rotork®

Keeping the World Flowing
for Future Generations

Noah NL Range

Linear electric actuators

A rotork Brand
NOAH
Actuation

Reliable, compact, modular electric actuators with linear output drives designed for industrial applications.

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Rotork Group

Rotork is a market-leading global provider of mission-critical flow control and instrumentation solutions for the industrial actuation and flow control markets. These include oil and gas, water and wastewater, power, chemical, process and industrial applications.

Customers rely on us for innovative, high quality and dependable solutions for managing the flow of liquids, gases and powders. We help customers around the world to improve efficiency, reduce emissions, minimise their environmental impact and assure safety.

Our reliability record is second to none. Our products are designed with safety and performance at their core and are put through vigorous testing and certified to international standards. Our products are certified for use in the world's most dangerous and hazardous areas.

Partnering with us provides the following:

- Assured safety and reliability
- Industry leading accuracy and efficiency
- Proven technology that works with all network control systems
- Product range with solutions to suit every application
- Assistance with plant planning, development and maintenance through our local support services
- We have innovative research and development centers throughout the world

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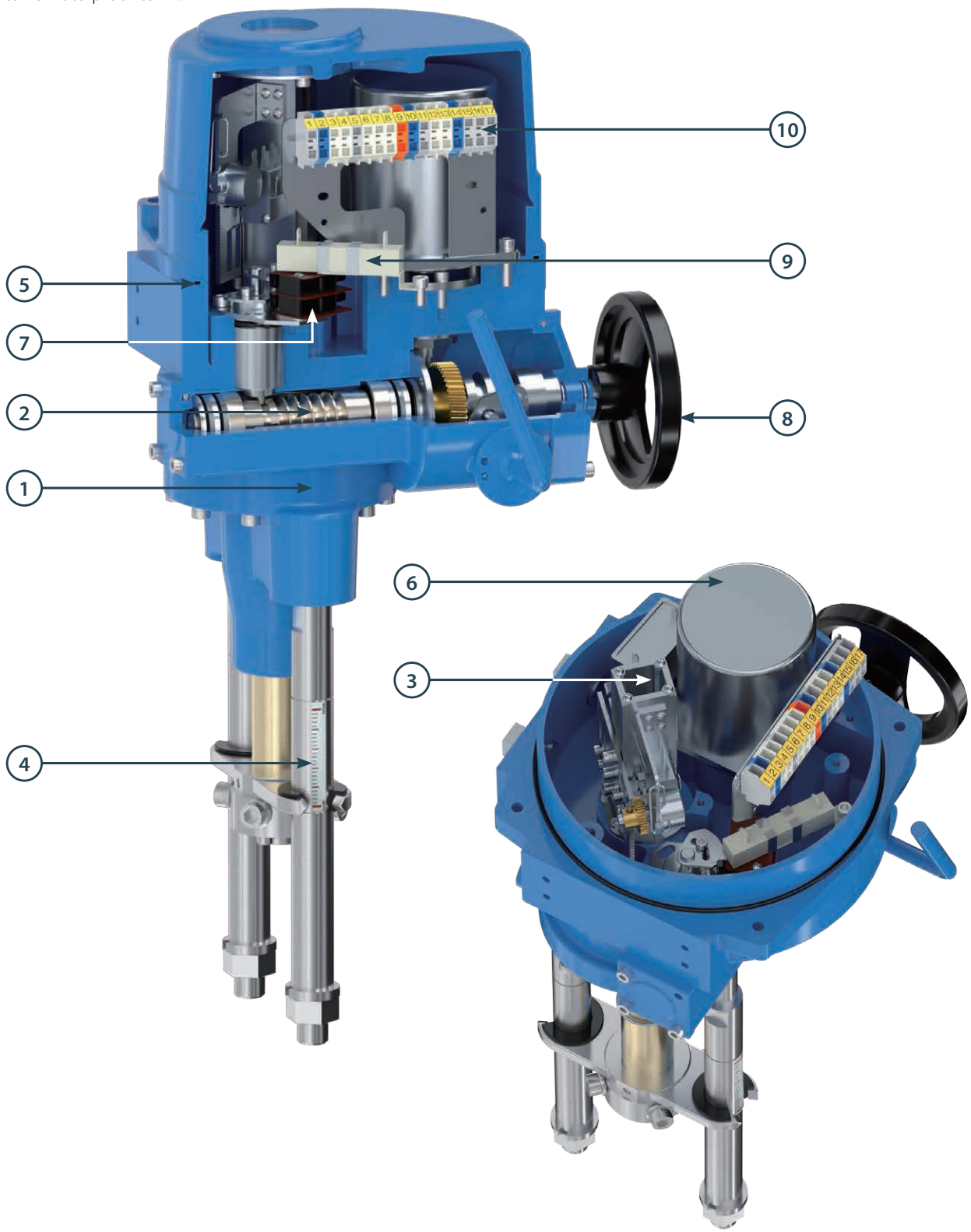
Noah NL

The Noah NL linear electric actuator is waterproof to IP67.



Inside the Noah NL Actuator

1. Outer case

The aluminum alloy casting is oxide film treated then powder coated (Polyester, TGIC-Free) to provide the best corrosion protection performance in any environment.

2. Gear

Using a two-stage worm gear and trapezoidal screw provides high efficiency output drive with low noise, high starting thrust, and selectable output thrusts: 4 to 35 kN (899 to 7868 lbf).

3. Limit Switch

The simple and easily adjusted built-in limit switch (open/close) can precisely control the movement of the valve and prevents the adjustment position changing, even if over-travel occurs.

4. Indicator

The open/closed position of the valve can be determined through the marked indicator (up to 100mm).

5. Waterproof

The Noah NL range is IP67 rated waterproof and all connections feature O-rings, ensuring complete waterproofing even when installed outdoors.

Optional specification - IP68: 10 m / 72 hours

6. Motor

Supply voltages for customer selection include 1-phase (110/220 VAC), 3-phase (380/440 VAC) and 24 VDC. Noah NL range actuators include a built-in thermal protector to protect the motor in case of motor overload.

7. Safety Device

NL range has a built-in thermal protector for motor overload protection and a built-in torque switch (open/close) to protect the actuator and connected valve when overload exceeds the set torque, providing a double (mechanical and electrical) safety device. The adjustment position does not change even if over-travel occurs.

Note: Due to their designs, NL04 and NL06 actuators do not include a torque switch.

8. Manual/automatic switching device

The built-in manual/automatic lever allows switching between manual (handwheel) and automatic (motor) output control. The lever is lockable in either position

9. Internal heater

The built-in internal heater prevents condensation and moisture forming inside the actuator to protect the internal components.

10. Terminal block

The terminal block is WAGO-structured allowing for simple wiring and is highly resistant to vibration and corrosion.

Standard specifications

Waterproof rating	Waterproof ingress protection IP67
Operating temperature range	Tamb -20 to +70 °C (-4 to +158 °F), +150 °C (+302 °F) / 1 hour
Power supply	110-220 VAC 50/60 Hz, 380/440 VAC 50/60 Hz (Option: 24 VDC)
Limit switches	Open : 1ea / Close : 1ea
Torque switches	Open : 1ea / Close : 1ea (except NL04, NL06)
Stall protection	Thermal protection: Open 150 °C (302 °F)
Indicator	Continuous position indicator
Manual override	Hand/Auto declutching mechanism
Heater	20 W
Cable entries	Basic: 2-PF ¾" Options: 2-M20 x Pitch 1.5, 2-NPT ¾"
Lubricant	Shell Gadus S2 V220 2
Case material	Aluminium
Surface treatment	Anodising
Standard paint finish	Polyester powder coating (TGIC-FREE)

Performance data

Model	Thrust		Speed 50/60 Hz	Stroke	Duty Cycle	Rated current (A) 60 Hz									Motor		Number of handle turns	Valve stem max. size	Flange thread	Flange distance	Weight	
						110 V		220 V		380 V		440 V		24 VDC	W	Class						
	kN	lbf	mm / sec	mm	S4(%)	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz					mm		mm	kg	lbs
NL04	4	899	0.8/ 0.93	40	50	0.46	0.43	0.28	0.27	0.11	0.09	0.10	0.09	1.65	15	F	190	M20	M16	100	16	35.3
NL06	6	1349	0.79/ 0.9	40	50	0.73	0.72	0.38	0.37	0.14	0.12	0.12	0.11	1.87	25	F		M20	M16	100	16	35.3
NL08	8	1798	0.75/ 0.86	50	50	0.84	0.81	0.46	0.43	0.16	0.14	0.15	0.13	2.46	25	F	250	M20	M16	100	18	39.7
NL10	10	2248	0.72/ 0.83	50	50	1.52	1.50	0.79	0.75	0.25	0.24	0.23	0.21	4.02	40	F		M20	M16	100	18	39.7
NL20	20	4496	0.8/1	100	30	1.90	1.95	1.00	1.50	0.33	0.33	0.25	0.32	9.45	60	F	475	M24	M20	150	31	68.3
NL25	25	5620	0.72/ 0.87	100	30	2.53	3.25	1.05	1.45	0.45	0.45	0.54	0.45	10.50	90	F	500	M24	M20	150	31	68.3
NL35	35	7868	0.4/ 0.47	100	20	2.80	3.60	1.50	2.00	0.49	0.49	0.56	0.51	12.00	90	F		M24	M20	150	31	68.3

NL20: 24 VDC motor: 40 W
NL25, NL35: 24 VDC motor: 120 W
From NL20, the maximum valve stem size can be applied up to M24 due to the change in the housing design.

Standard specifications

Waterproof rating	Waterproof ingress protection IP67
Operating temperature range	Tamb -20 to +70 °C (-4 to +158 °F), +150 °C (+302 °F) / 1 hour
Power supply	110-220 VAC 50/60 Hz, 380/440 VAC 50/60 Hz (Option: 24 VDC)
Limit switches	Open : 1ea / Close : 1ea
Torque switches	Open : 1ea / Close : 1ea (except NL04, NL06)
Stall protection	Thermal protection: Open 150 °C (302 °F)
Indicator	Continuous position indicator
Manual override	Hand/Auto declutching mechanism
Heater	20 W
Cable entries	Basic: 2-PF ¾", 2-PF 1", 2-NPT ¾", 2-NPT 1", 2-M20, 2-M25, 2- M32 x Pitch 1.5 Options: 3-PF ¾", 3-PF 1", 3-NPT ¾", 3-NPT 1", 3-M20, 3-M25, 3-M32 x Pitch 1.5 Note: Options not available for NL04, NL06
Lubricant	Shell Gadus S2 V220 2
Case material	Aluminium
Surface treatment	Anodising
Standard paint finish	Polyester powder coating (TGIC-FREE)

Performance data

Model	Thrust		Speed 50/60 Hz	Stroke	Duty Cycle	Rated current (A) 60 Hz								Motor		Number of handle turns	Valve stem max. size	Flange thread	Flange distance	Weight	
						110 V		220 V		380 V		440 V		24 VDC	W	Class					
	kN	lbf	mm / sec	mm	S4(%)	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz				mm		mm	kg	lbs
NL04	4	899	0.7/ 0.9	40	50	0.79	1	0.39	0.43	0.17	0.18	0.2	0.16	3.2	15	F	170	M20	M16	100	16	35.3
NL06	6	1349	0.7/ 0.9	40	50	1.2	1.27	0.67	0.58	0.24	0.26	0.24	0.21	4.4	25	F		M20	M16	100	16	35.3
NL08	8	1798	0.7/ 0.8	50	50	1.27	1.22	0.69	0.56	0.21	0.23	0.22	0.22	4.3	40	F	250	M20	M16	100	18	39.7
NL10	10	2248	0.7/ 0.8	50	50	1.66	1.62	0.84	0.79	0.4	0.28	0.64	0.7	4.5	40	F		M20	M16	100	18	39.7
NL20	20	4496	0.8/ 0.9	100	30	2.44	2.62	1.35	1.45	0.56	0.56	0.59	0.55	9.5	60 (DC: 40)	F	442	M24	M20	150	31	68.3
NL25	25	5620	0.7/ 0.8	100	30	2.74	3.8	1.29	1.64	0.58	0.58	0.79	0.59	10.5	90 (DC: 120)	F	500	M24	M20	150	31	68.3
NL35	35	7868	0.4/ 0.5	100	20	2.8	3.9	1.5	2	0.6	0.65	0.56	0.65	12	90 (DC: 120)	F		M24	M20	150	31	68.3

NL Version 2 is a new design with extra cable entries as well as gear ratio and external appearance changes.

NL20: 24 VDC motor: 40 W
NL25, NL35: 24 VDC motor: 120 W
From NL20, the maximum valve stem size can be applied up to M24 due to the change in the housing design.

Standard features

Waterproof (standard)

The Noah NL range is certified waterproof to IP67 as standard and all connections feature O-rings to ensure complete waterproofing even when installed outdoors.

Supply voltage

Supply voltage can be selected according to specifications including 1-phase (110 / 220 VAC), 3-phase (380 / 400 / 415 / 440 / 460 / 480 V), and 24 VDC.

Safety

Any problem that could cause the actuator to operate beyond its set limits may create a problem with the valve. The Noah NL range features a mechanical limit switch to protect the valve. After setting the open/close limit switch, stopper bolts are also installed.

This safety device is required to protect the valve in case of an electrical problem with the actuator.

Optional extras

Waterproof (optional)

IP68 waterproof and dustproof rating is available as an option. IP68: 10 m depth / 72 hours

No-voltage auxiliary limit switch (ALS)

Used when the actuator position (open/closed/middle) status is output as a voltage-free contact signal with a cam structure connected in series with the driving shaft, such as the limit switch of the actuator.

No-voltage auxiliary torque switch (ATS)

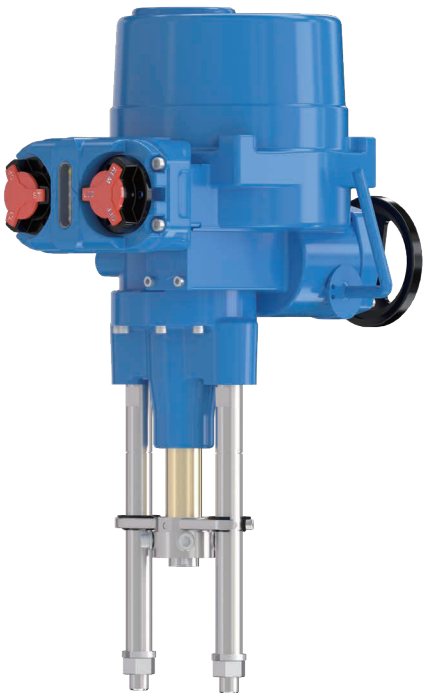
Used when receiving the over-torque status of the actuator as a voltage-free contact signal with a cam structure connected in series with the torque shaft, such as the torque switch of the actuator.

NL Version 2

This model has the same gear configuration as NL Version 1 with a redesigned top cover and new cable entry options.

Local Control Unit (LCU)

The compact LCU can be installed directly or indirectly on the actuator as a field control pane. It is composed of a Local/ Remote switch, Open/Stop/Close switch and LED lamp, enabling easy basic operation of the actuator in the field. Main power 110 V or 220 V.



Current Position Transmitter (CPT)

Outputs the actuator's closed and open (0-100%) position values as a 4-20 mA output signal.

Proportional Control (PCU)

Used to control the actuator so that the opening/closing degree of the valve is proportional to the input signal.

- Input adjustment signal: DC 4-20 mA (Default) / 0-5 VDC / 0-10 VDC / 1-5 VDC / 2-10 VDC
- Output transmission signal: DC 4-20 mA
- External PCU: Terminal block/board separation type
- Built-in PCU: Terminal block/board integrated type

Super Capacitor (SCP)

The actuator has a built-in super capacitor device so that when power is cut off, it operates in the open/closed/stop position set by the user, and can be used semi-permanently with a battery or other capacitor storage device. Contact Rotork for details.

INTEGRAL local control options

The INTEGRAL product presents a more comprehensive control solution than the LCU. It is equipped with a field operation panel, a positive/negative converter, and local control. It can used with all power supply specifications and can be used to switch modes (OFF, LOCAL, REMOTE) and operate (OPEN, CLOSE, STOP) on site. It is used when adding control options.

You can choose between INTEGRAL / SMALL INTEGRAL according to the situation. Contact Rotork for details.

Wired Communication

Our network control options for all major fieldbus networks provide seemless compatibility with existing and new site control systems.

Modbus® is a low-speed communication protocol suitable for small systems with simple and limited scalability.

Profibus® supports high speed and large-scale networks and is widely used in manufacturing and process automation.

Foundation Fieldbus is a protocol that supports peer-to-peer communication between devices and is designed to allow more processing to be done locally in process control systems.

The advantage of HART® is that it uses a hybrid approach of analog systems and digital communications, allowing digital data to be transmitted while maintaining existing infrastructure.

(*Applicable to both general type and integral type) Contact Rotork for details.

Super Capacitor (SCP)

The SCP specification incorporates a super capacitor device inside the actuator, so that when power is cut off, it operates in the open/closed/stop position set by the user, and can be used semi-permanently with a battery or other capacitor storage device.

Standard specifications

Power supply	24 VDC 90-260 VAC 50/60 Hz	**Number of emergency actions**		1 time (Open to Close or Close to Open)
Charging voltage	26.5 VDC	**Charging current**	**24 VDC**	5.9 A
Charging time	3 minutes 30 seconds		**110 VAC**	2.2 A
Weight	0.7 kg (1.54 lbs)		**220 VAC**	1.2 A

***Before using the SUPER CAPACITOR, fully charge it and then use it. It will not operate if not fully charged.**

Performance data

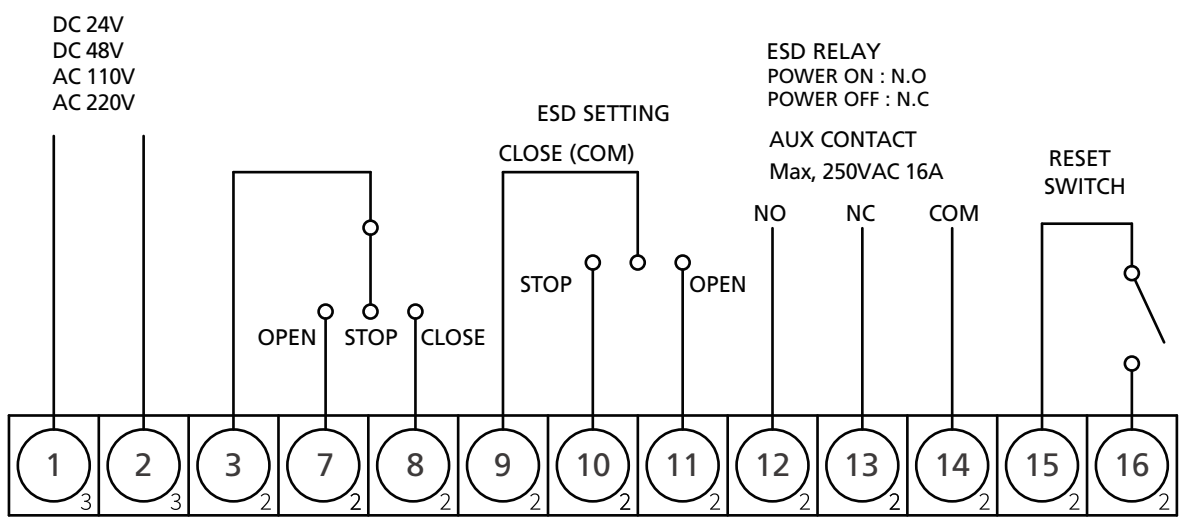
Model	Thrust		Speed	Stroke	Rated current (A) 60 Hz			Motor	Number of handle turns	Weight	
	kN	lbf	mm/sec	mm	24 VDC	110 V	220 V	DC Motor	S4 (%)	kg	lbf
NL04	4	899	1	40	3	1	0.65	15	170	20.5	45.2
NL06	6	1349	1.1	40	4	1.3	0.7	25			
NL08	8	1798	1.1	50	5.6	1.55	0.95	40	250	22.5	49.6
NL10	10	2248	1.1	50	5.6	1.85	1	40			

Optional extras

Proportional Control Unit (PCU)	Controls the actuator to open and close the valve proportionally to the input signal
Non-voltage auxiliary limit switch (ALS)	Used when receiving the actuator position (open/closed/middle) status as a voltage-free contact signal with a cam structure connected in series with the driving shaft, such as the actuator's limit switch.
No-voltage auxiliary torque switch (ATS)	Used when receiving the over-torque status of the actuator as a voltage-free contact signal with a cam structure connected in series with the torque shaft, such as the torque switch of the actuator.

Standard wiring diagram

SCP type standard wiring diagram



INTEGRAL controls

The NA range INTEGRAL actuator can be operated on-site with the integrated operation panel featuring LOCAL/REMOTE selection switch and the open/close/stop buttons. The current operating status can be easily seen on the clear 0~100% LCD. Additional options and control cards can easily be inserted inside the INTEGRAL control unit. It can also be used with all power sources.

Standard specifications

Power supply	1-phase 110/220 VAC 50/60 Hz, 3-phase 380/440 VAC 50/60 Hz	
Internal control power	24 VDC	
External control power supply	110 VAC, 24 VDC	
Position control	Open : 1ea / Close : 1ea	
Torque control	Open : 1ea / Close : 1ea (except NL04, NL06)	
Controller	1. Non-penetrating push button [Open/Stop/Close] 2. Non-penetrating selector switch [Remote/Oil/Local] 3. Station controller 4. Phase converter	
Indicator	Digital screen (0-100%)	
Remote dry contact	1. Full Open / Close 2. Opening / Closing 3. Open / Close Over Torque 4. Monitor (Remote / Local)	
Cable entries	Basic	1-PF 1", 2-PF ¾"
	Options	1-NPT 1", 2-NPT ¾" 1-M25 Pitch 1.5, 2-M20 Pitch 1.5
Potentiometer	0-1 kΩ	
Lubricant	Shell Gadus S2 V220 2	
Foreign port material	Aluminium alloy	
Surface treatment	Anodising	
Standard paint finish	Polyester powder coating (TGIC-Free)	

Optional extras

Small INTEGRAL (220 V 1-phase only)

Integral type designed for use under 220 V 1-phase voltage conditions.

Proportional Control Unit (PCU)

Used to control the actuator so that the opening/closing degree of the valve is proportional to the input signal.

- Input adjustment signal: DC 4-20 mA (Default) / 0-5 VDC / 0-10 VDC / 1-5 VDC / 2-10 VDC
- Output transmission signal: DC 4-20 mA

Current Position Transmitter (CPT)

The resistance value of the potentiometer directly connected to the drive shaft can be converted into a current value to easily determine the position of the actuator.

- Output transmission signal: DC 4-20 mA

Mobile Application

Connect the actuator and smartphone via Bluetooth® wireless communication and use the mobile application to check the status and operate it.

Wired Communication

Our network control options for all major fieldbus networks provide seemless compatibility with existing and new site control systems.

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