MOUNTING AND
OPERATING INSTRUCTIONS

EB 5724-8 EN

Translation of original instructions



TROVIS 5724-8 (without fail-safe action)
TROVIS 5725-8 (with fail-safe action)
Electric Actuators with Process Controller

For heating and cooling applications

Firmware version 2.13

Edition November 2025

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*** **>** ***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 5724-8 and TROVIS 5725-8 Electric Actuators with Process Controller are a combination of an electric actuator and an integrated digital controller with two PID control modules. They are 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 actuators with process controller are suitable for closed-loop operation in heating and cooling applications.

The electric actuator with process controller is designed to operate under exactly defined conditions (e.g. thrust, travel). Therefore, operators must ensure that the electric actuator with process controller is only used in operating conditions that meet the specifications used for sizing it at the ordering stage. In case operators intend to use the electric actuator with process controller 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' chapter.

Reasonably foreseeable misuse

The electric actuators with process controller are 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 electric actuators with process controller must be mounted, started up, serviced and repaired by fully trained and qualified personnel only; the accepted industry codes and practices are to 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.

Personal protective equipment

No personal protective equipment is required for the direct handling of electric actuators 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 following safety features exist:

- The limit switches switch off the motor in the end positions.
- An active blocking protection (A8.3 configuration item = 1, see Appendix A) in the electric actuator with process controller prevents the valve from seizing up.
- Upon supply voltage failure, the TROVIS 5725-8 Electric Actuator with Process Controller causes the valve to move to a certain fail-safe position. The fail-safe action of SAMSON actuators is specified on the actuator nameplate.

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

Devices with a CE marking fulfill the requirements of the following Directives:

- 2014/30/EU
- 2014/35/EU
- 2011/65/EU

The declarations of conformity can be found in the 'Certificates' chapter of these mounting and operating instructions.

The electric actuators with process controller are designed for use in low-voltage installations.

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

Referenced documents

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

- Configuration Manual for TROVIS 5724-8 and TROVIS 5725-8 Electric Actuators with Process Controller ▶ KH 5724-8
- Mounting and operating instructions of the valve on which the electric actuator with process controller is mounted, e.g. for SAMSON valves:
  - ▶ 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 and Type 3214 Globe Valves
  - ▶ EB 8111 for Type 3321 Globe Valve
  - ▶ EB 8113 for Type 3323 Three-way Valve
  - ▶ EB 8131 for Type 3531 Globe Valve for Heat Transfer Oil
  - ▶ EB 8135 for Type 3535 Three-way Valve for Heat Transfer Oil
  - ▶ EB 3018 for Type 42-36 E Pressure-independent Control Valve (PICV) with electric actuator

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 back housing cover.

The electric actuators with process controller are protected against spray water (IP 54).

➔ Avoid jets of water.

The switching output may be live after the supply voltage has been connected.

➔ Do not touch the wire ends of the switching output.

➔ When the switching output is not used, deactivate it in function **M4** ('None' setting ▶ KH 5724-8).

1.2 Notes on possible personal injury

⚠ WARNING

Crush hazard arising from moving parts.

The form-fit version of the electric actuators with process controller contains moving parts (actuator and plug stems), which can injure hands or fingers if inserted into the actuator.

➔ Do not insert hands or fingers into the yoke while the valve is in operation.

➔ Disconnect the supply voltage before performing any work on the control valve.

➔ Do not impede the movement of the actuator or plug stem by inserting objects into their path.

⚠ WARNING

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

Over time, markings, labels and nameplates on the electric actuator with process controller 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 actuator damage due to incorrect wiring of the inputs.

Incorrect wiring of the inputs may lead to excessively high voltages and damage the electric actuator with process controller.

➔ Wire the inputs range according to the technical data.

Risk of damage to the electric actuator due to over-torquing.

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

➔ Observe the specified tightening torques.

NOTICE

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

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

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

➔ Do not use a power tool to move the actuator stem.

The display does not work due to an interrupted cable connection.

The cable connection for the display is located underneath the front housing cover.

➔ Only open the front housing cover to perform actions described in these instructions.

➔ Do not disconnect the connecting cable between the electric actuator and housing cover.

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.

Risk of damage to the screw heads on the front cover due to the use of the wrong tool.

The actuator housing cover is fastened using TORX PLUS® screws, size 10IP.

➔ To loosen and tighten the screws, only use the following screwdrivers:

- TORX® T10
- TORX PLUS® 10IP
- Flat-blade screwdriver with 0.8 mm blade thickness and 4.0 mm blade width

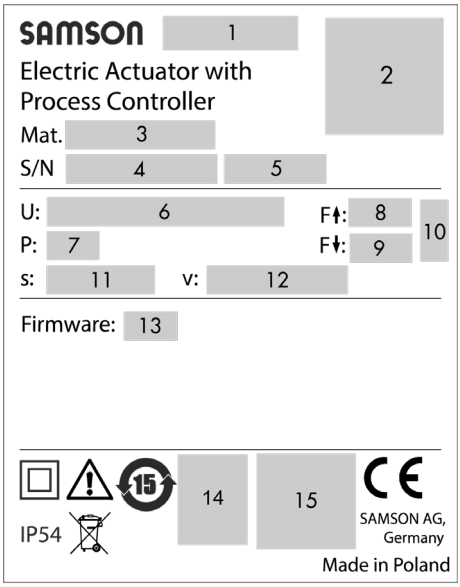
Risk of actuator damage due to direct contact with steam.

➔ Make sure that a mounted actuator cannot come into contact with a jet of steam while the control valve is in operation.

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 Data Matrix code
3 Material number
4 Serial number
5 Date of manufacture
6 Supply voltage; power line frequency
7 Power consumption
8 Thrust (actuator stem retracts)
9 Thrust (actuator stem extends)
10 Direction of action (fail-safe action)



Extends

11 Rated travel
12 Stroking speed
13 Firmware version
14 DIN test with register number (only version with "actuator stem extends" fail-safe action)
15 Other mark of conformity

2.2 Device code

Electric Actuator with Process Controller	**TROVIS 572**	x	-	8	x	x
Fail-safe action						
Without		4				
With		5				
Rated travel/adaptation						
6 mm/force-locking					1	
12 mm/force-locking					2	
15 mm/form-fit					3	
Stem movement						
Standard						0

2.3 Firmware versions

Firmware revisions	
Old	**New**
2.00	**2.01**
	Communication parameters that cannot be changed are hidden.
2.01	**2.10**
	Automatic protocol detection works with SSP and Modbus. In this case, Modbus is restricted to the setting '9600, 8N1'.
	The 'Communication module' and 'Protocol' communication parameters have been replaced by the communication parameter with same name (i.e. 'Protocol' but with different setting options. The new settings are 'None', 'Automatic (SSP, Modbus)' and 'Modbus (adjustable)'. 'Automatic (SSP, Modbus)' is set by default.
	The message **'Last positioning value upon signal failure'** has been replaced by **'Last travel value'**. The electric actuator with process controller stops immediately upon signal failure with this setting.
	Transit time measurement and initialization can be canceled by pressing the [0] key. The electric actuator with process controller does not perform a zero calibration after cancellation. The actuator moves to a predefined positioning value.
2.10	**2.11**
	New system code numbers: 2, 38 and 58
	'LIM1', 'LIM2', '[I]/[O] keys or LIM1' and '[I]/[O] keys or LIM2' have been added to the Trigger function (A1.5).
	The error message 'Eb' is displayed at the actuator when a bus failure is detected.
	Baud rate 38400 is no longer available for Modbus.
2.11	**2.12**
	The system code numbers are assigned in the range from 0 to 99.
2.12	**2.13**
	Internal revisions

3 Design and principle of operation

The TROVIS 5724-8 and TROVIS 5725-8 Electric Actuators with Process Controller contain two integrated digital controllers, referred to as controller [1] and controller [2] in the following. The TROVIS 5724-8 is without fail-safe action and the TROVIS 5725-8 has fail-safe action.
The electric actuators with process controller are mounted onto SAMSON Types 3222, 3213, 3214, 2488, 42-36 E, 3226 and 3260 Valves as well as Series V2001 Valves up to nominal size DN 50.

Construction

The actuator contains a reversible synchronous motor and a maintenance-free gear. The force of the motor is transmitted to the actuator stem via gearing and cam disk. When the actuator stem extends, it pushes against the valve's plug stem. When the actuator stem retracts, the return spring in the valve causes the plug stem to follow the movement (force-locking connection). The valve and actuator have a force-locking connection. A form-fit connection is used for special valve models, e.g. Series V2001 valves.

The user can read and change the set point and operating values at the control panel. All other parameters can be changed in the TROVIS-VIEW software.

Modbus is used for data exchange between the actuator and computer.



Fig. 3-1: *TROVIS 5724-8 Electric Actuator with Process Controller*

Manual adjuster

➔ See the 'Operation' chapter.

The actuator version without fail-safe action (TROVIS 5724-8) has a handwheel used to manually position the valve (only when the electric actuator is disconnected from the supply voltage). Travel and direction of action can be read off the travel indication scale.

3.1 Fail-safe action

The TROVIS 5725-8 Electric Actuator with Process Controller contains a spring mechanism and an electromagnet. The actuator stem is moved by the force of the spring to the fail-safe position (lower end position) when the electromagnet (connected to terminals L and N) is de-energized.

Note

The actuator stem of the TROVIS 5724-8 Electric Actuator with Process Controller remains in its last position in the event of supply voltage failure.

NOTICE

Increased wear and shortened service life of the electric actuator with process controller.

➔ *Do not use the fail-safe action to control the valve position.*

The TROVIS 5725-8 Electric Actuator with Process Controller does not have a handwheel on the housing cover. Manual override is possible, after removing the front cover, using a 4 mm hex screwdriver. The actuator stem immediately moves back to its original position as soon as the hex screwdriver is removed from the actuating shaft.

Testing according to DIN EN 14597

TROVIS 5725-8 Electric Actuators with "actuator stem extends" fail-safe action, which have a test mark on their nameplate, are tested by the German technical surveillance association TÜV according to DIN EN 14597 in combination with different SAMSON valves (register number on request).

3.2 Communication

Interface

The actuator is fitted with an RS-485 interface. The data transfer uses an SSP or Modbus RTU protocol.

➔ Supported Modbus functions (see Appendix A)

The electric actuator with process controller can be connected to a control station over Modbus and can be configured using TROVIS-VIEW. Various communications protocol (SSP or Modbus RTU slave) and a bus connecting cable are used for various functions (see Appendix A).

Configuration

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

Note

TROVIS-VIEW can be downloaded free of charge from our website at
▶ *www.samsongroup.com > DOWNLOADS > Software & Drivers > 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.

3.3 Versions

The electric actuator with process controller is available in four versions [A], [B], [C] and [D]. These versions are tailored to the ready-configured applications. In many cases, it is also possible to use the electric actuator with process controller with another device version for other applications (see Table 3-1).

i ***Note***

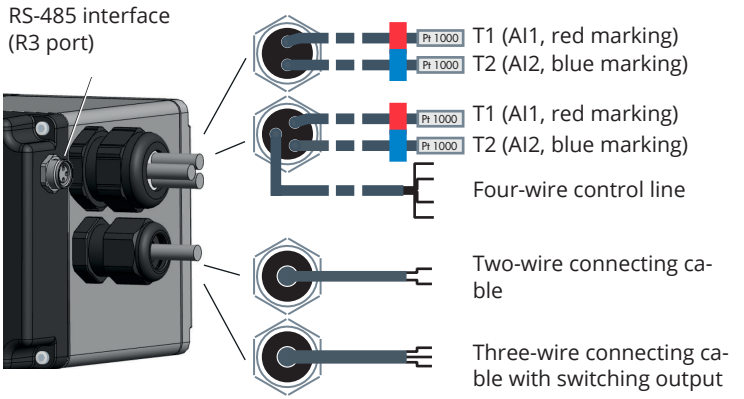
The ready-configured applications are defined in M0 configuration item. They are described in the Configuration Manual ▶KH 5724-8.

- **Device version [A]** with two-wire connecting cable (voltage supply) and two Pt1000 sensors
- **Device version [B]** with three-wire connecting cable (voltage supply and switching output) and two Pt1000 sensors
- **Device version [C]** with two-wire connecting cable (voltage supply), two Pt1000 sensors and a four-wire control line for two further inputs
- **Device version [D]** with three-wire connecting cable (voltage supply and switching output), two Pt1000 sensors and a four-wire control line for two further inputs

Table 3-1: *Device versions ([A], [B], [C], [D]) and their possible implementation*

	Device version [A]	Device version [B]	Device version [C]	Device version [D]
System code numbers 20, 60	•	•	•	•
System code numbers 1, 2, 10, 21, 30, 50, 70, 80	o	•	o	•
System code numbers 65, 66	–	–	•	•
System code numbers 35, 38, 40, 55, 58, 75, 95	–	–	o	•

• Recommended
• Possible
o Possible when the switching output is not used
– Not possible



	Versions			
	A	B	C	D
T1 (AI1, red marking) T2 (AI2, blue marking)	•	•		
T1 (AI1, red marking) T2 (AI2, blue marking) Four-wire control line			•	•
Two-wire connecting cable	•		•	
Three-wire connecting cable with switching output		•		•

Fig. 3-2: *Sensors and connections*

3.4 Additional equipment

Sensors

- Mounting kit for a Pt1000 immersion sensor as contact sensor
- Additional Pt1000 immersion sensor for connection to the control line
- Brass thermowell, G ½, 80 mm immersion length, PN 16
- Stainless steel thermowell, G ½, 80 mm immersion length, PN 40
- Stainless steel thermowell, G ½, 250 mm immersion length, PN 40
- Brass thermowell, G ½, 160 mm immersion length, PN 16
- Stainless steel thermowell, G ½, 160 mm immersion length, PN 40

Communication

- Bus connecting cable for Modbus RTU communication with 3-pin round connector, 5 m
- USB-RS485 adapter R3 for direct configuration over TROVIS-VIEW and Modbus interface
- TROVIS-VIEW software
  The TROVIS-VIEW software can be downloaded free of charge from our website (▶ www.samsongroup.com > DOWNLOADS > Software & Drivers > TROVIS-VIEW). The software can also be supplied on a CD-ROM. Further details in Data Sheet ▶ T 6661.

Open loop control

Tip

A commercially available time switch with floating contacts can be used to reduce the set point.

3.5 Technical data

Electric Actuator with Process Controller TROVIS		5724-810	5725-810	5724-820	5725-820	5724-830	5725-830
Fail-safe action		without	with	without	with	without	with
	Actuator stem	–	extends	–	extends	–	extends
Connection to valve		Force-locking				Form-fit	
Rated travel		6 mm		12 mm		15 mm	
Transit time for rated travel		35 s		70 s		90 s	
Stroking speed		0.18 mm/s					
Thrust		700 N	500 N	700 N	500 N	700 N	280 N
Supply voltage		230 V (±10 %), 50 Hz					
Power consumption		6 VA					
Manual adjuster		With	without	With	without	With	without
Permissible temperature ranges [1]							
	Ambient	0 to 50 °C					
	Storage	-20 to +70 °C					
Degree of protection (not installed suspended)		IP54 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					
Connecting cable length		Two-wire, 5 m · Three-wire, 2.5 m					
Weight		Approx. 1.1 kg					

Device versions	
Device version [A]	• Two-wire connecting cable with open end for connection to voltage supply (5 m) • 2x Pt1000 sensors (3 m red and 2 m blue)
Device version [B]	• Three-wire connecting cable with open end for connection to voltage supply and switching output (2.5 m) • 2x Pt1000 sensors (3 m red and 2 m blue)
Device version [C]	• Two-wire connecting cable with open end for connection to voltage supply (5 m) • 2x Pt1000 sensors (3 m red and 2 m blue) • Four-wire control line for two additional inputs (3 m)
Device version [D]	• Three-wire connecting cable with open end for connection to voltage supply and switching output (2.5 m) • 2x Pt1000 sensors (3 m red and 2 m blue) • Four-wire control line for two additional inputs (3 m)

1) 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.

Sensors		
Connecting cable length	2 m	3 m
Marking	Blue	Red
Number of Pt1000 resistors	1	1
Accuracy	Class B	
Sensor length	50 mm	50 mm
Perm. temperature range	-50 to +180 °C	
Degree of protection acc. to EN 60529	IP54	
Weight	Approx. 0.23 kg	
Wiring	AI2	AI1

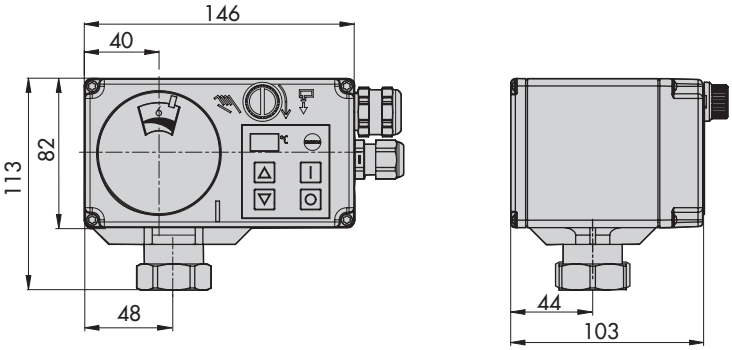
Connecting cable		
Version	**Two-wire**	**Three-wire**
Length	5 m	2.5 m
Wire designation	N <> Blue L <> Brown	N <> Blue L <> Brown L' <> Black

Switching output	
Voltage	230 V
Current	Max. 1 A

Control line		
Version	**AI3**	**AI4**
Wire designation	+ <> Orange – <> Brown	+ <> Red – <> Black

3.6 Dimensions

TROVIS 5724-810/-820 and TROVIS 5725-810/820



TROVIS 5724-830 and TROVIS 5725-830

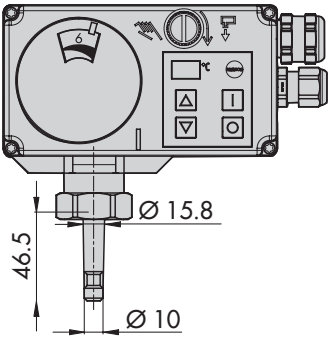


Fig. 3-3: *Dimensions in mm*

4 Shipment and on-site transport

The work described in this chapter is to be performed only 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

i ***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 5724-8 or TROVIS 5725-8 Electric Actuator with Process Controller
1x	Document IP 5724-8 (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 range 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 actuator damage due to improper storage.

➔ *Observe the storage instructions.*

➔ *Avoid longer storage periods.*

➔ *Contact SAMSON in case of different storage conditions or longer storage times.*

Note

SAMSON recommends to regularly check the electric actuator and the prevailing storage conditions during long storage periods.

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 position

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.

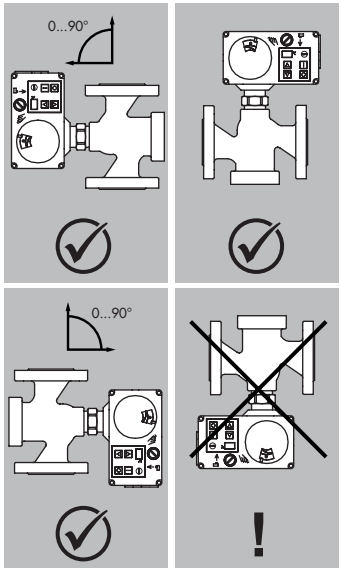


Fig. 5-1: *Mounting position*

NOTICE

Risk of actuator damage due to adverse weather conditions.

➔ *Do not use the electric actuator with process controller outdoors.*

5.2 Preparation for installation

Before installation, make sure that the following conditions are met:

– The electric actuator with process controller is not damaged.

Proceed as follows:

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

Cover screws

The actuator housing cover is fastened using TORX PLUS® screws, size 10IP.

➔ To loosen and tighten the screws, the following screwdrivers can be used:

– TORX® T10
– TORX PLUS® 10IP
– Flat-blade screwdriver with 0.8 mm blade thickness and 4.0 mm blade width

5.3 Aligning the travel indication scale

The travel indication scale has two opposed scales. Which scale is to be used depends on the valve version. In the delivered state, the scale alignment applies to globe valves and three-way diverting valves. The alignment needs to be changed when a three-way mixing valve is used.

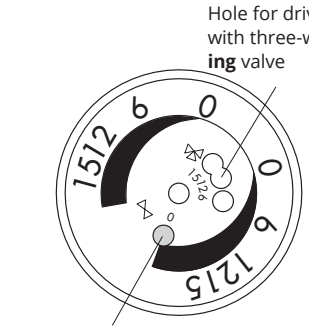


Fig. 5-2: *Travel indication scale*

Globe and three-way diverting valves: the driving pin is in position 0 (delivered state).

Three-way mixing valve:
change the alignment of the scale.

➔ Carefully open the front cover.

NOTICE

The display does not work due to an interrupted cable connection.

➔ *Only open the front housing cover to perform actions described in these instructions.*

➔ *Do not disconnect the connecting cable between the electric actuator and housing cover.*

Tip

SAMSON recommends screwing the bottom screws of the open front housing cover into the top holes of the housing.

➔ Remove scale, turn it and replace it so that the pin is positioned over the appropriate hole (6, 12 or 15) corresponding to the rated travel (6, 1 or 15 mm travel).

➔ Close front cover.

5.4 Mounting the actuator

The electric actuator with process controller is mounted either directly onto the valve or using a yoke depending on the valve version used (see Fig. 5-3).

NOTICE

Risk of damage to the electric actuator due to over-torquing.

➔ *Observe the tightening torque.*

NOTICE

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

➔ *Only turn the handwheel far enough to move the actuator to the top or bottom end position at the maximum.*

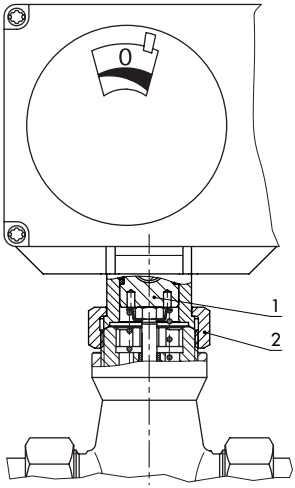
➔ *Do not use a power tool to move the actuator stem.*

5.4.1 TROVIS 5724-8 (force-locking attachment)

➔ See Fig. 5-3.

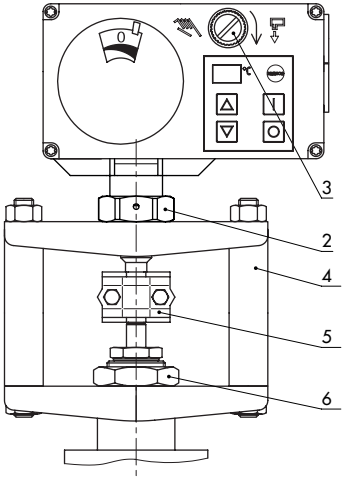
1. Turn the handwheel (3) counterclockwise to retract the actuator stem.
2. Place the actuator on the valve connection and fasten with the coupling nut (2).

Tightening torque	20 Nm



Force-locking attachment with coupling nut, e.g. to Type 3222 Valve

1 Actuator stem
2 Coupling nut
3 Handwheel (TROVIS 5724-8 only)



Form-fit attachment with stem connector, e.g. with rod-type yoke on Series V2001 Valve

4 Rod-type yoke
5 Stem connector
6 Nut

Fig. 5-3: *Connection of the electric actuator and valve*

5.4.2 TROVIS 5724-8 (form-fit attachment)

➔ See Fig. 5-3.

NOTICE

Crush hazard arising from moving parts (actuator and plug stem).

➔ *Do not insert hands or fingers into the yoke while the valve is in operation.*

1. Place the actuator on the yoke (4) and fasten with the coupling nut (2).

Tightening torque	20 Nm

2. Place the actuator with the yoke onto the valve and fasten with the nut (6).

Tightening torque	150 Nm

3. Pull plug stem until it reaches the actuator stem or extend actuator stem using the handwheel (3).
4. Position the clamps of the stem connector (5) included in the accessories on the ends of the actuator stem and plug stem. Fasten tight with screws.

5.4.3 TROVIS 5725-8 (force-locking attachment)

The actuator stem must be retracted before the actuator can be mounted onto the valve. The stem can be retracted either mechanically or electrically. Both methods are described below.

Retracting the actuator stem mechanically

1. Carefully open the front housing cover and place a 4 mm hex screwdriver on the red actuating shaft.
2. Retract the actuator stem: turn the screwdriver counterclockwise and only as far as the top end position which is at the point where the torque switch is activated.
3. Hold the screwdriver in place and fasten valve and actuator together using the coupling nut.

Tightening torque	20 Nm

Remove the screwdriver and carefully replace the front housing cover.

Retracting the actuator stem electrically

1. Carefully open the front cover.
2. Connect the wiring as shown in Chapter 5.7.
3. Switch on supply voltage and connect the actuator at the RJ-12 port to the computer.
4. Retract the actuator stem in manual level in TROVIS-VIEW. Fasten valve and actuator together using the coupling nut.

Tightening torque	20 Nm

5.4.4 TROVIS 5725-8 (form-fit attachment)

➔ Install as described in Chapter 5.4.2.

5.5 Installing the control valve into the pipeline

NOTICE

Degree of protection not achieved due to incorrect mounting position.

➔ *Install the control valve according to Chapter 5.1.*

NOTICE

Risk of actuator damage due to direct contact with steam.

➔ *Make sure that a mounted electric actuator cannot come into contact with a jet of steam while the control valve is in operation.*

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

5.6 Installing the accessories

Temperature sensor

➔ Mount the thermowells for sensor to be installed into pipelines (depending on the application, see associated documentation).

Note

Upon delivery, the sensors are already connected to the terminals of the electric actuator with process controller (the 'Design and principle of operation' chapter).

Tip

All ready-configured applications are described in the Configuration Manual ▶ KH 5724-8. Refer to the plant schemes to find out where the sensors are preferably to be mounted for an application.

Communication

➔ Insert the bus connection line with three-pin R3 round connector for communication into the associated port (see the 'Design and principle of operation' chapter).

5.7 Electrical connection

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 disconnecting the supply voltage. Make sure the supply voltage cannot be reconnected unintentionally.*

⚠ DANGER

Risk of fatal injury due to electric shock at switching output L' in device versions B and D after connecting the supply voltage.

The switching output L' may be live.

➔ *Do not touch the wire ends of the switching output L'.*

NOTICE

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

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

➔ Connect the connecting cable to the voltage supply (see Fig. 5-5).

i Note

Upon delivery, the sensors are already connected to the terminals of the electric actuator with process controller.

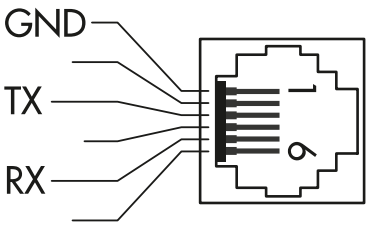
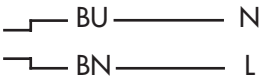
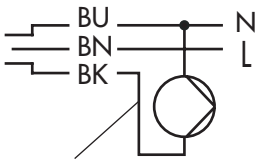


Fig. 5-4: *Terminal assignment of RJ-12 jack*

Version without switching output



Version with switching output



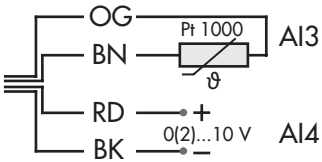
⚠ DANGER

Live wires

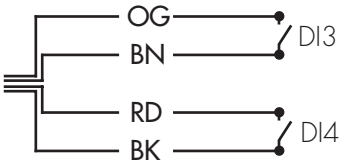
➔ *Do not touch wire ends.*

Control line

With Pt1000 and voltage input



With two binary inputs



BU	Blue
BN	Brown
OG	Orange
BK	Black
RD	Red

i *Note*

Terminals are not included in the scope of delivery.

Fig. 5-5: *Electrical connection*

5.7.1 Establishing connection with the control station

➔ Connect the bus connection line for communication over Modbus RTU protocol.

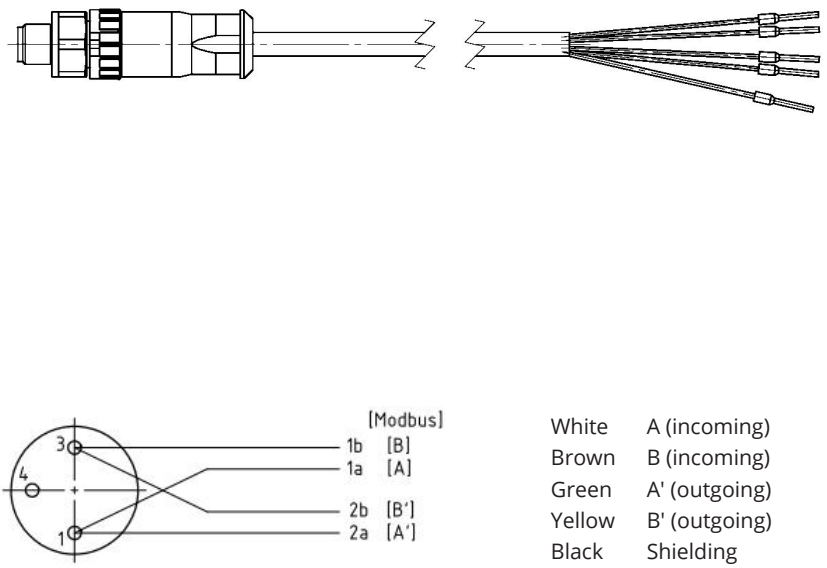


Fig. 5-6: *Bus connection line with three-pin round connector*

Note

Fit the first and last bus participant of the RS-485 bus with an external bus termination.

6 Operation

6.1 Device overview and operating controls

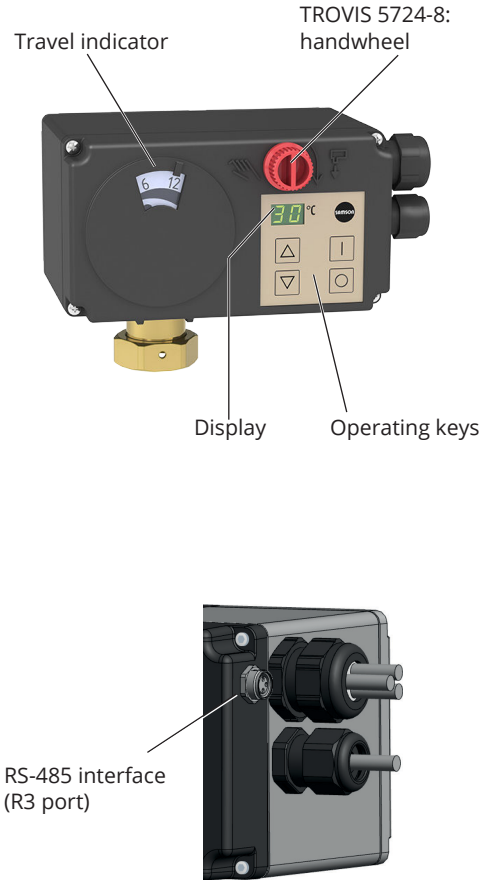


Fig. 6-1: *Operating elements on the actuator*

6.2 Display

The actual value (process variable) before the comparator for controller [1] or [2] is shown on the display during closed-loop operation. The setting is performed in the A3.1 configuration item in TROVIS-VIEW (see Appendix A).

6.2.1 Readings and their meaning

Non-blinking readings on the display

- Displayed value (see A2.2 in Appendix A) < -9 °C
- Displayed value (see A2.2 in Appendix A) > +99 °C
- Zero calibration active
- Initialization in progress
- Transit time measurement in progress
- Blocking protection active
- Manual level in TROVIS-VIEW active
- Long-term test active
- Internal limit LIM1 reached
- Internal limit LIM2 reached
- Program controller active
- Manual level active
- Initialization in progress
- Update in progress

➔ Error messages (see the 'Malfunctions' chapter).

Information indicated by the decimal point on the bottom right-hand corner of the display

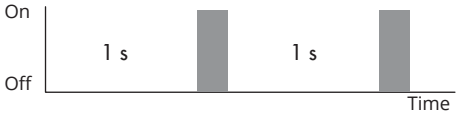
– Programmed function of [I] key activated by digital input.



– Programmed function of [O] key activated by digital input.



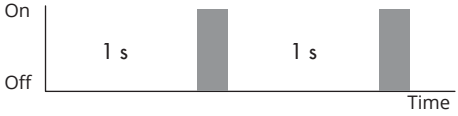
– Programmed function of [I] key activated by on-site operation.



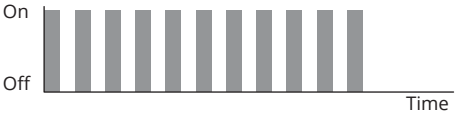
– Programmed function of [O] key activated by on-site operation.



– Program (program controller) active.



– Program (program controller) stopped.



– Program (program controller) finished.



6.3 Operating keys

In closed-loop operation, the operating keys have the function listed in Table 6-1.

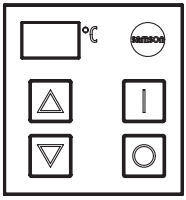


Table 6-1: *Function of the operating keys*

Key	Function
△	**Briefly pressing the key** Depending on how A2.1 configuration item is set, a set point, which can be adjusted, is displayed (see Appendix A).
▽	**Briefly pressing the key** Depending on how A2.2 configuration item is set, a different value is displayed (see Appendix A).
I	**Briefly pressing the key** The function depends on how A1.1 configuration item is set (see Appendix A). **Key held pressed for three seconds** Reading H A Open manual level. **Key held pressed for six seconds** Reading I n Start initialization (see the 'Start-up and configuration' chapter). **Key held pressed for nine seconds** Reading C P Set communication parameters (see the 'Installation' chapter). **Key held pressed for twelve seconds** Reading U P Start firmware update.
○	**Briefly pressing the key** The function depends on how A1.1 configuration item is set (see Appendix A).

6.4 Travel indicator

The travel indicator shows the current position of the actuator stem.

6.5 Interface

The RS-485 interface enables data transfer using an SSP or Modbus RTU protocol.

6.5.1 Establishing connection with TROVIS-VIEW

Communication is established between the electric actuator and a computer using an USB-to RS-485 adapter R3.

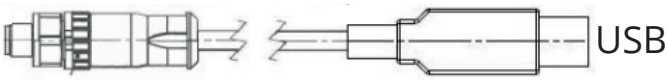


Fig. 6-2: *Connecting cable USB-to-RS-485 R3*

7 Start-up and configuration

The electric actuator with process controller is started at the operator keys, while it is configured with the TROVIS-VIEW software.

7.1 Initializing the actuator

The electric actuator with process controller needs to be initialized on starting up the actuator for the first time. After connecting the supply voltage, the **E7** error message appears on the display ('No initialization', see the 'Malfunctions' chapter).

NOTICE

The process is disturbed by the movement of the actuator stem.

➔ *Do not perform the initialization while the process is running. First isolate the plant by closing the shut-off valves.*

➔ Connect supply voltage to terminals L and N.

Starting initialization using the operating keys

➔ Press [|] and hold for six seconds until 'In' appears on the display.

➔ Release [|] within three seconds.

Initialization starts.

'F1' is displayed.

Note

Initialization must be started no later than three seconds after 'In' appears on the display. Otherwise, the actuator automatically returns to closed-loop operation.

After initialization is completed, the actuator returns to closed-loop operation.

Note

We recommend reinitializing the actuator if the mounting situation changes. The initialization causes the electric actuator with process controller to be adapted to the changed situation.

7.2 Zero calibration

If the supply voltage is reconnected after failure or interruption, an already initialized actuator automatically performs a zero calibration. During zero calibration, the actuator stem fully extends or retracts depending on the setting of the configuration item A8.1.

After zero calibration, the electric actuator with process controller goes into closed-loop operation. It operates using the last valid settings.

Note

The default settings cause the actuator stem to extend during zero calibration.

7.3 Communication

The electric actuator with process controller communicates with TROVIS-VIEW using an SSP or Modbus RTU protocol.

➔ Supported Modbus functions (see Appendix A)

Tip

SAMSON recommends the setting P r = A P. With this setting the electric actuator with process controller automatically detects the required protocol (see Chapter 7.3.1).

Table 7-1: *Communication parameters*

C P menu	Designation	Setting	
U n	Communication unit	o F	Bluetooth module not active
		b L	Bluetooth module active
		r 4	RS-485 module active
P r	Communication protocol	S P	SSP
The following values are automatically set with the 'A P' setting: b d = 96, S t = l n		o d	Modbus RTU slave
		A P	Automatic protocol detection
A d	Modbus address (station address)	01 ... 99	01 to 99
		00. ... 99.	100 to 199
		0.0. ... 4.7.	200 to 247
b d	Baud rate	l 2	1200
		24	2400
		48	4800
		96	9600
		l 9	19200
S t	Stop and parity bits	l n	1 stop bit, no parity
		l E	1 stop bit, even parity
		l o	1 stop bit, odd parity
		2 n	2 stop bits, no parity
t l	Timeout	0 ... 99	With t = 0 min, timeout is deactivated. After the adjusted time has elapsed, the electric actuator returns to closed-loop operation (serves as bus failure monitoring).

7.3.1 Protocol

The RS-485 data transfer is performed automatically using an SSP or Modbus RTU protocol.

- Setting -1: none
  No protocol supported
- Setting -2: automatic
  The SSP and Modbus protocols are automatically detected: the interface parameters are fixed internally to Baud rate 9600 bit/s, 8 data bits, no parity, 1 stop bit. The controller can exchange data with TROVIS-VIEW or the control station without switching over. Station number and timeout are adjustable.
- Setting -3: Modbus RTU
  Communication is based on the Modbus RTU protocol. All interface parameters listed in Table 7-1 are adjustable.

Station number

The station number 'A d' is used to identify the controller for the Modbus RTU protocol.

Transmission rate

The transmission rate is adjusted with the 'b d' parameter. It is the transmission rate between the controller and control station/computer. The transmission rate adjusted at the controller must be the same as that in the control station. Otherwise, no communication is established.

Stop bit and parity

The number of stop bits and the parity are set in the 'S t' parameter. The parity (none = 0, even = 1 and odd = 2) is used to detect data transmission errors. The parity bit is added to the end of the string of data bits and the total value is made up from the data and parity bit.

Timeout

The external manual level of the communication is monitored by the bus failure monitoring. After a bus failure is detected, automatic operation is reestablished. The time for the bus failure monitoring is adjustable. Set the value to 0 to deactivate bus failure monitoring.

7.3.2 Modbus parameters

Proceed over on-site operation

Press [|] until 'C P' appears on the display.

Select the main menus [U n], [P r], [A d], [b d], [S t] and [t l] one after the other and change settings. To do this, proceed as follows:

[△] / [▽] Press to select a menu or configuration item.

[|] Press to confirm the setting.

[◯] Press to exit the setting without saving it.

See Table 7-1 for meaning of menus and configuration items.

Proceed using the TROVIS-VIEW software

➔ Change parameters in [Service] folder (> Communication).

7.4 Configuring the actuator

➔ ▶ KH 5724-8.

Ready-configured systems are available to facilitate configuration. As a result, the user only needs to change very few settings to adapt the device to the application. The user selects the system code number and changes configuration items in the TROVIS-VIEW software. All the configuration items and parameters are listed in Appendix A.

Tip

All ready-configured applications as well as all configuration items and parameters are described in detail in the help section of TROVIS-VIEW and in the associated Configuration Manual ▶ KH 5724-8.
The TROVIS-VIEW software can be downloaded free of charge from our website (▶ www.samsongroup.com > Downloads > Software & Drivers > TROVIS-VIEW).

➔ Perform the application-specific configuration in TROVIS-VIEW. See documentation on TROVIS-VIEW software ▶ EB 6661.

Tip

SAMSON recommends writing down the configuration made in the Appendix A.

Configuration of the electric actuator

➔ Define Modbus parameters:
- Over on-site operation or
- Using the TROVIS-VIEW software

➔ Perform configuration as required in TROVIS-VIEW.

7.5 Quick check

To test the electric actuator's ability to function, the following quick checks can be performed:

➔ Apply the maximum and minimum control signals (e.g. over the manual level in TROVIS-VIEW).

➔ Check the end positions of the valve.

➔ Check the displayed travel.

➔ Check the reading on the display.

➔ Check bus connection, if applicable.

TROVIS 5725-8

➔ Disconnect the supply voltage and check whether the actuator stem moves to the fail-safe position (lower end position).

8 Setup

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

⚠ WARNING

Form-fit version: crush hazard arising from moving parts (actuator and plug stem).

➔ *Do not insert hands or fingers into the yoke while the valve is in operation.*

❗ *NOTICE*

Form-fit version: operation disturbed by a blocked actuator or plug stem.

➔ *Do not impede the movement of the actuator or plug stem by inserting objects into their path.*

Operating keys are used to operate the electric actuator with process controller (see the 'Operation' chapter). Various operating functions can be set at the electric actuator with process controller.

❗ *NOTICE*

Unwanted function after pressing the operating keys due to incorrect configuration.

The function of the keys depends on how the electric actuator with process controller is configured.

➔ *Before performing an operating action, check the necessary configuration (see Chapters 8.1 to 8.5).*

8.1 Adjust the set point

Necessary configuration (see Appendix A)

- A2.1 = 1 to change the set point at controller [1] C1.SP
- A2.1 = 2 to change the set point at controller [2] C2.SP

Adjusting the set point

△ Select the set point reading.

△ Start set point adjustment.

△ Raise/lower the set point.

▽ After five seconds the reading changes back to the reading determined in A3.1. The actuator uses the newly adjusted set point for closed-loop control.

If '==' is selected instead of the value, the set point limit is reached. In this case, the set point adjustment is canceled without changing the set point.

Canceling set point adjustment

△ or ▽ until '==' appears.
After five seconds the reading changes back to the reading determined in A3.1 without the set point being changed.

8.2 Start/end closed-loop operation

Necessary configuration (see Appendix A)

– A1.1 = 1

Start closed-loop operation

[|] Start closed-loop operation.
Readings:
'on' during start-up time. Afterwards, the value resulting from the A3.1 configuration item.

Note

The duration of start-up time is set in the A1.T.ON parameter in TROVIS-VIEW. During start-up, the actuator stem moves to the defined positioning value A1.YP.ON (see Appendix A).

End closed-loop operation

[○] End closed-loop operation.
Readings:
'-' blinks in alternating sequence on the left and right while the lag time is running
'--' while closed-loop operation is interrupted

Note

The duration of lag time is set in the A1.T.OFF parameter in TROVIS-VIEW. While the lag time is running, the actuator stem moves to the defined positioning value A1.YP.OFF (see Appendix A).

8.3 Increase/decrease set point

Necessary configuration (see Appendix A)

– A1.1 = 2 and A1.5 = 0 or
– A1.1 = 2 and A1.5 = 1 or
– A1.1 = 2 and A1.5 = 2 or
– A1.1 = 2 and A1.5 = 3 or
– A1.1 = 2 and A1.5 = 4

Note

The setting A1.5 = 1, 2, 3 or 4 allows the operating function to be controlled by the digital input and over the [I]/[O] keys (automatic level, 'Au' reading in the display). Changing to the function level ('F u' reading) is performed only using the [I]/[O] keys.
Press the [I] or [O] key once to change from the automatic to the function level. To change from the function to the automatic level, keep the [O] key pressed for three seconds.

Control to set point

[|] Control to set point.

Increase/decrease set point

[○] Start set point increase/decrease.

Note

The set point increase/decrease is set in the C1.SP.DIF parameter in TROVIS-VIEW (see Appendix A).

8.4 Select the external/internal set point

Necessary configuration (see Appendix A)

- A1.1 = 3 and A1.5 = 0 or
- A1.1 = 3 and A1.5 = 1 or
- A1.1 = 3 and A1.5 = 2 or
- A1.1 = 3 and A1.5 = 3 or
- A1.1 = 3 and A1.5 = 4

i ***Note***

The setting A1.5 = 1, 2, 3 or 4 allows the operating function to be controlled by the digital input and over the [I]/[O] keys (automatic level, 'Au' reading in the display). Changing to the function level ('F u' reading) is performed only using the [I]/[O] keys.
Press the [I] or [O] key once to change from the automatic to the function level. To change from the function to the automatic level, keep the [O] key pressed for three seconds.

[I] Activate external set point.

[O] Activate internal set point.

8.5 Start and stop program controller

The program controller allows you to define the set point over time (max. 1 week = 10080 min). Additionally, it is possible to define the behavior after the program has run (see A0.1 configuration item in Appendix A).

Necessary configuration (see Appendix A)

- A1.1 = 4 and A1.5 = 0 or
- A1.1 = 4 and A1.5 = 1 or
- A1.1 = 4 and A1.5 = 2 or
- A1.1 = 4 and A1.5 = 3 or
- A1.1 = 4 and A1.5 = 4

Start and stop program controller

[I] Start and stop program controller.

Restarting the stopped program controller causes the program to continue running.

Cancel program controller

[O] Cancel program controller.

Restarting the stopped program controller after it has been canceled causes the program to start from the beginning.

8.6 Manual mode

8.6.1 Manually changing the stem position

Manually changing the stem position only makes sense when the supply voltage is disconnected as the stem position is determined by the integrated process controller in closed-loop operation, meaning any manual change would be automatically corrected.

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The stem position is changed at the handwheel:

➔ Switch off the supply voltage.

➔ Turn the handwheel clockwise:
the actuator stem extends (approx. four turns for 1 mm travel).

➔ Turn the handwheel counterclockwise:
the actuator stem retracts (approx. four turns for 1 mm travel).

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Open the front housing cover and use a hex screwdriver to adjust the stem position:

➔ Switch off the supply voltage.

➔ Carefully open the front cover.

NOTICE

The display does not work due to an interrupted cable connection.

➔ *Only open the front housing cover to perform actions described in these instructions.*

➔ *Do not disconnect the connecting cable between the electric actuator and housing cover.*

Tip

SAMSON recommends screwing the bottom screws of the open front housing cover into the top holes of the housing.

➔ Turn the handwheel clockwise:
the actuator stem extends (approx. four turns for 1 mm travel).

➔ Turn the handwheel counterclockwise:
the actuator stem retracts (approx. four turns for 1 mm travel).

Note

After removing the hex screwdriver, the actuator stem automatically move to the fail-safe position.

8.7 Changing manual/automatic mode and setting manual positioning value

8.7.1 Changing over to manual mode on the device

➔ Press [|] key and hold for three seconds.

'HA' appears on the display.

➔ Release [|] key.

The manual mode is active (internal manual level).

'HA' and the current positioning value (TROVIS-VIEW: 'YP Actuator positioning value') are shown in alternating sequence on the display.

The manual positioning value corresponds to the last positioning value in automatic mode before changeover to manual mode.

Setting the manual positioning value

➔ Use the [△] and [▽] keys to change the manual positioning value.

The new manual positioning value becomes directly effective.

Example:

A manual positioning value set to 50 % causes the actuator stem to directly move to the calculated 50 % position.

Changing to automatic mode

➔ Press [◯] key.

The actuator changes from manual to automatic mode.

The actual temperature value appears on the display.

8.7.2 Changing to manual mode over Modbus

Manual/automatic switchover

Coil CL 3 is used for manual/automatic switchover.

– Manual mode: CL 3 = 1 (external manual level)

'F4' appears on the display when the external manual level is active.

– Automatic mode: CL 3 = 0

CL 2 is used to display the mode of the internal manual level.

– Manual mode: CL 2 = 1 (internal manual level)

– Automatic mode: CL 2 = 0

Setting the manual positioning value over Modbus

The manual positioning value is set over the holding register HR 25. See Appendix A (Excerpt from Modbus list).

The calculated travel is displayed over the holding register HR 22.

Coil CL 3 cannot be used to activate the automatic mode after the manual mode has been activated at the device (internal manual level: CL 2 = 1).

The automatic mode cannot be activated at the device (external manual level: CL 3 = 1) after the manual mode has been activated over Modbus. When the external manual level is active, the internal manual level (CL 2 = 1) can be activated at the device to override it. In this case, the manual positioning value (HR 21) set at the device becomes effective. After exiting the internal manual level by pressing the ◯ key, the manual positioning value of the external manual level (HR 25) becomes effective again.

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.	The actuator stem 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 its full range.	No or incorrect supply voltage connected.	➔ Check the supply voltage and connections.
No readings shown on the display.	The display connection is interrupted.	➔ Remove the front housing cover and check that the display is connected correctly.
Incorrect operating action after pressing [I] and [O] keys	The A1.1 configuration item and A1.5, if applicable, are not set correctly.	➔ Check configuration.
The electric actuator with process controller does not perform the functions as required.	The configuration of the electric actuator with process controller does not meet the application requirements.	➔ Check configuration. ➔ If necessary, refer to the Configuration Manual ▶ KH 5724-8.
	The electric actuator with process controller was reset to its default settings without adapting the configuration to the application afterwards.	

9.2 Error messages

9.2.1 Error messages on the display

The corresponding reading blinks on the display in the event of a malfunction.

Table 9-2: *Error messages on the display*

Display	Error	Priority [1)]
	Signal failure AI1	4
	Signal failure AI2	5
	Signal failure AI3	6
	Limit contact error	1
	No basic setting	2
	No configuration	3
	No initialization	7
	No calibration	8
	Stem extension/retraction canceled	9

1) Highest priority = 1, lowest priority = 9

i ***Note***

If several errors have occurred, only the error with the highest priority is shown. The error with the next highest priority is shown when the error with highest priority is remedied.

9.2.2 Modbus error

Table 9-3: *Modbus error responses/excerpt from Modbus list*

Error code	Error	Cause
1	Illegal function	The function code is not supported.
2	Illegal data address	A register address is invalid or write-protected.
3	Illegal data value	A value contained in the data is not allowed or not plausible.
4	Slave device failure	An unrecoverable error occurred during an action.
6	Slave device busy	The slave is busy and cannot accept the query.

CL	Designation COILS (1-bit)	Access	Status 0	Status 1
Fatal errors				
16	Signal failure at analog input 1	R	No	Yes
17	Signal failure at analog input 2	R	No	Yes
18	Signal failure at analog input 3	R	No	Yes
19	Both limit contacts active	R	No	Yes
20	Canceled while retracting stem	R	No	Yes
21	Canceled while extending stem	R	No	Yes
22	Excessive temperature inside the actuator	R	No	Yes
23	No initialization performed	R	No	Yes
EEPROM error				
24	EE-Error basic settings state	R	No	Yes
25	EE-Error basic settings cause	R	No	Yes
26	EE-Error configuration state	R	No	Yes
27	EE-Error configuration cause	R	No	Yes
28	EE-Error offset state	R	No	Yes
29	EE-Error offset cause	R	No	Yes
30	EE-Error calibration state	R	No	Yes
31	EE-Error calibration cause	R	No	Yes
32	EE-Error serial number state	R	No	Yes
33	EE-Error serial number cause	R	No	Yes
34	EE-Error manufacturing parameters state	R	No	Yes

CL	Designation COILS (1-bit)	Access	Status 0	Status 1
35	EE-Error manufacturing parameters cause	R	No	Yes
36	EE-Error transit time state	R	No	Yes
37	EE-Error transit time cause	R	No	Yes
38	EE-Error status messages state	R	No	Yes
39	EE-Error status messages cause	R	No	Yes
40	EE-Error statistics state	R	No	Yes
41	EE-Error statistics cause	R	No	Yes

9.3 Emergency action

The valve, on which the electric actuator with process controller with fail-safe action is mounted, is moved to its fail-safe position upon failure of the supply voltage (see the 'Design and principle of operation' chapter).

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 chapter is to be performed only by personnel appropriately qualified to carry out such tasks.

i ***Note***

The electric actuator 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 electric actuator with process controller requires no maintenance.

SAMSON recommends 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' chapter).
	➔ Renew damaged wires or replace the device.

11 Decommissioning

The work described in this chapter 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 electric actuator with process controller, 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 put the electric actuator out of operation before removing it, proceed as follows:

1. Close the shut-off valves upstream and downstream of the control valve to stop the process medium from flowing through the valve.
2. Completely drain the pipelines and valve.
3. Disconnect the supply voltage and protect it against unintentional reconnection.

12 Removal

The work described in this chapter 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 electric actuator with process controller, switch off 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.*

12.1 Removing TROVIS 5724-8

Force-locking attachment

1. Retract the actuator stem using the handwheel (see the 'Operation' chapter).
2. Undo the coupling nut and remove the electric actuator from the valve connection.

Form-fit attachment

➔ See Fig. 12-1.

1. Retract the actuator stem using the handwheel (see the 'Operation' chapter).
2. Unfasten the stem connector clamps (5) between the actuator stem and the plug stem.
3. Undo the nut (6) and remove the rod-type yoke (4) together with the electric actuator from the valve.
4. Undo the coupling nut (2) and remove the electric actuator from the rod-type yoke (4).

12.2 Removing TROVIS 5725-8

❗ *NOTICE*

Risk of damage to the electrical wiring between the housing cover and electric actuator.

➔ *Open the housing cover carefully.*

Force-locking attachment

➔ See Fig. 12-1.

1. Carefully open the front housing cover.
2. Retract the actuator stem with a 4 mm hex screwdriver (see the 'Operation' chapter).

➔ Hold the actuating shaft in place after retracting the actuator stem to prevent it from extending again.

3. Undo the coupling nut (2) and remove the electric actuator from the valve connection.

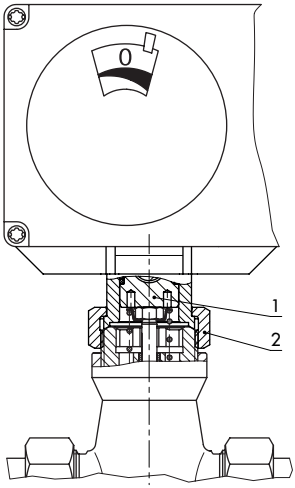
Form-fit attachment

➔ See Fig. 12-1.

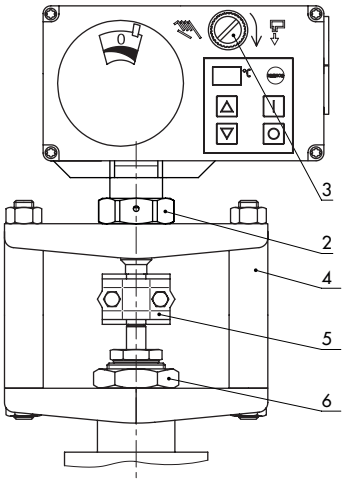
1. Carefully open the front housing cover.
2. Unfasten the stem connector clamps (5) between the actuator stem and the plug stem.
3. Retract the actuator stem with a 4 mm hex screwdriver (see the 'Operation' chapter).

➔ Hold the actuating shaft in place after retracting the actuator stem to prevent it from extending again.

4. Undo the nut (6) and remove the rod-type yoke (4) together with the electric actuator from the valve.
5. Undo the coupling nut (2) and remove the electric actuator from the rod-type yoke (4).



Force-locking attachment with coupling nut, e.g. to Type 3222 Valve



Form-fit attachment with stem connector, e.g. with rod-type yoke on Series V2001 Valve

1	Actuator stem	4	Rod-type yoke
2	Coupling nut	5	Stem connector
3	Handwheel (TROVIS 5724-8 only)	6	Nut

Fig. 12-1: *Connection of the electric actuator and 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' chapter).
2. Continue as described on our website at ▶ www.samsongroup.com > SERVICE > After-sales Service > Returning goods .

14 Disposal



SAMSON is a producer registered in Europe.
▶ www.samsongroup.com > About SAMSON > Environment, Social & Governance > Material Compliance > Waste electrical and electronic equipment (WEEE)
WEEE reg. no.: DE 62194439

Information on substances listed as substances of very high concern (SVHC) on the candidate list of the REACH regulation can be found in the document "Additional Information on Your Inquiry/Order", which is added to the order documents, if applicable. This document includes the SCIP number assigned to the devices concerned. This number can be entered into the database on the European Chemicals Agency (ECHA) website (▶ https://www.echa.europa.eu/scip-database) to find out more information on the SVHC contained in the device.

Note

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

➔ Observe local, national and international refuse regulations.

➔ Do not dispose of components, lubricants and hazardous substances together with your other household waste.

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 > Actuators > 5724-8

▶ www.samsongroup.com > Products > Actuators > 5725-8

EU declaration of conformity for TROVIS 5724-8

SMART IN FLOW CONTROL

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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 5724-8

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, EN 61326:2013
LVD 2014/35/EU	EN 60730-1:2016, EN 61010-1:2010
RoHS 2011/65/EU	EN 50581:2012

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

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Revison 07

EU declaration of conformity for TROVIS 5725-8

SMART IN FLOW CONTROL.

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Typ / Type / Type 5725

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Revison 07

Declaration of Incorporation



16 Appendix A

16.1 Configuration and parameter list

i ***Note***

The default setting depends on the selected system code number. All default settings are listed in Chapter 16.3.

CO/PA	Function/ designation	Setting/ adjustment range
I ...	**Inputs and outputs**	
	Universal input I1/Universal input I2/Universal input I3	
I1/I2/I3	Function	0: None 1: DI1 not inverted 2: DI1 inverted 3: AI1 (Pt 1000)
AI1.COR/ AI2.COR/ AI3.COR [1)]	Offset AI1 Offset AI2 Offset AI3	-9.9 to +9.9 °C
	Function generation AI1/Function generation AI2/Function generation AI3	
AI1.I1/ AI2.I1/ AI3.I1	Input signal, point 1	-50 to +149 °C
AI1.O1/ AI2.O1/ AI3.O1	Output signal, point 1	-50 to +150 °C
AI1.I2/ AI2.I2/ AI3.I3	Input signal, point 2	-49 to +150 °C
AI1.O2/ AI2.O2/ AI3.O2	Output signal, point 2	-50 to +150 °C

1) Parameters are listed in Service folder > Start-up.

CO/PA	Function/ designation	Setting/ adjustment range
	Universal input I4	
I4	Function	0: None 1: DI4 not inverted 2: DI4 inverted 4: AI4 (0 to 10 V)
AI4.I1	Input signal, point 1	0.0 to 99.9 %
AI4.COR [1)]	Offset AI4	-9.9 to +9.9 %
AI4.O1	Output signal, point 1	-50 to +150 °C
AI4.I2	Input signal, point 2	0.1 to 100.0 %
AI4.O2	Output signal, point 2	-50 to +150 °C
	Switching output	
M4	Function	0: None 1: On with LIM1/Off with lag time 2: On with LIM2/Off with lag time 3: On at travel > 0 %/Off at 0 % with lag time 4: On at travel < 100 %/Off at 100 % with lag time 5: Alarm active 6: Fixed actuator positioning value [1] reached 7: Fixed actuator positioning value [2] reached 8: Manual mode active
M4.T	Lag time	0 to 999 s
M5	Logic	0: Not inverted 1: Inverted

1) Parameters are listed in Service folder > Start-up.

CO/PA	Function/ designation	Setting/ adjustment range
M ...	**Closed loop control**	
	Application	
M0	System code number	0: User-defined 1: Heating · Fixed set point control with one sensor · Internal set point decrease 2: Cooling · Fixed set point control with one sensor · Start/stop control sequence with [I]/[O] keys or with DI3 10: Heating · Fixed set point control · Temperature mean value calculation using two sensors · Internal set point decrease 20: Cooling · Fixed set point control · Differential temperature between two sensors · Start/stop control sequence 21: Cooling · Fixed set point control · Temperature mean value calculation using two sensors · Start/ stop control sequence 30: Heating · Follow-up control · Return temperature limitation · Internal set point decrease 35: Heating · Follow-up control · Outdoor temperature controlled, return temperature limitation · External set point decrease with DI4 38: Heating · Follow-up control with controller switchover · Outdoor temperature controlled, return temperature limitation · Frost protection · Summer deactivation · Set point decrease with [I]/ [O] keys · Control activated with DI4 40: Cooling · Follow-up control · Differential temperature between two sensors · Set point shift with AI3 · Start/stop control sequence with DI4 50: Heating · Override control with minimum selection · Return temperature limitation · Internal set point decrease 55: Heating · Override control with minimum selection · Outdoor temperature controlled, return temperature limitation · External set point decrease with DI4

CO/PA	Function/ designation	Setting/ adjustment range
		58: Heating · Override control with minimum selection · Position transmitter with return temperature limitation · Set point/set point with [I]/[O] keys or DI3, off with DI1 60: Cooling · Override control with minimum selection · Differential temperature with two sensors, return temperature limitation · Start/ stop control sequence 65: Cooling · Override control with minimum selection · Differential temperature with two sensors, return temperature limitation · Start/ stop control sequence 66: Cooling · Override control for district cooling · Maximum selection of the set point control · Start/stop control sequence 70: Heating · Cascade control with two sensors · Internal set point switchover 75: Cooling · Cascade control with three sensors · Start/stop control sequence with [I]/[O] keys or with DI4, off with LIM2 80: Cooling · Cascade control · With two sensors · Start/stop control sequence 95: Heating · Position transmitter / Fixed set point/ follow-up control · 2 to 10 V position transmitter / 0–2 V Fixed set point/follow-up control · Return temperature limitation, set point decrease with DI3

CO/PA	Function/ designation	Setting/ adjustment range
	Control function	
M1	Control mode	0: Fixed set point/follow-up 1: Override (MIN selection) 2: Override (MAX selection) 3: Controller [1] active when LIM1 = off/ Controller [2] active when LIM1 = on 4: Controller [1] active when LIM2 = off/ Controller [2] active when LIM2 = on 5: Controller [1] active when DI1 = off/Controller [2] active when DI1 = on 6: Controller [1] active when DI2 = off/Controller [2] active when DI2 = on 7: Controller [1] active when DI3 = off/Controller [2] active when DI3 = on 8: Controller [1] active when DI4 = off/Controller [2] active when DI4 = on 9: Cascade
M2	Direction of action	0: >> (increasing/increasing) 1: <> (increasing/decreasing)
	Internal limit LIM1/Internal limit LIM2	
LIM1.S/ LIM2.S	Source	1: Measured value AI1 2: Measured value AI1 after function generation 3: Measured value AI2 4: Measured value AI2 after function generation 5: Measured value AI3 6: Measured value AI3 after function generation 7: Measured value AI4 8: Measured value AI4 after function generation 9: Actual value [1] before comparator 10: Set point [1] before comparator 11: Set point deviation [1] before comparator 12: Actual value [2] before comparator 13: Set point [2] before comparator 14: Set point deviation [2] before comparator 15: Set point from program controller

CO/PA	Function/ designation	Setting/ adjustment range
LIM1.F/ LIM2.F	Function	0: None 1: Source (signal) ≤ LIM1 Source (signal) ≤ LIM2 2: Source (signal) ≥ LIM1 Source (signal) ≥ LIM2
LIM1.P/ LIM2.P	Switching point	-50 to +150 °C
LIM1.H/ LIM2.H	Hysteresis	0.5 to 10.0 °C
	Program controller	
A0.1	Behavior when program has elapsed	1: Control active, last set point is retained 2: Control active, program is repeated cyclically 3: Control inactive, actuator positioning value is 0 % 4: Control inactive, actuator positioning value is 100 %
C1 .../C2 ...	**Controller [1]/controller [2]**	
	Process variable (actual value)	
C1.1/C2.1	Source	0: Process variable (actual value) = $\frac{(C1.a * AI1 + C1.b * AI2 + C1.c * AI3 + C1.d * AI4)}{C1.z}$ 1: Process variable (actual value) = AI1 after function generation 2: Process variable (actual value) = AI2 after function generation 3: Process variable (actual value) = AI3 after function generation 4: Process variable (actual value) = AI4 after function generation
	Formula parameters for actual value	
C1.a/C2.a	Factor AI1	-9.0 to +99.0
C1.b/C2.b	Factor AI2	-9.0 to +99.0
C1.c/C2.c	Factor AI3	-9.0 to +99.0
C1.d/C2.d	Factor AI4	-9.0 to +99.0
C1.z/C2.z	Divisor	1.0 to 99.0

CO/PA	Function/ designation	Setting/ adjustment range
	Set point adjustment	
C1.2/C2.2	Source A different rule applies to controller [2] for C2.2 = 7: Set point = C1.SP + C2.e *AI1 + C2.f * AI2 + C2.g * AI3 + C2.h * AI4	0: Set point = C1.SP + C1.e * AI1 + C1.f * AI2 + C1.g * AI3 + C1.h * AI4 1: Set point = AI1 after function generation 2: Set point = AI2 after function generation 3: Set point = AI3 after function generation 4: Set point = AI4 after function generation 5: Set point = C1.SP 6: Set point = C2.SP 7: Set point = Output of controller [2] 8: Set point = Program controller 9: Set point = Program controller + C1.SP + C1.e * AI1 + C1.f * AI2 + C1.g * AI3 + C1.h * AI4
C1.SP/C2.2	Set point	-50.0 to +150.0 °C
C1.SP.DIF/ C2.SP.DIF	Set point offset	-50.0 to +150.0 °C
C1.SP.MIN/ C1.SP.MIN	Lower adjustment limit	-50 to +150 °C
C1.SP.MAX/ C2.SP.MAX	Upper adjustment limit	-50 to +150 °C
	Formula parameters for set point	
C1.e/C2.e	Factor AI1	-9.0 to +99.0
C1.f/C2.f	Factor AI2	-9.0 to +99.0
C1.g/C2.g	Factor AI3	-9.0 to +99.0
C1.h/C2.h	Factor AI4	-9.0 to +99.0
	Set point deviation	
C1.3/C2.3	Function	0: Not inverted 1: Inverted by DI1 2: Inverted by DI2 3: Inverted by DI3 4: Inverted by DI4 5: Inverted by LIM1 6: Inverted by LIM2 7: Inverted

CO/PA	Function/ designation	Setting/ adjustment range
	PID controller	
C1.KP/ C2.KP	Proportional-action coefficient	0.1 to 999.9
C1.TN/ C2.TN	Reset time	0 to 999 s
C1.TV/ C2.TV	Derivative-action time	0 to 999 s
C1.Y0/ C2.Y0	Operating point	0.0 to 100.0 %
	Manipulated variable	
C1.4/C2.4	Function	0: Controller positioning value 1: Fixed actuator positioning value with DI1 2: Fixed actuator positioning value with DI2 3: Fixed actuator positioning value with DI3 4: Fixed actuator positioning value with DI4 5: Fixed actuator positioning value with LIM1 6: Fixed actuator positioning value with LIM2
C1.YP/ C2.YP	Fixed actuator positioning value	0.0 to 100.0 %
M ...	Actuator	
	Actuator parameters	
MY.EA	End position guiding (stem extends)	0.0 to 49.9 %
MY.EE	End position guiding (stem retracts)	50.0 to 100.0 %
MY.TE	Idle time during end position guiding	0 to 99 s
MY.TZ	Dead band (switching range)	0.5 to 5.0 %
	Signal failure	
A7.1	Function	0: Last travel value 1: Fixed positioning value
A7.YP.ERR	Fixed actuator positioning value	0.0 to 100.0 %

<table>
<tr><th>CO/PA</th><th>Function/
designation</th><th>Setting/
adjustment range</th></tr>
<tr><td></td><td>Actuator</td><td></td></tr>
<tr><td>A8.1</td><td>Zero calibration</td><td>0: Extend actuator stem
1: Retract actuator stem</td></tr>
<tr><td>A8.2</td><td>Restart conditions</td><td>0: Start with last operating state
1: Start with operating function [O]
2: Start with operating function [I]</td></tr>
<tr><td>A8.3</td><td>Blocking protection</td><td>0: No
1: Yes</td></tr>
<tr><td></td><td>Characteristic</td><td></td></tr>
<tr><td>M6</td><td>Characteristic type</td><td>0: Linear
1: Equal percentage
2: Reverse equal percentage
3: User-defined
<table>
<tr><td>#</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td></tr>
<tr><td>X</td><td>0</td><td>10.0</td><td>20.0</td><td>30.0</td><td>40.0</td><td>50.0</td><td>60.0</td><td>70.0</td><td>80.0</td><td>90.0</td><td>100.0</td></tr>
<tr><td>Y</td><td>0</td><td>10.0</td><td>20.0</td><td>30.0</td><td>40.0</td><td>50.0</td><td>60.0</td><td>70.0</td><td>80.0</td><td>90.0</td><td>100.0</td></tr>
</table></td></tr>
<tr><td>A ...</td><td>Operation</td><td></td></tr>
<tr><td></td><td>[I]/[O] setting</td><td></td></tr>
<tr><td>A1.1</td><td>Function</td><td>0: No function
1: [I] Start control sequence/[O] Stop control sequence
2: [I] Set point/[O] Set point increase/decrease
3: [I] External set point/[O] Internal set point
4: [I] Start/halt program controller/[O] Cancel program controller</td></tr>
<tr><td>A1.5</td><td>Open loop control</td><td>0: [I]/[O] keys
1: [I]/[O] keys or DI1
2: [I]/[O] keys or DI2
3: [I]/[O] keys or DI3
4: [I]/[O] keys or DI4
5: DI1
6: DI2
7: DI3
8: DI4</td></tr>
</table>

CO/PA	Function/ designation	Setting/ adjustment range
A1.T.ON	Start-up time after start	0 to 999 s
A1.YP.ON	Positioning value during start-up function	0.0 to 100.0 %
A1.T.OFF	Lag time after stop	0 to 999 s
A1.YP.OFF	Positioning value after lag time	0.0 to 100.0 %
	[Up]/[Down] settings	
A2.1	[Up] key function	1: Display and adjust set point C1.SP 2: Display and adjust set point C2.SP 3: Display set point C1.SP 4: Display set point C2.SP 5: Display set point before comparator of controller [1] 6: Display set point before comparator of controller [2]
A2.2	[Down] key function	1: Display measured value AI1 2: Display measured value AI1 after function generation 3: Display measured value AI2 4: Display measured value AI2 after function generation 5: Display measured value AI3 6: Display measured value AI3 after function generation 7: Display measured value AI4 8: Display measured value AI4 after function generation 9: Display actual value before comparator of controller [1] 10: Display set point before comparator of controller [1] 11: Display set point deviation of controller [1] 12: Display actual value before comparator of controller [2] 13: Display set point before comparator of controller [2] 14: Display set point deviation of controller [2]

CO/PA	Function/ designation	Setting/ adjustment range
		15: Set point from program controller
	Display	
A3.1	Function	1: Actual value before comparator of controller [1] 2: Actual value before comparator of controller [2]

16.2 Excerpt from Modbus list

The firmware version 2.1x of TROVIS 5724-8 and TROVIS 5725-8 Electric Actuators with Process Controller have an integrated RS-485 interface to use the Modbus RTU protocol, which is a master/slave protocol (in which the control station acts as the master and the electric actuator as the slave).

The following Modbus functions are supported:

Code	Modbus function	Application
1	Read Coils	Read state of several digital outputs in bit format
3	Read Holding Registers	Read several parameters
5	Write Single Coil	Write a single digital output in bit format
6	Write Single Register	Write a value into a single holding register
15	Write Multiple Coils	Write several digital outputs in bit format
16	Write Multiple Registers	Write a value into several holding registers

The electric actuator can issue the following Modbus error responses:

Error code	Error	Cause
1	Illegal function	The function code is not supported.
2	Illegal data address	A register address is invalid or write-protected.
3	Illegal data value	A value contained in the data is not allowed or not plausible.
4	Slave device failure	An unrecoverable error occurred during an action.
6	Slave device busy	The slave is busy and cannot accept the query.

Several important data points from the Modbus data point list are listed below. The entire data point list is available on request.

i *Note*

Data are saved in a non-volatile EEPROM. This type of memory has a limited life of at least one million write operations per memory address. It is almost impossible to exceed this limitation if configurations and data are only changed manually using TROVIS-VIEW or the keys on the device. If parameters are changed automatically (e.g. by Modbus communication), make sure to observe the maximum number of write operations and take appropriate action to prevent that parameters are written too frequently.

HR	Designation	Access	Transmission range		Display range	
			Lower range value	Upper range value	Lower range value	Upper range value
Device ID data						
1	Device type	R	5724	5725	5724	5725
2	Version	R	8	8	8	8
3	Revision (e.g. rev. 2.00)	R	100	9999	1.00	99.99
4	Serial number, part 1 (four high-order digits)	R	0	9999	0	9999
5	Serial number, part 2 (four low-order digits)	R	0	9999	0	9999
6	Firmware version	R	100	9999	1.00	99.99
7	Released firmware version	R	100	9999	1.00	99.99
8	Station address (release "W" via CL 008)	R	0	255	0	255
Control function						
9	System code number M0	R	0	99	0	99
10	Control mode M1	R/W	0	9	0	9
11	Direction of action M2	R/W	0	1	0	1
Operating values (analog inputs)						
12	Measured value (analog input I1)	R	-500	+1500	-50.0	+150.0
13	Analog input I1 after function generation	R	-500	+1500	-50.0	+150.0
14	Measured value (analog input I2)	R	-500	+1500	-50.0	+150.0
15	Analog input I2 after function generation	R	-500	+1500	-50.0	+150.0
16	Measured value (analog input I3)	R	-500	+1500	-50.0	+150.0
17	Analog input I3 after function generation	R	-500	+1500	-50.0	+150.0
18	Measured value (analog input I4)	R	0	+1000	0.0	100.0
19	Analog input I4 after function generation	R	-500	+1500	-50.0	+150.0
Operating values (analog inputs)						
20	Source of positioning value (controller [...])	R	0	9	0	9
21	YP Actuator positioning value	R	0	1000	0.0	100.0
22	AT Calculated actuator travel	R	0	1000	0.0	100.0

HR	Designation	Access	Transmission range		Display range	
			Lower range value	Upper range value	Lower range value	Upper range value
23	Travel status	R	0	4	0	4
24	Set point deviation of positioning value	R	0	1000	0.0	100.0
Manual level						
25	Manual positioning value (external)	R/W	0	1000	0.0	100.0
26	Set point deviation of the external manual level	R	0	1000	0.0	100.0
Operating values (operating function)						
27	Operating function status	R	0	11	0	11
28	Operating function cause	R	0	3	0	3
29	Program controller set point	R	-500	+1500	-50.0	+150.0
30	Program controller time elapsed	R	0	10080	0	10080
31	Reserved (time elapsed for start function)	R	0	65535	0	65535
32	Reserved (time elapsed for end function)	R	0	65535	0	65535
33	Reserved (time elapsed for switching output)	R	0	65535	0	65535
Operating values and settings of controller [1]						
34	Actual value before comparator of controller [1] (PV[1])	R	-500	1500	-50.0	150.0
35	Set point before comparator of controller [1] (SP[1])	R	-500	1500	-50.0	150.0
36	Set point deviation of controller [1] (SP[1] – PV[1])	R	-9999	+9999	-999.9	+999.9
37	Positioning value of controller [1] before characteristic Y[1]	R	0	1000	0.0	100.0
38	Positioning value of controller [1] after characteristic YP[1]	R	0	1000	0.0	100.0
39	Set point deviation of controller [1]	R	0	1	0	1
40	Active controller set point [1]	R	0	9	0	9
41	Set point C1.SP	R/W	-500	+1500	-50.0	+150.0
42	Reserved	R	0	65535	0	65535
43	Reserved	R	0	65535	0	65535
44	Reserved	R	0	65535	0	65535

HR	Designation	Access	Transmission range		Display range	
			Lower range value	Upper range value	Lower range value	Upper range value
45	Reserved	R	0	65535	0	65535
Operating values and settings of controller [2]						
46	Actual value before comparator of controller [2] (PV[2])	R	-500	+1500	-50.0	+150.0
47	Set point before comparator of controller [2] (SP[2])	R	-500	+1500	-50.0	+150.0
48	Set point deviation of controller [2] (SP[2] – PV[2])	R	-9999	+9999	-999.9	+999.9
49	Positioning value of controller [2] before characteristic Y[2]	R	0	1000	0.0	100.0
50	Positioning value of controller [2] after characteristic YP[2]	R	0	1000	0.0	100.0
51	Set point deviation of controller [2]	R	0	1	0	1
52	Active controller set point [2]	R	0	9	0	9
53	Set point C2.SP	R/W	-500	+1500	-50.0	+150.0
54	Reserved	R	0	65535	0	65535
55	Reserved	R	0	65535	0	65535
56	Reserved	R	0	65535	0	65535
57	Reserved	R	0	65535	0	65535

CL	Designation COILS (1-bit)	Access	Status 0	Status 1
Operating states				
1	Error during operation	R	No	Yes
2	Internal manual level on the actuator activated	R	No	Yes
3	Enable external manual level (travel adjustment)	R/W	No	Yes

CL	Designation COILS (1-bit)	Access	Status 0	Status 1
Digital inputs				
4	State of digital input 1	R	Off	On
5	State of digital input 2	R	Off	On
6	State of digital input 3	R	Off	On
7	State of digital input 4	R	Off	On
Limits				
8	State of internal limit 1	R	Off	On
9	State of internal limit 2	R	Off	On
Limit switches				
10	State of limit switch "stem retracted"	R	Off	On
11	State of limit switch "stem extended"	R	Off	On
Switching output				
12	Logical state of switching output	R	Off	On
13	Switching contact of switching output	R	Off	On
14	Enable manual level for switching output	R/W	Off	On
15	Logical state (manual level for switching output)	R/W	Off	On
Actions				
42	Zero calibration active	R	No	Yes
43	Initialization in progress	R	No	Yes
44	Blocking protection active	R	No	Yes
45	Long-term test active	R	No	Yes

16.3 Default settings and customer-specific data

If a system code number ≠ 0 is switched to system code number 0, the data of previously selected system code number are adopted. Any parameters not used in this configured system are written with the default setting.

The electric actuator with process controller is delivered with the system code number 10 (fixed set point control, heating with mean value calculation of two sensors and set point decrease) set by default.

i ***Note***

The values in dark gray fields in the following tables cannot be changed.

Settings for heating

											Adjusted value
System code no.	**1**	**10 (WE)**	**30**	**35**	**38**	**50**	**55**	**58**	**70**	**95**	
Inputs and outputs											
I1	3	**3**	3	3	3	3	3	1(2)	3	3	
AI1.I1 °C	-50	**-50**	-50	-50	-50	-50	-50		-50	-50	
AI1.O1 °C	-50	**-50**	-50	-50	-50	-50	-50		-50	-50	
AI1.I2 °C	150	**150**	150	150	150	150	150		150	150	
AI1.O2 °C	150	**150**	150	150	150	150	150		150	150	
I2		**3**	3	3	3	3	3	3	3	3	
AI2.I1 °C		**-50**	65	65	65	-50	-50	-50	-50	65	
AI2.O2 °C		**-50**	0	0	0	-50	-50	-50	-50	0	
AI2.I2 °C		**150**	115	115	115	150	150	150	150	115	
AI2.O2 °C		**150**	-50	-50	-50	150	150	150	150	-50	
I3	2(1)			3	3		3	2(1)		1(2)	
AI3.I1 °C				-35	-20		-35				
AI3.O1 °C				99	100		99				
AI3.I2 °C				25	25		25				

									Adjusted value		
System code no.	**1**	**10 (WE)**	**30**	**35**	**38**	**50**	**55**	**58**	**70**	**95**	
AI3.O2 °C				10	20		10				
I4				1(2)	1(2)		1(2)	3		4	
AI4.I1 %								0.0		20.0	
AI4.O1 °C								0		0.	
AI4.I2 %								99.0		100.0	
AI4.O2 °C								99		100	
M4	3	**3**	3	3	3	3	3	3	1	1	
M4.T s	60	**60**	60	60	60	60	60	60	60	0	
M5	0	**0**	0	0	0	0	0	0	0	0	
Closed loop control											
M0	1	**10**	30	35	38	50	55	58	70	95	
M1	0	**0**	0	0	8	1	1	1	9	3	
M2	0	**0**	0	0	0	0	0	0	0	0	
LIM1.S				9	9		5		10	7	
LIM1.F				0	2		0		2	1	
LIM1.P °C				3	0		3		11	19	
LIM1.H °C				1.0	2.0		1.0		0.9	0.9	
LIM2.S				5	5		5		10	3	
LIM2.F				2	2		2		0	2	
LIM2.P °C				25	22		25		25	75	
LIM2.H °C				1.0	2.0		1.0		1.0	10.0	

									Adjusted value		
System code no.	**1**	**10 (WE)**	**30**	**35**	**38**	**50**	**55**	**58**	**70**	**95**	
Controller 1											
C1.1	1	**0**	1	1	1	1	1	4	2	0	
C1.a		**1.0**								0.0	
C1.b		**1.0**								0.0	
C1.c		**0.0**								0.0	
C1.d		**0.0**								0.0	
C1.z		**2.0**								1.0	
C1.2	5	**5**	0	2	0	5	0	0	7(5)	4	
C1.SP °C	50.0	**50.0**	50.0	0.0	0.0	50.0	0.0	0.0		0.0	
C1.SP.DIF °C	-10.0	**-10.0**	-10.0	-10.0	-10.0	-10.0	-10.0	0.0	0.0		
C1.SP.MIN °C	10	**10**	10	0	-9	10	-9	0	10		
C1.SP.MAX °C	99	**99**	99	0	9	99	9	99	70		
C1.e			0.0	0.0	0.0		0.0	0.0			
C1.f			1.0	1.0	1.0		0.0	0.0			
C1.g			0.0	1.0	1.0		1.0	0.0			
C1.h			0.0	0.0	0.0		0.0	0.0			
C1.3	0	**0**	0	0	0	0	0	7	0	0	
C1.KP	0.0	**0.0**	2.0	2.0	2.0	2.0	2.0	1.0	2.0	1.0	
C1.TN s	0	**0**	120	120	120	120	120	0	120	0	
C1.TV s	0	**0**	0	0	0	0	0	0	0	0	
C1.Y0 %	0.0	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
C1.4	0	**0**	0	6	5	0	6	1	0	0	
C1.YP %				0.0	0.0		0.0	0.0			

									Adjusted value		
System code no.	**1**	**10 (WE)**	**30**	**35**	**38**	**50**	**55**	**58**	**70**	**95**	
Controller 2											
C2.1					1	2	2	2	1	1	
C2.a											
C2.b											
C2.c											
C2.d											
C2.z											
C2.2					7	6	0	6	6	0	
C2.SP °C						65.0	65.0	65.0	50.0	80.0	
C2.SP.DIF °C					-10	-5.0	-5.0	-10	-10	-10	
C2.SP.MIN °C						10	-50	10	10	10	
C2.SP.MAX °C						99	90	99	99	99	
C2.e					0.0		0.0			0.0	
C2.f					1.0		0.0			1.0	
C2.g					1.0		0.0			0.0	
C2.h					0.0		0.0			0.0	
C2.3					0	0	0	0	0	0	
C2.KP					2.0	2.0	2.0	2.0	2.0	2.0	
C2.TN s					120	120	120	120	120	120	
C2.TV s					0	0	0	0	0	0	
C2.Y0 %					0.0	0.0	0.0	0.0	0.0	0.0	
C2.4					6	0	6	0	0	6	
C2.YP %					0.0		0.0			0.0	

									Adjusted value		
System code no.	**1**	**10 (WE)**	**30**	**35**	**38**	**50**	**55**	**58**	**70**	**95**	
Actuator											
MY.EA %	1.0	**1.0**	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
MY.EE %	99.0	**99.0**	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	
MY.TE s	0	**0**	0	0	0	0	0	0	0	0	
MY.TZ %	2.0	**2.0**	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
A7.1	1	**1**	0	1	1	1	1	1	1	1	
A7.YP.ERR %	0.0	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
A8.1	0	**0**	1	0	0	0	0	0	0	0	
A8.2	0	**0**	0	0	2	0	0	0	0	0	
A8.3	0	**0**	0	0	0	0	0	0	0	0	
M6	0	**0**	0	0	0	0	0	0	0	0	
Operation											
A1.1	2	**2**	2	2	2	2	2	2	2	2	
A1.5	3			4	0		4	3		3	
A1.T.ON s											
A1.YP.ON %											
A1.T.OFF s											
A1.YP.OFF %											
A2.1	1	**1**	1	1	1	1	1	6	2	2	
A2.2	10	**10**	10	10	13	10	10	12	9	10	
A3	1	**1**	1	1	2	1	1	1	2	2	

WE = Default setting

Settings for cooling

								Adjusted value		
System code no.	**10 WE**	**2**	**20**	**21**	**40**	**60**	**65**	**66**	**80**	
Inputs and outputs										
I1	**3**		3	3	3	3	3	3	3	
AI1.I1 °C	**-50**		-50	-50	-50	-50	-50	-50	-50	
AI1.O1 °C	**-50**		-50	-50	-50	-50	-50	-50	-50	
AI1.I2 °C	**150**		150	150	150	150	150	150	150	
AI1.O2 °C	**150**		150	150	150	150	150	150	150	
I2	**3**	3	3	3	3	3	3	3	3	
AI2.I1 °C	**-50**	-50	-50	-50	-50	-50	-50	-50	-50	
AI2.O2 °C	**-50**	-50	-50	-50	-50	-50	-50	-50	-50	
AI2.I2 °C	**150**	150	150	150	150	150	150	150	150	
AI2.O2 °C	**150**	150	150	150	150	150	150	150	150	
I3		1(2)	1(2)		0	1(2)	1(2)	3		
AI3.I1 °C					20		-50	-50		
AI3.O1 °C					2		-50	-50		
AI3.I2 °C					24		150	150		
AI3.O2 °C					-2		150	150		
I4					2(1)		4	2(1)		
AI4.I1 %							10.0			
AI4.O1 °C							10			
AI4.I2 %							70.0			
AI4.O2 °C							70			
M4	**3**	3		3	5				1	
M4.T s	**60**	60		60					60	
M5	**0**	0		0	1				0	

								Adjusted value		
System code no.	**10 WE**	**2**	**20**	**21**	**40**	**60**	**65**	**66**	**80**	
Closed loop control										
M0	**10**	2	20	21	40	60	65	66	80	
M1	**0**	0	0	0	0	1	1	1	9	
M2	**0**	0	0	0	0	0	0	0	0	
LIM1.S									10	
LIM1.F									1	
LIM1.P °C									39	
LIM1.H °C									0.9	
LIM2.S									10	
LIM2.F									0	
LIM2.P °C									25	
LIM2.H °C									1.0	
Controller 1										
C1.1	**1**	2	0	0	0	0	0	2	1	
C1.a	**1.0**		1.0	1.0	1.0	1.0	1.0			
C1.b	**1.0**		-1.0	1.0	-1.0	-1.0	-1.0			
C1.c	**0.0**		0.0	0.0	0.0	0.0	0.0			
C1.d	**0.0**		0.0	0.0	0.0	0.0	0.0			
C1.z	**2.0**		1.0	2.0	1.0	1.0	1.0			
C1.2	**5**	5	5	5	0	5	5	0	7(5)	
C1.SP °C	**50.0**	20.0	2.0	20.0	6.0	2.0	2.0	7.0		
C1.SP.DIF °C	**-10.0**									
C1.SP.MIN °C	**10**	0	0	0	0	0	0	0	5	
C1.SP.MAX °C	**99**	40	10	40	10	10	10	40	40	
C1.e					0.0			1.0		

								Adjusted value		
System code no.	**10 WE**	**2**	**20**	**21**	**40**	**60**	**65**	**66**	**80**	
C1.f					0.0			0.0		
C1.g					1.0			0.0		
C1.h					0.0			0.0		
C1.3	**0**	7	7	7	7	7	7	7	7	
C1.KP	**0.0**	10.0	40.0	10.0	6.0	40.0	40.0	10.0	10.0	
C1.TN s	**0**	90	0	90	90	0	0	90	90	
C1.TV s	**0**	0	0	0	0	0	0	0	0	
C1.Y0 %	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
C1.4	**0**	0	0	0	0	0	0	0	0	
C1.YP %										
Controller 2										
C2.1						1	1	2	2	
C2.a										
C2.b										
C2.c										
C2.d										
C2.z										
C2.2						6	0	7	6	
C2.SP °C						25.0	0.0		20.0	
C2.SP.DIF °C										
C2.SP.MIN °C						10	-9		0	
C2.SP.MAX °C						70	9		40	
C2.e							0.0	0.0		
C2.f							0.0	0.0		
C2.g							0.0	1.0		

								Adjusted value		
System code no.	**10 WE**	**2**	**20**	**21**	**40**	**60**	**65**	**66**	**80**	
C2.h							1.0	0.0		
C2.3						7	7	7	7	
C2.KP						40.0	40.0	10.0	10.0	
C2.TN s						0	0	90	90	
C2.TV s						0	0	0	0	
C2.Y0 %						0.0	0.0	0.0	0.0	
C2.4						0	0	0	0	
C2.YP %										
Actuator										
MY.EA %	**1.0**	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
MY.EE %	**99.0**	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	
MY.TE s	**0**	0	0	0	0	0	0	0	0	
MY.TZ %	**2.0**	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
A7.1	**0**	1	1	1	1	1	1	1	1	
A7.YP.ERR %	**0.0**	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
A8.1	**0**	1	1	1	1	1	1	0	1	
A8.2	**0**	0	2	0	2	2	2	1	0	
A8.3	**0**	0	0	0	0	0	0	0	0	
M6	**0**	0	3	0	3	3	3	1	0	

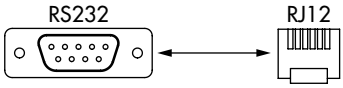
								Adjusted value		
System code no.	**10 WE**	**2**	**20**	**21**	**40**	**60**	**65**	**66**	**80**	
Operation										
A1.1	**2**	1	1	1	1	1	1	1	1	
A1.5		3	3		8	3	3	8		
A1.T.ON s		5	600	5	0	600	600	5	5	
A1.YP.ON %		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
A1.T.OFF s		0	0	0	0	0	0	0	0	
A1.YP.OFF %		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
A2.1	**1**	1	1	1	5	2	6	1	2	
A2.2	**10**	3	1	4	5	9	9	5	9	
A3	**1**	1	1	1	1	2	2	1	2	

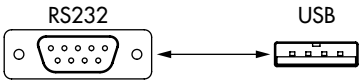
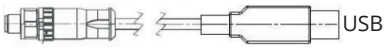
WE = Default setting

17 Appendix B

17.1 Accessories

Table 17-1: *Accessories*

Mounting kit for a Pt1000 immersion sensor as contact sensor	Order no. 100000722
Pt1000 immersion sensor · Type 5277 for additional connection to the control line	➔ ▶ T 5200 and ▶ T 5220.
Brass thermowell, G ½, 80 mm immersion length, PN 16	Order no. 1099-0807
Stainless steel thermowell, G ½, 80 mm immersion length, PN 40	Order no. 1099-0805
Stainless steel thermowell, G ½, 250 mm immersion length, PN 40	Order no. 1099-0806
Brass thermowell, G ½, 160 mm immersion length, PN 16	Order no. 8525-5005
Stainless steel thermowell, G ½, 160 mm immersion length, PN 40	Order no. 8525-5011
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 RS-232 adapter	Order no. 8812-2001 
Connecting cable for communication with TROVIS-VIEW USB to RS-485 adapter R3	Order no. 1402-1300 
Connecting cable for communication over RS-485 with Modbus RTU protocol R3/RS-485, 4-wire	Order no. 1380-2689 
Software	
TROVIS-VIEW (free of charge)	▶ www.samsongroup.com > Downloads > Software & Drivers > TROVIS-VIEW

17.2 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 AG, 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:

- Type designation
- Material number
- Serial number
- Firmware version

EB 5724-8 EN

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