SINTESI SMART Modbus

ROTARY ACTUATOR WITH COMMUNICATION PROTOCOL AND PROPORTIONAL CONTROL FOR BALL VALVE

USE

- zone heating / cooling systems
- HVAC
- Building Management Systems (BMS)
- latest generation of domotic systems

KEY FEATURES

- remote management via RS485 serial control with MODBUS-RTU communication protocol
- powered-on, current mode or modbus proportional control
- fast push connection with SINTESI ball valve range
- manual operation

TECHNICAL FEATURES	SINTESI SMART Modbus
Power supply	24V DC/AC ± 10% 50/60Hz
Power consumption during operation	3,5 W
Power consumption during standby	0,3 W
Feeder cable	Length 80 cm
Nominal torque	6 Nm
Maximum torque	8 Nm
Protocol	Modbus - RTU
Standard	EIA-RD 485 half duplex mode
Speed	9600 Baud/s
Number of bits	8
Stop bit	1
Parity	None
Operating angle	95°
Operating time (90°)	30 sec • 60 sec • 120 sec
Positioning accuracy	± 3%
Maximum noise (at 1m distance)	40 dB(A)
Position indicator	Rotating arrow
Installation	Indoor, protected from frost *
Operational room temperature	+5°C …+50°C
Ambient humidity	max 95% RH, no condensation
Protection degree	IP54
Insulation degree	II - double insulation ▢
Outlet shell material	Polyamide PA 6, 30% fiberglass
Maintenance	None
Certification	CE

* the actuator must be installed indoors and far from the direct sunlight

Notes and Warnings: The device is designed to be used in heating systems, cooling systems, ventilation systems and - in general - in civil installations with features corresponding to the above-mentioned specifications. It can not be used outside the intended application field.

VERSIONS

Command	Operating times	Code
RS485 Modbus RTU 24V AC / DC	30 s • 60 s • 120 s	SMMODBUS

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FUNCTIONS

● **Modbus communication**

The communication protocol used is compatible with MODBUS-RTU. The protocol handles up to 255 different tools. The data is transmitted as a packet (message) and is controlled by a word (CRC). There are no limits to the number of possible attempts the Master can make. The communication complies with the EIA-RS485 standard in half duplex mode. In this case, only one instrument at a time can keep the line busy, since only two wires are used; this means that there must be a master polling the slave instruments in order to switch between query and answer. Up to 32 devices can be connected on the same physical line (including master). In order to increase the number of the slave instrument, the necessary repeaters must be used.

● **Proportional control**

SINTESI SMART Modbus is arranged to receive proportional commands: by means of a suitable address it is possible to activate the function and to set the type of signal (powered-on or current mode).

● **Auto-calibration**

The actuator is programmed in order to make a calibration cycle every 2000 inversion of the sense of rotation commands. The purpose of the procedure is reaching the calibration point located at the complete closed position of the actuator. Afterwards, the actuator resumes its normal operation and the counter is reset to zero.

Note: the procedure does not take place if the actuator reaches the close position before the 2000 inversion commands.

DESCRIPTION OF THE MODBUS REGISTER • The Modbus log description table can be downloaded from **www.comparato.com.**

No	Address	Log	Read Write
		INPUT	
1	40001	System parameters editing enable	R/W
2	40002	Proportional control enable	R/W
3	40003	Positioning control	R/W
4	40004	Reset command	R/W
		SYSTEM PARAMETERS	
5	40005	Motor step angle	R/W
6	40006	Transmission ratio	R/W
7	40007	Idleness current	R/W
		OPERATING PARAMETERS	
8	40008	Command	R/W
9	40009	Operating angle	R/W
10	40010	Operating time	R/W
11	40011	Proportional command dead band	R/W
12	40012	Proportional command reversal	R/W
13	40013	-	-
14	40014	-	-
15	40015	Closing angle correction	R/W
16	40016	Opening angle correction	R/W
17	40017	Modbus address	R/W
		OUTPUT	
18	40018	Position feedback	R
19	40019	Alarm status	R
20	40020	Model	R
21	40021	Firmware review	R

ADDRESS
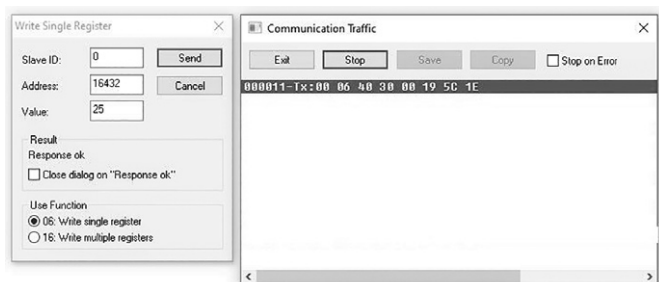
SINTESI SMART Modbus is provided with physical address 100 by default.

The address can be edited connecting each device to the Modbus network and sending a function code command 06 (FC06- write single register) to the physical address 0 writing the new peripheral device address in the memory log (0X4030 hex - 16432 dec).
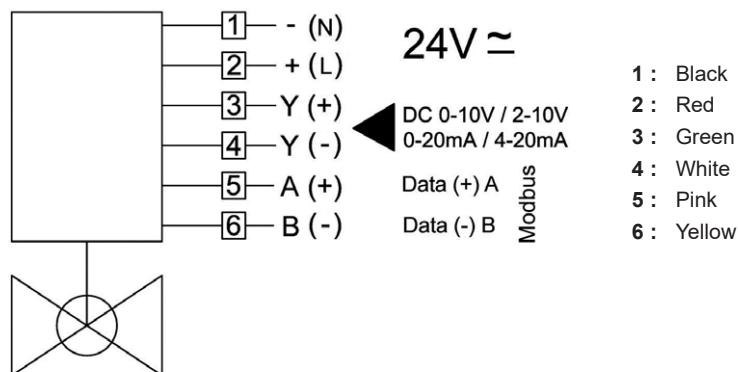
E.g.: Actuator programmed with physical address 25

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ELECTRICAL CONNECTIONS

1	- (N)	24V ≃
2	+ (L)	
3	Y (+)	DC 0-10V / 2-10V
4	Y (-)	0-20mA / 4-20mA
5	A (+)	Data (+) A — Modbus
6	B (-)	Data (-) B — Modbus

1 : Black
2 : Red
3 : Green
4 : White
5 : Pink
6 : Yellow

NOTES • The connection of the power cable should be made inside a branch box with at least an IP54 protection.

COUPLING SEQUENCE TO BALL VALVES WITH FAST PUSH CONNECTION

MOTOIRISED VALVE SEALING WITH LEAD

By means of special seals (not included), it is possible to seal the motorised valve with lead, in order to prevent the actuator to be removed from the ball valve.

MANUAL OPERATION

In case of need, it is possible to open/close the ball valve manually, as follows:

1. Release the actuator from the ball valve;
2. Insert the actuator in the body of the valve, without pressing it;
3. Proceed with the desired manual activation, using the actuator as a knob.
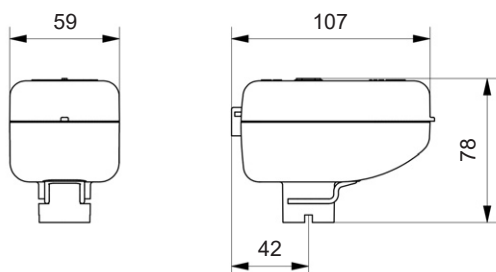
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OVERALL SIZE

ACTUATOR

59
107
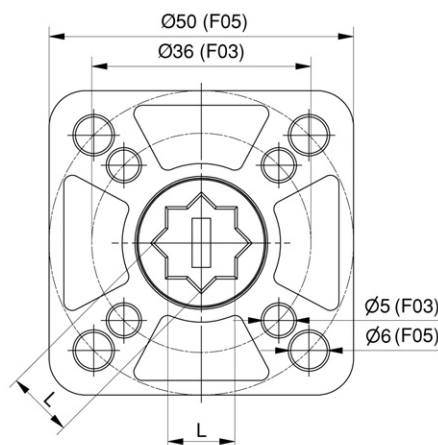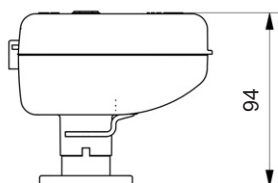78
42

SPACER • cod. DISN04

101
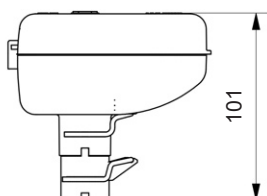
ISO 5211 CONNECTION KIT • cod. AIST01

94

Ø50 (F05)
Ø36 (F03)
Ø5 (F03)
Ø6 (F05)
L
L

ISO Connection	L
F03	9
F05	11

EXAMPLE OF SPECIFICATIONS

SINTESI SMART MODBUS actuator by means of an RS485 serial control with MODBUS-RTU protocol, powered-on or current mode proportional control, maximum torque: 8 Nm, power supply: 24V AC/DC, operating time: 95°, degree of protection: IP54, for ball valve: 2-way / 3-way / 6-way / PICV / by-pass, connection to the ball valve via Sintesi fast push connection.

Brand: **COMPARATO**
Code: **SMMODBUS**

BI**M**
BUILDING
INFORMATION
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UPDATED DATA SHEETS AVAILABLE AT www.comparato.com

HYDROTHERMAL SYSTEMS
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