800-543-9038 USA
866-805-7089 CANADA
203-791-8396 LATIN AMERICA

Wire Size vs. Length of Run for SY Series Actuators

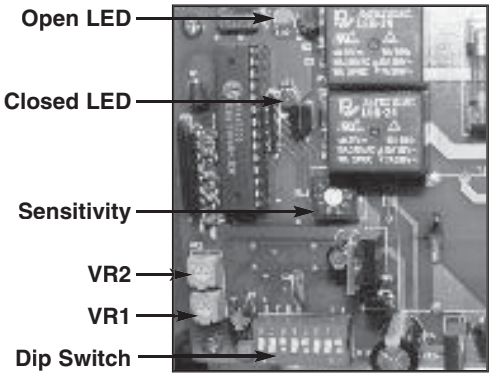
24 VAC		SY1	SY2	SY3	SY4	SY5
		Amps	Amps	Amps	Amps	Amps
	wire gauge	1.8	3	3	6	6.5
		MAX Distance between Actuator and Supply (feet)				
	18	92	55	55		
	16	144	87	87	43	40
	14	233	140	140	70	65
	12	357	214	214	107	99
	10	606	364	364	182	168
	8	905	543	543	271	250

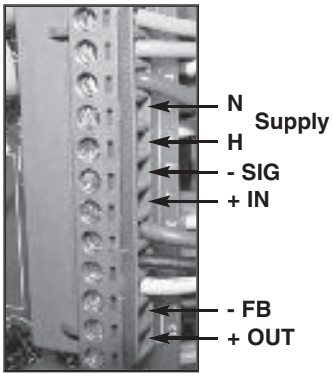
110 VAC		SY1	SY2	SY3	SY4	SY5	SY6	SY7	SY8	SY9	SY10	SY11	SY12
		Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps
	wire gauge	0.5	1	1	1.3	1.5	1.8	3.2	4	3.2	4	3	4
		MAX Distance between Actuator and Supply (feet)											
	18	1515	758	758	583	505	421	237	189	237	189	253	189
	16	2381	1190	1190	916	794	661	372	298	372	298	397	298
	14	3846	1923	1923	1479	1282	1068	601	481	601	481	641	481
	12	5882	2941	2941	2262	1961	1634	919	735	919	735	980	735
	10	10000	5000	5000	3846	3333	2778	1563	1250	1563	1250	1667	1250
	8	14925	7463	7463	5741	4975	4146	2332	1866	2332	1866	2488	1866

220 VAC		SY1	SY2	SY3	SY4	SY5	SY6	SY7	SY8	SY9	SY10	SY11	SY12
		Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps
	wire gauge	0.3	0.5	0.5	0.6	0.7	0.8	1.6	2	1.6	2	1.6	2.2
		MAX Distance between Actuator and Supply (feet)											
	18	5051	3030	3030	2525	2165	1894	947	758	947	758	947	689
	16	7937	4762	4762	3968	3401	2976	1488	1190	1488	1190	1488	1082
	14	12821	7692	7692	6410	5495	4808	2404	1923	2404	1923	2404	1748
	12	19608	11765	11765	9804	8403	7353	3676	2941	3676	2941	3676	2674
	10	33333	20000	20000	16667	14286	12500	6250	5000	6250	5000	6250	4545
	8	49751	29851	29851	24876	21322	18657	9328	7463	9328	7463	9328	6784

The NEC mandates that 24 VAC over 100 VA power requires CLASS 1 wiring conduit. Local codes may vary. Do NOT mix CLASS 1 & CLASS 2 circuits in the same conduit. Generally, 24 VAC actuators over 100 VA should be changed to 120 VAC models.

BELIMO







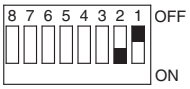
Sensitivity switchsetting is position #3 for factory default. To widen dead-band, select a higher number (up to 9).

INSTALLATION NOTES

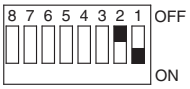
CAUTION

Notes:
1. Applicable to the SY1 and legacy SY2-12 actuators.
2. **Do not change sensitivity or dip switch settings with power applied!**
3. VR1 and VR2 are factory calibrated and should not be moved.
4. Motor CAMS have been factory calibrated and should not be moved.

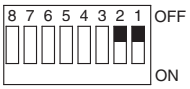
Dip Switch Settings



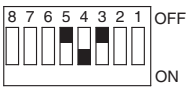
INPUT = 2-10 VDC



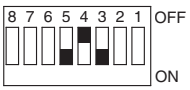
INPUT = 4-20mA



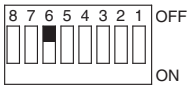
INPUT = 1-5 VDC



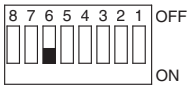
OUTPUT = 4-20mA



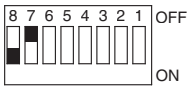
OUTPUT = 2-10 VDC



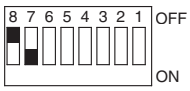
RESPONSE = DIRECT



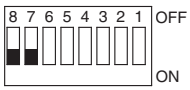
RESPONSE = REVERSE



LOSS OF SIGNAL = CLOSED (Direct Acting)
LOSS OF SIGNAL = OPEN (Reverse Acting)



LOSS OF SIGNAL = OPEN (Direct Acting)
LOSS OF SIGNAL = CLOSED (Reverse Acting)



LOSS OF SIGNAL = STOP

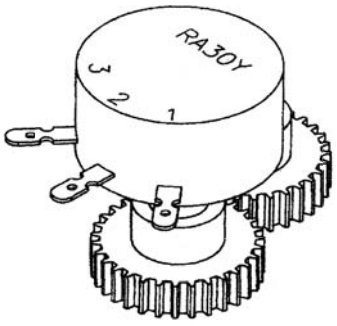
WARNING

Potentiometer (Factory Pre-set)

*On modulating actuators **DO NOT** master/slave using optional potentiometer.

For 2-position actuators with 1k feedback option
Potentiometer points 1, 2, 3 are wired to terminal blocks 8, 9, 10.
When a valve is closed: 8, 9 → 1k Ω
9, 10 → 0k Ω
When a valve is opened: 8, 9 → 0k Ω
9, 10 → 1k Ω

For modulating actuators with 1k feedback option*
Potentiometer points 1, 2, 3 are wired to terminal blocks 8, 9, 10.
When a valve is closed: 8, 9 → 1k Ω
9, 10 → 0k Ω
When a valve is opened: 8, 9 → 0k Ω
9, 10 → 1k Ω



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Actuators: SY1-24P SY1-110P SY1-220P

W547

Hazard Identification

Warnings and Cautions appear at appropriate sections throughout this manual. Read these carefully.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Indicates an action or condition that may cause irreversible damage to the actuator(s) or associated equipment.

Equipment damage!
Power consumption and input impedance must be observed.

INSTALLATION NOTES

Observe Class 1 and Class 2 wiring restrictions.

Transformer sizing = SY actuator draw X 1.25 (safety margin)
(Ex. SY2-24 requires 3.0A x 1.25 = 3.75A, 3.75A X 24 VAC = 90VA Transformer)

APPLICATION NOTES

34 Ground shielded wire at control panel chassis. Tape back ground at actuator.

36 Use of feedback is optional.

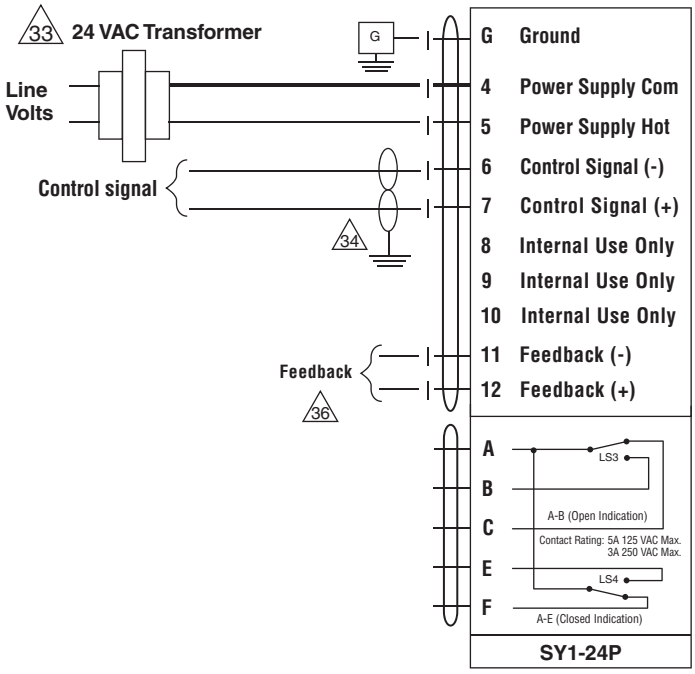
NOTES SY1...24P

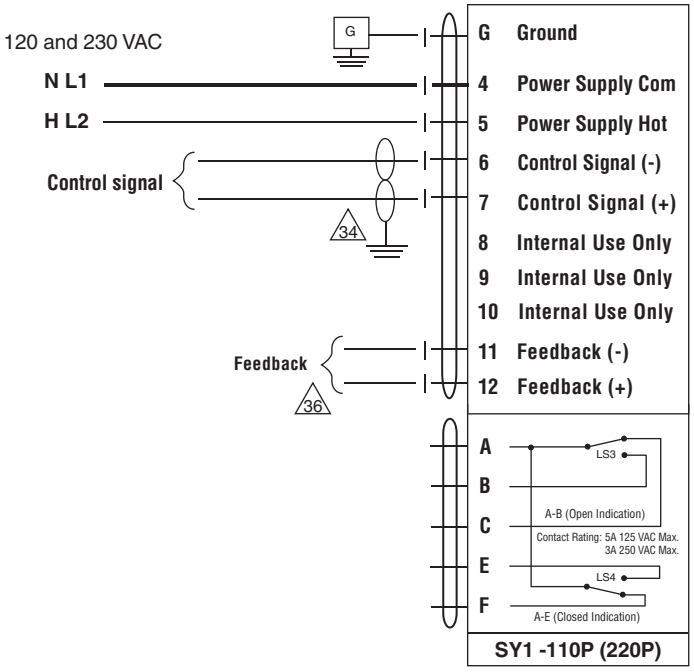
33 Each actuator should be powered by a single, isolated control transformer.

- Power supply Com/Neutral and Control Signal "–" wiring to a common is prohibited. Terminals 4 and 6 need to be wired separately.
- Do not change sensitivity or dip switch settings with power applied.

NOTES SY1...110P (220P)

- **Caution:** Power supply voltage.
- Power supply Com/Neutral and Control Signal "–" wiring to a common is prohibited. Terminals 4 and 6 need to be wired separately.
- Do not change sensitivity or dip switch settings with power applied.





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Actuators: SY1-24P

W550

Hazard Identification

Warnings and Cautions appear at appropriate sections throughout this manual. Read these carefully.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Indicates an action or condition that may cause irreversible damage to the actuator(s) or associated equipment.

Equipment damage!
Power consumption and input impedance must be observed.

INSTALLATION NOTES

Observe class 1 and class 2 wiring restrictions.

Transformer sizing = SY actuator draw X 1.25 (safety margin)
(Ex. SY2-24 requires 3.0A x 1.25 = 3.75A,
3.75A X 24 VAC = 90VA Transformer).

NOTES SY1-24P

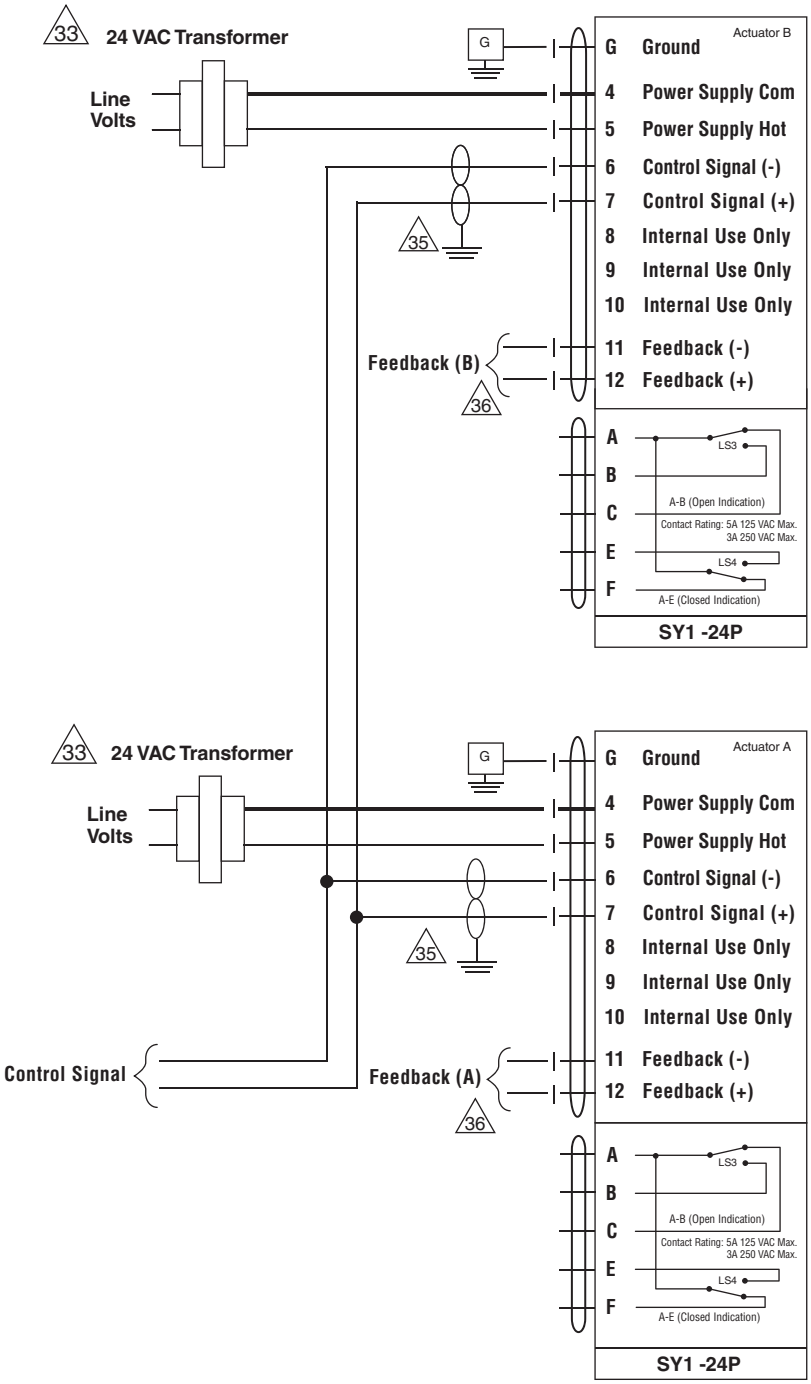
33 Each actuator should be powered by a single, isolated control transformer.

- **SY1-24P notes:** Power supply Com/Neutral and Control Signal "–" wiring to a common is prohibited. Terminals 4 and 6 need to be wired separately otherwise irreversible damage will occur.
- Do not change sensitivity or dip switch settings with power applied.

APPLICATION NOTES

35 Recommended twisted shielded pair for control wiring. Ground shielded wire at control panel chassis. Tape back ground at actuator.

36 Use of feedback is optional.



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