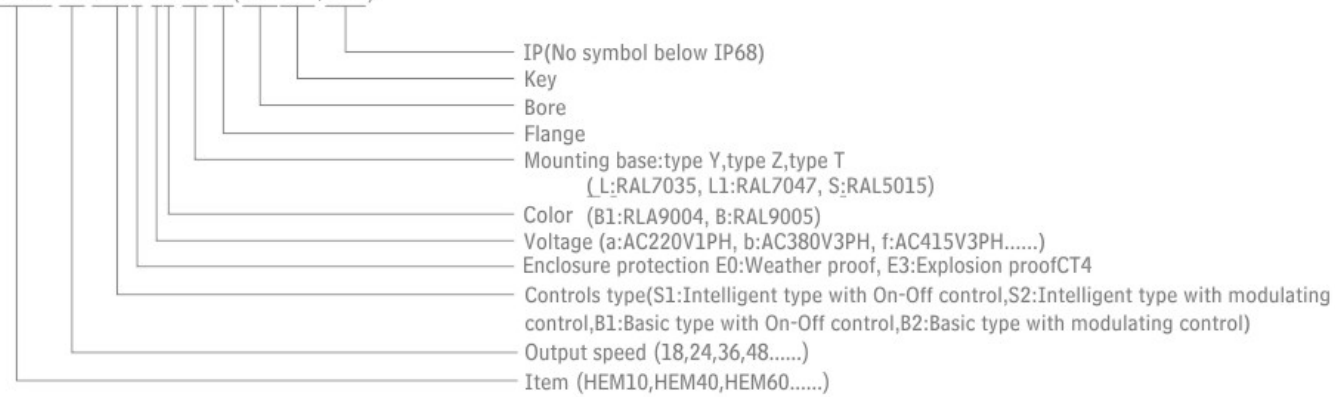


Ordering Information

HEM40-24-S2E0-aB-ZF14(D35K10,IP68)



SELECTION KNOWLEDGE

According to ratio to choose the gear box model.

Actuator torque*Ratio*Efficiency=Output Torque

Example:Multi-turn HEM40/400(Actuator torque)*6(6:1)*0.85(one stage bevel gearbox efficiency)=2040Nm

Example:Multi-turn HEM40/400(Actuator torque)*20(20:1)*0.7(two stages bevel gearbox efficiency)=5600Nm

Example:Quarter-turn HEM40/400(Actuator torque)*60(60:1)*0.3(one stage worm gearbox efficiency)=7200Nm

Example:Quarter-turn HEM40/400(Actuator torque)*560(560:1)*0.25(two stages worm gearbox efficiency)=56000Nm

Pay attention to input and output limits,excessive bearing capacity, damaged gear, consider the structure and module of the gear, and heat treatment process of the material.

Stroke time for Quarter-turn:

Gearbox ratio ÷ 4 ÷ Actuator RPM = stroke time

Example:60 ÷ 4 ÷ 24 = 0.625min/37.5 seconds

Stroke time for Multi-turn:

Stroke ÷ pitch ÷ Actuator RPM * gearbox ratio = Stroke time

Example:500 ÷ 8 ÷ 24 * 5 = 13.02(seconds)

Calculate the actuator torque and gearbox ratio based on the actuator torque and stroke time time.

Quarter-turn:

Rated torque ÷ (rated time * actuator RPM * 4) ÷ efficiency = Actuator input torque

Example:5000Nm ÷ (2 * 24 * 4) ÷ 0.25 = 104Nm

Multi-turn:

Example:1800Nm, stroke time 3 minutes, 500(valve stroke) ÷ 10(valve stem pitch) = 50 turns(valve stroke turns), 50 * 4(gearbox speed ratio) = 200, 200 ÷ 3(time required) = 66.6, 1800 ÷ 40 ÷ 0.85 = 529Nm.(In case of known speed ratio)

Example:1800Nm, stroke time 3 minutes, 1800Nm ÷ 400Nm(actuator torque) ÷ 0.85(efficiency) = 5.2(in case of unknown speed ratio)



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From Better to Great.



HEM Multi-Turn Electric Actuator

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Valve & Actuator Solutions



WENZHOU HELI AUTOMATIC METER CO.,LTD.

Heli Automatic Meter
Focus on R & D and manufacturing of valve actuators



Company Profile

Established in 2003Y,Heli is a high-tech enterprise special in developing and manufacturing control valve,electric actuator,pneumatic actuator,damper actuator,electric valve,pneumatic valve.Our products are widely used in Oil&Gas, HVAC, Marine, Mining, Pulp& Paper, Food&Beverage, Power, Water&wasterwater, Pharmaceutical and Chemical industries around the world.

Heli owns many invention patents,new utility patents and software copyrights, meanwhile we own lots of honors from NGO and institutions .The certificate are DNV, EAC, CE, ROHS, SIL, ATEX, CNEX, 3C, IP67, IP68.

We insist on " Quality-driven, Technical innovator, Honest service" , providing the best valve &actuator solutions, cooperating with domestic and international companies to improve our globalization service.

Quality policy



Reliable Steady

The strong stability ensures that the products adapt to various environments and climates,

Quality first Global manufacturing

With 18 years of experience, we keep on developing the products,ensure provide customer with the premium product

Global customer service

Solve problem for every steps from inquiry to after sales

Cost Optimization

Improve production efficiency,decrease the cost for users

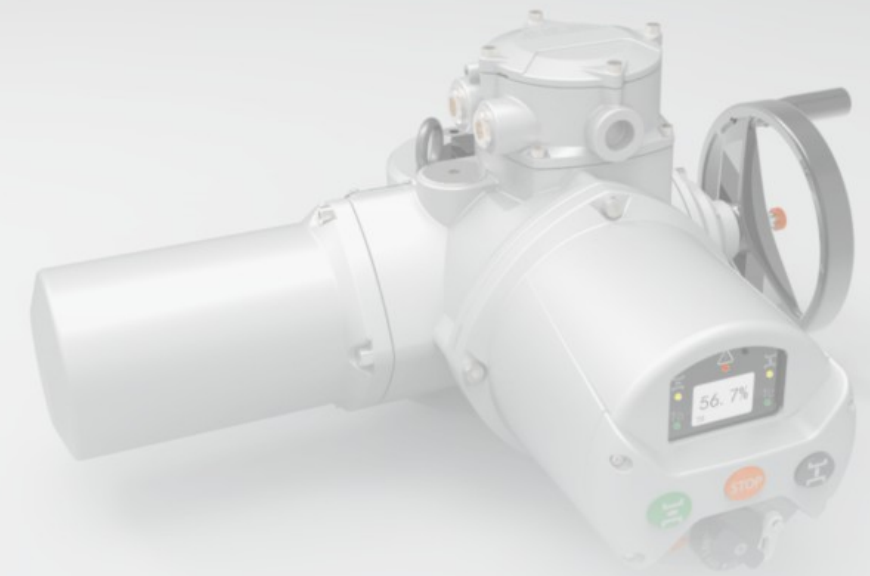
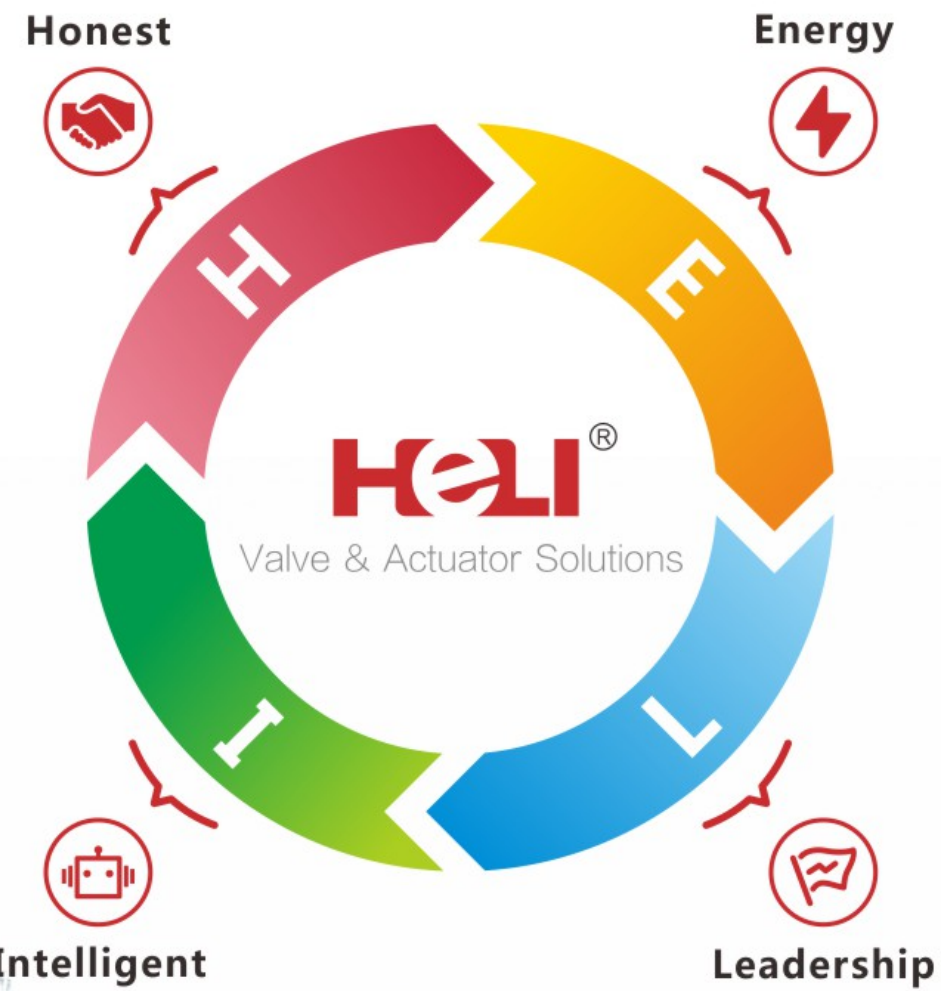
Various products, covering various fields

Electricity,oil,gas,water,HVAC,marine,mining, pharmacy,chemical.

Global sales

Provide super service for customers. Local condition and valve type is the most important selection factor for electric actuator. For HEM electric actuator, it can work in extreme environments. National certificates ensure the quality.

Company culture



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HEM Multi-Turn Electric Actuator -Basic Type

Patent No: 202030073234.5



HEM Multi-Turn Electric Actuator-Intelligent type

Patent No: 20203008118.5

HEM-Advantages

Multi-turn electric actuator

- > Available torque range from 60N.M to 3000N.m.
- > Available speed range from 18rpm to 144rpm.
- > Designs and controls with basic,intelligent,fieldbus and separated control box to select.
- > IP67 enclosure protection as standard,IP68 ,BT4/BT6,CT4/CT6 as options.
- > Suitable for ball valve,butterfly valve,plug valve,gate valve, globe valve, check valve and regulating valve.

Advance technology

- > Reliable operation
- > Heavy duty motor
- > Accurate torque measure
- > Continuous position tracking
- > Real time valve and actuator performance information
- > Auto self test and diagnosis
- > Versatile enclosure
- > Easy maintenance
- > Hardwired controls and fieldbus communication options.
- > Asset management

Non intrusive setting

- > Command/Mode selector switch for remote or local control
- > Infrared remote control to set and commissioning

Valve and Actuator Protection

- > Phase monitoring
- > Protection of change in direction
- > Motor thermal protection
- > Torque protection
- > Emergency shutdown protection
- > Failure monitor relay
- > Password protection
- > Failure Alarms indication

User friendly &intuitive controls

- > High resolution LCD display (except for basic type)
- > Local signal
- > Local commands
- > User friendly menu

1. Double sealing

Two o-rings insure an optimum protection against water ingress into the electrical compartment based on GB/T4942.2-93,IP68 as option.

2. Non intrusive setting

- > Open/Close /Stop button and LOC/OFF/REM selector switch to achieve the close and open operation at site.
- > The infrared remote control to set and commissioning the data.

3. Rotatable electrical compartment and LCD display.

- > Possible to rotate the electrical compartment with LCD display to suit the actuator mounting.
- > Possible to rotate the direction of cable entries to meet the wiring requests.
- > The high resolution display has a wide view making it legible from a distance.

4. Heavy duty motor

Squirrel cage motor with built-in 135°C thermostat protection , low inertia design,Class F insulated.

5. Position measure

Absolute position encoder output the accurate position to show on LCD,there is no position loss due to mains power loss or any interferences.

6. Torque sensor

The torque sensor directly measures output torque and converts value to a voltage signal.Torque of intelligent type can be set in the range 40% to 100% of rated torque with the additional facility to bypass torque switch.

7. Drive train

The drive train uses the basic design with the features of simple,reliable and robust,the components are oil lubricated with maintenance-free.

8. Explosion proof enclosure as option

- > In accordance with ExdIICT4, atmospheric pressure range from 86Kpa to 106Kpa,ambient temperature range from -30°C to 60°C.
- > ExdIIBT4,ExdIIBT6,ExdIICT6 as options.

9. Handwheel and Declutch button

Push the red declutch button to achieve the handwheel operation when emergency or commissioning.

HEM-Introduction

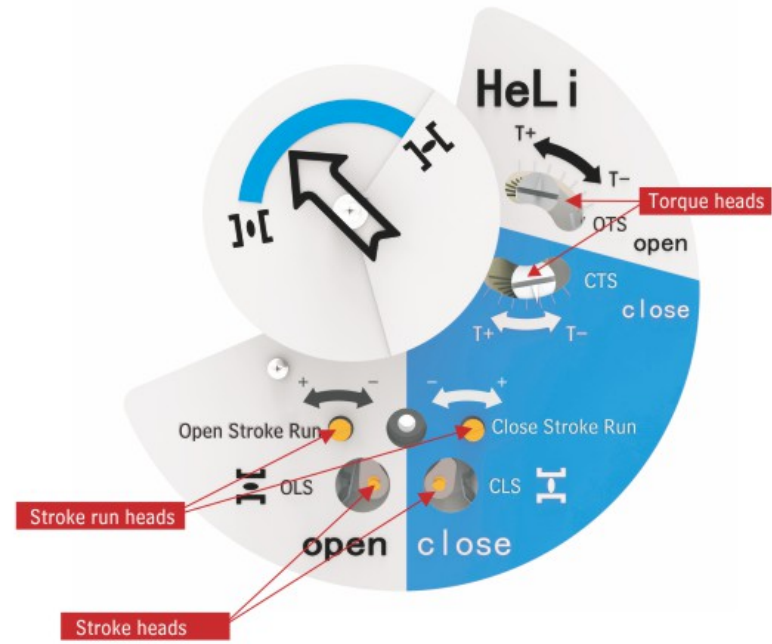
Patent No: 20201060145.3
202020282671.2



• Mechanical commissioning

- 1. Torque heads
- 2. Stroke run heads
- 3. Stroke heads

Patent No: 202030073234.5



• User friendly & intuitive controls

Patent No: 202030008118.5

- 1. LCD display with clearly indication of actuator's state.
- 2. Command selector switch
- 3. Mode selector switch



HEM Basic type- cutaway view

HEM Intelligent type-cutaway view





• 3 positions of cable entries to meet the cables from different directions.

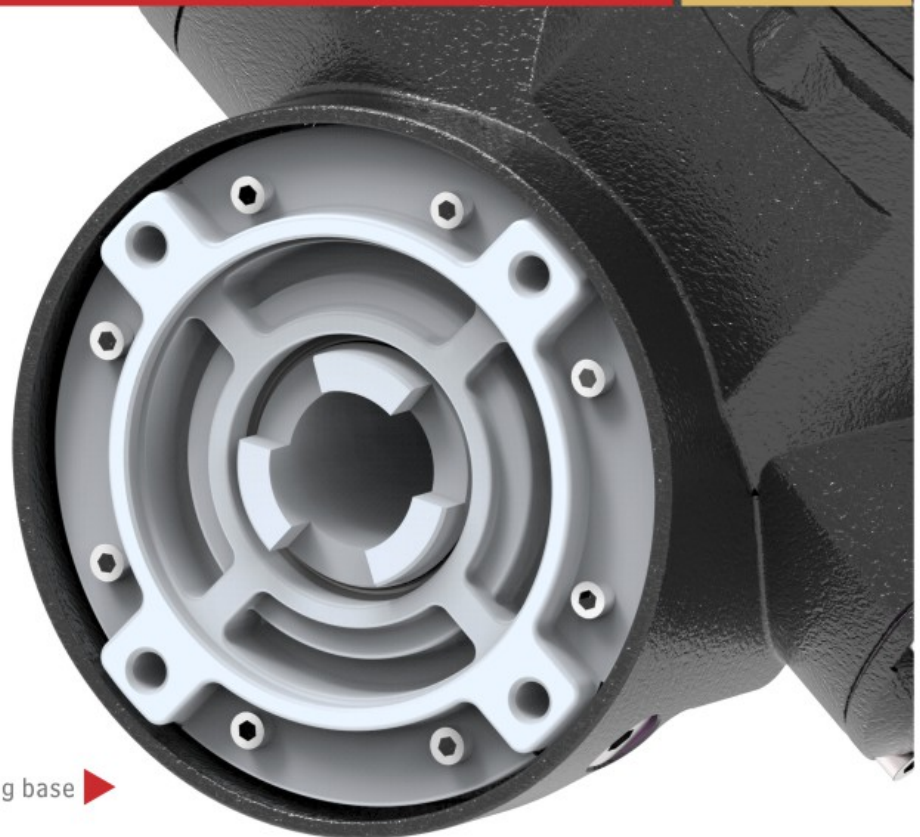
Mounting Base And Coupling-HEM Multi-turn Electric Actuator

Removable mounting base

- Type Y(claw) as standard based on JB2920 standard
- Type Z(bore and keyway)or type T(Thrust)based on ISO5210 standard

Thrust bearings

- Removable type T mounting base suitable for thrust bearings, please refer to the technical data for more information.





Separated Control Box-HEM Multi-Turn Electric Actuator

The separated control box can be useful when the electric actuator has to be mounted in a difficult access, on a highly vibrating device, or in an excessively high or low temperature atmosphere, the max. distance between electric actuator and control box is 20 meters.

Torque Specification

- Due to the effects of inertia and drive coupling wear, speeds not recommended for direct mounted on gate valve application.
- Rated torque is maximum torque setting in both directions. Stall torque will be 1.4 to 2 times this value depending on speed and voltage.
- If the 60Hz purchased, the speed will increase by 1.2 times.
- If maximum torque is required for more than 20% of valve travel, please contact with us.

3ph,380VAC On-Off type and modulating up to 600 starts/hour(1200 starts for modulating as option)

Model	18	24	36	48	72	96	144
HEM10/380V	100	100	90	80	70	50	40
HEM15/380V	150	150	130	120	100	75	60
HEM20/380V	200	200	190	180	170	150	100
HEM30/380V	300	300	280	250	200	170	120
HEM40/380V	400	400	350	300	250	230	150
HEM50/380V	500	500	450	400	350	300	200
HEM60/380V	600	600	550	500	450	400	260
HEM80/380V	800	800	750	650	600	480	350
HEM90/380V	900	900	800	730	630	550	420
HEM100/380V	1000	1000	850	700	x	x	x
HEM150/380V	1500	1500	1300	1000	x	x	x
HEM200/380V	2000	2000	1700	1400	x	x	x
HEM300/380V	3000	3000	2000	1800	1000	750	500

• 1ph 220VAC On-Off type

Model	18	24	36	48	72	96	144
HEM10/220V	88	88	60	45	30	22	15
HEM40/220V	190	190	125	95	65	48	32
HEM60/220V	440	440	300	220	150	110	75

• 1ph,220VAC Modulating type

Model	18	24	36	48	72	96	144
HEM10/220V	70	70	48	35	24	18	12
HEM40/220V	150	150	100	75	50	40	25
HEM60/220V	350	350	235	175	118	90	60

Intelligent type

Standard Specification	Torque		· 60-3000Nm(Without worm gearbox)	
	Output Speed		· 18-144(rpm)	
	Ambient Temperature		· -30°C~70°C(-40°C-70°C as option)	
	Vibration Resistance		· Comply with JB/T8219	
	Noise degree		· Less than 70dB witin 1 meter	
	Cable entries		· Two NPT3/4,one replacement for NPT 3/4(If you have any requirement of cable entry,pls kindly contact us)	
	Enclosure Protection		· IP67as standard, IP68 as option	
	Mounting base		· Standard JB2920(clutch);ISO520(thrust,spline)	
Technical Specification	Motor ratings		· Class F, with 150°C thermal protection	
	Duty rating		· ON-OFF: S2-15min, less than 600 starts/hour · Modulating: S4-50%, less than 600 starts/hour · Option: 1200 starts/hour	
	Voltage		· Three phase: AC380V (±10%) ; 50HZ (±5%) three phase three wires · AC220V, AC415V and other voltages as option	
	Fieldbus controls		· Modbus, Profibus as option; Hart	
	ON-OFF	Control signal	· ON-OFF signal(dry contact, 24V, 220V, possible to exchange between inching and keep)	
		Feedback signal	· 6 x relay contacts(5 x state relay+1 x fault relay) · 1 xanalogue feedback: 4~20mA, output impedance: ≤750Ω(4~20mA as standard; 0~10V, 2~10V as option)	
	Modulating	Control signal	· ON-OFF signal(dry contact, 24V, 220V, possible to exchange the inching and keep) · Analogue signal: 4~20mA, input impedance: 65Ω ; (0~10V, 2~10V as option)	
		Feedback signal	· 6 x relay contacts (5 x state relay+1 x fault relay) · 1 x analogue feedback:4~20mA, output impedance: ≤750Ω(4~20mA standard; 0~10V, 2~10V as option)	
		Deadband	· 0.3~9.9% adjusted within full stroke	
		Polarity	· Yes	
		Signal loss action	· Yes	
	Operation Mode	Indication		· LCD display · Open/Close/Remote/Failure lamp(Digital shown in percent for position and torque)
		Menu operation		· Remote control or Selector switch · Configuration set(position, status feedback, Max.torque)
		Local control		· Command selector switch(OPEN/CLOSE/STOP) · Mode selector switch(LOC/REM/OFF)
Data logger and diagnostics		· Infrared remote control suit menu to access the faults diagnosis		
Others	Functions		· Automatic phase correcton(3PH only) · Alarms(Local and remote) · Torque protection · Motor thermal protection · Bypass torque switch · Space heater · ESD set(Open,Close,Keep) · Average torque · Infrared remote control · Option:Explosion proof infrared remote control	

Basic type

Standard Specification	Torque		· 60-3000Nm(Without worm gearbox)
	Output Speed		· 18-144(rpm)
	Ambient Temperature		· -30°C~70°C
	Vibration Resistance		· Comply with JB/T8219
	Noise Degree		· Less than 70dB within 1 meter
	Cable Entries		· 2×NPT 3/4 plus 1×NPT 3 /4
	Enclosure Protection		· IP67 as standard, IP68 as option(15m under water without leakage for 72hours)
	Mounting Base		· Comply with JB2920(Claw) or ISO5211(Thrust,Torque)
Technical Specification	Motor ratings		· Class F, with 150°C motor thermal protection.
	Duty ratings		· ON-OFF, S2-15min, less than 600 starts/hour
	Voltage		· three phase: AC380V (±10%) / 50Hz(±5%) three phase four wires · Option: 1PH AC220V
	Fieldbus controls		· None
	ON-OFF	Control signal	· ON-OFF, built in contact with ratings 5A@250VAC
		Feedback signal	· Fully open/Fully closed (dry contact) · Open torque switch/Close torque switch (dry contact) · Option: with potentiometer
	Operation Mode	Indication	
Menu operation		· None	
Local control		· None	
Data logger and diagnostics		· None	
Others	Functions		· Space heater · Torque protection · Motor thermal protection · Option:Explosion proof infrared remote control

Communication Interfaces

Industrial network systems requires the seamless control and feedback plus asset management between actuator and control room so that the process operator needs real-time operational data to control the local equipment at all times and the maintenance manager needs the asset management to make a better maintenance plan.

> Serial Communication

- When HELI developed the control module, our engineer considered the continuous development of the industrial network bus system. Through a professional system support team, HELI can provide professional and compatible actuator for fieldbus controls.
- All fieldbus controls of the HEM series are possible to update to extend other functions.
- Fieldbus controls can be used independently or in conjunction with hardwired controls according to the specific applications or site requirements.

> Modbus®

- HELI modbus modules suitable for single or dual communication highways may be included in the HEM actuator, to provide Fieldbus communication of all the actuator control functions and feedback data, which is carried on an RS485 data highway and the communications protocol used is Modbus RTU. System address and data baud rate are programmed over the infrared communication or bluetooth wireless.

> Profibus®

- Profibus DP interface module is available to allow the actuator to be integrated into a Profibus network. Full compatibility with EN50170 is provided and the Profibus network allows full actuator control and feedback of data to the host.

> Profinet and Modbus TCP

- Profinet has gradually become the most popular solutions in industrial automation. HELI already designed the modules of Modbus TCP and Profinet solutions for HEM series actuator. Please contact HELI for more details.

Electric Actuator-With thrust unit/gearbox



Thrust range with thrust unit: 5KN-217KN
Globe valve and regulating valve availability.

• Thrust unit Specification

No.	Max.Thrust(N)	Standard stroke(mm)	Customized stroke(mm)
1	6500	16-40	possible to customize the stroke
2	10000	16-40	
3	16000	16-40	
4	25000	60-100	
5	35000	60-100	
6	45000	130-150	
7	65000	130-150	

Please contact the company if you need more details of specification.



Torque range with bevel gearbox: 200Nm~50000Nm
Gate valve and global valve availability.



Torque range with worm gearbox: 100Nm~600,000Nm
Butterfly valve, ball valve and plug valve availability.

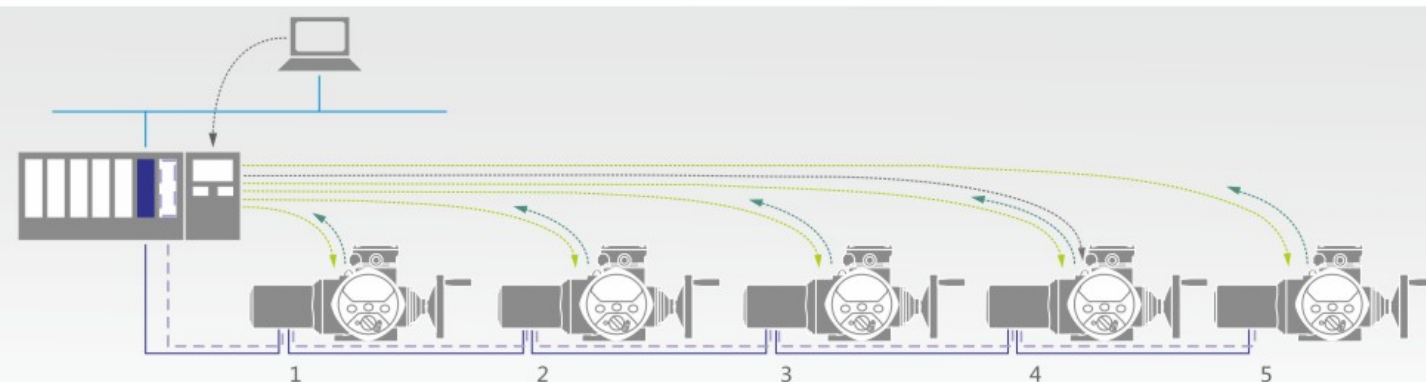
• Worm gearbox specification

No.	Worm gearbox output torque (Nm)	Item	Actuator input torque (Nm)	Speeds (r/min)	Ratio	Working time (s)
1	3500	HEM30-24-B1EO-aB+2J-D	250	24	50:1	31
2	4500	HEM30-24-B1EO-aB+3-D	300	24	50:1	31
3	7500	HEM50-24-B1EO-aB+3J-D	500	24	53:1	33
4	12000	HEM80-24-B1EO-aB+4-D	800	24	55:1	35
5	16500	HEM90-24-B1EO-aB+4J-D	900	24	57:1	36
6	22000	HEM100-24-B1EO-aB+5-D	1000	24	62:1	39
7	28000	HEM150-24-B1EO-aB+5-D	1500	24	67:1	42
8	38000	HEM200-24-B1EO-aB+6-D	2000	24	65:1	41
9	48000	HEM200-24-B1EO-aB+6J-D	2000	24	75:1	47
10	63000	HEM300-24-B1EO-aB+7-D	3000	24	82:1	52
11	80000	HEM300-24-B1EO-aB+7X-D	3000	24	70:1	44

Please contact the company if you need more details of specification.



Fieldbus Communication-HEM Multi-Turn Electric Actuator



— Single Channel
— Dual Channel

Bus cycle with 5 electric actuators

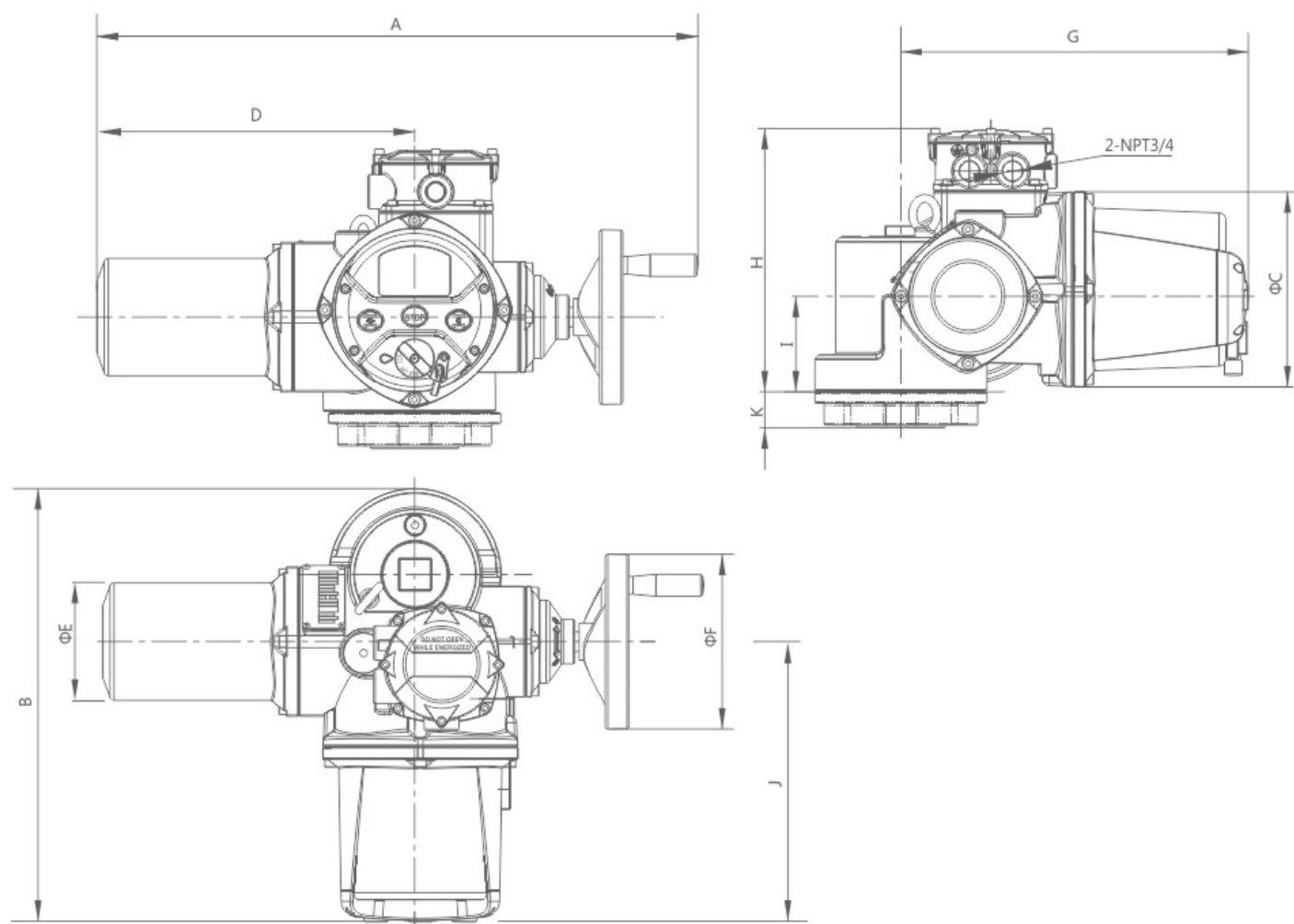


- Cyclic process data requests from master station
- Cyclic process data feedbacks from slave station
- Acyclic diagnostic or parameter data transmission

Comparison of bus cycle times



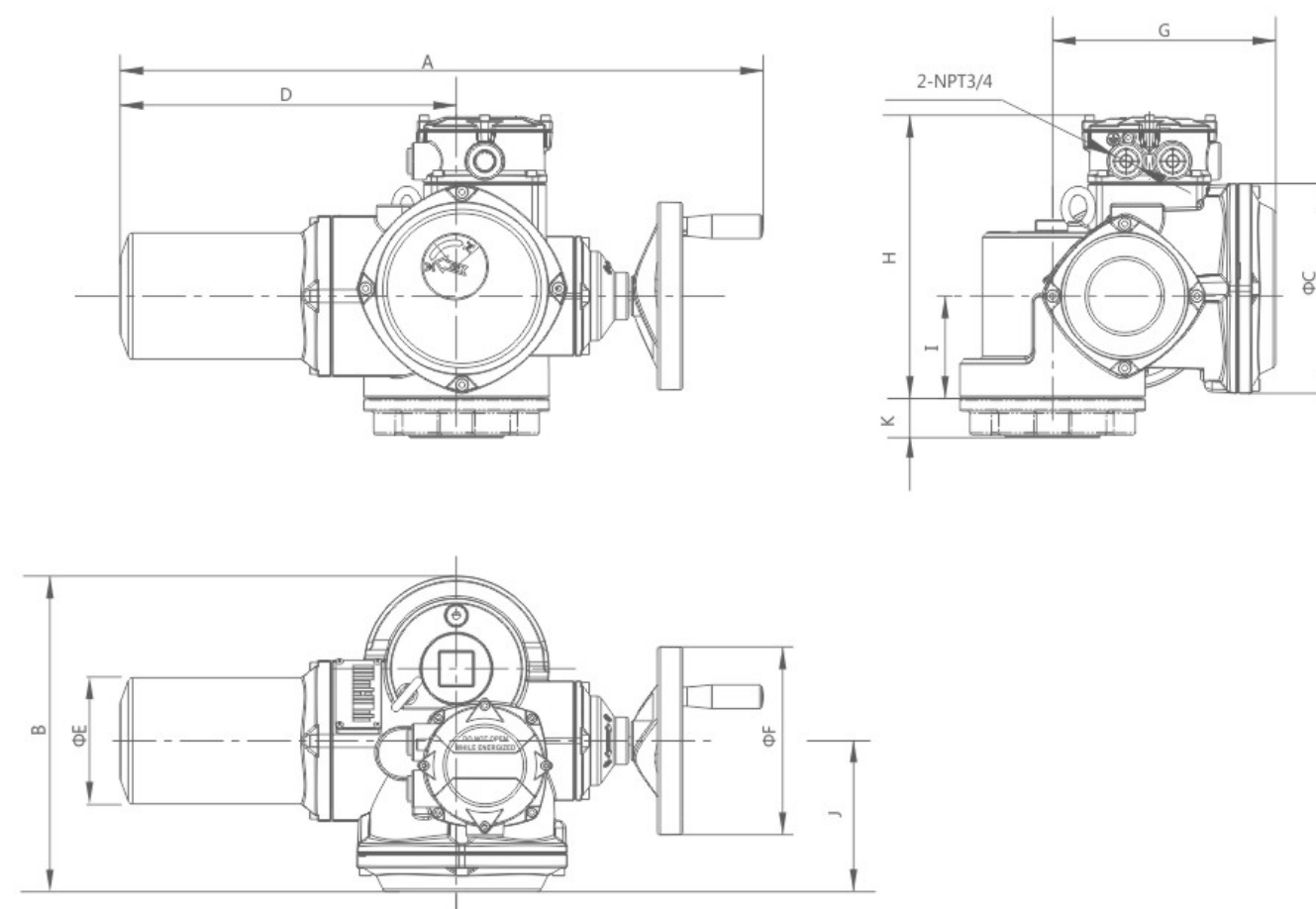
Demension(Intelligent type)



Unit : mm

Item	A	B	ΦC	D	ΦE	ΦF	G	H	I	J	K		Weight (kg)
											Type Z flange	Type T flange	
HEM10	569	452	222	293	105	125	378	290	108	318	0	60	26
HEM15	569	452	222	293	105	125	378	290	108	318	0	60	26
HEM20	682	490	222	360	135	200	394	300	108	318	41	60	42
HEM30	682	490	222	360	135	200	394	300	108	318	41	60	42
HEM40	682	490	222	360	135	200	394	300	108	318	41	60	42
HEM50	732	545	222	404	155	200	420	305	114	323	41	62	56
HEM60	732	545	222	404	155	200	420	305	114	323	41	62	56
HEM80	732	545	222	404	155	200	420	305	114	323	41	62	56
HEM90	732	545	222	404	155	200	420	305	114	323	41	62	56
HEM100	855	602	222	519	226	247	445	355	165	323	0	125	165
HEM150	855	602	222	519	226	247	445	355	165	323	0	125	165
HEM200	855	602	222	519	226	247	445	355	165	323	0	125	165
HEM300	855	602	222	519	226	247	445	355	165	323	0	125	165

Demension(Basic type)

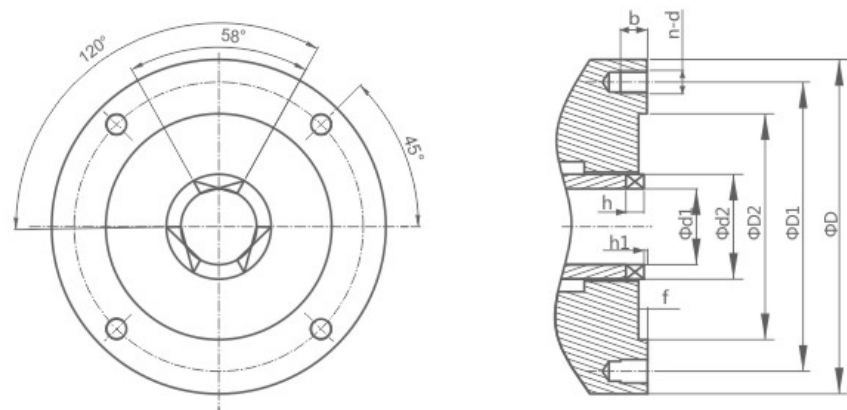


Unit : mm

Item	A	B	ΦC	D	ΦE	ΦF	G	H	I	J	K		Weight (kg)
											Type Z flange	Type T flange	
HEM10	569	294	222	293	105	125	219	290	108	160	0	60	20
HEM15	569	294	222	293	105	125	219	290	108	160	0	60	20
HEM20	682	332	222	360	135	200	235	300	108	160	41	60	38
HEM30	682	332	222	360	135	200	235	300	108	160	41	60	38
HEM40	682	332	222	360	135	200	235	300	108	160	41	60	38
HEM50	732	387	222	404	155	200	261	305	114	165	41	60	54
HEM60	732	387	222	404	155	200	261	305	114	165	41	60	54
HEM80	732	387	222	404	155	200	261	305	114	165	41	60	54
HEM90	732	387	222	404	155	200	261	305	114	165	41	60	54
HEM100	855	445	222	519	226	247	287	355	165	165	0	125	145
HEM150	855	445	222	519	226	247	287	355	165	165	0	125	145
HEM200	855	445	222	519	226	247	287	355	165	165	0	125	145
HEM300	855	445	222	519	226	247	287	355	165	165	0	125	145

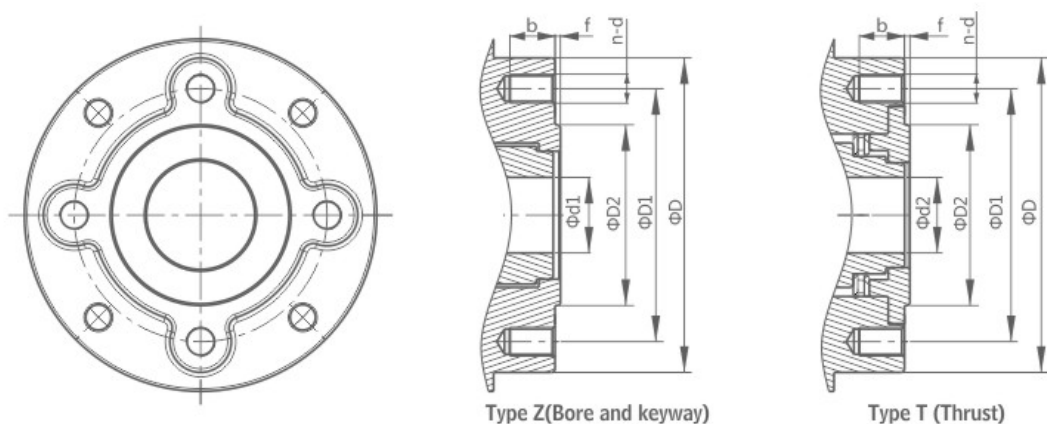
HEM Series Mounting Base

Type Y (claw)——JB2920 standard



Item	Flange	φD	φD1	φD2	φd1	φd2	f	h	h1	n-d	b
HEM10/15	JB2	145	120	90	30	45	5	8	2	4-M10	20
HEM20/30/40	JB3	185	160	125	43	58	5	10	2	4-M12	20
HEM50/60/80	JB4	225	195	150	50	72	5	12	2	4-M16	25
HEM100/150	JB5	275	235	180	62	82	5	14	2	4-M20	35
HEM200/300	JB7	330	285	220	65	98	6	16	2	4-M24	35

Type Z (Bore and keyway) or Type T (Thrust)——ISO5210 standard



Item	Flange	φD	φD1	φD2	f	φd1 (Max.)	φd2 (Max.)	n-d	b
HEM10/15	F10	138	102	70	3	30	Tr28	4-M10	15
HEM20/30/40	F14	175	140	100	4	42	Tr48	4-M16	24
HEM50/60/80	F16	205	165	130	5	50	Tr62	4-M20	30
HEM100/150	F25	338	254	200	5	75	Tr80	8-M16	25
HEM200/300	F30	338	298	230	5	75	Tr80	8-M20	30



HL series quarter-turn electric actuator

Smart appearance, light weight,
Easy to install, economical and durable.



ZX series small electric actuator

Torque: 9N.m~24N.m
Explosion proof, Weather proof



LQ series quarter-turn electric actuator

Overtorque protection, explosion proof as
option, Intelligent control to meet more I
ndustrial application.



HLF series damper electric actuator

Suitable for heating, ventilation, air
conditioning, refrigeration, building
automation etc.



HEM series multi-turn electric actuator

LCD display, Local/remote control operation
selector, suitable for big size butterfly valves,
ball valves, globe valves, Gate valves etc.



HAT series rack and pinion pneumatic actuator

Maximum torque: 9340Nm



HEQ series electric actuator

New optimized design, high enclosure
protection, low noise, Double anti-condensation,
independent control unit.



Electric valves series

Butterfly valves, ball valves, gate valves,
regulating valves, etc. with different pressure
class, mounting bases and operation methods.