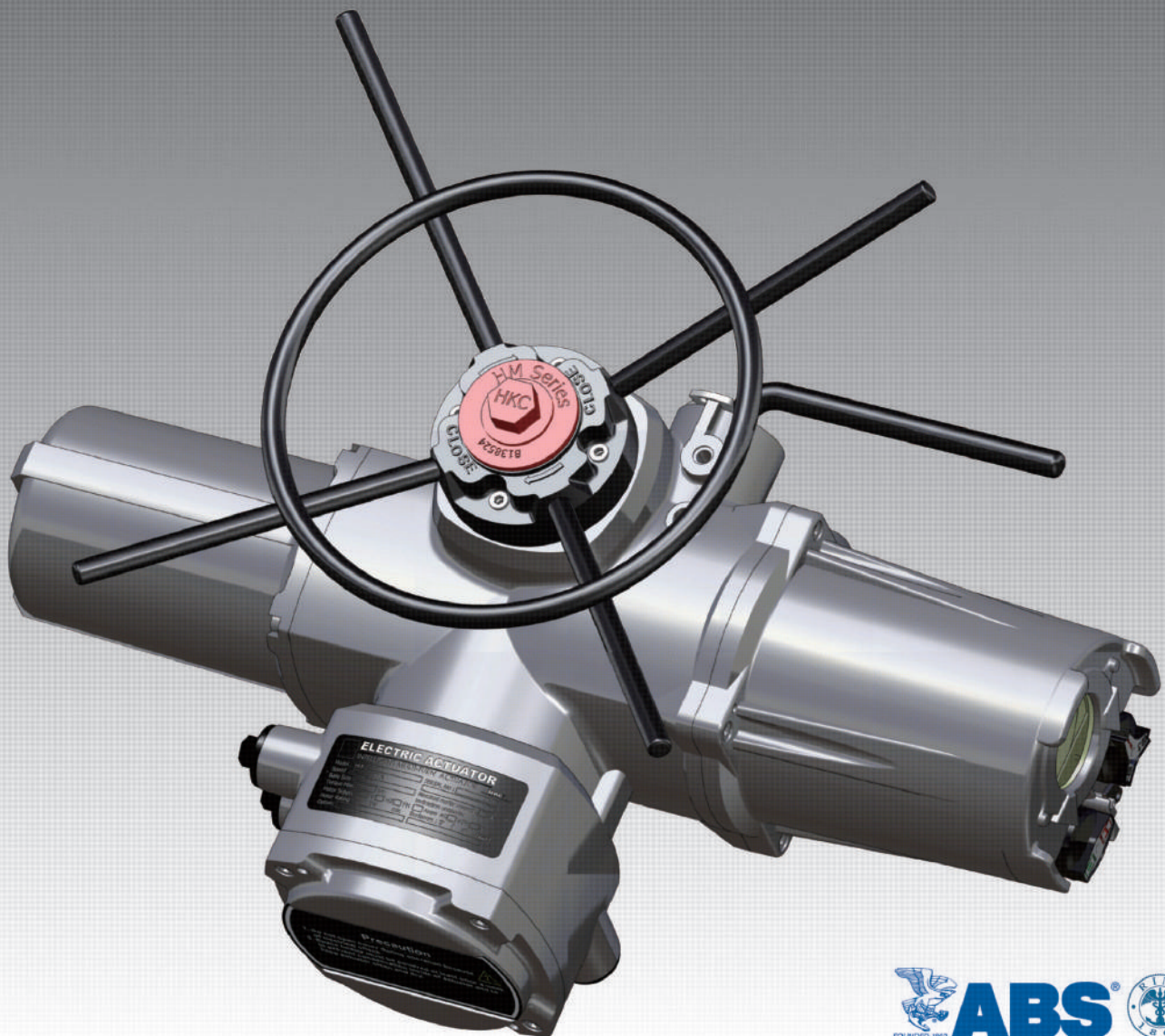


Actuation & Flow Control

**HKC<sup>®</sup>**  
Valve Automation

Smart & Intelligent Design

HM-Series Multi-turn Electric Actuators



**HM- Series**  
Electric Actuators and Control Systems

Publication HM0382 Issue 14/08

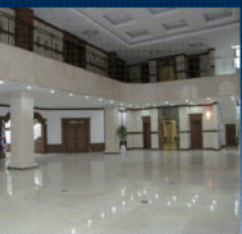
Leading company in valve automation



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# HM- Series Electric Valve Actuators

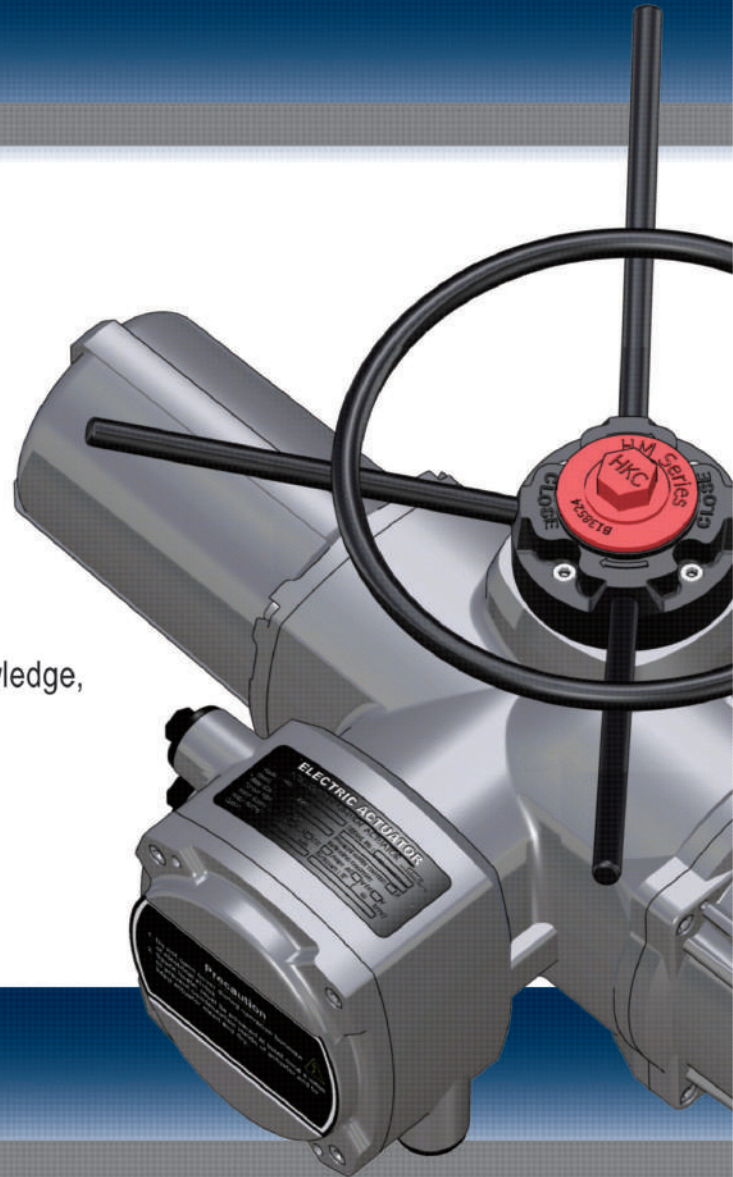


The Specialist for Electric Valve Actuators



## Description

- HM- series electric multi-turn actuator is specially designed for all multi turn valve applications such as globe, gate valves and similar usages.
- Wide range of output torque and control options meet your specific requirement.
- HM- series provides high reliability and performance .
- HM series is simple and safe, and rapid non-intrusive commissioning with infra-red control.
- The digital positon display clearly indicates the status of valve and actuator.
- With our extensive product range and engineering knowledge, HKC can provide solutions for costomer requirements.
- User friendly easy controls and indication.
- Simple commissioning & trouble-shooting



## Intelligent Control System

- Intergrated design (IMS, Local/Stop/Remote control)
- Wide range of electric power application
- Built-in auto phase discriminator
- Easy of setting and operation.
- Comprehensive control and flexibility
- Support english and korean languages
- Torque and position control increased reliability

## Easy Setting



Setting Tool

## Features

- Robust and low weight due to high grade aluminum alloy housing. (except HM100 ~)
- High corrosion resistance due to hard anodizing and polyester coating.
- Direct output torque range from 35Nm to 3000Nm.
- Wide range of voltages available.
- Digital LCD window & smart design.
- Rugged design construction  
(Water tight : IP68, Explosion proof : Eexd IIB T4, IP68)
- Handwheel for manual operation engaged by a hand/auto lever
- Valve torque indication
- Setting tool (infrared setup)

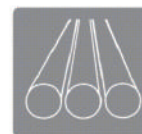
## Areas of Application



**Power Plant**  
: Coking Plant  
: Separator Plants  
: Petroleum Processing  
: Fire Fighting  
: Isolation  
: Emergency Shutdowns



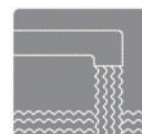
**Storage Tank**  
: Delete / Loader Bridges  
: Storage  
: Distribution  
: Multi-Port  
: Flow Measurement  
: Manifold



**Transportation**  
: Transshipment Centers  
: Pipelines  
: Pumping Stations  
: Booster  
: Pressure Reducers  
: Refueling



**Marine & Rigs**  
: Head Control Production  
: Drill, Support  
: Dissipation  
: Separators  
: Gas-Lift Method  
: Manifold  
: Shipyard

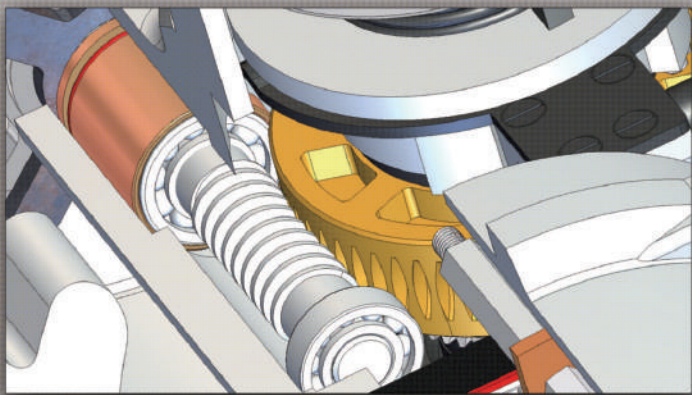


**Water Work**  
: Drinking Water Distribution  
: Sewage Treatment Plants  
: Drinking Water Distribution  
: Water Treatment Plants  
: Sea Water Desalination  
: Hydroelectric Power

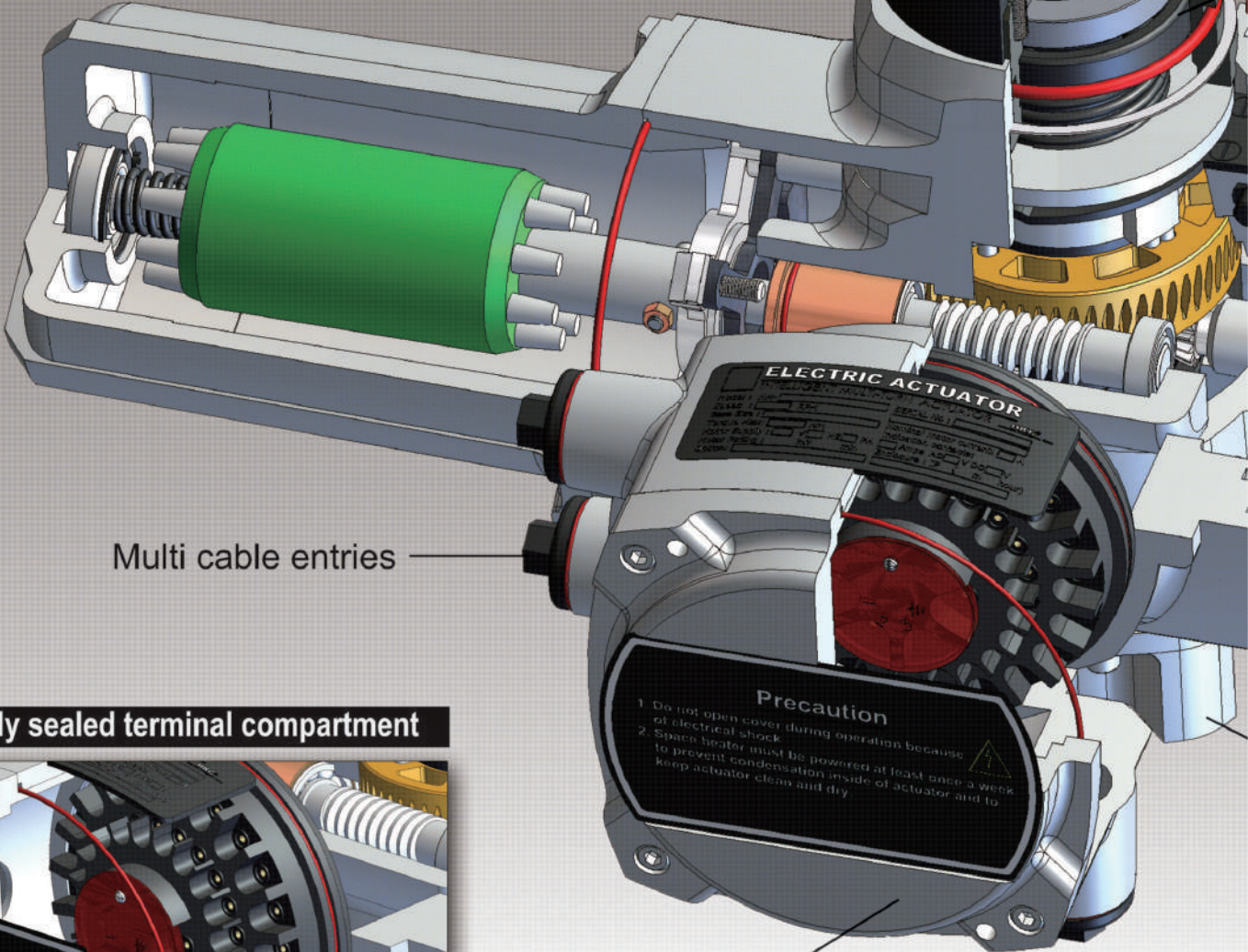
# Valve Automation

## Design Construction

### HM actuator mechanical worm gear system

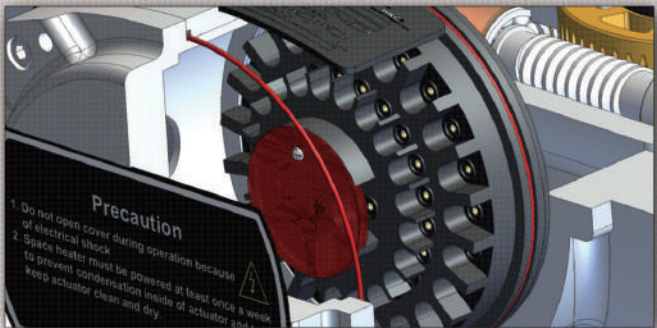


**Motor**  
Available in 1 phase, 3 phase, 24V DC.  
All motors are custom built for high torque,  
low current and the highest duty cycle ratings offered.



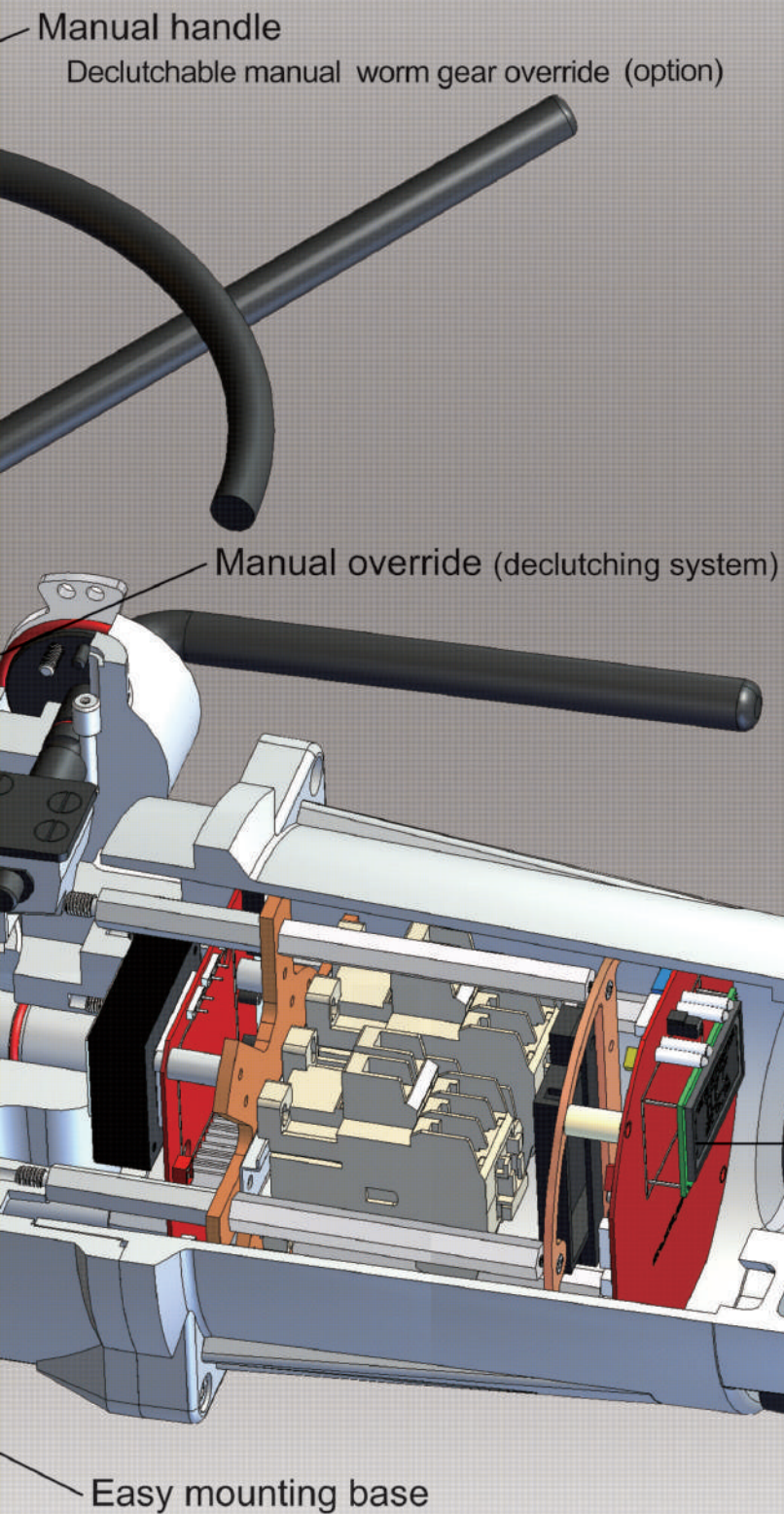
Multi cable entries

### Separately sealed terminal compartment

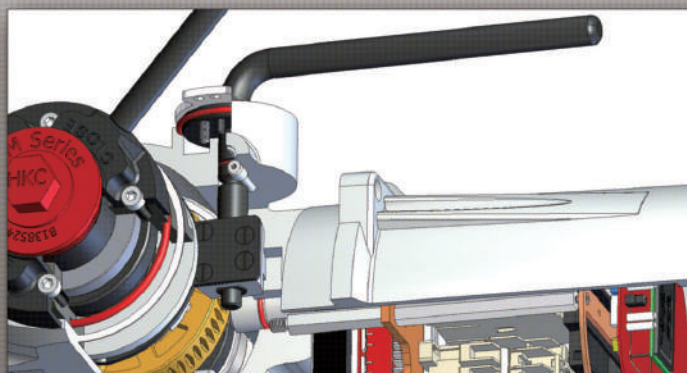


Terminal box

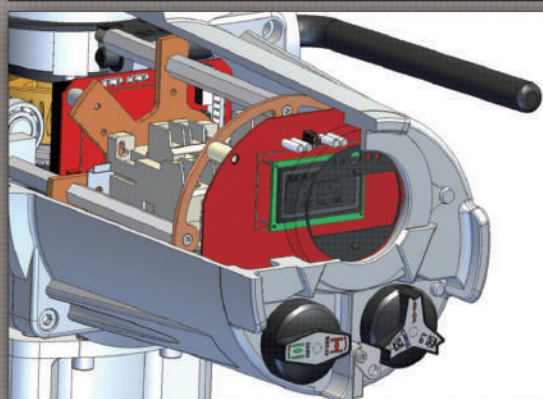
# HM- Series Electric Valve Actuators



## Declutching manual override system

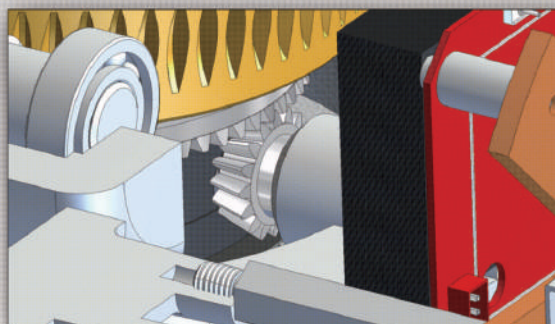


## Local control & non intrusive setting



Window  
Position indicator  
& control monitor  
Local control selector switch

## HM-series Position control system



## Cover and housing

High corrosion-resistance due to anodizing on the inside  
& outside and polyester powder coating on the outside  
(except HM-100 ~)

## Performance Data

### ● AC 3phase Model / Torque

| RPM       |      | MODEL / TORQUE(Nm) |       |       |       |       |       |       |       |       |       |
|-----------|------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           |      | 3 Phase            |       |       |       |       |       |       |       |       |       |
| 50Hz      | 60Hz | HM004              | HM008 | HM011 | HM020 | HM040 | HM060 | HM100 | HM150 | HM200 | HM300 |
| 18        | 21   | 35                 | 80    | 110   | 200   | 400   | 600   | 1000  | 1500  | 2000  |       |
| * 24      | * 29 | 35                 | 80    | 110   | 200   | 400   | 600   | 1000  | 1500  | 2000  | 3000  |
| 36        | 43   | 35                 | 80    |       | 200   | 300   | 540   | 850   | 1300  | 1700  |       |
| * 48      | * 57 | 35                 | 68    |       | 200   | 250   | 470   | 680   | 1000  | 1360  |       |
| * 72      | * 86 | 35                 | 48    |       | 176   | 250   | 470   | 680   | 1000  | 1360  |       |
| 96        | 115  | 35                 | 40    |       | 142   | 230   | 370   | 540   | 750   | 1000  |       |
| 144       | 173  |                    |       |       | 105   | 150   | 260   | 400   | 650   | 860   |       |
| 192       | 230  |                    |       |       |       |       |       |       | 540   | 730   |       |
| *STD (kW) |      | 0.6                | 0.6   | 0.6   | 1.2   | 1.2   | 1.9   | 2.6   | 2.6   | 5.1   |       |

### ● AC 1phase Model / Torque

| RPM  |      | MODEL / TORQUE(Nm) 1Phase                    |       |       |       |       |       |       |       |       |       |
|------|------|----------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |      | AC110 / 220V (HM040 Need more than the 220V) |       |       |       |       |       |       |       |       |       |
| 50Hz | 60Hz | HM004                                        | HM008 | HM011 | HM020 | HM040 | HM060 | HM100 | HM150 | HM200 | HM300 |
| 18   | 21   | -                                            | 65    | -     | 165   | 450   | -     | -     | -     | -     | -     |
| * 24 | * 29 | -                                            | 60    | -     | 130   | 400   | -     | -     | -     | -     | -     |
| 36   | 43   | -                                            | 45    | -     | 130   | 350   | -     | -     | -     | -     | -     |
| * 48 | * 57 | -                                            | 40    | -     | 125   | 320   | -     | -     | -     | -     | -     |
| * 72 | * 86 | -                                            | 30    | -     | 100   | 230   | -     | -     | -     | -     | -     |
| 96   | 115  | -                                            | 25    | -     | 80    | 190   | -     | -     | -     | -     | -     |
| 144  | 173  | -                                            | -     | -     | 60    | 135   | -     | -     | -     | -     | -     |
| 192  | 230  | -                                            | -     | -     | -     | -     | -     | -     | -     | -     | -     |

RED FONT : According to high-speed operation can cause problems. Must connect to the Gearbox(Reducer).

BLUE FONT : Blue fonts are made only AC220V more.

\*STD

### ● Solid State Design Model / Torque

| RPM  |      | MODEL / TORQUE(Nm)                |         |         |         |         | MODEL / TORQUE(Nm)                |                      |
|------|------|-----------------------------------|---------|---------|---------|---------|-----------------------------------|----------------------|
|      |      | Solid State Type 3Phase (AC380V~) |         |         |         |         | Solid State Type 3Phase (AC380V~) |                      |
| 50Hz | 60Hz | HM04 S3                           | HM08 S3 | HM11 S3 | HM20 S3 | HM40 S3 | HM08 S1 (AC110~240V)              | HM20 S1 (AC220~240V) |
| 18   | 21   | 35                                | 80      | 110     | 200     | 400     | 65                                | 165                  |
| 24   | 29   | 35                                | 80      | 110     | 200     |         | 60                                | 130                  |
| 36   | 43   | 35                                | 80      |         |         |         | 45                                | 130                  |
| 48   | 57   | 35                                | 68      |         |         |         | 40                                | 125                  |
| 72   | 86   | 35                                | 48      |         |         |         | 30                                | 100                  |
| 96   | 115  |                                   |         |         |         |         | 25                                | 80                   |

# HM- Series Electric Valve Actuators

## Mechanical Data / Technical Data



### ● Mechanical Data

| MECHANICAL DATA      |                                                               |        |        |        |        |        |        |        |        |        |
|----------------------|---------------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MODEL                | HM004                                                         | HM008  | HM011  | HM020  | HM040  | HM060  | HM100  | HM150  | HM200  | HM300  |
| FLANGE SIZE(ISO5211) | F10                                                           | F10    | F10    | F14    | F14    | F16    | F25    | F30    | F25    | F30    |
| Weight(kg)           | 40                                                            | 40     | 40     | 65     | 65     | 75     | 190    | 190    | 200    | 200    |
| Trust Rating(Nm)     | 44                                                            | 44     | 44     | 100    | 100    | 150    | 220    | 220    | 334    | 445    |
| Hand Wheel Ratio     | Direct                                                        | Direct | Direct | Direct | Direct | Direct | Direct | 18 : 1 | 18 : 1 | 18 : 1 |
| Option               | 15 : 1                                                        | 15 : 1 | 15 : 1 | 15 : 1 | 15 : 1 | 23 : 1 | 54 : 1 | 54 : 1 | 54 : 1 | 54 : 1 |
| Cable Entry          | STANDARD : PF 1"X4EA PF 1½"X1 / OPTION : NPT 1"X4EA, NPT 1½x1 |        |        |        |        |        |        |        |        |        |

### ● Stem Acceptance Diameter Maximum Size - Base

| STEM ACCEPTANCE DIAMETER MAXIMUM SIZE (BASE) |            |    |    |    |    |    |    |     |     |     | unit(mm) |
|----------------------------------------------|------------|----|----|----|----|----|----|-----|-----|-----|----------|
| Thrust                                       | Rising     | 32 | 32 | 32 | 38 | 38 | 54 | 64  | 70  | 70  | 83       |
|                                              | Non-rising | 26 | 26 | 26 | 32 | 32 | 45 | 51  | 57  | 57  | 73       |
| Non Thrust                                   | Large Type | 42 | 42 | 42 | 60 | 60 | 80 | 100 | 100 | 120 | 120      |
|                                              | ISO Type   | 20 | 20 | 20 | 30 | 30 | 40 | 50  | 50  | 50  | N/A      |
|                                              | blank Type | 20 | 20 | 20 | 30 | 30 | 44 | 50  | 60  | 60  | N/A      |

### ● Technical Data - Standard

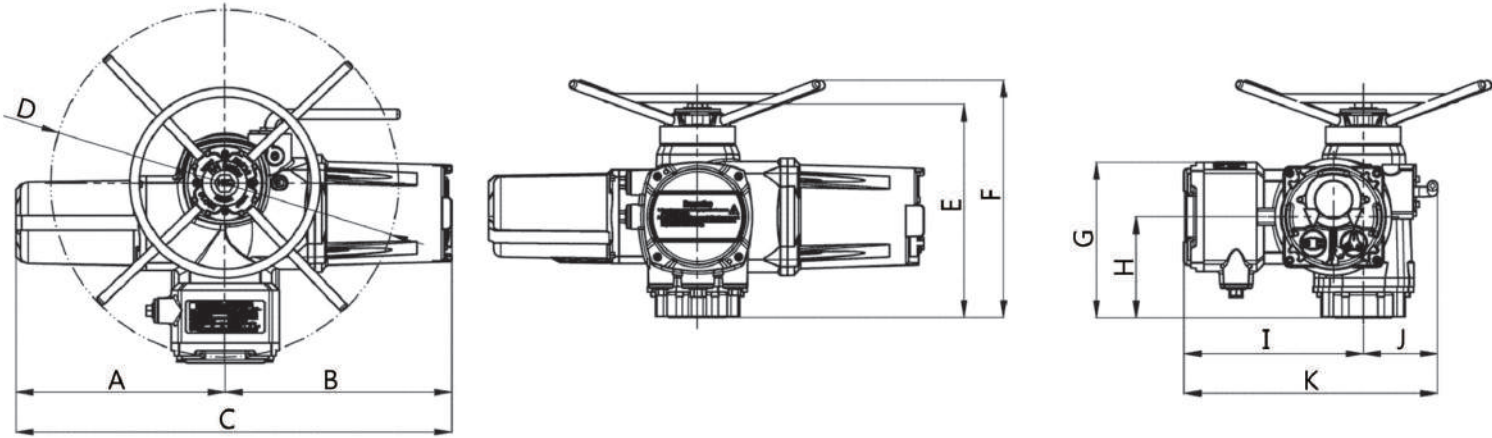
| HM STANDARD TECHNICAL DATA |                                                                                                            |                                |                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------|
| Enclosure                  | Weatherproof IP67, IP68 (10m 72Hr) IEC60529                                                                |                                |                                                        |
|                            | High grade aluminium alloy, corrosion coated (HM04~HM60)                                                   |                                |                                                        |
|                            | Nodular graphite cast iron& High grade aluminium alloy corrosion coated (HM100~HM300)                      |                                |                                                        |
| Power Supply               | 110 , 220 VAC 1 Ph, (HM08,20,40) *HM40 Only 220V~ / 220 , 380 , 420, 440, 460, 480V~ 600V AC 3 Ph, 50/60Hz |                                |                                                        |
| Power Voltage Tolerance    | ±10%                                                                                                       | Starting Voltage Drop(Maximum) | -15%                                                   |
| Duty Rating                | HM04~300 3ph : 60Starts/Hour 15Minutes Rated / HM08,20,40 1ph : 60Starts/Hour 15Minutes Rated              |                                |                                                        |
|                            | HM04~40 3ph : 120Starts/Hour S4-50%                                                                        |                                |                                                        |
| Torque                     | 14~3000Nm direct drive. When combined With gear box up to 43000Nm or 500,000Nm                             |                                |                                                        |
|                            | Quarter-turn HM08,20,40 1Ph : 25Nm~450Nm HMS04~40 : 25Nm~450Nm                                             |                                |                                                        |
| Motor                      | Induction Motor                                                                                            | Monitoring Switches            | 4 Switches, 250 VAC 16A rating / Option: 8~16 Switches |
| Travel Angle               | 0~10,000,000 Turn                                                                                          | Indigator                      | Digital Display position indicator                     |
| Signal Lamp Unit           | Red : Open, Green Close, Yellow : Falut                                                                    | Manual Override                | Declutchable manual override                           |
| Self Locking               | By Worm gear Box                                                                                           | Conduit Entries                | PF 1"X4, PF 1½"X1 / NPT 1"X4EA, NPT 1½x1               |
| Design Life                | Torque & thrust test: 50,000 Cycles                                                                        | Lubrication                    | -30 °C ~ + 70 °C                                       |
| Anti Vibration             | 1G 10~1000Hz                                                                                               | Anti Shock                     | 5G Peak Acceleration                                   |
| Valve to "HM" Interface    | Multi turn/ISO5210-Part turn/ISO5211 MSS SP-102                                                            |                                |                                                        |
| Local Control / Set Up     | Two Rotary Selector Switch(Function switch & Operation switch) Setup: Setting Tool(LCD Windows)            |                                |                                                        |

### ● Option Technical Data - Optional

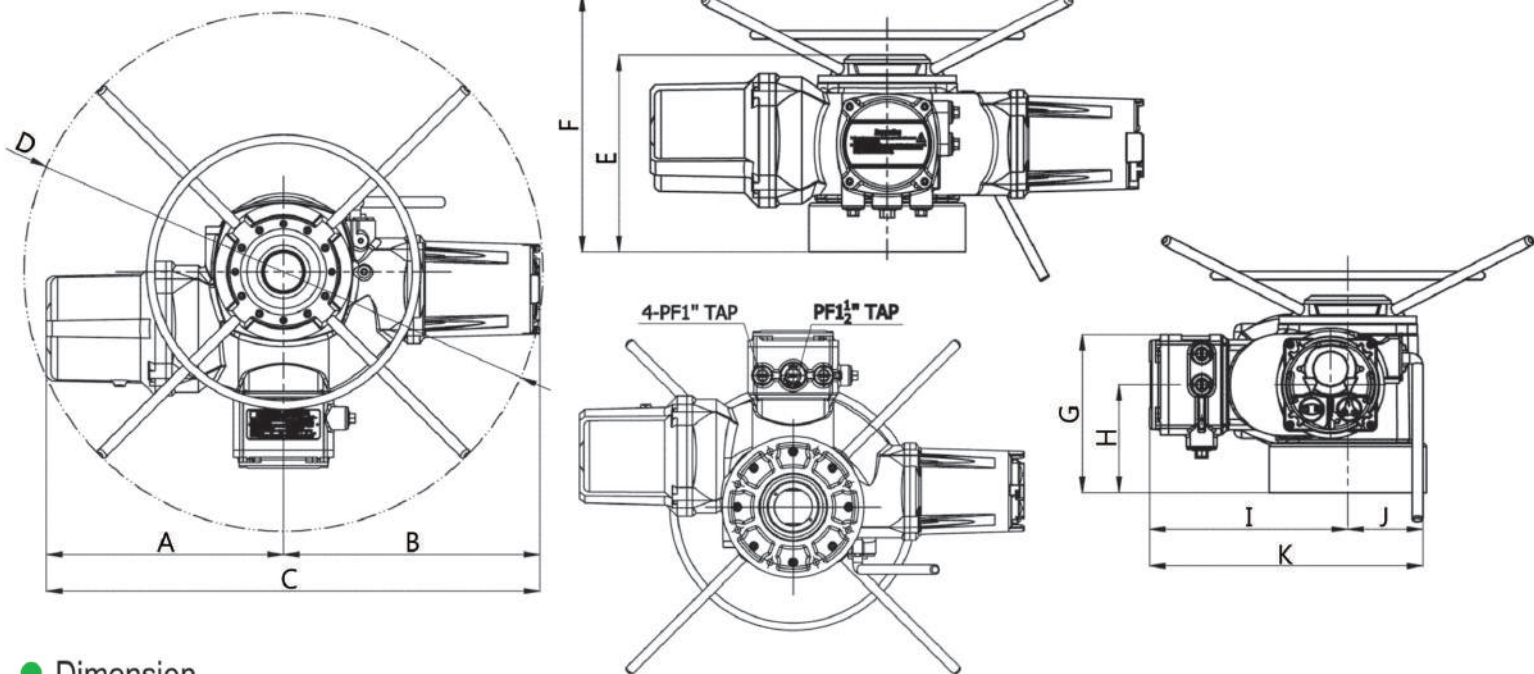
| HM OPTION TECHNICAL DATA |                                                                                         |          |                                                                |
|--------------------------|-----------------------------------------------------------------------------------------|----------|----------------------------------------------------------------|
| EXA                      | Explosion Proof Enclosure : Ex d II B T4 (-20°C ~ +60°C) / Ex d II C T4 (-20°C ~ +60°C) |          |                                                                |
| MGO                      | Declutchable Manual Worm Gear Override                                                  | WTA      | Watertight Enclosure (IP68 10m / 72hr)                         |
| PCU                      | Proportional Control Unit (Input, Output 0~10 VDC, 4~20mA DC)                           | AMS1     | Additional monitoring switches (SPST x 4EA 250V AC 16A Rating) |
| ECU                      | External Control Unit (LCU+ Digital indicator)                                          | CPT      | Current Position Transmitter (Output 4~20mA DC)                |
| FPA1                     | Fire Proofing Actuator 1050° ± 5° / 50min                                               | FPA2     | Fire Proofing Actuator 250° ± 5° / 150min                      |
| MODBUS                   | Modbus Modules                                                                          | PROFIBUS | Profibus DP Interface Module                                   |

## Dimensional Drawing

### ● HM004, HM008, HM011, HM020, HM040, HM060



### ● HM100, HM150, HM200, HM300



### ● Dimension

unit(mm)

| MODEL | A     | B     | C     | D    | E     | F     | G     | H     | I     | J   | K     |
|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-----|-------|
| HM004 | 291   | 381.5 | 672.5 | φ490 | 264.5 | 316   | 226.5 | 130.5 | 277   | 130 | 407   |
| HM008 | 291   | 381.5 | 672.5 | φ490 | 264.5 | 316   | 226.5 | 130.5 | 277   | 130 | 407   |
| HM011 | 291   | 381.5 | 672.5 | φ490 | 264.5 | 316   | 226.5 | 130.5 | 277   | 130 | 407   |
| HM020 | 369   | 399.5 | 768.5 | φ620 | 356.8 | 420   | 273.8 | 177.8 | 317.7 | 130 | 447.7 |
| HM040 | 369   | 399.5 | 768.5 | φ620 | 356.8 | 420   | 273.8 | 177.8 | 317.7 | 130 | 447.7 |
| HM060 | 383.5 | 407   | 790.5 | φ835 | 392.5 | 481   | 293.9 | 197.9 | 319.7 | 132 | 451.7 |
| HM100 | 452.5 | 489.5 | 942   | φ995 | 379   | 493.5 | 305   | 209   | 379   | 143 | 522   |
| HM150 | 452.5 | 489.5 | 942   | φ995 | 379   | 493.5 | 305   | 209   | 379   | 143 | 522   |
| HM200 | 507.5 | 489.5 | 997   | φ995 | 418.5 | 611   | 305   | 209   | 379   | 143 | 522   |
| HM300 | 507.5 | 489.5 | 997   | φ995 | 418.5 | 611   | 305   | 209   | 379   | 143 | 522   |





**HM- Series Electric Valve Actuators**



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