SIEMENS

Technical Instructions
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ZM, ZM../A

Terminal Housing for Magnetic Valves

Description

Terminal housing for optional control of Siemens Building Technologies magnetic valves with various control signals:

- 0 – 10 Vdc
- 4 – 20 mA
- 0 – 20 Vdc phase cut

Product Numbers

Table 1.

Control Signal	Power		
	Up to 40 W		Up to 120 W
0 – 10 Vdc or 0 – 20 Vdc phase cut	ZM100/A	ZM101/A	ZM200/A
4 – 20 mA or 0 – 20 Vdc phase cut	ZM120/A	ZM232/A	ZM220/A
0 – 20 Vdc phase cut	ZM110	ZM111	ZM210

Principle of Operation

The control properties of the magnetic valve are not affected by the type of terminal housing or control signal.

ZM../A

Terminal housing ZM100/A, ZM101/A, ZM120/A, ZM121/A, ZM200/A and ZM220/A are signal transducers/power amplifiers. They convert a 0 – 10 Vdc or 4 – 20 mA control signal and a 24 Vac power supply into a 0 – 20 Vdc phase cut signal. See *Phase Cut Signal Diagram.*

The differential amplifier with signal inputs (3) and (4) is isolated from the AC supply by high resistance. See *Block Diagram*.

For three-wire applications, the signal negative (3) must be connected to AC supply terminal (1).

It is also possible to use the ZM../A terminal housing as a straight-through electrical housing, supplied directly with a 0 –20 Vdc phase cut signal. In this case, do not connect the 24 Vac voltage supply.

Principle of Operation cont'd.

ZM110, ZM111, ZM210

The ZM110, ZM111 and ZM210 terminal housings are straight-through electrical housings only.

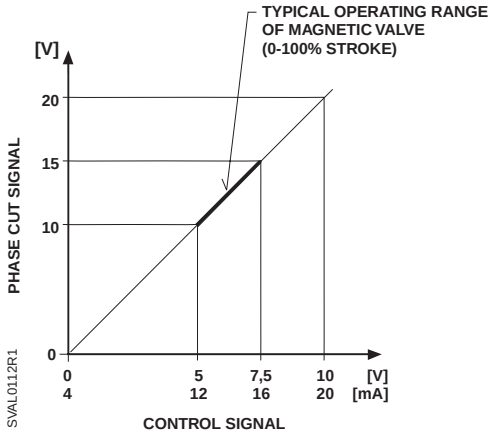
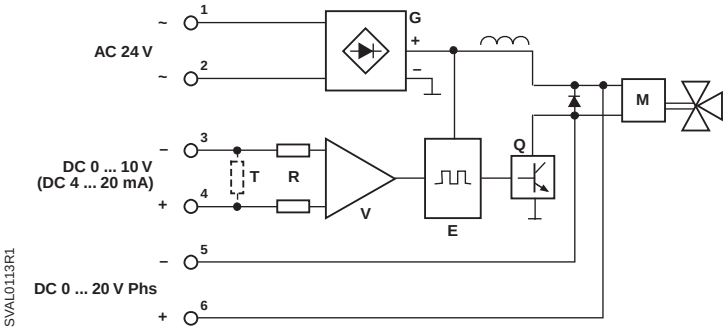


Figure 1. Phase Cut Signal Diagram.

NOTE: ZM../A terminal housing used with 0 – 20 Vdc phase cut signals:
Do not connect 24 Vac to Terminals 1 and 2.
Connect Terminal 5, (marked "-") to the appropriate Y output terminal



Key:

- E Electronic phase cut conditioning
- G Bridge rectifier
- M Magnetic valve
- Q Phase cut output
- R 56 KΩ input resistors
- T 150 Ω shunt
  (ZM120/A, 121/A, 220/A with 4 – 20 mA only)
- V Differential amplifier

Figure 2. ZM../A Block Diagram.

Transformer sizing

Transformer power P_{Tra} = 1.4 • Sum of the individual loads.

Specifications

ZM100/A, ZM101/A, ZM120/A, ZM121/A, ZM200/A, ZM220/A

Supply voltage	24 Vac + 15/-10% Class 2 50/60 Hz
Current consumption	Max. 1 mA at 0 – 10 Vdc (input impedance 2 x 56 kΩ
Control signals	0 – 10 Vdc 4 – 20 mA 0 – 20 Vdc phase cut
Shunt resistance (4 – 20 mA)	150 Ω
Maximum output power	
ZM1.., ZM1../A	Up to 40 W
ZM2.., ZM2/A	Up t 120 W
Mean operating data	See *valve data sheet*
Housing material	Aluminum
Connection terminals	For max. 1 x 12 AWG or 2 x 14 AWG
Ambient temperature	
ZM100/A, ZM110, ZM120/A	35.6 – 122°F (2 – 50°C)
ZM101/A, ZM111, ZM121/A	-40 – 122°F (-40 – 50°C)
ZM200/A, ZM210, ZM220/A	35.6 – 122°F (2 – 50°C)
Dimensions	See *Figure 9*
ZM1..	1.6″ x 2.4″ x 3.0″
ZM2..	1.6″ x 3.5″ x 4.5″
Weight	
ZM100/A, ZM111, ZM120/A	0.5 lb
ZM101/A, ZM121/A	0.5 lb
ZM110	0.4 lb
ZM200/A	1.0 lb
ZM210	0.8 lb
ZM220/A	1.0 lb
Conforms to CE requirements	

Warning/Caution Notations

WARNING		Personal injury/loss of life may occur if a procedure is not performed as specified.
CAUTION		Equipment damage, or loss of data may occur if the user does not follow procedure as specified.

Installation

CAUTION:

It is important to use the cable cross-sections appropriate to the various cable lengths used.

WARNING:

Always disconnect the power supply before installing or removing the ZM.. or ZM../A.

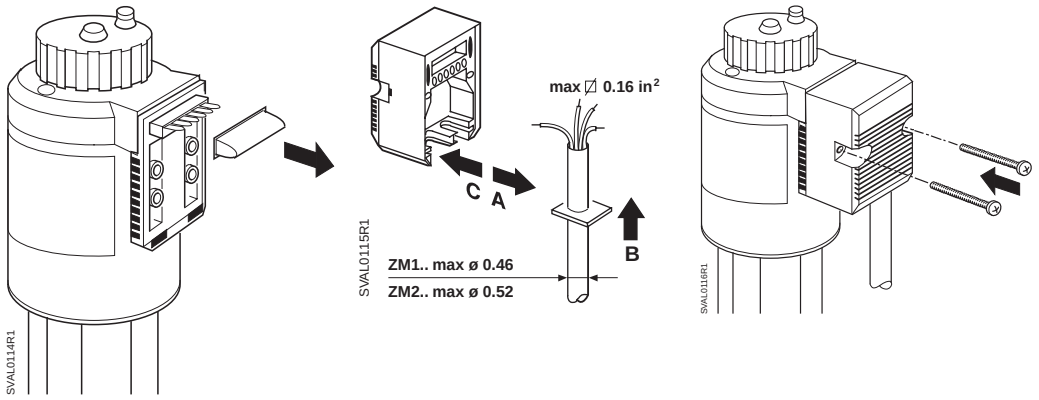


Figure 3. Mounting the ZM... Module.

Wiring

ZM../A with 0 – 10 Vdc control signal

NOTE: If, for reasons of cross-section, the 24 Vac and 0 – 10 Vdc (or 4 – 20 mA) cables are routed separately, it is not necessary to twist the 24 Vac cable.

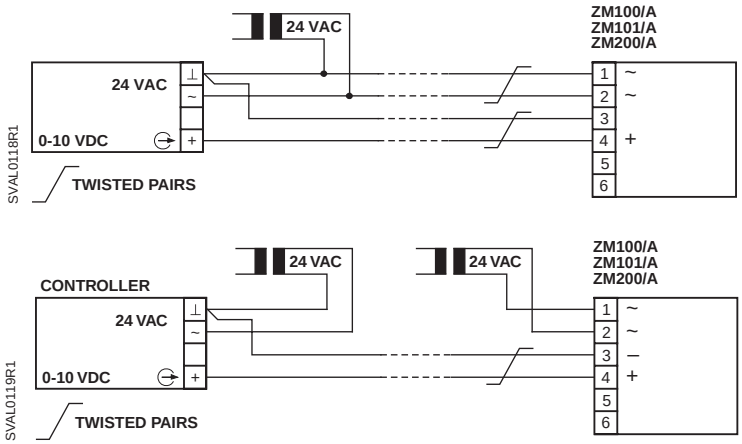


Figure 4. Three-wire Connection to Controller.

Wiring, cont'd.

ZM../A supplied from controller transformer or (over longer distances) from a separate transformer.

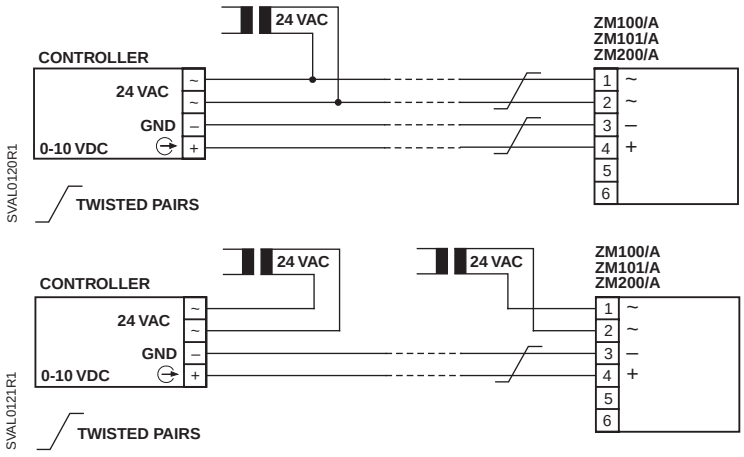


Figure 5. Four-wire Connection to Controller.

ZM../A with 4 – 20 mA control signal

NOTE: Several 4 – 20 mA receivers can be driven by the same control signal (series connection—check input impedance).

ZM../A supplied from controller transformer or (over longer distances) from a separate transformer.

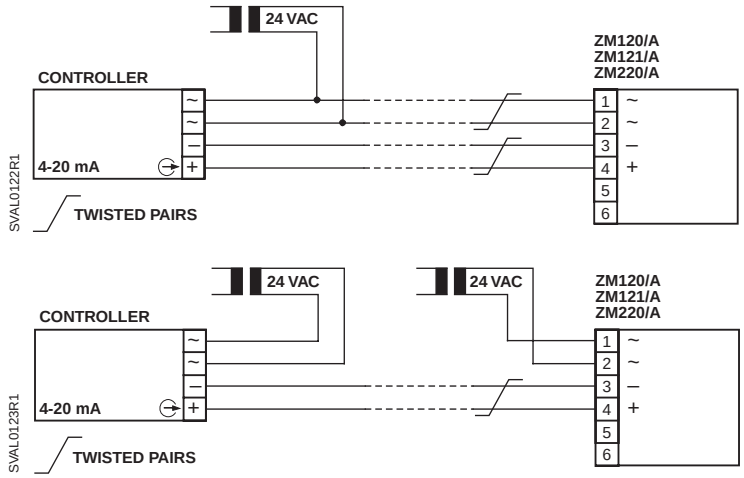


Figure 6. ZM../A with 4 – 20 mA Control Signal.

ZM.. with 0 – 20 Vdc phase cut signal

NOTE: ZM../A terminal housing used with 0 – 20 Vdc phase cut signals:
Do not connect 24 Vac to Terminals 1 and 2.
Connect Terminal 5 (marked"-") to the appropriate Y output terminal.

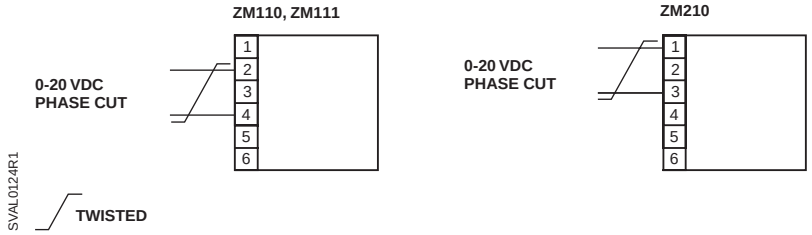


Figure 7. ZM110, ZM111, ZM210 (Without Power Amplifier).

Wiring, cont'd.

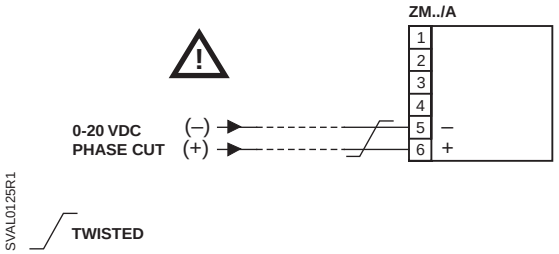


Figure 8. ZM100/A, ZM101/A, ZM200/A, ZM120/A, ZM121/A, ZM220/A (With Power Amplifier).

Dimensions

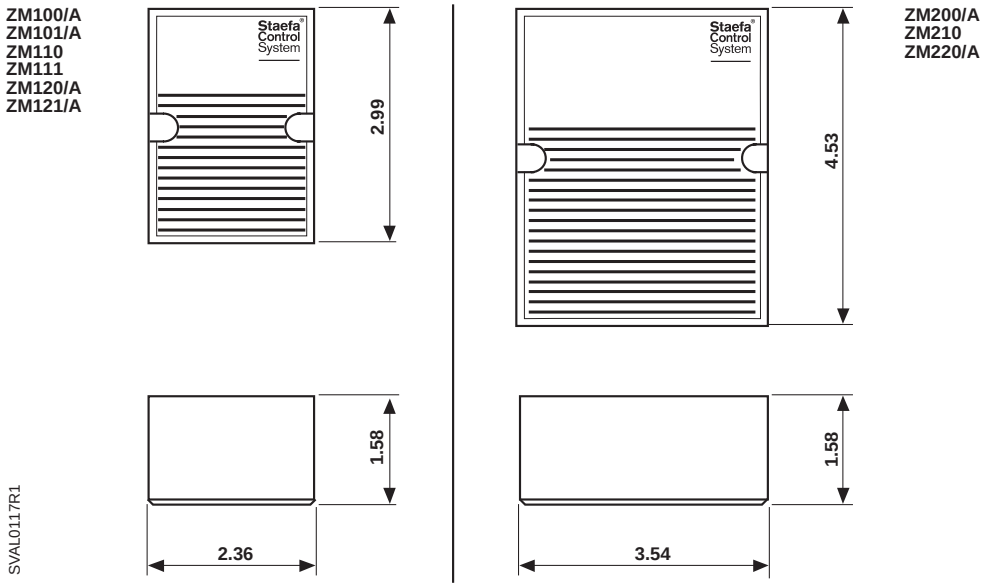


Figure 9. Dimensions in Inches.