

Technical data Multi-turn actuators for open-close and modulating duty

General information

AUMA multi-turn actuators PF-M25 – PF-M100 are equipped with integral controls.

Type	Speed in rpm (adjustable in 9 steps) ¹⁾		Torque range ²⁾	Run torque ³⁾ / modulating torque ⁴⁾	Valve attachment	Valve shaft			Handwheel		Weight ⁵⁾
	25 W	50 W				Max. [Nm]	Max. [Nm]	Standard EN ISO 5211	Cylindrical max. [mm]	Square max. [mm]	
PF-M 25	1 – 6	2 – 14	10 – 25	12.5	F05/F07/F10	20	17	17	125	20.2 : 1	8
PF-M 50	0.5 – 3	0.5 – 6	20 – 50	25	F05/F07/F10	20	17	17	125	20.2 : 1	8
PF-M 100	0.5 – 1.5	0.5 – 3	40 – 100	50	F07/F10	38	30	27	160	17.5 : 1	11

- 1) The values for output speed refer to an operation at a load of 70 % of the maximum torque
- 2) The "Torque by-pass" function (can be activated) allows increasing the pre-set torque to 130 % (unseating torque). This increase only applies during actuator start for an adjustable time period, allowing to unseat blocked valves.
- 3) Maximum permissible torque for 15 min. running time
- 4) Maximum permissible torque for modulating duty
- 5) Specified weight includes multi-turn actuator, unbored coupling and handwheel.

Features and functions

Type of duty	Open-close duty	Classes A and B according to EN 15714-2, short-time duty S2 - 15 min
	Modulating duty	Class C according to EN 15714-2, intermittent duty S4 - 50 % with maximum number of starts: <ul style="list-style-type: none"> • PF-M25 – 1,200 starts/hour • PF-M50 – 1,200 starts/hour • PF-M100 – 1,200 starts/hour
	For nominal voltage and +40 °C ambient temperature and at run or modulating torque load. The type of duty must not be exceeded.	
Motor	Variable speed, brushless motor	
Insulation class	F, tropicalized	
Motor protection	Via calculated temperature value	
Self-locking	Yes, at standstill with spring-applied brake	
Turns / stroke	Standard:	1 – 27 turns/stroke
	Option:	27 – 400 turns/stroke
Limit switching	Via hall sensors	
Torque switching	Via electronic current measurement. Tripping torques adjustable in 8 steps	
Mechanical position indicator (option)	Continuous indication. Versions: 1 – 9 turns/stroke 9 – 14 turns/stroke 14 – 27 turns/stroke	
Manual operation (option)	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation	
Coupling	Standard:	Coupling unbored
	Options:	<ul style="list-style-type: none"> • Coupling unbored extended • Finish machining of coupling (standard or extended) <ul style="list-style-type: none"> - Bore according to EN ISO 5211 with 1 keyway according to DIN 6885-1 - Square bore according to EN ISO 5211 - Two-flat according to EN ISO 5211
Valve attachment	Standard:	Dimensions according to EN ISO 5211
	Options:	<ul style="list-style-type: none"> • With output drive type A • With LE linear thrust unit • With GS worm gearbox

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Power supply	Standard voltages: 1-phase AC current: 100 – 240 V / 50 – 60 Hz Permissible variation of mains voltage: ±10 % Permissible variation of mains frequency: ±5 % For current consumption, refer to Electrical data for PROFOX multi-turn actuators	
Overvoltage category	Category III according to IEC 60364-4-443	
Power electronics	With integral motor controller (current consumption in standby mode 3 W)	
Control (input signals)	3 digital Inputs 3 digital inputs (via opto-isolator, with one common) <ul style="list-style-type: none"> Control voltage 24 V DC, current consumption: approx. 15 mA per input Minimum pulse duration for shortest operation pulse: 100 ms All digital inputs must be supplied with the same potential. All inputs can be configured as required Standard assignment: OPEN, STOP, CLOSE Assignment for option with positioner: OPEN, CLOSE, MODE 	
	Analogue Input (option) Analogue Input (option)	<ul style="list-style-type: none"> 0/4 – 20 mA or 0 – 10 V No galvanic isolation Used as input signal for position setpoint (in combination with positioner) or as input signal for motor speed.
Status signals (output signals)	3 digital Outputs 3 digital Outputs	<ul style="list-style-type: none"> Freely configurable semi-conductor output contacts, per contact max. 24 V DC, 100 mA (resistive load) Outputs can be configured as required Standard assignment: End position OPEN, end position CLOSED, collective fault signal
	Analogue output Analogue output	<ul style="list-style-type: none"> Position feedback 0/4 – 20 mA (load 500 Ω) or 0 – 10 V No galvanic isolation
Voltage output (option)	Auxiliary voltage 24 V DC, max. 40 mA for supply of control inputs, without galvanic isolation.	
Functions	Standard:	<ul style="list-style-type: none"> Switch-off mode adjustable: Limit or torque seating for end positions OPEN and CLOSED Torque monitoring across the whole travel Torque by-pass Programmable EMERGENCY behaviour <ul style="list-style-type: none"> Digital input low active, Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN Speed control <ul style="list-style-type: none"> Ramps Program operation profiles Program either specific speed for OPEN and CLOSE operations or one digital input
	Option:	<ul style="list-style-type: none"> Positioner (for modulating actuators): <ul style="list-style-type: none"> Position setpoint via analogue input E1 = 0/4 – 20 mA or 0 – 10 V Programmable behaviour on loss of signal Automatic adaptation of dead band (adaptive behaviour selectable) Selection between open-close duty and modulating duty via digital MODE input
Electrical connection	Cable gland: 3 x M20 and inside terminal rail for wire connection	
Wiring diagram (basic version)	Open-close duty	TPC P00A1A1A100000
	Modulating duty	TPC P00A1B1A100000

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Operation and Display		
Basic at actuator	Status indication	FOX-EYE (indication LED) Status indications: OK, end positions, faults and "Bluetooth connection active".
	Set end positions	4 buttons and 1 LED are located below the hood. Run actuator in directions OPEN and CLOSE. Set end position once mounted to the valve
Smart Via Bluetooth using AUMA Assistant App or AUMA CDT software in the latest version	Set end positions	Run actuator in directions OPEN and CLOSE. Set end position once mounted to the valve.
	Configuration	Basic settings for operation: <ul style="list-style-type: none"> • Rotation speed • Type of seating for end positions, Torque switching • Assignment of signal inputs and outputs • Fieldbus parameter (if fieldbus option has been selected). • etc.
		Additional functions:
	Diagnostics	Monitoring key figures and measured values for preventive maintenance and consequently increasing process safety. Limit values can be set. Deviations generate warning signals which can be transmitted to the DCS via binary outputs or fieldbus.
Actuator:		Temperature value within actuator Key figures regarding lifetime of mechanics, grease, electronics, and motor.
Actuator and valve:		Method for identifying changes in torque requirement: Perform reference operation and save torque as reference profile. Define tolerance range. Perform comparative operation if required. Values outside tolerance initiate a signal which is communicated as described above.
Further key figures:		In basic version, the actuator monitors and records further figures and conditions. The generated fault and warning signals are saved within the event log. These signals can be configured as requested. An overview in the AUMA Assistant App or the CDT software shows all available fault/warning signals with option to enter the details.

Service conditions		
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level > 2 000 m above sea level on request	
Ambient temperature	–30 °C to +70 °C	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	Standard:	IP67
	Option:	According to AUMA definition, enclosure protection IP68 meets the following requirements: <ul style="list-style-type: none"> • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Not valid in combination with gearboxes.	

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Service conditions		
Corrosion protection	Standard:	KS Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination	
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)
	Option:	Available colours on request
Lifetime	Open-close duty:	10,000 operating cycles OPEN - CLOSE - OPEN One operation cycle consists of 25 turns in both directions (OPEN-CLOSE-OPEN)
	Modulating duty:	1.8 million modulating steps
	The lifetime depends on the load and the number of starts. A high starting frequency will rarely improve the modulating accuracy. To reach the longest possible maintenance and fault-free operating time, the number of starts per hour chosen should be as low as permissible for the process.	
Further information		
EU Directives	Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)	
Reference documents	Dimensions PROFOX PF-M50 – PF-M100 Electrical data PROFOX PF-M25 – PF-M100	