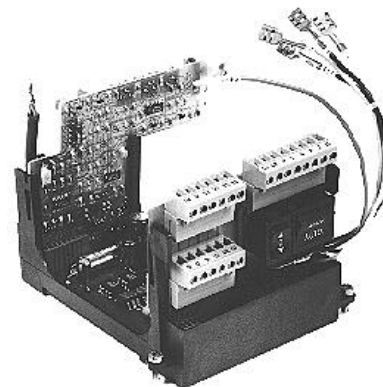




ISO 9001

Analogue Input Modules

AGA56...



Supplementary data sheets 7815 and 7921

Analogue Input Modules for the control of SQM5... air damper actuators by means of continuous analog control signals, such as 4...20 mA, and continuous analog position feedback signals.

The AGA56... and this data sheet are intended for use by OEMs which integrate the functional modules in their products.

Use

The AGA56... are auxiliary modules for use with the SQM5... air damper actuators according to data sheet 7815. They can be integrated into the SQM5... on site, or are supplied with the actuator, ready built in.

Technical data

Type reference	Operating voltage	Power consumption (without actuator)	2.8 VA
- ...A27	AC 220 V -15 %...240 V +10 %	Vibrations	30 m/s ² (3 g) to IEC 68-2-6
- ...A17	AC 100 V -15 %...110 V +10 %		
- ...A87	AC 24 V -15 %/+10 %	Vibration range	2...100 Hz
- ...A97	AC 24 V -5 %...240 V +10 %		
Operating voltage frequency	50...60 Hz ±6 %	Perm. input line lengths	≤ 100 m
Degree of protection to IEC 529 when mounted in the SQM5...	IP54	Temperature drift ¹⁾ of output signals	≤ 2.5 %
Safety class to IEC 730-1 when mounted in the SQM5...		¹⁾ Referred to entire ambient temperature range	
- AGA56...A17, ...A27	I	Weight	approx. 330 g
- AGA56...A87	III	Perm. loading on outputs	
Input resistance		- Current output	short-circuit-proof to IEC 381
- Current input	≤ 300 Ω	- (Current) total max. load	600 Ω
- Voltage input	≥ 100 kΩ	- Voltage output	≥ 1.5 kΩ
		- Total load, all simultaneously	to IEC 381
Environmental conditions		DC current signals	accord. IEC 381 T1
Transport	IEC 721-3-2	DC voltage signals	accord. IEC 381 T2
Climatic conditions	class 2K2		
Temperature range	-30...+60 °C		
Humidity	< 95 % r.h., Climate F, DIN 40040		
Mechanical conditions	class 2M2		
Operation	IEC 721-3-3		
Climatic conditions	class 3K5		
Ambient temperature of SQM5... with AGA56... built in	-20...+50 °C		
Humidity	< 95 % r.h., Climate F, DIN 40040		
Condensation, formation of ice and ingress of water are not permitted!			
		For assignment of terminals and further specification of the inputs and outputs, refer to «Assignment of terminals / Legend».	
		CE conformity	
		According to the directives of the European Union	
		Electromagnetic compatibility EMC	
			89 / 336 EEC incl. 92 / 31 EEC
		Low voltage directive	73/23 EEC



Warning notes



To avoid injury to persons, damage to property or the environment, the following warning notes should be observed!

Do not make any modifications to the modules!

- In the event of failure, the input modules do not offer intrinsic safety. Hence, depending on the application and the requirements, adequate safety measures outside the modules must be taken!
- Completely isolate the module from the mains supply before performing any wiring changes in the connection area of the AGA56...!
- Ensure protection against contact by adequate installation of the AGA56... and adequate wiring!
- Always run AC 230 V and extra low voltage cables separately!
- Check wiring and all safety functions!

Mounting notes

- Observe the relevant national safety regulations!

Installation notes

- Installation and commissioning work may only be carried out by qualified staff!
- Check wiring carefully before commissioning the equipment!

Type summary

Functions	Control inputs	Position feedback signal	Operating voltage (50...60 Hz)	Type reference	Identification letter ¹⁾	
Manual control	---	---	AC 24...240 V	AGA56.1A97	A	
Adjustment of control range Manual control	4...20 mA	---	AC 100...110 V	AGA56.41A17	G	
			AC 220...240 V	AGA56.41A27	G	
			AC 24 V	AGA56.41A87	G	
			DC 0...2 V in connection with 0..135 Ω potentiometers (balance relay), up to 0...1000 Ω ³⁾	---	AC 100...110 V	AGA56.42A17
			AC 220...240 V	AGA56.42A27	H	
			AC 24 V	AGA56.42A87	H	
		DC 0...10 V	---	AC 100...110 V	AGA56.43A17	K
				AC 220...240 V	AGA56.43A27	K
			AC 24 V	AGA56.43A87	K	
Adjustment of control range	0...20 mA	0...20 mA	AC 100...110 V	AGA56.9A17	Z	
Linearization of angle of rotation	4...20 mA	4...20 mA	AC 220...240 V	AGA56.9A27	Z	
Readjustment of control signal	DC 0...10 V	DC 0...10 V	AC 24 V	AGA56.9A87	Z	
Presetting of fixed position	DC 0...2 V in connection with 0..135 Ω potentiometers (balance relay), up to 0...1000 Ω ³⁾					
Manual control						

Accessories

Potentiometers

For technical data of the potentiometers, refer to data sheet 7921.
Every input module requires **one** potentiometer.

	Type reference	Identification number ²⁾
1000 Ω / 90° / conductive plastic	ASZ12.803	3
1000 Ω / 135° / conductive plastic	ASZ12.833	4
1000 Ω / 1000 Ω / 90° / conductive plastic	ASZ22.803	7
1000 Ω / 1000 Ω / 135° / conductive plastic	ASZ22.833	8

¹⁾ Type suffix (6th digit after the dot)

²⁾ Type suffix (7th digit after the dot)

³⁾ Any intermediate range possible

Ordering

Supply of input module and potentiometer	Ordering
• Integrated in the SQM5...	Part of type reference of the SQM5... (refer to data sheet 7815) Identification letter and identification number (refer to «Type summary»)
• As an individual item	Type reference of input module and potentiometer (refer to «Type summary» and «Accessories»)

Function

The following functions are provided:

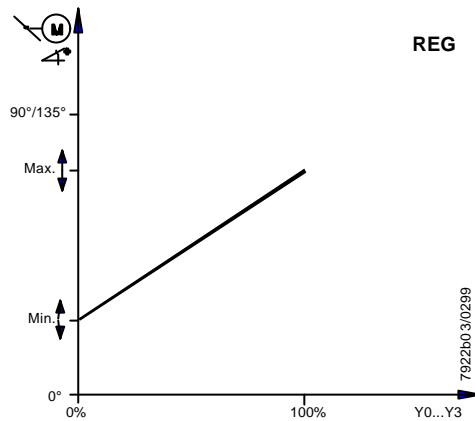
- Manual control
 - Adjustment of the control range
 - Linearization of the angle of rotation
 - Readjustment of the control signal
 - Presetting the fixed position
- For availability, refer to «Type summary / Functions».

- Manual control

After operating the «MAN./AUTO.» switch and changing from «AUTO.» to «MAN.», the actuator can be opened or closed with the «▲/0/▼» toggle switch.

- Adjustment of the control range

Using the two potentiometers «MIN» and «MAX», the actuator's working range can be limited to between 0° and 90° or 135°.



Adjusting the limitations

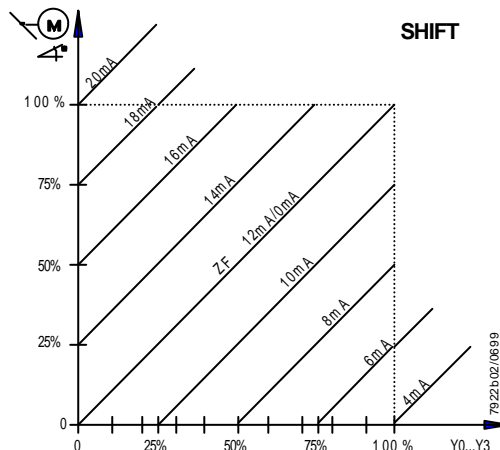
- Set switch «S1» to «MIN»
- Set «MIN» potentiometer to a position between 0° and 67.5° or 101°
- Set switch «S1» to «MAX»
- Set «MAX» potentiometer to a position between the previously set «MIN» angle and 90° or 135°

The «MAX» angle value must be greater than the «MIN» angle value!

- Set switch «S1» to «OPE».
- In operation, switch «S1» must be in position «OPE».

- Readjustment of the control signal

The control signal can be readjusted using the external «ZF» signal (4...20 mA).

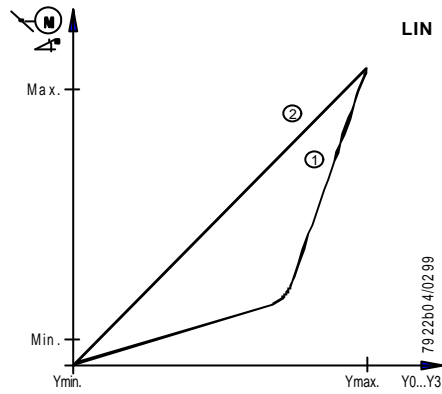


Legend

M	Air damper actuator
REG	Adjustment of the control range
SHIFT	Readjustment of the control signal
Y0...Y3	Control inputs
ZF	External signal for SHIFT

For specification, refer to «Assignment of terminals»

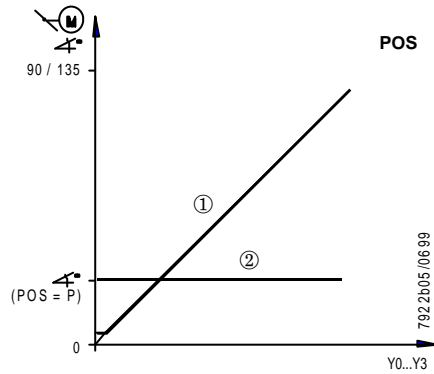
- **Linearization of the angle of rotation**



By setting shorting plug «J1» to position «1», the proportional behavior of the actuator (curve ②) can be matched to the control (curve ①). In the case of small signals, linearization of the angle of rotation produces overproportionally small angular changes and, in the case of greater signals, overproportionally large angular changes. Used in connection with non-linear regulating units, such as air dampers.

- **Presetting the fixed position**

Using potentiometer «POS», the actuator's angular position can be preset. This position is approached independent of control signals when operating voltage is present at the input of «POS» (Terminal «P»). Position «POS» can be adjusted within the entire range of angular rotation.

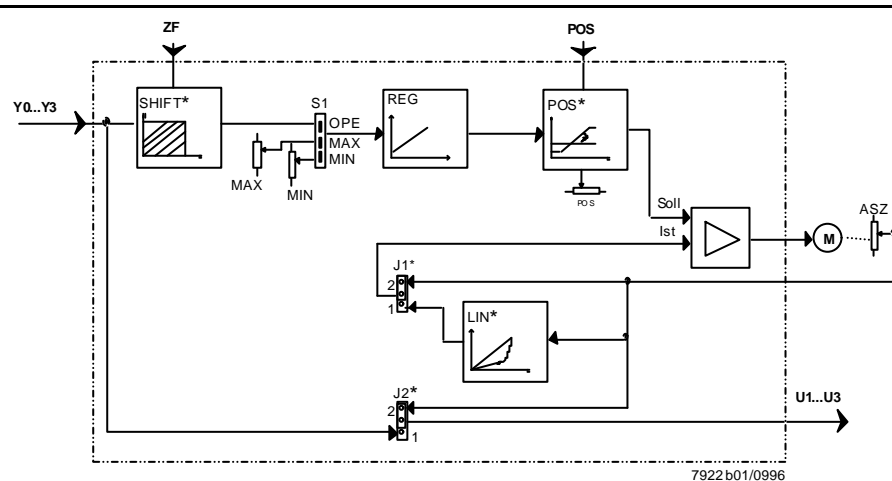


① P = 0 V
Function according to «Adjustment of the control range»

② P = operating voltage, fixed position

P = connection terminal

Basic circuit diagram



* Only contained in the AGA59.9!

Legend

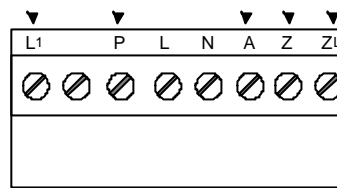
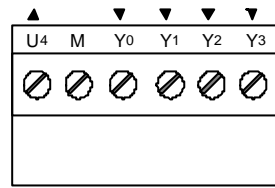
ASZ	Potentiometer	POS	Preset fixed position
J1	Shorting plug	REG	Adjustment of the control range
J2	Shorting plug	S1	Switch
L	Live	SHIFT	Readjustment of the control signal
LIN	Linearization of angle of rotation	U1...U3	Control outputs
M	Air damper actuator	Y0...Y3	Control inputs
OPE	Operating position	ZF	External signal for SHIFT

Assignment of terminals

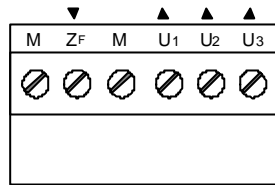
Safety extra low voltage terminals

Operating voltage terminals

AGA56.9

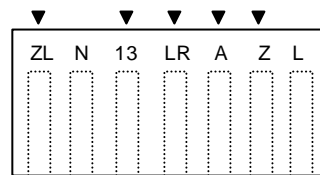
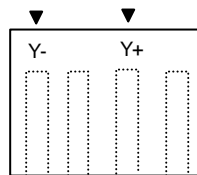


Screw terminals for single-wire cables up to 2.5 mm² (AWG12)



7922a.01/0699

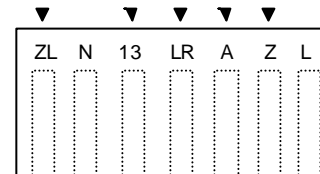
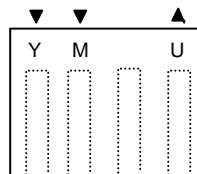
AGA56.41...



7922a.01/0699

Terminals to RAST5 standard, also suited for use with quick connectors to DIN 46244-A 6.3-0.8

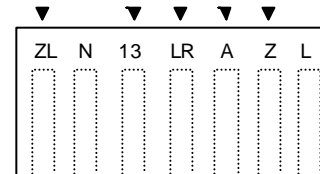
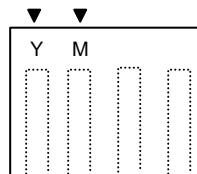
AGA56.42...



7922.a02.0.699

Terminals to RAST5 standard, also suited for use with quick connectors to DIN 46244-A 6.3-0.8

AGA56.43...



7922.a05.0.699

Terminals to RAST5 standard, also suited for use with quick connectors to DIN 46244-A 6.3-0.8

Legend

A	Signal for opening the actuator → Limited by limit switch in the SQM5...	Y-	Control input -pole
L	Live	Y	AGA56.42: same as Yo AGA56.43: same as Y1
L1, LR	Enabling control	Z, 13	Signals for closing the actuator, «CLOSED» position limited by limit switch in the SQM5..., two parallel inputs for • signal from the burner control and • feedback of the AGA56...-internal control signal «ZL» (link ZL → 13)
M	Ground		Use: Air damper does not close when burner is «OFF», that is, when «Ignition position» corresponds to the «CLOSED» position. Ends of output cables no. 3 and 13 must be stripped
N	Neutral	ZF	Control input 4...20 mA for readjustment of the control signal
P	Positioning signal	ZL	Signal for closing the actuator → Limited by auxiliary switch in the SQM5... <u>Example:</u> ignition load!
U, U4	Constant power supply DC 2 V for external potentiometer 135 Ω...1 kΩ, e.g. in connection with a balance relay system		
U1	Control output DC 0...10 V		
U2	Control output 0...20 mA		
U3	Control output 4...20 mA		
Yo	Control input DC 0... 2 V from external potentiometer 135 Ω...1 kΩ, e.g. in connection with a balance relay system		
Y1	Control input DC 0...10 V		
Y2	Control input 0...20 mA		
Y3	Control input 4...20 mA		
Y+	Control input +pole		

Following applies to AC 24 V versions:

Go = N = M
G = L

Signals and power supply with **operating voltage**

A, L, Z, ZL, 13, L1, P, LR



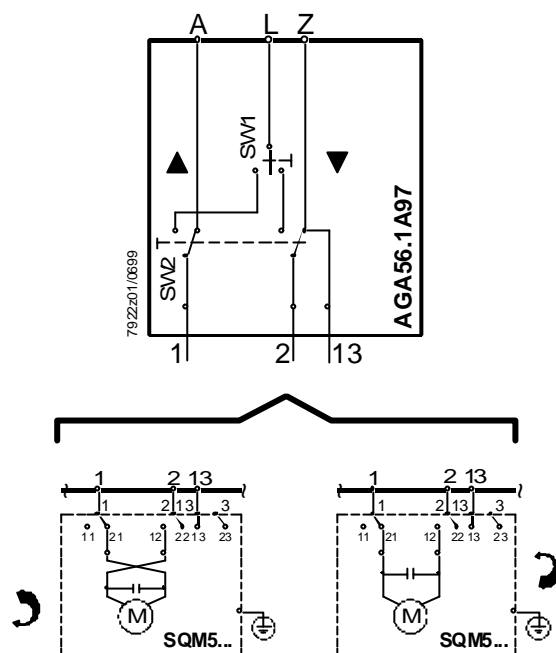
The following signals may not be present at the same time:

- L1, LR with A, Z, ZL or 13
- A with Z, ZL or 13

Internal diagrams and connection diagrams

AGA56.1A97

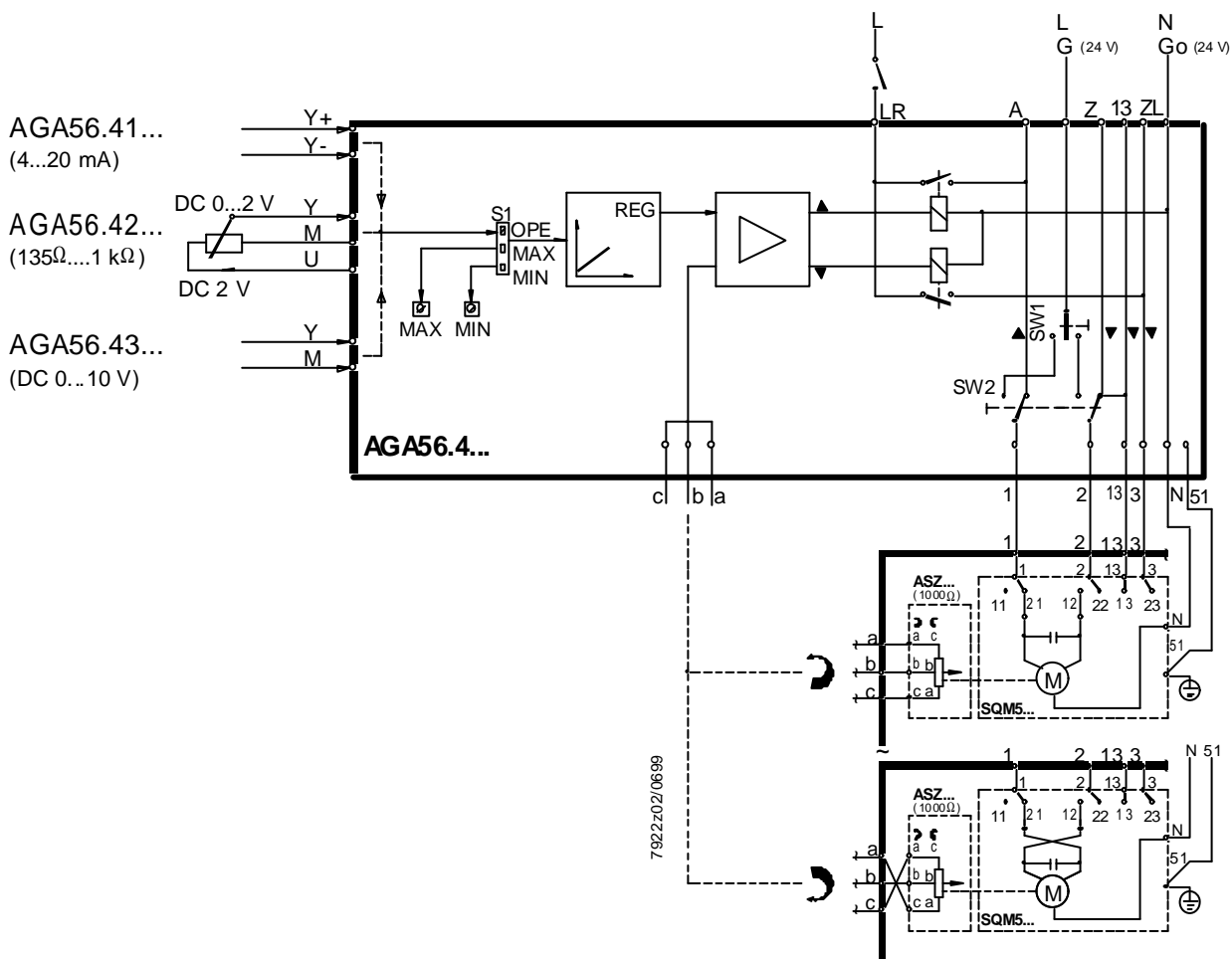
– Manual control



AGA56.4...

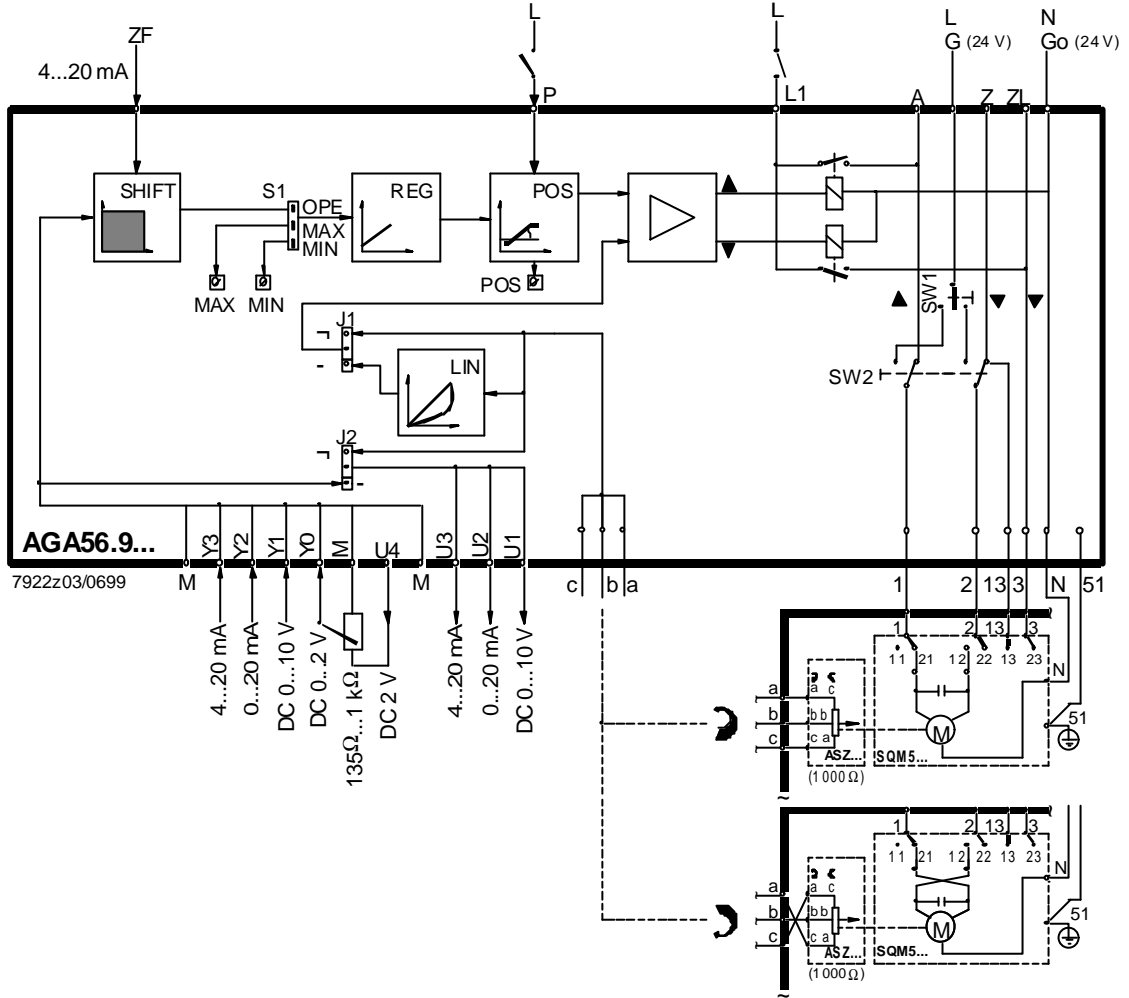
– Manual control
– Adjustment of the control range

...A87 : DC 24 V / 50...60 Hz
...A27 : AC 220...240 V / 50...60 Hz
...A17 : AC 100...110 V / 50...60 Hz



- Manual control
- Adjustment of the control range «REG»
- Readjustment of the control signal «SHIFT»
- Linearization of the angle of rotation «LIN»
- Presetting the fixed position «POS»

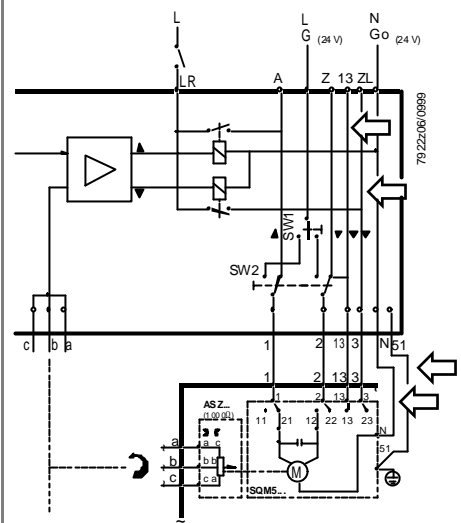
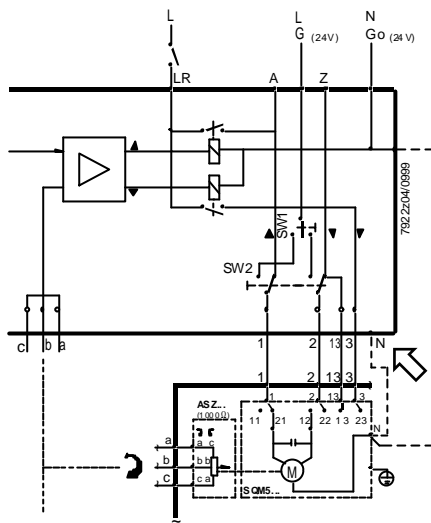
...A87 : DC 24 V / 50...60 Hz
 ...A27 : AC 220...240 V / 50...60 Hz
 ...A17 : AC 100...110 V / 50...60 Hz



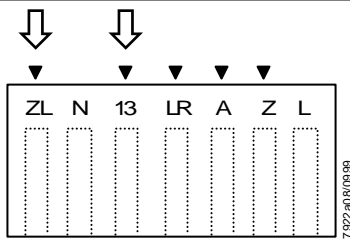
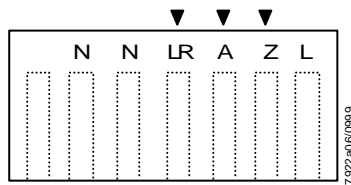
Executions supplied until end of 1999

Current execution

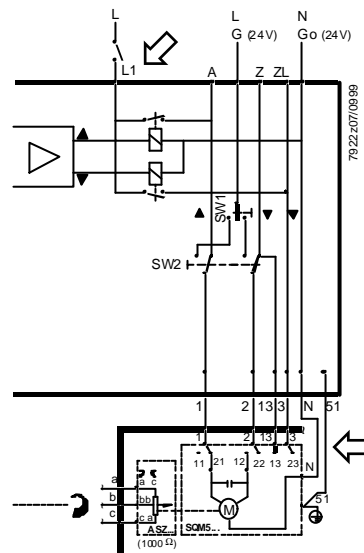
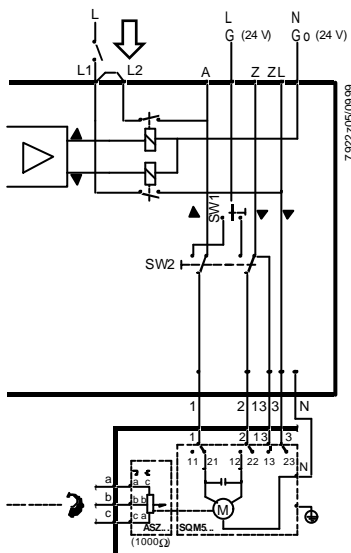
AGA56.41
AGA56.42
AGA56.43



Terminal assignment



AGA56.9



Terminal assignment

