

General Information

ACV 01.2 actuator controls for controlling variable speed multi-turn actuators of the SAV/SARV .2 type range with Profinet interface.

Features and functions

Power supply	Standard voltages AC:									
	3-phase AC					1-phase AC				
	Voltages/frequencies					Voltages/frequencies				
	Volt	220 – 240		380 – 480		Volt	110 – 120		220 – 240	
	Hz	50	60	50	60	Hz	50	60	50	60
	Permissible variation of mains frequency: ±5 % Permissible variation of mains voltage: ±10 % –30 % for maximum 10 seconds within a range of 380 V – 480 V with the following restrictions: • If required, the motor speed will be reduced down to nominal speed depending on the load of the actuators used • A low mains voltage increases the mains current consumption; a higher mains voltage reduces the mains current consumption • The torque limits of the actuators used might be decreased for a short time, if applicable									
External supply of the electronics (option)	24 V DC: +20 % / –15 % Current consumption: Basic version approx. 250 mA, with options up to 500 mA For external electronics supply, the power supply of integral controls must have an enhanced isolation against mains voltage in compliance with IEC 61010-1 and the output power be limited to 150 VA.									
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator									
Control voltage/current consumption for control inputs	Standard	24 V DC, current consumption: approx. 10 mA per input								
	Options:	48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 100 – 125 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input								
	All input signals must be supplied with the same potential.									
Local controls	Standard:	• Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated								
	Option:	• Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)								
Bluetooth Communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments; supports the SSP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool)									

Features and functions		
Application functions	Standard:	- Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED - Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) - Start and end of stepping mode as well as ON and OFF times can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds - Operation profile with any 8 intermediate positions: Position can be set between 0 and 100 %, reaction and signal behaviour programmable - Velocity profile with up to 10 ranges, velocity can be individually adjusted for positions OPEN and CLOSED for each range - Running indication blinking: can be set - Speed/operating time source can be selected (REMOTE, LOCAL) 4 internal nominal speeds or operating times can be programmed (and selected in LOCAL) - Nominal speed source can be selected for REMOTE (binary, analogue, fieldbus) - Soft start, soft stop with velocity reduction (adjustable) - Positioner: - Position setpoint via fieldbus interface - Programmable behaviour on loss of signal - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control via fieldbus - Modulating duty with proportional operation (2 % – 20 %) - Positioning accuracy <0.2 % (SAV/SARV .2 only)
	Options:	- PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs for process setpoint and actual process value - Multiport valve: Up to 16 positions, signals (pulse or edge) (SAV/SARV .2 only) - Lift Plug Valve: In combination with multiport valve (SAV/SARV. 2 only) - Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set - Static and dynamic torque recording for both rotation directions with torque measurement flange as additional accessory
Monitoring function		- Valve overload protection: Adjustable, results in switching off and generates fault signal - Motor temperature monitoring (thermal monitoring): Results in switching off and generates fault signal - Monitoring the heater within actuator: Generates warning signal - Monitoring of permissible on-time and number of starts: Adjustable, generates warning signal - Operating time monitoring: Adjustable, generates warning signal - Phase failure monitoring: Results in switching off and generates fault signal
Diagnostic functions		- Electronic device ID with order and product data - Operating data logging: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings - Time-stamped event report with history for setting, operation and faults: - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" - Torque characteristics (for version with MWG in actuator): 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately - Torque characteristics stored can be shown on the display.
Motor protection evaluation	Standard:	Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Option:	PTC tripping device (TMS module) in combination with PTC thermistors within actuator motor
ACV 01.2 heating system (option)	Temperature version below –30 °C including heating system:	
	- in version with internal power supply at 400 V AC, or - in version with external power supply for 230 V AC or 115 V AC For external power supply of the heating system, the minimum operational temperature may not fall below –40 °C in case of danger of disconnection of the mains voltage.	

Features and functions

Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	- Terminals or crimp connection - Gold-plated control contacts (pins and sockets)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads

For version with MWG within actuator

Setting of limit and torque switching via local controls

Torque feedback signal	Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω).
Wiring diagram (basic version)	TPCHN000N1AF-A000 TPA00R100-0I1-000, 3-phase AC current, 380 V – 480 V TPCHN000N1AE-A000 TPA00R100-0I1-000, 1-phase AC current, 110 V – 120 V

Settings/programming the Profinet interface

The Profinet interface is set (assignment of device name as well as assignment of the IP address) using the Profinet engineering tools of the DCS.

General data of the Profinet interface

Communication protocol	Profinet according to IEC 61158 and IEC 61784	
Network topology	Star topology, point-to-point wiring Due to the switch function integrated within the AC 01.2, both line topology and redundant ring topology (MRP) are available. Unused network ports can be switched off.	
Connection	Ethernet IEEE 802.3 2-pair cabling in compliance with IEC 61784-5-3 Auto Negotiation and Auto Crossover are supported.	
Profinet connection	2 x Ethernet connection terminals with insulation displacement connection, integral screen with strain relief, suitable for all Ethernet cable types or 2 x RJ-45 Connection via connector for field assembly, one RJ-45 connector for Cat.5 (K009.706) is included in the scope of supply of the electrical connection.	
Transmission rate	100 Mbits/s (100BASE-TX), full duplex	
Cable length	Max. 100 m	
Device classes	I/O controller (usually the PLC/DCS) I/O devices (field devices) I/O supervisor (programming device, PC or HMI for diagnostics/commissioning)	
Fieldbus access	Provider - consumer model	
Supported Profinet specification	Version V2.32	
Supported Profinet functions	Cyclic Profinet communication (RT) Acyclic Profinet communication (Read/Write Record)	
Supported Profinet alarms	Status Alarm Update Alarm Port Data Change Notification Alarm Sync Data Change Notification Alarm	
Supported network diagnostic and management protocols	ACD (Address Conflict Detection) ARP (Address Resolution Protocol) DCP (Discovery and Basic Configuration Protocol) SNMP (Simple Network Management Protocol) LLDP (Link Layer Discovery Protocol) in accordance with IEEE 802.1AB These functions allow assignment of the Profinet device name, a graphic representation of the plant topology, port-granular diagnostics as well as neighbourhood detection as the basis for quick commissioning and easy device replacement.	
Profinet redundancy	Standard:	Media Redundancy Protocol in compliance with IEC 62439 (switch function integrated within AC 01.2)
	Option:	System redundancy S2 Single NAP
Vendor ID	319	
Ident Code	1	

General data of the Profinet interface

Profinet device type	AUMA-Actuator-AC01-2	
Identification & Maintenance properties	I&M0 Profile ID:	62976
	I&M0 Profile Specification Type:	4
	I&M0 Version:	257
	I&M0 Supported:	30
Profinet Ident Nr.	0x013F; 0x0001	
DAP (Device Access Point)	0x80010000	
Conformance class	CC-B (Conformance Class B) for the Profinet application of the AC actuator controls CC-C (Conformance Class C) for the integral switch function	
Netload Class	III	
Device diagnostics via Ethernet	Via TCP/IP and integral web server possible Via FDI package & software for diagnostics/commissioning (e. g. Siemens PDM, Emerson AMS)	
Device integration	Via GSD (ml) file (available for download at www.auma.com)	

Commands and signals of the Profinet interface

Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE, PVST		
Process representation input (feedback signals)	End positions OPEN, CLOSED Actual position value Actual torque value, requires MWG in actuator Selector switch in position LOCAL/REMOTE Running indication (directional) Torque switches OPEN, CLOSED Limit switches OPEN, CLOSED Manual operation by handwheel or via local controls Analogue (2) and digital (4) customer inputs		
Process representation input (fault signals)	Motor protection tripped Torque switch tripped in mid-travel One phase missing Failure of analogue customer inputs		
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command		

Service conditions

Use	Indoor and outdoor use permissible		
Mounting position	Any position		
Installation altitude	≤ 2 000 m above sea level > 2,000 m above sea level on request		
Ambient temperature	Standard:	−30 °C to +70 °C	
	Options:	−40 °C to +70 °C	
		−60 °C to +60 °C, extreme low temperature version	
		Low temperature versions including heating system. For further options, refer to line "ACV 01.2 heating system (option)".	
Ambient temperature	Standard:	−25 °C to +70 °C	
Humidity	Up to 100 % relative humidity across the entire permissible temperature range		

Service conditions		
Enclosure protection in accordance with IEC 60529	Standard:	IP68
	Option:	DS terminal compartment additionally sealed against interior of actuator controls (double sealed)
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not possible during 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	1 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.	
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

Accessories	
Wall bracket	For actuator controls mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and actuator controls is max. 16 m.
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool)
Torque measurement flange DMF (SAV/SARV .2 only)	Accessory for torque measurement

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU RoHS Directive 2011/65/EU RED Directive 2014/53/EU
Reference documents	Electrical data SAV 07.2 – SAV 16.2/SARV 07.2 – SARV 16.2 Electrical data SQV 05.2 – SQV 14.2/SQVR 05.2 – SQVR 14.2