

Features

- Modbus- RTU digital control
- Add up to 127 actuators on single bus
- Multiple alarm/status messaging
- Configurable baudrate
- Able to be operated in 4-20 mA analog control

Applications

The 5618 Modbus module is available as a factory pre-installed option for Valworx 5618 series actuators EPS (Electronic Positioning System) actuators. Modbus- enabled actuators greatly simplify wiring for multiple device installations.

Valve position can be adjusted from 0–100% using an internal scale of 0–10000 (full closed to full open).

Operation

The actuator is controlled using the Modbus Write Multiple Registers command (Function Code 0x10). Available control commanded are Set Actuator Position and Actuator Stop. Actuator maintains position upon loss of signal and stays in last position upon loss of power. Available configuration commands are Set Device Address and Set Baud Rate.

Actuator status is read using the Modbus Read Multiple Registers command (Function Code 0x03). Available status includes Valve Position, Position Signal Error, Input Signal Error, Over Torque Error, Actuator Stuck Error, Actuator Opening and Actuator Closing.

The Modbus actuator can also be controlled in using a 4-20mA analog signal. Valve position is still updated in the Modbus register (0x0019) even if running in analog mode. Analog mode is canceled upon receipt of modbus position command.

Rotation	0-90°
Input Signal	4-20mA
Output Signal	4-20mA
Deadband	0.5%-5.0% Adjustable
Steps (analog)	4/20mA: Min. 150 steps/ 90°
Impedance 4-20mA	180-280 Ohms

Note: Overall accuracy of a valve assembly will vary depending on the type of valve selected and how the valve is mounted to the actuator.



Description

Modbus-enabled 5618 actuators are controlled using standard Modbus-RTU protocol. Valve position, alarms and status can all be accessed over the Modbus network with standard Modbus-RTU Function codes 0x03 and 0x10.

Upon receipt of a valve position command, the Modbus module compares the commanded position with the actual position. An electric motor/gear drive rotates the output drive until the comparisons match. Mis-matched values when the actuator is running are flagged as a position error.

Approvals

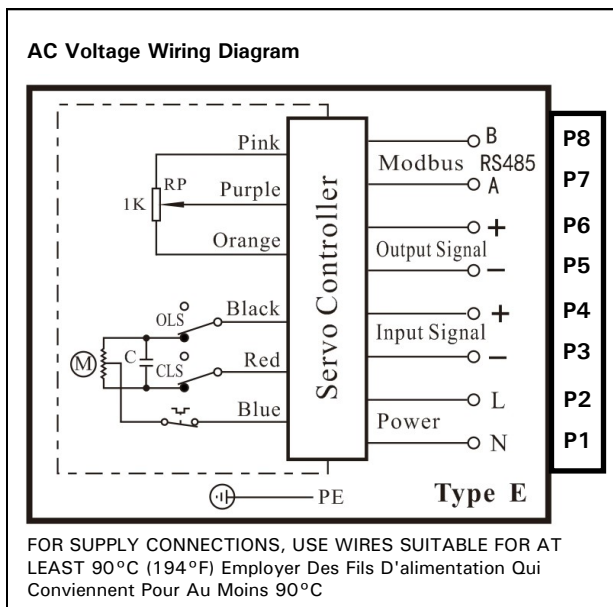
- CE Conformance

MOD - Modbus Control System

Stock Number	Description	Used with Valworx Electric Actuators
A5618MXX01	Modbus Control Module for 561857C as accessory	561857C
A5618MXX02	Modbus Control Module for 561856C as accessory	561856C
A5618MXX15	Modbus Control Module for 561876A as accessory	561876A
A5618MXX35	Modbus Control Module for 561877C as accessory	561877C

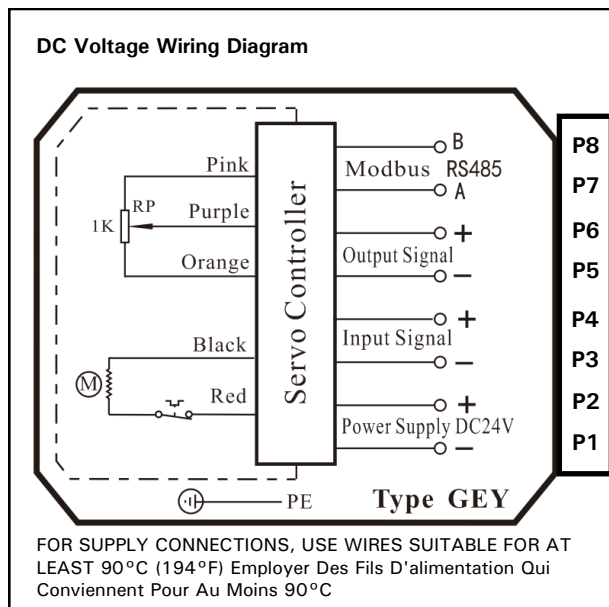
Note: The modbus is a factory installed option. The modbus is pre-installed at the factory when ordered as an option for the 5618 series electric actuator or an electric actuated valve assembly.

ELECTRICAL WIRING DIAGRAMS



AC Voltage Wiring:

1. AC power - Neutral
2. AC power - Line/Hot
3. Analog Input control signal - Negative (-)
4. Analog Input control signal - Positive (+)
5. Analog Output monitoring signal - Negative (-)
6. Analog Output monitoring signal - Positive (+)
7. RS485 A Modbus (+)
8. RS485 B Modbus (-)



DC Voltage Wiring:

1. DC power - Negative (-)
2. DC power - Positive (+)
3. Analog Input control signal - Negative (-)
4. Analog Input control signal - Positive (+)
5. Analog Output monitoring signal - Negative (-)
6. Analog Output monitoring signal - Positive (+)
7. RS485 A Modbus (+)
8. RS485 B Modbus (-)

NOTES: 1. Actuator should have its own fused and isolated circuit. 2. Do not wire actuators in parallel. 3. Output signal is 4-20mA.

Use of the output signal is optional.

Table 1 – Register

Address	Bit	Group	Signal Name	Min	Max	Unit	r/w	Type	Truth Table	Description
0x0010	b15-b5	\	\	\	\	\	r/w	hex	reserve 0	Reserve
	b5	\	\	\	\	\	r/w	hex	reserve 0	Reserve
	b4	control	stop	\	\	\	r/w	hex	1:stop, 0:normal	Stop running
	b3	\	\	\	\	\	r	hex	reserve 0	Reserve
	b2	\	\	\	\	\	r	hex	reserve 0	Reserve
	b1-b0	control	mode	\	\	\	r/w	hex	1: communication control other: exit communication control	Control mode
0x0011	b15-b0	control	SetOpenDegree	0	10000	%	r/w	int hex	0-10000 corresponds to 0-100%open degree	Control valve open degree (ratio coefficient 1/100)
0x0012	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0013	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0014	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0015	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0016	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0017	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0018	b15-b6	\	\	\	\	\	r	hex	reserve 0	Reserve
	b5	infor	errPosition	\	\	\	r	hex	1: position signal error	Error: Position signal flag
	b4	infor	errSignal	\	\	\	r	hex	1: input signal error	Error: input signal flag
	b3	infor	overTorqueFlag	\	\	\	r	hex	1: over torque	Over torque flag
	b2	infor	stuckFlag	\	\	\	r	hex	1: stuck	Stuck flag
	b1	infor	openRunFlag	\	\	\	r	hex	1: valve close in progress	Open valve flag
0x0019	b0	infor	closeRunFlag	\	\	\	r	hex	1: valve open in progress	Close valve flag
	b15-b0	infor	openDegree	0	10000	%	r	int hex	0-10000 corresponds to 0-100% open degree	Current valve open degree (ratio coefficient 1/100)
0x001A	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x001B	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x001C	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x001D	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x001E	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x001F	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0040	b15-b0	config	cfgMode	1	127	\	rw	hex	0x0000: enter normal mode	Mode select, the configuration parameters can be modified only in configuration mode
									0xA501: enter config_mode	
0x0041	b15-b0	config	cmm_addr	1	127	\	rw	hex	1 ~ 127	Set communication address
0x0042	b15-b0	config	cmm_baudrate	\	\	\	rw	hex	0: baudrate 4800	Set baudrate The baudrate is written according to the truth table. The baudrate is returned according to the actual value
									1: baudrate 9600	
									2: baudrate 19200	
									3: baudrate 115200	
0x0043	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0044	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0045	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0046	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0047	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve
0x0048	b15-b0	\	\	\	\	\	r	hex	reserve 0	Reserve