actuator is only available with reduced speed, until the motor has sufficiently cooled down
6	TEMP_ELC	Critical electronics temperature	Once electronics-alarm temperature is achieved, the actuator is only available with reduced speed, until the motor has sufficiently cooled down
7	24_VOLT	Breakdown of external DC 24 Volt supply	Actuator is still working, however, if main power lost, output contact will not be able to maintained, nor analog output
8	CNT_TRQ	Exceed torque switch off limit (default limit value: 10,000)	Check valve working status
9	STEP/SH	Switching frequency of 1200/hour exceeded	Increase dead zone (P3.8 menu), to decrease the responding times
10	SETPOINT	Input exceed the limit	Please check current supply, make sure the current is within 3.6mA~20.8mA
11	ACT_TYPE	Miss matching of actuator model	Please check the actuator setting type or model in menu P5.6
12	AC_PHASE	Miss matching of phase of power supply	Please check AC power supply phase number setting in menu P5.7, check the power supply as well

10 Product Maintenance

10.1 General

- After commissioning, check the actuator for damage that may be due to the installation. Thoroughly touch up with the right tool and paint to recover damaged spots to prevent corrosion.
- To ensure long term operability, we recommend the following measures:
Every six months after commissioning and or after every year of operation, check fixing screws between the actuator and valve, for tightness. If required, tighten the screws.
Every two years, check each actuator visually for leakage of oil/grease.

11 Lubrication and Vent Valve

11.1 Lubricating Oil

- Actuators are oil lubricated. There are no restrictions concerning the mounting position. There is no need to change the lubricant during the entire life of the actuator.
- When air shipping is needed, oil is not allowed to be inside the actuator and, therefore, oil needs to be filled by the customer before use. The upper most drain screw is to be replaced by the supplied venting plug.

Ontrac actuators are oil lubricated with MOBIL SHC 629. There is no need to change the lubricant during the entire actuator life. Please refer to follow table in case there is any reason to do so.

Actuator Type	MOE706 MME806	MOE708 MME808	MOE712 MME812	MOE725 MME825	MOE750 MME850	MOE790 MME890	MOE790L
Filling (L)	0.4	0.4	0.4	0.6	0.6	0.8	0.8



11.2 Vent Valve



- When delivered both oil filler holes are sealed with drain plugs.
Once the actuator is installed, it is important to remember that the upper most drain screw must be replaced by the additionally supplied venting plug. This venting plug helps manage altitude and temperature changes experienced by the actuator - it is a one way valve to adjust the inner oil gas pressure.

For installations above 2000m poster height, consider that an additional heating element might be required.

12 Service

Ontrac provides multiple service channels to ensure timely and effective support throughout the product lifecycle.

● General inquiries

For general business inquiries, quotations, or non-technical questions, please contact our sales team directly by email: sales@ontracactuators.com

● Technical support during operation

If you encounter any issues during installation, commissioning, or operation of the actuator, please scan the QR code on the product to access the **Service Request** page and submit a service ticket through the **Service Request** system.

This allows our technical support team to track, analyze, and respond to your request timely and more efficiently.

Access the Service Request page

Fill in the form according to your requests

Additional service information and contact details are available at www.ontracactuators.com.

Ontrac and its authorized partners is committed to provide timely responds and profeesional services upon request.

Subject to technical changes.

This technical documentation is protected by copyright law. Do not translate, copy or distribute in any way even in a modified form or as an excerpt without the prior written permission of the right holder. Also, reprints, photomechanical or electronical reproduction or storage of data in data processing systems or data networks must be authorized by the right-holder. Any infringement of the copyright law will be prosecuted



Made by Ontrac

Copyright©2025 Ontrac All rights reserved

For more information and up to date overview of
how to contact us: www.ontracactuators.com