

MOUNTING AND OPERATING INSTRUCTIONS



EB 5757-7 EN

Translation of original instructions



TROVIS 5757-7 Electric Actuator with Process Controller

For heating and cooling applications

Firmware version 2.04



Edition January 2020

Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

- ➔ For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- ➔ If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersalesservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website at **www.samsongroup.com** > **Service & Support > Downloads > Documentation.**

Definition of signal words

DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

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1 Safety instructions and measures

Intended use

The TROVIS 5757-7 Electric Actuator with Process Controller is an electric actuator with an integrated digital controller. It is designed for operating a mounted globe valve. In combination with the valve, the actuator is used to control the flow of liquids or vapors in the pipeline. The electric actuator with process controller is suitable for closed-loop operation in heating and cooling applications.

The actuator is designed to operate under exactly defined conditions (e.g. thrust, travel). Therefore, operators must ensure that the actuator is only used in operating conditions that meet the specifications used for sizing the actuator at the ordering stage. In case operators intend to use the actuator in applications or conditions other than those specified, contact SAMSON.

SAMSON does not assume any liability for damage resulting from the failure to use the device for its intended purpose or for damage caused by external forces or any other external factors.

➔ Refer to the technical data for limits and fields of application as well as possible uses. See the 'Design and principle of operation' section.

Reasonably foreseeable misuse

The actuator is not suitable for the following applications:

- Use outside the limits defined during sizing and by the technical data
- Outdoor use

Furthermore, the following activities do not comply with the intended use:

- Use of non-original spare parts
- Performing service and repair work not described

Qualifications of operating personnel

The actuator must be mounted, started up, serviced and repaired by fully trained and qualified personnel only; the accepted industry codes and practices must be observed. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Safety instructions and measures

Personal protective equipment

No personal protective equipment is required for the direct handling of the electric actuator with process controller. Work on the control valve may be necessary when mounting or removing the device.

- ➔ Observe the requirements for personal protective equipment specified in the valve documentation.
- ➔ Check with the plant operator for details on further protective equipment.

Revisions and other modifications

Revisions, conversions or other modifications of the product are not authorized by SAMSON. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the product may no longer meet the requirements for its intended use.

Safety features

The limit switches switch off the motor in the end positions.

Warning against residual hazards

The electric actuator with process controller has a direct influence on the valve when it is mounted on the valve. To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the control valve by the process medium, the operating pressure, the signal pressure or by moving parts by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warnings and caution notes in these mounting and operating instructions, especially for installation, start-up and service work.

Responsibilities of the operator

Operators are responsible for proper use and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions as well as the referenced documents to the operating personnel and to instruct them in proper operation. Furthermore, operators must ensure that operating personnel or third parties are not exposed to any danger.

Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the referenced documents and observe the specified hazard statements, warnings and caution notes. Furthermore, operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards, directives and regulations

The TROVIS 5757-7 Electric Actuator with Process Controller with a CE marking fulfills the requirements of the Directives 2014/30/EU and 2014/35/EU.

The 'Certificates' section contains this declaration of conformity.

The electric actuator with process controller is designed for use in low-voltage installations.

➔ For wiring, maintenance and repair, observe the relevant safety regulations.

Referenced documentation

The following documents apply in addition to these mounting and operating instructions:

- Configuration Manual ► KH 5757-7 for TROVIS 5757-7 Electric Actuator with Process Controller (detailed description of all functions and parameters)
- Mounting and operating instructions of the valve on which the electric actuator with process controller is mounted, e.g. for SAMSON valves:
 - EB 3135-1 for Type 2488 Pressure-independent Control Valve (PICV)
 - EB 3136 for Type 2488 N Pressure-independent Control Valve (PICV)
 - EB 5861 for Type 3260 Three-way Valve
 - EB 5863 for Type 3226 Three-way Valve
 - EB 5866 for Type 3222 Globe Valve
 - EB 5867 for Type 3222 N Globe Valve
 - EB 5868 for Type 3213 Globe Valve

1.1 Notes on possible severe personal injury

DANGER

Risk of fatal injury due to electric shock.

- Before connecting wiring or performing any work on the device, disconnect the supply voltage and protect it against unintentional reconnection.
- Only use power interruption devices that can be protected against unintentional reconnection of the power supply.
- Do not open the actuator housing.

The electric actuator with process controller is protected against dripping water falling at an angle (IP42).

- Avoid sprays and jets of water.

The wires of the switching output L' may be live after the supply voltage has been connected.

- Do not touch the wires of the switching output L'.
- When the switching output is not used, deactivate it in function **F16** ('Not active' setting ► KH 5757-7). Insulate the wire ends.

1.2 Notes on possible personal injury

WARNING

Risk of personal injury due to incorrect operation, use or installation as a result of information on the actuator being illegible.

Over time, markings, labels and nameplates on the actuator may become covered with dirt or become illegible in some other way. As a result, hazards may go unnoticed and the necessary instructions not followed. There is a risk of personal injury.

- Keep all relevant markings and inscriptions on the device in a constantly legible state.
- Immediately renew damaged, missing or incorrect nameplates or labels.

1.3 Notes on possible property damage

NOTICE

Risk of actuator damage due to the supply voltage exceeding the permissible tolerances.

The actuator is designed for use according to regulations for low-voltage installations.

→ Observe the permissible tolerances of the supply voltage.

Risk of damage to the electric actuator due to excessively high tightening torques.

The connection of the electric actuator with process controller must be tightened with a certain torque. Excessive tightening torques lead to parts wearing out more quickly.

→ Observe the tightening torque.

Risk of damage to the actuator by moving the actuator stem too far.

The actuator stem of the electric actuators can be adjusted manually.

→ Move the actuator stem only as far as the bottom or top end position.

Risk of actuator damage due to direct contact with steam.

→ During mounting, make sure that the actuator cannot come into contact with a jet of steam during operation.

Malfunction due to a configuration that does not meet the requirements of the application.

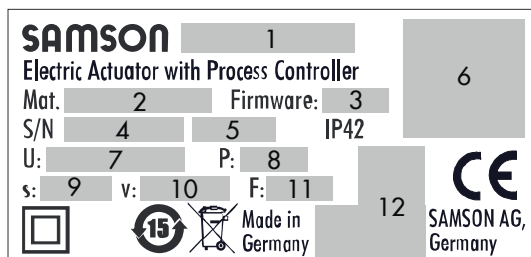
The electric actuator with process controller is configured for the specific application by setting configuration items and parameters.

→ Perform the configuration for the specific application during start-up and after a reset to default settings.

2 Markings on the device

2.1 Nameplate

The nameplate shown was up to date at the time of publication of this document. The nameplate on the device may differ from the one shown.



- 1 Type designation
- 2 Material number
- 3 Firmware version
- 4 Serial number
- 5 Date of manufacture
- 6 Data Matrix code
- 7 Supply voltage
- 8 Power consumption
- 9 Rated travel
- 10 Stroking speed
- 11 Thrust
- 12 Other mark of conformity

2.2 Firmware versions

Firmware revisions	
Old	New
1.0x	2.0x
	Slider switch to switch between two different configurations and parameters at the device
	Programming is only possible with TROVIS-VIEW 4.

3 Design and principle of operation

The TROVIS 5757-7 Electric Actuator with Process Controller is a combination of an electric actuator and an integrated digital controller. It is especially designed for installations in small to medium-sized buildings for outdoor-temperature-compensated control, fixed set point control or fixed set point control with room temperature sensors. It is particularly suitable for mounting to SAMSON Types 3222, 3222 N and 2488 Valves as well as to special versions of Type 3226 and Type 3260 Valves.

Design

➔ See Fig. 3-1.

The electric actuator with process controller is mounted onto the valve using a coupling nut (4).

When the actuator stem extends, the valve is closed, opposing the force of the valve spring (7). When the actuator stem retracts, the valve is opened as the plug stem (6) follows the motion of the return spring.

Principle of operation

The output signal of the integrated digital controller acts over the positioner on the synchronous motor of the actuator and is transferred over the connected gear to the actuator stem (3 in Fig. 3-1) and used as the positioning force.

The motor is switched off by torque switches when an end position is reached or in case the motor is overloaded.

Inputs

A flow sensor needs to be connected on the input side, which can be optionally upgraded by a return flow, outdoor or room sensor. They can all be combined with a return flow sensor.

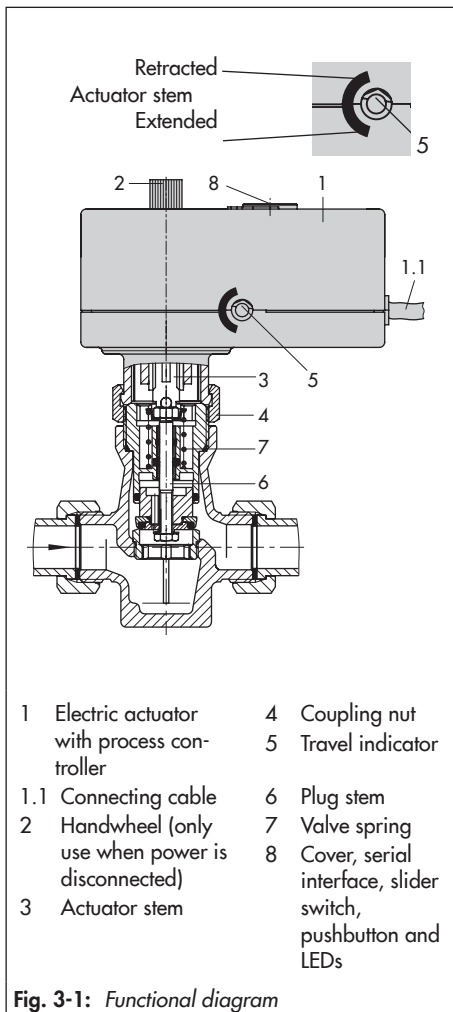
In addition to the Pt 1000 input, the digital controller has a potentiometer input (1000 to 1100 Ω or 1000 to 2000 Ω) to measure the flow temperature. This input influences the heating characteristic in the case of outdoor-temperature-controlled control and the room temperature set point is corrected in the case of fixed set point control with room temperature influence (± 5 K, ► KH 5757-7).

When an outdoor sensor is used, the adjusted heating characteristic can be changed using the potentiometer (► KH 5757-7)

The heating characteristic and set point can be entered over the TROVIS-VIEW software. The connected sensors are monitored for line breakages (see the 'Malfunctions' section).

Outputs

A circulation pump can be control with the 230 V switching output (see section 3.2). The switching output can alternatively be used as control for an external demand for heat.



3.1 Communication

Serial interface

The actuator is fitted with an RS-232 serial interface. This allows communication with TROVIS-VIEW using SSP protocol.

i Note

The serial interface is exclusively intended for servicing purposes. It must only be used temporarily and not permanently.

Configuration

The actuator is configured using the TROVIS-VIEW software that enables the user to easily configure the controller as well as view process parameters online.

i Note

TROVIS-VIEW can be downloaded free of charge from our website at

► www.samsongroup.com > Service & Support > Downloads > TROVIS-VIEW. Further information on TROVIS-VIEW (e.g. system requirements) is available on our website and in the Data Sheet ► T 6661 as well as the Operating Instructions ► EB 6661.

Manual override

➔ See the 'Operation' section.

In the de-energized state, the manual adjuster can be used to change the position of the actuator stem.

3.2 Technical data

TROVIS 5757-7	
Connection to valve	Force-locking
Rated travel	6 mm
Transit time for rated travel	20 s
Thrust	300 N
Supply voltage	230 V ($\pm 10\%$), 50 Hz
Power consumption	5 VA
Temperature sensor	Max. 3x Pt 1000
Operating temperature range	-40 to +150 °C
Binary inputs	
BI1 ¹⁾ (instead of the potentiometer)	Floating contact, contact load 5 V, 1 mA
BI2 ¹⁾ (instead of return flow sensor)	Floating contact, contact load 5 V, 1 mA
Potentiometer input	1000 to 1100 Ω or 1000 to 2000 Ω
Switching output	230 V, 50 Hz, 1 A; circulation pump or demand for externally required signal
Permissible temperature ranges ²⁾	
Ambient	0 to 50 °C
Storage	-20 to +70 °C
Degree of protection	IP 42 according to EN 60529
Class of protection	II according to EN 61140
Device safety	According to EN 61010-1
Noise immunity	According to EN 61000-6-2 and EN 61326-1
Noise emission	According to EN 61000-6-3 and EN 61326-1
Conformity	CE
Weight	Approx. 0.7 kg

¹⁾ Recommendation: use devices with gold contacts when using relays.

²⁾ The permissible medium temperature depends on the valve on which the electric actuator with process controller is mounted. The limits in the valve documentation apply.

3.3 Dimensions

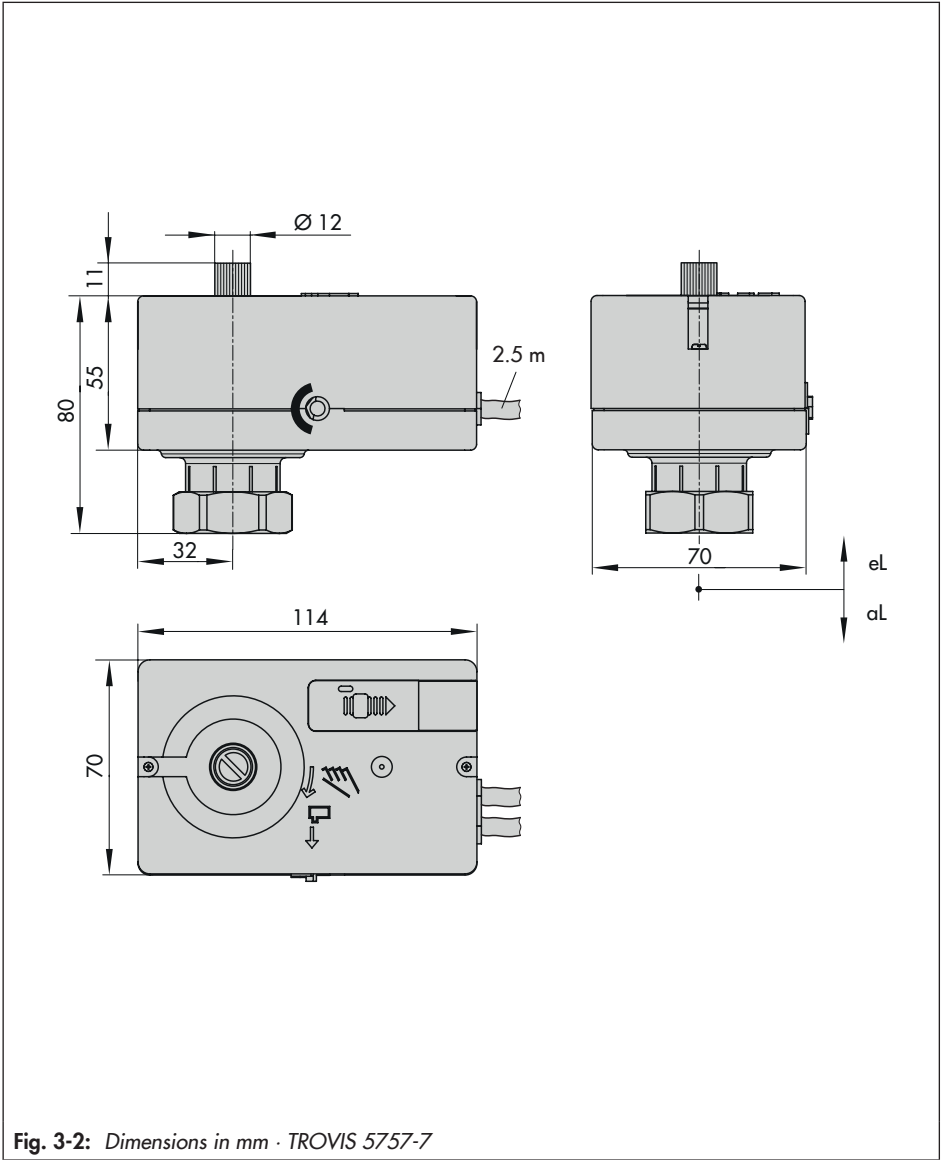
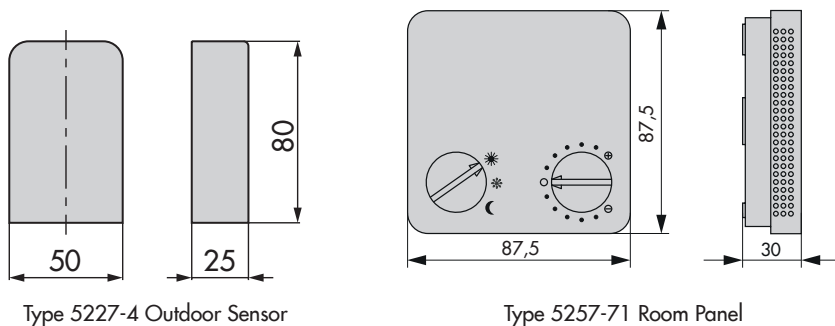
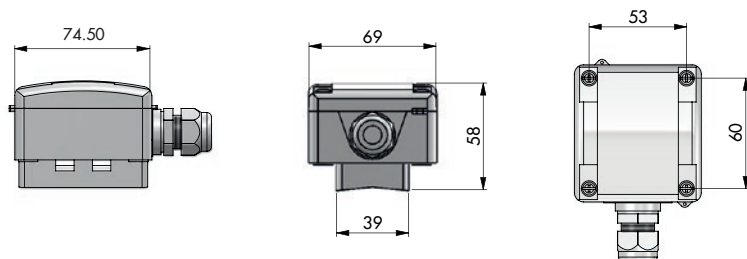


Fig. 3-2: Dimensions in mm · TROVIS 5757-7



Type 5227-4 Outdoor Sensor

Type 5257-71 Room Panel



Type 5267-3 Contact Sensor

Fig. 3-3: Dimensions in mm · Accessories for heating applications

3.4 Values for resistance thermometers

Pt 1000 sensors

°C	−35	−30	−25	−20	−15	−10	−5	0	+5	+10
Ω	862.5	882.2	901.9	921.6	941.2	960.9	980.4	1000.0	1019.5	1039.0
°C	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60
Ω	1058.5	1077.9	1097.3	1116.7	1136.1	1155.4	1174.7	1194.0	1213.2	1232.4
°C	+65	+70	+75	+80	+85	+90	+95	+100	+105	+110
Ω	1251.6	1270.7	1289.8	1308.9	1328.0	1347.0	1366.0	1385.0	1403.9	1422.9
°C	+115	+120	+125	+130	+135	+140	+145	+150		
Ω	1441.7	1460.6	1479.4	1498.2	1517.0	1535.8	1554.5	1573.1		

4 Shipment and on-site transport

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

4.1 Accepting the delivered goods

After receiving the shipment, proceed as follows:

1. Compare the shipment received with the delivery note.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.2 Removing the packaging from the actuator

Note

Do not remove the packaging until immediately before mounting and start-up.

1. Remove the packaging from the electric actuator.
2. Check scope of delivery (see Fig. 4-1).
3. Dispose of the packaging in accordance with the valid regulations.

- | | |
|----|---|
| 1x | TROVIS 5757-7 Electric Actuator with Process Controller |
| 1x | Document IP 5757-7 (Important Product Information) |

Fig. 4-1: Scope of delivery

4.3 Transporting the actuator

- Protect the electric actuator against external influences (e.g. impact).
- Protect the electric actuator against moisture and dirt.
- Observe the permissible transportation temperature of -20 to $+70$ °C.

4.4 Lifting the actuator

Due to the low service weight, lifting equipment is not required to lift the electric actuator.

4.5 Storing the actuator

NOTICE

Risk of electric actuator damage due to improper storage.

- ➔ *Observe the storage instructions.*
- ➔ *Avoid long storage times.*
- ➔ *Contact SAMSON in case of different storage conditions or longer storage times.*

Note

We recommend regularly checking the electric actuator and the prevailing storage conditions during long storage periods.

Shipment and on-site transport

Storage instructions

- Protect the electric actuator against external influences (e.g. impact).
- Protect the electric actuator against moisture and dirt.
- Make sure that the ambient air is free of acids or other corrosive media.
- Observe the permissible storage temperature from -20 to $+70$ °C.
- Do not place any objects on the electric actuator.

5 Installation

5.1 Installation conditions

Work position

If not described otherwise in the valve documentation, the work position for the control valve is the front view looking onto the operating controls.

Mounting orientation

The control valve can be installed in the pipeline in any desired position. However, a suspended mounting position of the actuator is not permissible (see Fig. 5-1).

The cable gland must not face upward after installation.

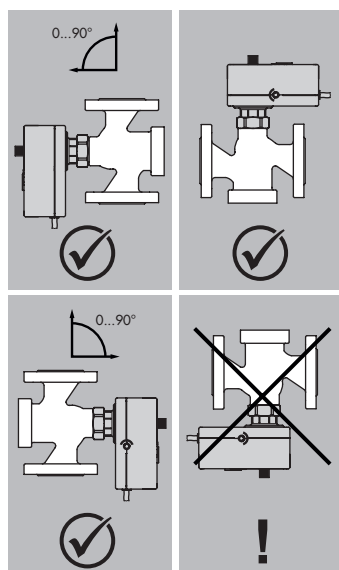


Fig. 5-1: Mounting position

NOTICE

Risk of actuator damage due to adverse weather conditions.

→ Do not use the actuator outdoors.

5.2 Preparation for installation

Before mounting, make sure the following conditions are met:

- The actuator is not damaged.

Proceed as follows:

Lay out the necessary material and tools to have them ready during mounting.

5.3 Mounting the actuator



Fig. 5-2: Mounting · TROVIS 5757-7

Installation

The actuator is mounted directly onto the valve.

NOTICE

Risk of actuator damage due to excessively high tightening torques.

→ Observe the tightening torque.

1. Turn the handwheel counterclockwise and move the actuator stem to the top end position.

NOTICE

Risk of damage to the actuator by moving the actuator stem too far.

→ Move the actuator stem only as far as the top end position.

2. Place the actuator on the valve connection and tighten the coupling nut.

Tightening torque	20 Nm
-------------------	-------

5.4 Installing the control valve into the pipeline

→ Install the valve into the pipeline according to the specifications in the mounting and operating instructions of the valve.

NOTICE

Risk of actuator damage due to direct contact with steam.

→ During mounting, make sure that the actuator cannot come into contact with a jet of steam during operation.

NOTICE

Degree of protection not achieved due to incorrect mounting position.

→ Do not install the valve with the actuator suspended downwards (see section 5.1).

5.5 Installing the accessories

Temperature sensors

Install the sensors according to the associated documentation.

- Mount the Type 5227-4 Outdoor Sensor on a wall outdoors.
 - Mount the room panel (e.g. Type 5257-71) to a wall indoors.
 - Mount the return flow sensor (e.g. Type 5267-3 Contact Sensor) to a pipe.
- See ► T 5220.

5.6 Electrical connection

NOTICE

Risk of actuator damage through opening the actuator housing.

→ Do not open the actuator housing.

⚠ DANGER

Risk of fatal injury due to electric shock.

- ➔ Upon installation of the electric cables, you are required to observe the regulations concerning low-voltage installations according to DIN VDE 0100 as well as the regulations of your local power supplier.
- ➔ Use a suitable voltage supply which guarantees that no dangerous voltages reach the device in normal operation or in the event of a fault in the system or any other system parts.
- ➔ Only perform the electrical connection after switching off the supply voltage. Make sure the supply voltage cannot be switched on again unintentionally.

The switching output L' is live.

- ➔ Do not touch the wire ends of the switching output L'.
- ➔ Insulate the wire ends when the switching output is not used.

⚠ NOTICE

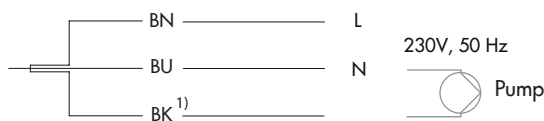
Risk of actuator damage due to incorrect wiring of the inputs.

- ➔ Wire the inputs range according to the technical data (see the 'Design and principle of operation' section).

Wiring

- ➔ Connect the wiring as shown in Fig. 5-3, Fig. 5-4, Fig. 5-5 or Fig. 5-6.
- ➔ Insulate any wires that are not used.

Electrical connection



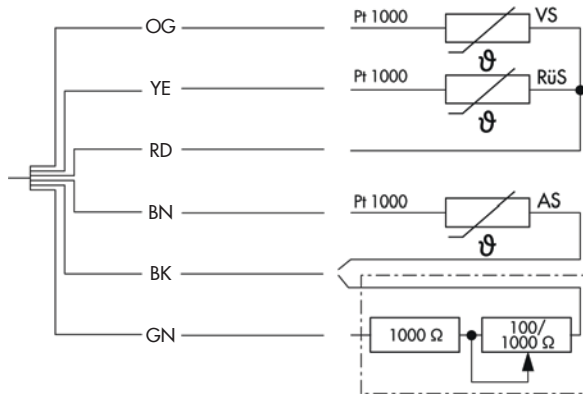
⚠ DANGER

Live wires

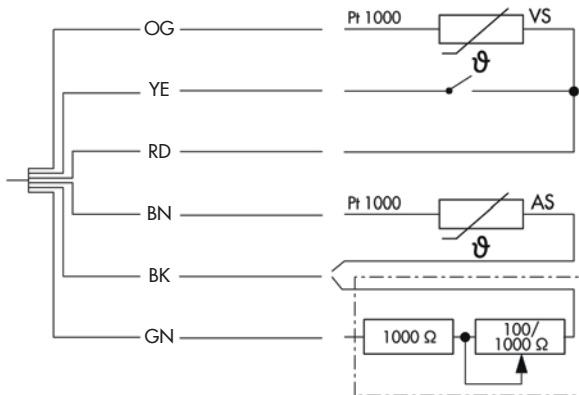
- ➔ Do not touch wire ends.
- ➔ Insulate any wires that are not used.

BN: Brown
BU: Blue
BK: Black

Fig. 5-3: Electrical connection of TROVIS 5757-7 · Supply line



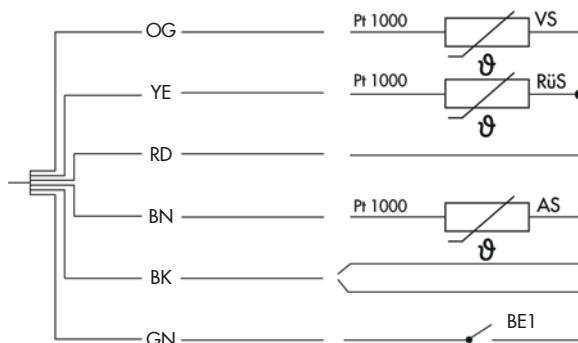
Application with flow sensor (VS), return flow sensor (RüS) and outdoor sensor (AS) and potentiometer functioning as set point adjuster



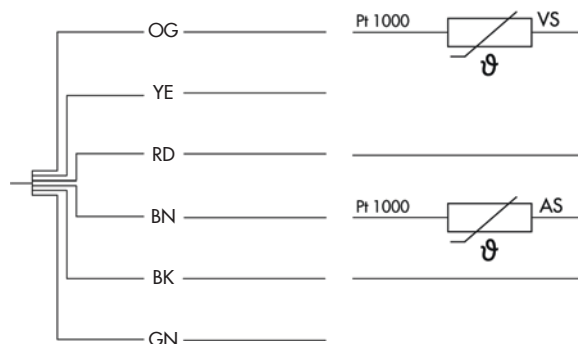
Application with flow sensor (VS), outdoor sensor (AS), binary input to switch between operating mode and potentiometer for adjusting the set point

OG: Orange	BN: Brown
YE: Yellow	BK: Black
RD: Red	GN: Green

Fig. 5-4: Electrical connection of TROVIS 5757-7 · Control line (part 1)



Application with flow sensor (VS), return flow sensor (RüS) and outdoor sensor (AS) and binary input to switch between operating modes



Application with flow sensor (VS) and outdoor sensor (AS)

OG: Orange

BN: Brown

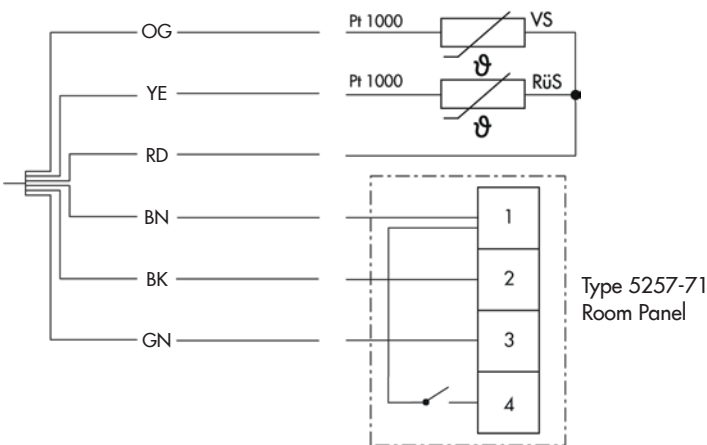
YE: Yellow

BK: Black

RD: Red

GN: Green

Fig. 5-5: Electrical connection of TROVIS 5757-7 · Control line (part 2)



Application with flow sensor (VS), return flow sensor (RüS) and room sensor with mode selector switch and room set point adjuster

- | | |
|------------|-----------|
| OG: Orange | BN: Brown |
| YE: Yellow | BK: Black |
| RD: Red | GN: Green |

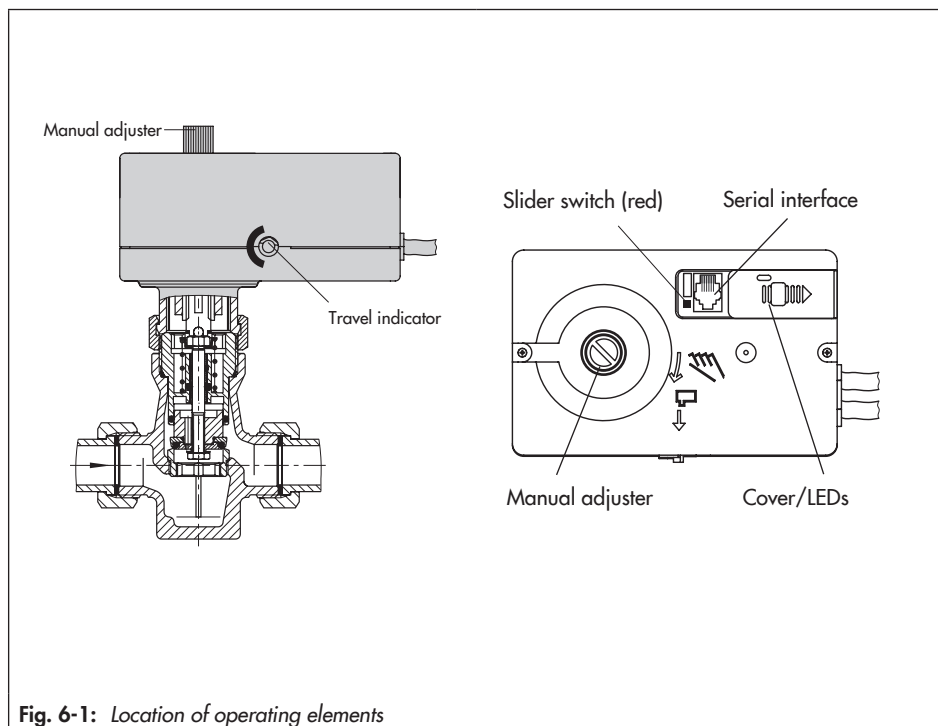
Fig. 5-6: Electrical connection of TROVIS 5757-7 · Control line (part 3)

Note

The terminals are not included in the scope of delivery.

6 Operation

6.1 Device overview and operating controls



6.2 Indication with LEDs

The electric actuator with process controller has a red and a yellow LED which indicate the operating state of the actuator. The LEDs are located underneath the transparent cover on top of the actuator (see Fig. 6-1).

➔ See the 'Operation' section for the blinking pattern.

6.3 Slider switch

The slider switch is used to switch between two different control configurations and parameters #1 and #2.

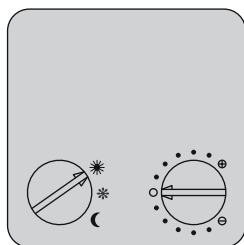
The slider switch points away from the housing in position #1 and in position #2 towards the middle of the housing.

6.4 Serial interface

The serial interface (RJ12 port) is used for communication with the actuator. Push the cover to access it (see Fig. 6-1).

6.5 Control mode switchover with a room panel

The Type 5257-71 Room Panel can be used to select an operating mode (day mode, night mode or frost protection). The room temperature set point can also be changed.



- ☀ Continuous day mode (rated operation)
- ☾ Continuous night mode (reduced operation)
- ❄ Off/frost protection

Fig. 6-2: Type 5257-71 Room Panel

7 Start-up and configuration

7.1 Initializing the actuator

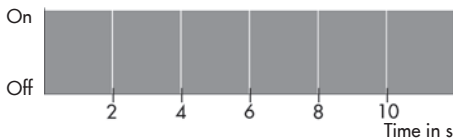
The initialization process starts automatically after the actuator has been connected to the supply voltage.

The actuator stem extends and the red and yellow LEDs are illuminated located underneath the cover on top of the actuator.

As soon as the actuator stem has reached the final position, the red LED is turned off. The yellow LED remains illuminated and indicates that the actuator is ready for use.

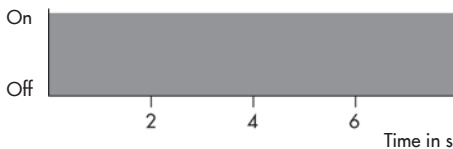
Blinking pattern of the red LED:

Zero calibration in progress



Blinking pattern of the yellow LED (after initialization):

Device ON



7.2 Configuring the actuator

The actuator is configured with the TROVIS-VIEW software. In this case, the serial interface on the actuator is used to connect the actuator to the computer (see the 'Design and principle of operation' section).

→ Refer to ► EB 6661 and ► KH 5757-7 for more details on configuration and operation using TROVIS-VIEW.

i Note

The Configuration Manual ► KH 5757-7 can be found in the Help menu of the TROVIS-VIEW software. The manual contains a detailed description of each function and parameter.

All the functions and parameters are listed in the Annex.

8 Operation

The valve with electric actuator is ready for use when mounting and start-up have been completed.

8.1 Closed-loop control

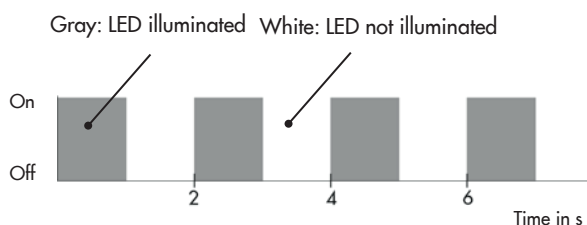
The electric actuator with process controller normally operates in closed-loop operation. In this case, the control behavior and movement of the actuator stem depend on the parameter settings (see Configuration Manual ► KH 5757-7).

8.1.1 Switching over the configuration and parameter levels

Two different levels are available. In both levels #1 and #2, the functions described in the Annex can be activated and the associated parameter settings made. The default settings is the same for both levels #1 and #2, except for function block F13. Changes to functions and parameters can be made using the TROVIS-VIEW software (► EB 6661 and ► KH 5757-7). The slider switch is used to select the level.

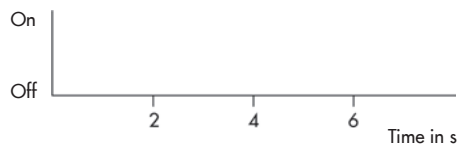
8.2 LED blinking pattern

The state of the corresponding LED (on/off) is shown over time.



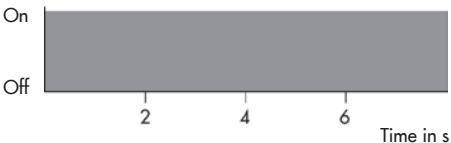
Blinking pattern of the yellow LED

- Device OFF

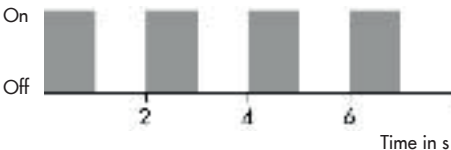


Operation

- Device ON

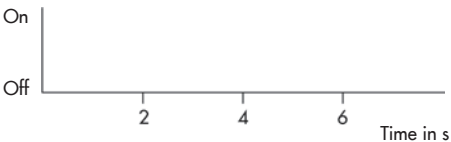


- Return flow temperature limitation active

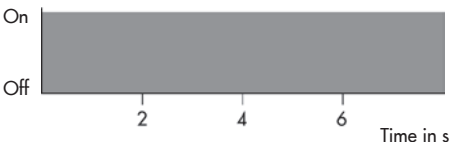


Blinking pattern of the red LED

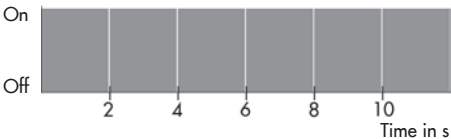
- Device OFF or in normal operation



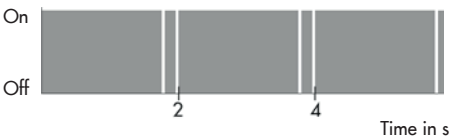
- Device starting up



- Zero calibration in progress



- Transit time measurement in progress



i Note

The blinking patterns for error indication are listed in the 'Malfunctions' section.

8.3 Manual mode

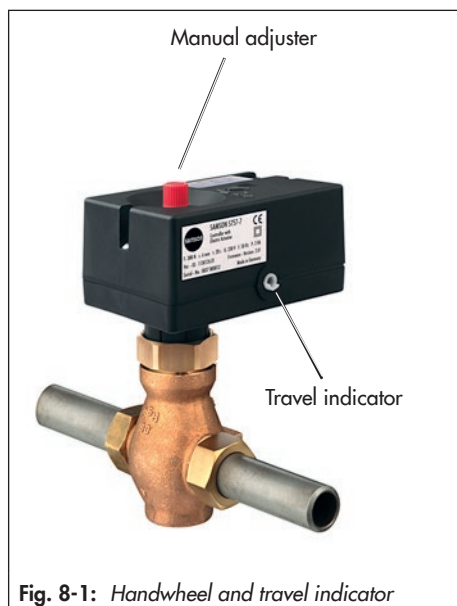


Fig. 8-1: Handwheel and travel indicator

Manually changing the stem position

The manual adjuster can be used to move the actuator stem to the required position. A manual adjustment of the stem position only makes sense when the power supply is switched off as the stem position is determined by the actuator in closed-loop operation, meaning any manual adjustment would be automatically corrected by the actuator.

The stem position is changed at the handwheel (see Fig. 8-1):

- ➔ Disconnect the power supply.
- ➔ Turn clockwise

The actuator stem extends (approx. four turns for 1 mm travel).

- ➔ Turn counterclockwise

The actuator stem retracts (approx. four turns for 1 mm travel).

Travel and direction of action can be read off the travel indicator on the side of the actuator housing (see Fig. 8-1).

8.4 Operation using memory pen

- ➔ See ► EB 6661.

The memory pen can be loaded with data configured in TROVIS-VIEW and the configuration data transferred to one or several devices of the same type and version.

Additionally, the data from the device can be written to the memory pen. This allows the configuration data to be simply copied from one device and loaded onto other devices of the same type and version.

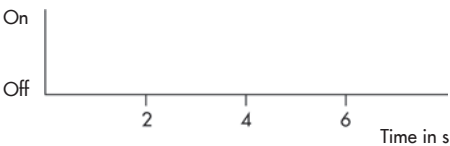
i Note

On inserting a memory pen that is empty or that contains data from another type of device or another version of the same device into the serial interface port of the actuator, the data from the actuator are uploaded to the memory pen regardless of the status of the memory pen and any other data on the memory pen will be overwritten.

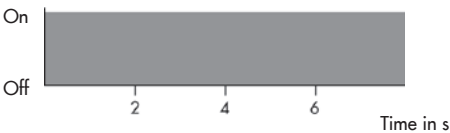
Operation

Blinking pattern of the yellow LED

– Command mode



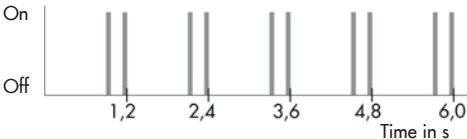
– Memory pen action completed



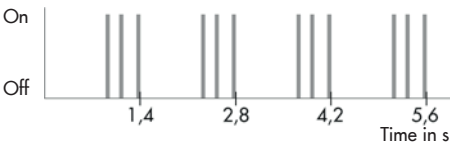
– Preparing to read from memory pen



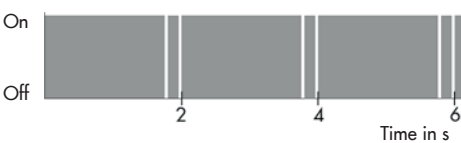
– Preparing to write data to memory pen



– Preparing data logging

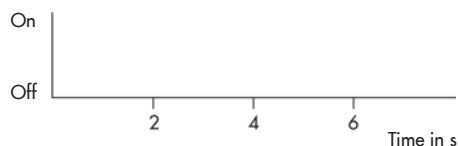


– Data logging in progress



Blinking pattern of the red LED

- Command mode



Data transmission between the actuator and memory pen

The memory pen is connected to the actuator as shown in Fig. 8-2. Refer to the TROVIS-VIEW Operating Instructions ► EB 6661 on how to transfer data.

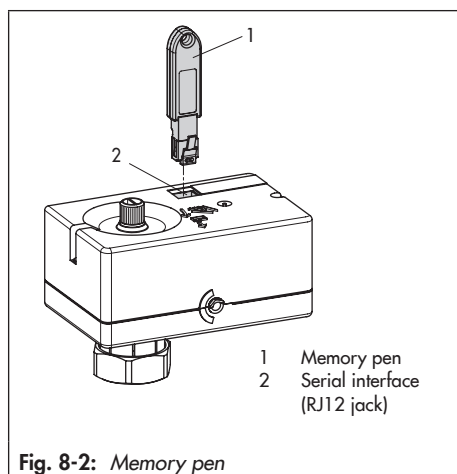


Fig. 8-2: Memory pen

The yellow LED on the actuator indicates that the data logging is being prepared. Data transmission is completed when the yellow LED is illuminated continuously.

8.4.1 Copying function

The memory pen can be used to copy setting data to other TROVIS 5757-7 Actuators after the data from the actuator have been transferred to the memory pen.

i Note

“Automatically write to memory pen” is automatically reset to the read status after data are transferred from the actuator for the first time.

8.4.2 Command mode

In closed-loop operation, the actuator stem can be moved to the top or bottom end position using the command pen regardless of the control conditions.

Possible settings:

- No command
- Retract actuator stem
- Extend the actuator stem

8.5 Readings in TROVIS-VIEW

8.5.1 Operating values

In **online mode**, the current operating values are listed in the 'Operating values' folder. Depending on the basic setting, a graph is shown under the 'Operating values' window.

i Note

The values in the 'Operating values' folder cannot be changed.

8.5.2 Operating states

Error messages can be read in the 'Service' folder ('Operating states').

i Note

Operating states and errors are also indicated by the LEDs (see section 8.2 and the 'Mal-functions' section).

8.5.3 Functions

In the 'Service' folder ('Functions'), the following functions are shown:

Manual level	➔ Manual level
Functions	➔ Perform reset
	➔ Load default settings in actuator
	➔ Start transit time measurement

The functions can be executed when communication between the actuator and computer is established.

8.5.4 Status messages

In the 'Service' folder ('Status messages'), device and operation parameters are shown:

Actuator	Firmware version	
	Serial number	
	Device information	
	Manufacturing parameters	
Operation	Operating hours	in h
	Operating hours at excess temperature	in h
	Temperature inside device	in °C

8.5.5 Statistics

In the 'Service folder' ('Statistics'), various readings of counters are shown:

Device failures counters	Supply voltage activated
	Program interruptions
Alarms counters	Sensor failures
	Collective error messages
Binary signals counters	Binary input 1 activated
	Switching output activated

9 Malfunctions

9.1 Troubleshooting

→ Troubleshooting (see Table 9-1).

i Note

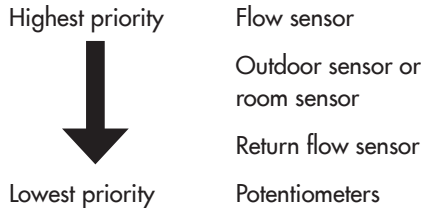
Contact SAMSON's After-sales Service for malfunctions not listed in the table.

Table 9-1: Troubleshooting

Error	Possible reasons	Recommended action
Actuator or plug stem does not move on demand.	Actuator is blocked.	→ Check attachment. → Remove the blockage.
	No or incorrect supply voltage connected.	→ Check the supply voltage and connections.
Actuator or plug stem does not move through the whole range.	No or incorrect supply voltage connected.	→ Check the supply voltage and connections.
The electric actuator with process controller does not perform the functions as required.	The configuration of the electric actuator does not meet the application requirements.	→ Check configuration. → If necessary, refer to the Configuration Manual ▶ KH 5757-7.
	The electric actuator was reset to its default settings without adapting the configuration to the application afterwards.	

9.2 Error priority

The connected sensors are monitored for line breakages. A fault in the line of a sensor is indicated by the red LED blinking. Each sensor has its own blinking pattern (see section 9.3). In the event that several sensors are defective, the LED blinks using the sequence for the sensor with the highest priority.

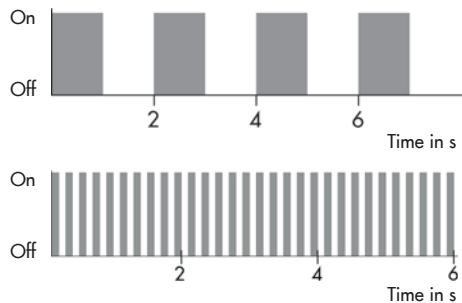


Example: In the event that the flow sensor and outdoor sensor are defective, the LED initially blinks to indicate that the flow sensor is defective. After this malfunction is remedied, the LED then blinks to indicate that the outdoor sensor is defective.

9.3 Error indication by LEDs

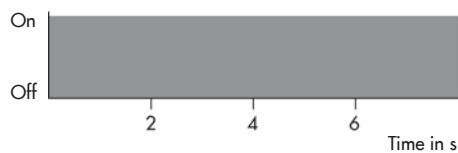
Blinking pattern of the yellow LED

- Plausibility error in memory pen
- EEPROM error in memory pen

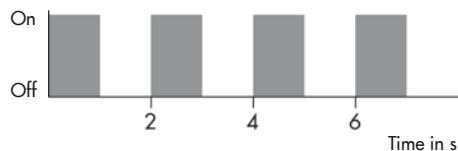


Blinking pattern of the red LED

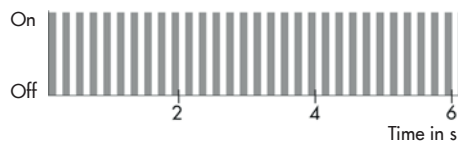
- Limit contact error



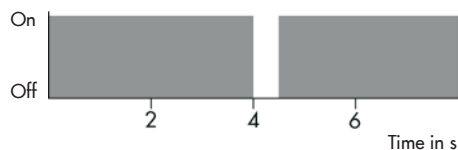
- Exceptional error or sensor line breakage



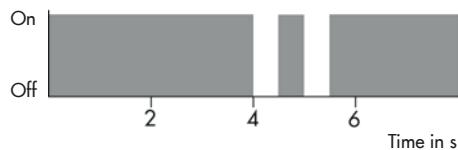
- EEPROM error in device



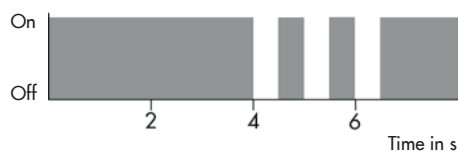
- Flow sensor defective



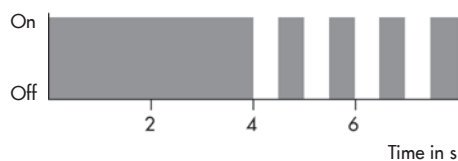
- Outdoor sensor/room sensor defective



- Return flow sensor defective



- Potentiometer defective



9.4 Emergency action

Plant operators are responsible for emergency action to be taken in the plant.



Tip

Emergency action in the event of valve failure is described in the associated valve documentation.

10 Servicing

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

i Note

The electric actuator with process controller was checked by SAMSON before it left the factory.

– The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by SAMSON's After-sales Service.

The actuator requires no maintenance.

We recommend inspection and testing according to Table 10-1.

Table 10-1: *Recommended inspection and testing*

Inspection and testing	Action to be taken in the event of a negative result
Check the markings, labels and nameplates on the electric actuator for their readability and completeness.	➔ Immediately renew damaged, missing or incorrect nameplates or labels.
	➔ Clean any inscriptions that are covered with dirt and are illegible.
Check the electric wiring.	➔ Tighten any loose terminal screws (see the 'Installation' section).
	➔ Replace the actuator.

11 Decommissioning

The work described in this section is to be performed only by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to electric shock.

- Before disconnecting the wires at the actuator, switch off the supply voltage and protect it against unintentional reconnection.

WARNING

Risk of personal injury due to residual process medium in the valve.

While working on the valve, residual medium can flow out of the valve and, depending on its properties, cause personal injury, e.g. (chemical) burns.

- Wear protective clothing, safety gloves and eye protection.

WARNING

Risk of burn injuries due to hot or cold components and pipeline.

Valve components and the pipeline may become very hot or cold. Risk of burn injuries.

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

To decommission the electric actuator for maintenance work or disassembly, proceed as follows:

- Put the control valve out of operation.
See associated valve documentation.
- Disconnect the supply voltage and protect it against unintentional reconnection.

12 Removal

The work described in this section is to be performed only by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to electric shock.

→ Before disconnecting live wires at the actuator, disconnect the supply voltage and protect it against unintentional reconnection.

⚠ WARNING

Risk of personal injury due to hot components.

→ If necessary, allow the pipeline and valve components to cool down.

⚠ WARNING

Risk of personal injury due to residual process medium.

While working on the valve, residual medium can flow out of the valve and, depending on its properties, cause personal injury, e.g. (chemical) burns.

→ Wear protective clothing, safety gloves and eye protection.

1. Disconnect the connecting lines.
2. Undo the coupling nut and remove the actuator from the valve connection (see Fig. 12-1).

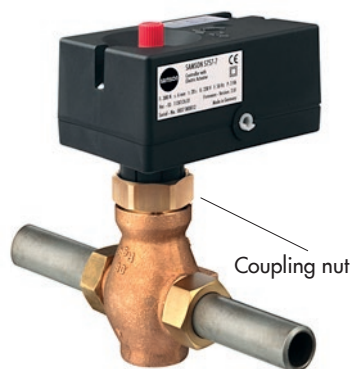


Fig. 12-1: Mounting TROVIS 5757-7 on the valve

13 Repairs

If the electric actuator does not function properly according to how it was originally configured or does not function at all, it is defective and must be exchanged.

NOTICE

Risk of actuator damage due to incorrect service or repair work.

- Do not perform any repair work on your own.
 - Contact SAMSON's After-sales Service.
-

13.1 Returning the actuator to SAMSON

Defective actuators can be returned to SAMSON for examination.

Proceed as follows to return devices:

1. Remove the electric actuator from the valve (see the 'Removal' section).
2. Continue as described on our website at
▶ www.samsongroup.com > Service & Support > After-sales Service > Returning goods .

14 Disposal



SAMSON is a producer registered at the following European institution
► <https://www.ewrn.org/national-registers/national-registers>.
WEEE reg. no.:
DE 62194439/FR 025665

- ➔ Observe local, national and international refuse regulations.
- ➔ Do not dispose of components, lubricants and hazardous substances together with your other household waste.

i Note

We can provide you with a recycling passport according to PAS 1049 on request. Simply e-mail us at aftersalesservice@samsongroup.com giving details of your company address.

Tip

On request, we can appoint a service provider to dismantle and recycle the product as part of a distributor take-back scheme.

15 Certificates

The following certificates are included on the next pages:

- EU declarations of conformity
- Declaration of incorporation

The certificates shown were up to date at the time of publishing. The latest certificates can be found on our website:

► www.samsongroup.com > Products & Applications > Product selector > Actuators > 5757-7

EU declaration of conformity

SMART IN FLOW CONTROL



SAMSON

**EU Konformitätserklärung / EU Declaration of Conformity /
Déclaration UE de conformité**

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/
This declaration of conformity is issued under the sole responsibility of the manufacturer/
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
Für das folgende Produkt / For the following product / Nous certifions que le produit

**Kombinierter Regler mit Hubantrieb / Controller with Electric Actuator /
Régulateur avec servomoteur électrique
Typ/Type/Type 5757**

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with/
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU	EN 61000-6-2:2005, EN 61000-6-3:2010 +A1:2011
LVD 2014/35/EU	EN 60730-1:2016, EN 61010-1:2010
RoHS 2011/65/EU	EN 50581:2012

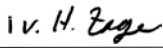
Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3
D-60314 Frankfurt am Main
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29
Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.



Gert Nahler
Zentralabteilungsleiter/Head of Department/Chef du département
Entwicklung Automation und Integrationstechnologien/
Development Automation and Integration Technologies



Hanno Zager
Leiter Qualitätssicherung/Head of Quality Management/
Responsable de l'assurance de la qualité

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3 60314 Frankfurt am Main

Telefon: 069 4009-0 · Telefax: 069 4009-1507
E-Mail: samson@samson.de

Revision 07

cs_5757-0_de_en_fr_ru_ne07.pdf

EU DECLARATION OF CONFORMITY

TRANSLATION



Declaration of Conformity of Final Machinery

in accordance with Annex II, section 1.A. of the Directive 2006/42/EC

For the following product:

Type 3222/XXX-X Electric Control Valve consisting of Type 3222 Valve and 5857, 5824, 5825, 5827, TROVIS 5757-X, TROVIS 5724-X or TROVIS 5725-X Actuator

We hereby declare that the machinery mentioned above complies with all applicable requirements stipulated in Machinery Directive 2006/42/EC.

For product descriptions refer to:

- Electric and Pneumatic Control Valves Type 3222/...:
Mounting and Operating Instructions EB 5866

Referenced technical standards and/or specifications:

- VCI, VDMA, VGB: "Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen, Mai 2018" [German only]
- VCI, VDMA, VGB: "Zusatzdokument zum Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen vom Mai 2018" [German only], based on DIN EN ISO 12100:2011-03

Comment:

Information on residual risks of the machinery can be found in the mounting and operating instructions of the valve and actuator as well as in the referenced documents listed in the mounting and operating instructions.

Persons authorized to compile the technical file:

SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany
Frankfurt am Main, 22 September 2023

Norbert Tollas
Senior Vice President
Global Operations

Peter Scheermesser
Director
Product Maintenance and Engineered Products

Revision no. 00

Declaration of incorporation

DECLARATION OF INCORPORATION TRANSLATION



Declaration of Incorporation in Compliance with Machinery Directive 2006/42/EC

For the following product:

TROVIS 5757-7 Electric Actuator with Process Controller

We certify that the TROVIS 5757-7 Electric Actuator with Process Controller is partly completed machinery as defined in the Machinery Directive 2006/42/EC and that the safety requirements stipulated in Annex I, 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.2, 1.2.3, 1.2.5, 1.2.6, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.7, 1.3.8.2, 1.3.9, 1.4.1, 1.5.1, 1.5.3, 1.5.4 and 1.5.8 are observed. The relevant technical documentation described in Annex VII, part B has been compiled.

Products we supply must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

Operators are obliged to install the products observing the accepted industry codes and practices (good engineering practice) as well as the mounting and operating instructions. Operators must take appropriate precautions to prevent hazards that could be caused by the process medium and operating pressure in the valve as well as by the signal pressure and moving parts.

The permissible limits of application and mounting instructions for the products are specified in the associated mounting and operating instructions; the documents are available in electronic form on the Internet at www.samsongroup.com.

For product descriptions refer to:

- TROVIS 5757-7 Electric Actuator with Process Controller: Mounting and Operating Instructions EB 5757-7

Referenced technical standards and/or specifications:

- VCI, VDMA, VGB: "Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen, Mai 2018" [German only]
- VCI, VDMA, VGB: "Zusatzdokument zum Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen vom Mai 2018" [German only], based on DIN EN ISO 12100:2011-03

Comments:

- See mounting and operating instructions for residual hazards.
- Also observe the referenced documents listed in the mounting and operating instructions.

Persons authorized to compile the technical file:

SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany

Frankfurt am Main, 14 September 2023


Stephan Giesen
Director Product Management

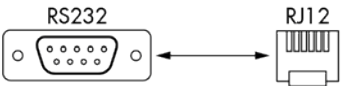

Sebastian Krause
Vice President Product Development

Revision no. 02

Classification: Public · SAMSON AKTIENGESELLSCHAFT · Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany Page 1 of 1

16 Annex

16.1 Accessories

Accessories	
Contact sensor	Type 5267-3
Outdoor sensor	Type 5227-4
Room panel	Type 5257-71
Hardware package consisting of: – Memory pen-64 – Connecting cable – Modular adapter	Order no. 1400-9998
Memory pen-64	Order no. 1400-9753 
Connecting cable	Order no. 1400-7699 
Modular adapter	Order no. 1400-7698 
USB to RS232 adapter	Order no. 8812-2001 
Software	
TROVIS-VIEW (free of charge)	► www.samsongroup.com > SERVICE & SUPPORT > Downloads > TROVIS-VIEW

16.2 After-sales service

Contact our after-sales service for support concerning service or repair work or when malfunctions or defects arise.

E-mail contact

You can reach our after-sales service at

► aftersalesservice@samsongroup.com.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON, its subsidiaries, representatives and service facilities worldwide can be found on our website (► www.samsongroup.com) or in all SAMSON product catalogs.

Required specifications

Please submit the following details:

- Model number
- Configuration ID
- Serial number
- Firmware version

16.3 Configuration list and customer-specific data

Function block list

There are separate two levels #1 and #2. Both levels contain the functions F01 to F13 with the specified default settings and meanings.

The functions F01 to F13 have the following listed functions.

F = Function block WE = Default setting 0 = OFF, 1 = ON

F	Function	WE	Meaning
01	Control mode	1	0: Fixed set point control 1: Control with reference variable
02	Reference variable (only effective when F01 - 1)	0	0: Outdoor sensor 1: Room sensor
03	Direction of action	0	0: >> (increasing/increasing) 1: <> (increasing/decreasing)
04	Delayed outdoor temperature (only effective when F01 - 1 and F02 - 0)	0	0: Without delay 1: With delay
05	Potentiometer input	0	0: Inactive, binary input 1 active 1: Active
06	Resistance range of potentiometer (only effective when F05 - 1)	0	0: Type 5257-7 Room Panel (1000 to 1100 Ω) 1: Remote adjuster (1000 to 2000 Ω)
07	Function of potentiometer (only effective when F02 - 0 and F05 - 1)	0	0: Heating characteristic level shift 1: Gradient shift
08	Function of binary input 1 (only effective when F05 - 0)	0	0: OFF with frost protection 1: Reduced operation
09	Function of switching output	0	0: Circulation pump (heating) 1: Demand (ON in rated operation)
10	Pump protection (only effective with F09 = 0)	1	0: Not active 1: Active
11	Return flow temperature sensor	1	0: Inactive, binary input 2 active 1: Active, with return flow temperature limitation
12	Function of binary input 2 (only effective when F11 - 0)	0	0: OFF with frost protection 1: Reduced operation
13	Manual mode	0 ¹⁾	0: Not active 1: Active

¹⁾ The default setting F13 - 1 applies for level #2.

Parameter list

There are two separate parameter levels #1 and #2. Both parameter levels contain the functions P01 to P23 with the specified default settings and setting ranges.

The parameters have the setting ranges as listed below.

P = Parameter WE = Default setting

P	Parameters	WE	Adjustment range
01	Flow temperature set point	70 °C	0 to 120 °C
02	Flow temperature set-back in reduced operation	15 K	0 to 50 K
03	Min. flow temperature	20 °C	0 to 120 °C
04	Max. flow temperature	120 °C	20 to 150 °C
05	Heating characteristic gradient	1.6	0.2 to 3.2
06	Heating characteristic level	0 K	-30 to +30 K
07	Gradient shift range via potentiometer	1.0	0.0 to 1.5
08	Level shift range via potentiometer	15 K	0 to 30 K
09	Kp flow temperature control	2.0	0.1 to 50.0
10	Tn flow temperature control	120 s	0 to 999 s
11	Actuator transit time Ty	24.0 s	10.0 to 240.0 s
12	Dead band (switching range)	2.0 %	0.5 to 5.0 %
13	Max. return flow temperature	50 °C	10 to 90 °C
14	Kp return flow temperature limitation	1.0	0.1 to 50.0
15	Tn return flow temperature limitation	400 s	0 to 999 s
16	Delay time for outdoor temperature	3 °C/h	1 to 6 °C/h
17	Outdoor temperature limit value at rated operation	22 °C	0 to 50 °C
18	Outdoor temperature limit value at reduced operation	15 °C	0 to 50 °C
19	Room temperature set point at rated operation	20 °C	10 to 40 °C
20	Room temperature set point at reduced operation	15 °C	10 to 40 °C
21	Max. room temperature boost for switch-off	2 K	1 to 6 K
22	Time interval for flash adaptation	10 min	0 to 100 min
23	Pump lag time	5 min	1 to 999 min

Customer-specific data

Station	
Operator	
SAMSON office	

Function blocks			
		Setting	
F	WE	#1	#2
01	1		
02	0		
03	0		
04	0		
05	0		
06	0		
07	0		
08	0		
09	0		
10	1		
11	1		
12	0		
13	0 ¹⁾		

¹⁾ The default setting F13 - 1 applies for level #2.

Parameters				
		Setting		
P	WE	#1	#2	Adjustment range
01	70 °C			0 to 120 °C
02	15 K			0 to 50 K
03	20 °C			0 to 120 °C
04	120 °C			20 to 150 °C
05	1.6			0.2 to 3.2
06	0 K			-30 to +30 K
07	1.0			0.0 to 1.5
08	15 K			0 to 30 K
09	2.0			0.1 to 50.0
10	120 s			0 to 999 s
11	24 s			10 to 240 s
12	2.0 %			0.5 to 5.0 %
13	50 °C			10 to 90 °C
14	1.0			0.1 to 50.0
15	400 s			0 to 999 s
16	3 °C/h			1 to 6 °C/h
17	22 °C			0 to 50 °C
18	15 °C			0 to 50 °C
19	20 °C			10 to 40 °C
20	15 °C			10 to 40 °C

Parameters				
		Setting		
P	WE	#1	#2	Adjustment range
21	2 K			1 to 6 K
22	10 min			0 to 100 min
23	5 min			1 to 999 min



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