

T 5724-8 EN

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

For heating and cooling applications



Application

Electric actuators with process controller for simple industrial applications as well as heating, ventilation and air-conditioning systems

The electric actuators with process controller can be used for flow temperature control depending on the outdoor temperature (heating), differential temperature control in (district) cooling networks (cooling) and in industrial applications for heating or cooling.

Special features

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 suitable for attachment to SAMSON Types 3222, 3213, 3214, 2488, 42-36 E, 3226, 3260 and V2001 Valves in valve sizes DN 15 to 50. In special cases, valve sizes up to DN 80 (TROVIS 5724-8 in combination with Types 3214, 3260 and 42-36 E Valves) can be used.

- TROVIS 5724-8 with manual override (handwheel)
- The TROVIS 5724-8xx and TROVIS 5725-8xx are available in four ready-wired device versions including sensors and control line to facilitate installation
- Fast start-up using system code numbers for fixed set point, follow-up, override, cascade or switching control
- Operating panel with display for set point adjustment and adjustable operating functions, e.g. start/stop control sequence
- Set point range from -50 to $+150$ °C, adjustment range can be limited
- Pump output to control a circulation pump can alternatively be used as a fault alarm output (connected wire L')
- Configuration, parameterization, diagnostic function and online connection for monitoring using the TROVIS-VIEW software (RS-485 interface)
- TROVIS 5724-8 without fail-safe action, TROVIS 5725-8 with fail-safe action
- Testing according to DIN EN 14597

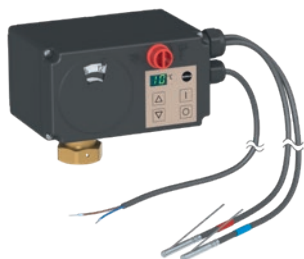
- The TROVIS 5725-8 Electric Actuator with Process Controller with fail-safe action "actuator stem extends" is tested by the German technical surveillance association TÜV according to DIN EN 14597 in combination with different SAMSON valves. Such actuators have a test mark on their nameplate.

The registration number is available on request.



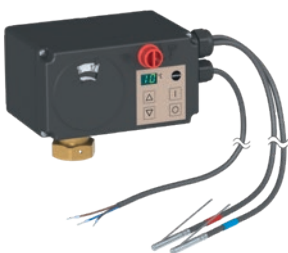
Fig. 1: TROVIS 5724-8 Electric Actuator with Process Controller

Device version [A]



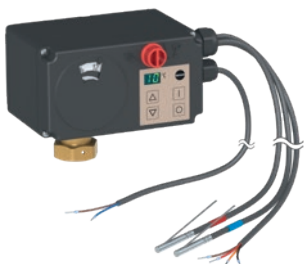
- Two-wire connecting cable with open end for connection to voltage supply (5 m)
- Two Pt 1000 sensors (3 m red and 2 m blue)

Device version [B]



- Three-wire connecting cable with open end for connection to voltage supply and switching output (2.5 m)
- Two Pt 1000 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)
- Two Pt 1000 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)
- Two Pt 1000 sensors (3 m red and 2 m blue)
- Four-wire control line for two additional inputs (3 m)

Fig. 2: Device versions

Design and principle of operation

The electric actuators with process controller can be used for diverse control tasks in heating and cooling applications. The actuators are available in four different versions which are adapted to the various tasks (see Fig. 2).

Ready-configured systems are available to facilitate start-up. 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 parameter settings in the TROVIS-VIEW software.

– TROVIS 5724-8

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. Data between the actuator and computer are transferred over the RS-485 interface (on the computer) and the R3 port (on the side device cover).

After the supply voltage is reconnected after a power supply failure, the electric actuator starts again by performing a zero calibration and uses the last valid setting. Zero calibration can be configured in TROVIS-VIEW.

– TROVIS 5725-8

The electric actuator with fail-safe action largely corresponds to the TROVIS 5724-8 described above. However, it contains a spring assembly and an electromagnet, which move the connected valve to its fail-safe position when de-energized. Upon supply voltage failure, the actuator stem extends.

The system code numbers allow the user to preconfigure the electric actuators with process controller in TROVIS-VIEW for a certain application.

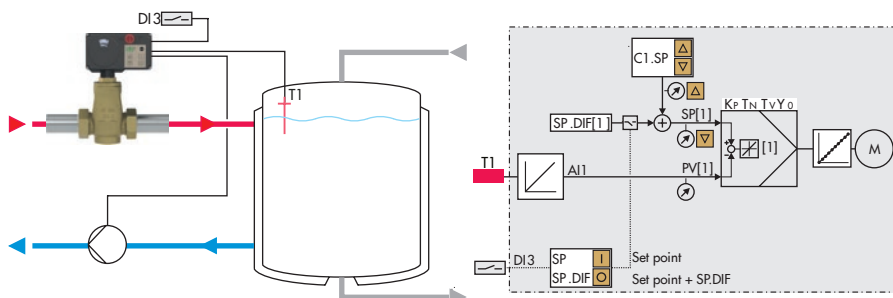
System code numbers for heating applications

System code number 1

- Fixed set point control with one sensor

Device version:

[A]	[B]	[C]	[D]
o	•	o	•

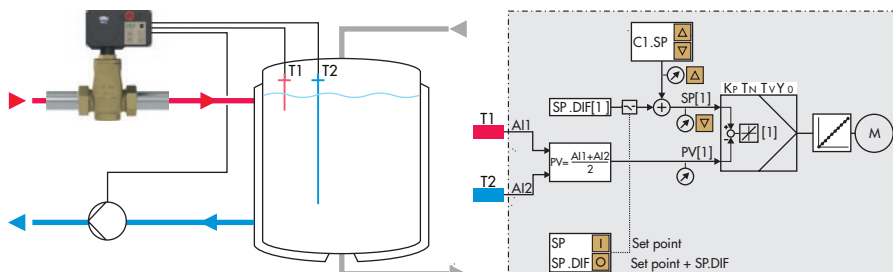


System code number 10 (default setting)

- Fixed set point control
- Mean value calculation using two sensors
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
o	•	o	•

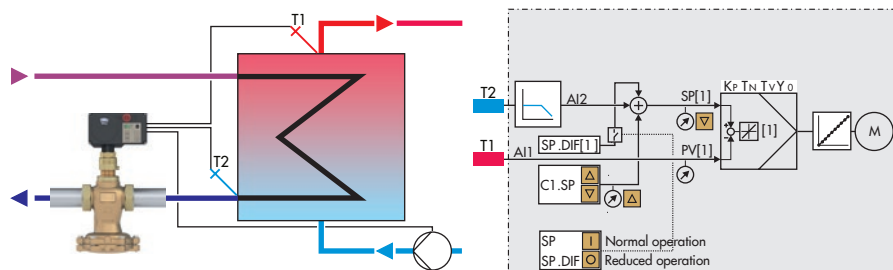


System code number 30

- Fixed set point/follow-up control
- Return flow temperature limitation
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
o	•	o	•

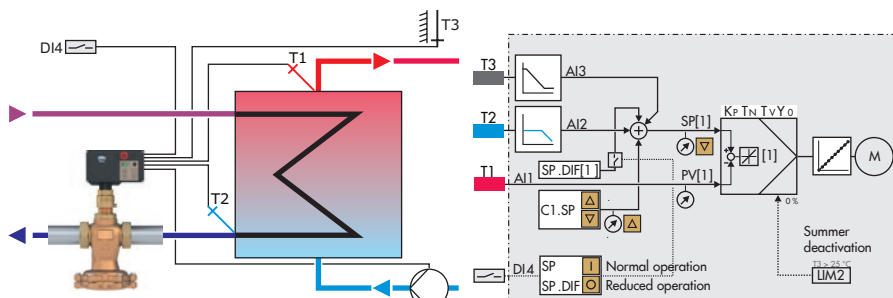


System code number 35

- Fixed set point/follow-up control
- Return flow temperature limitation
- Digital input e.g. for control according to day or night mode
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
-	-	o	•



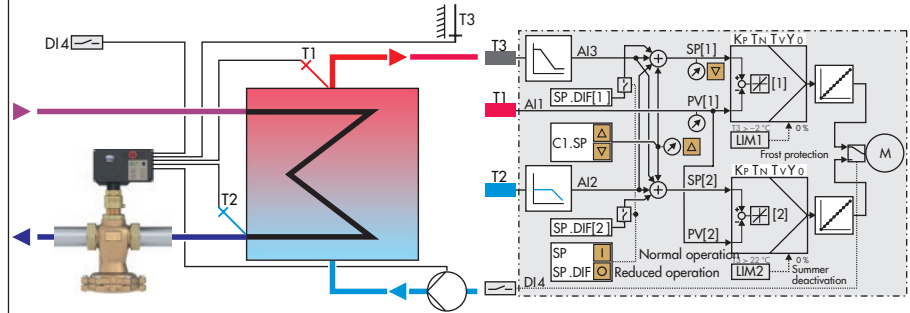
Device versions: • Recommended • Possible o Possible when the switching output is not used - Not possible

System code number 38

- Follow-up control with controller switchover
- Outdoor temperature controlled, return flow temperature limitation, frost protection, summer deactivation
- Set point decrease/increase with [I]/[O] keys, control ON with DI4
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
-	-	o	•

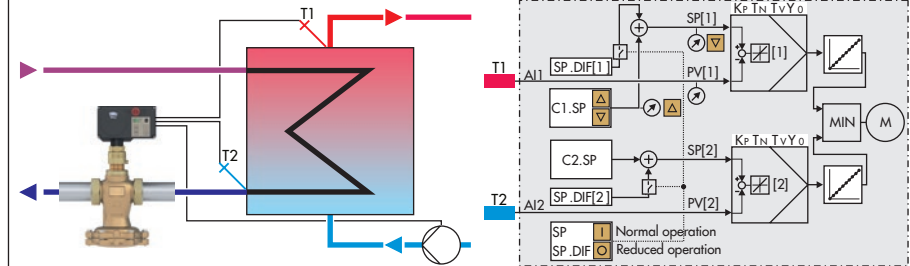


System code number 50

- Override control with minimum selection
- Return flow temperature limitation
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
o	•	o	•

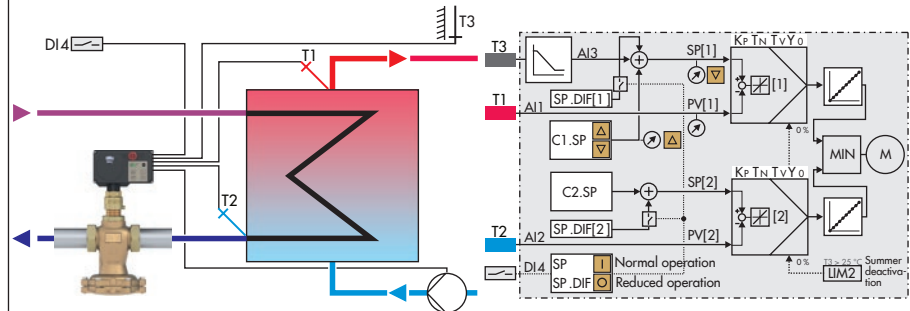


System code number 55

- Override control with minimum selection
- Return flow temperature limitation
- Digital input e.g. for control according to day or night mode
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
-	-	o	•

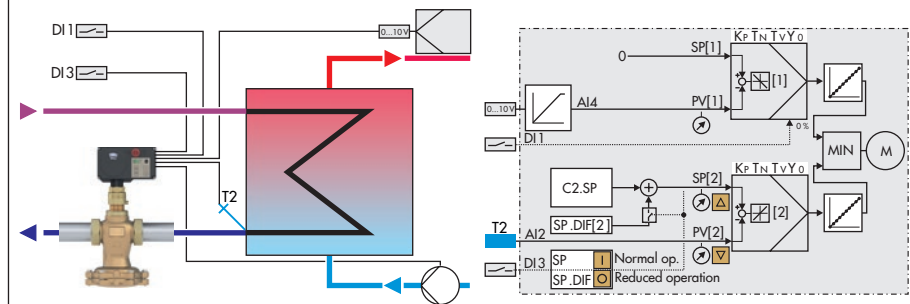


System code number 58

- Override control with minimum selection
- Position transmitter with return flow temperature limitation
- Set point decrease/increase with [I]/[O] keys, OFF with DI1
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
-	-	o	•



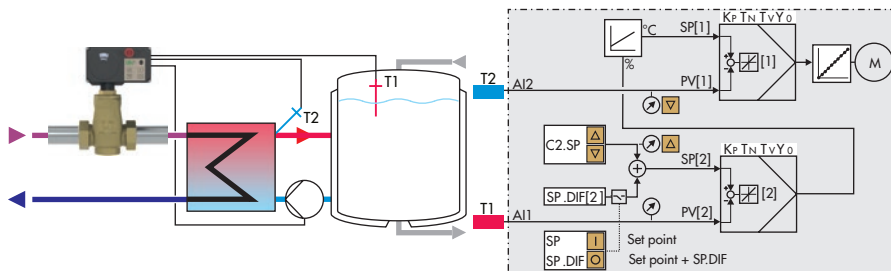
Device versions: • Recommended • Possible o Possible when the switching output is not used - Not possible

System code number 70

- Cascade control
- Two sensors and set point limitation at the input of the slave controller
- Set point switchover using [I]/[O] keys
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
o	•	o	•

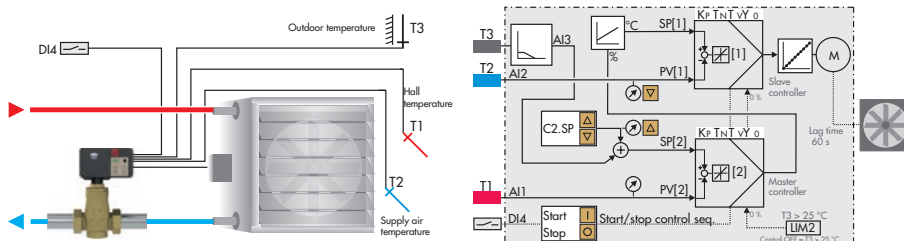


System code number 75

- Cascade control
- Three sensors and set point limitation at the input of the slave controller
- Start/stop control sequence using [I]/[O] keys or with DI4, OFF with LIM2
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
o	•	o	•

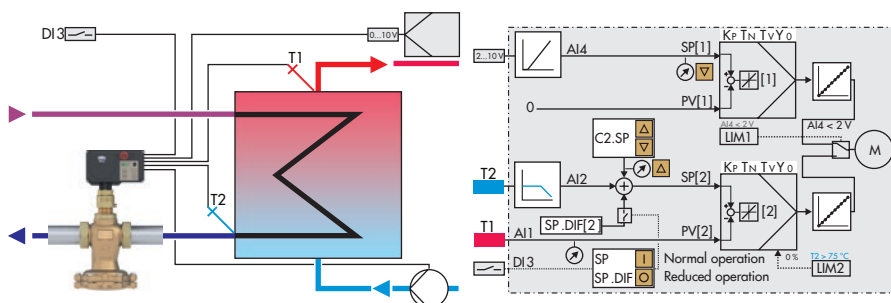


System code number 95

- Position transmitter 2 to 10 V with control in case of signal failure
- Fixed set point control, return flow temperature limitation
- Set point decrease/increase with [I]/[O] keys or DI3
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
-	-	o	•

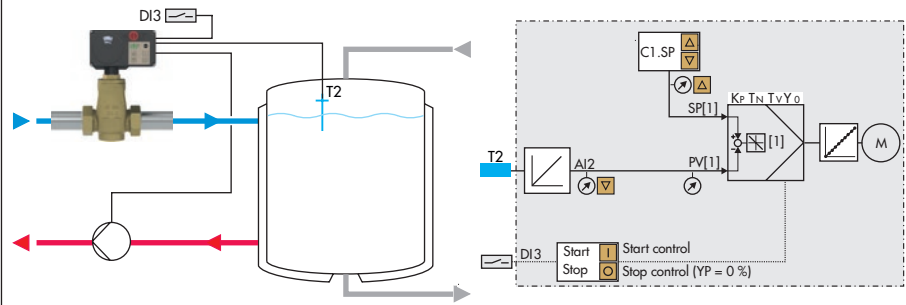


Device versions: • Recommended • Possible o Possible when the switching output is not used - Not possible

System code numbers for cooling applications

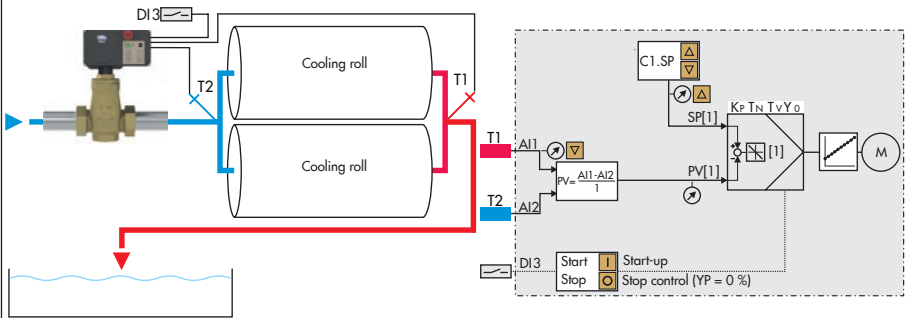
- System code number 2**
- Fixed set point control with one sensor
 - Start/stop control sequence using [I]/[O] keys or with DI3
 - Switching output e.g. for pump control
- Device version:**

[A]	[B]	[C]	[D]
o	•	o	•



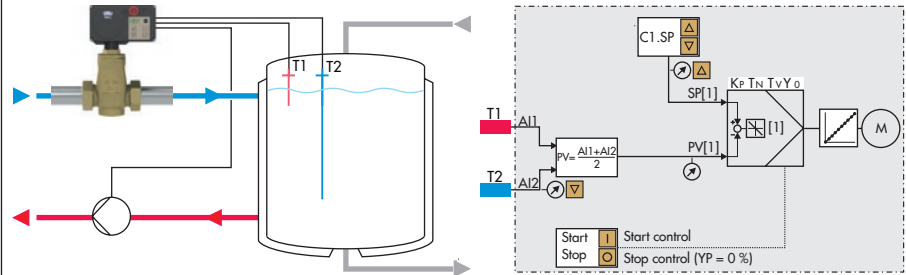
- System code number 20**
- Fixed set point control
 - Differential temperature between two sensors
- Device version:**

[A]	[B]	[C]	[D]
•	•	•	•



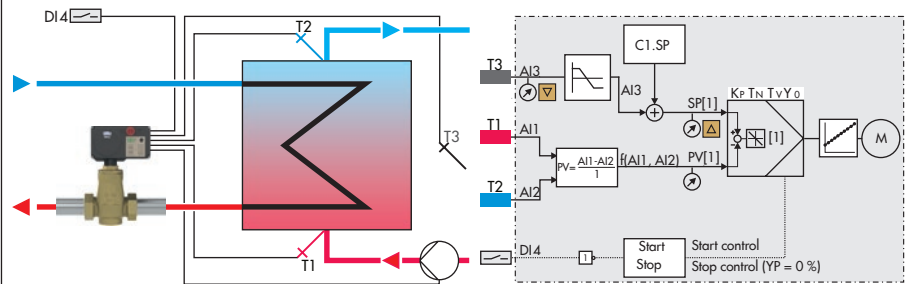
- System code number 21**
- Fixed set point control
 - Mean value calculation using two sensors
 - Switching output e.g. for pump control
- Device version:**

[A]	[B]	[C]	[D]
o	•	o	•



- System code number 40**
- Follow-up control
 - Differential temperature between two sensors
 - Set point shift with AI3, start/stop control sequence with DI4
 - Switching output e.g. for pump control
- Device version:**

[A]	[B]	[C]	[D]
-	-	o	•



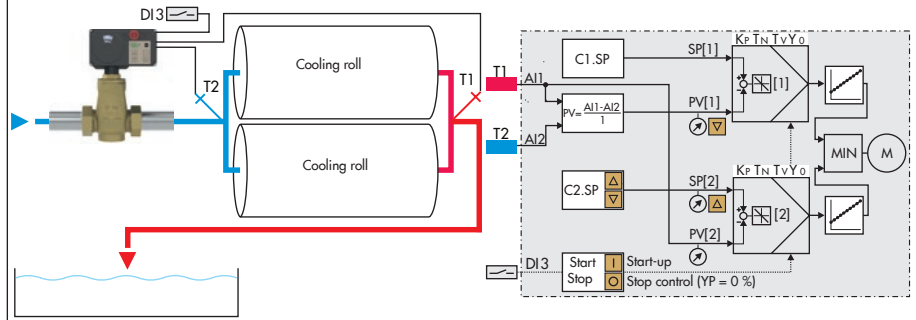
Device versions: • Recommended • Possible o Possible when the switching output is not used - Not possible

System code number 60

- Override control with minimum selection
- Differential temperature between two sensors and return flow temperature limitation

Device version:

[A]	[B]	[C]	[D]
•	•	•	•

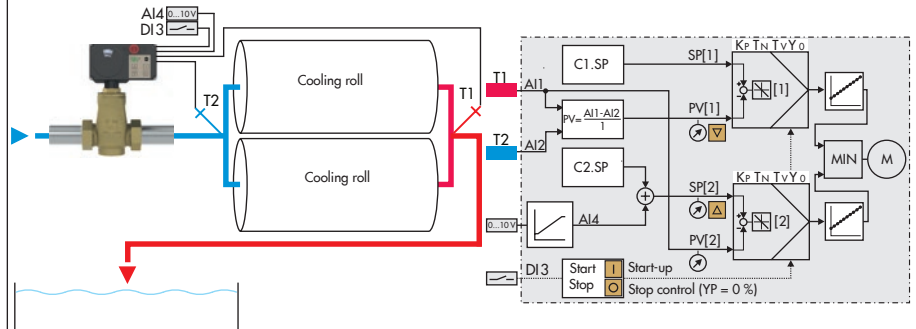


System code number 65

- Override control with minimum selection
- Differential temperature between two sensors and return flow temperature limitation
- External set point over 0 to 10 V signal

Device version:

[A]	[B]	[C]	[D]
-	-	•	•

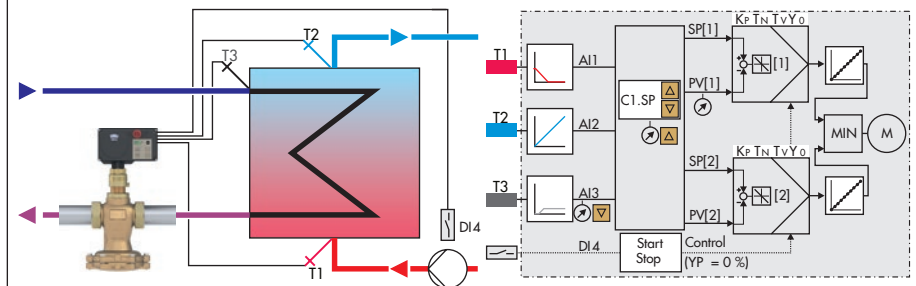


System code number 66

- Override control, district cooling with three sensors and a digital input
- Set point control with maximum selection

Device version:

[A]	[B]	[C]	[D]
-	-	•	•

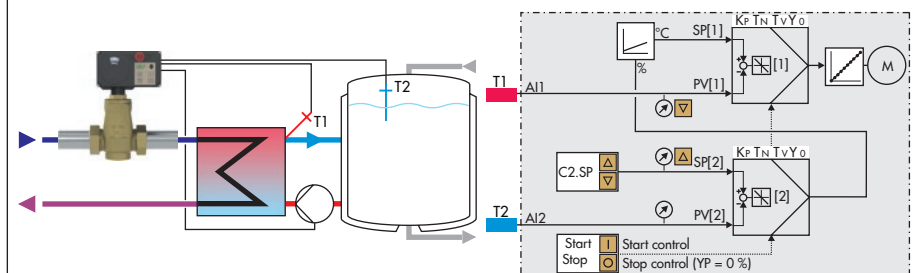


System code number 80

- Cascade control
- Two sensors and set point limitation at the input of the slave controller
- Switching output e.g. for pump control

Device version:

[A]	[B]	[C]	[D]
o	•	o	•



Device versions: • Recommended • Possible o Possible when the switching output is not used - Not possible

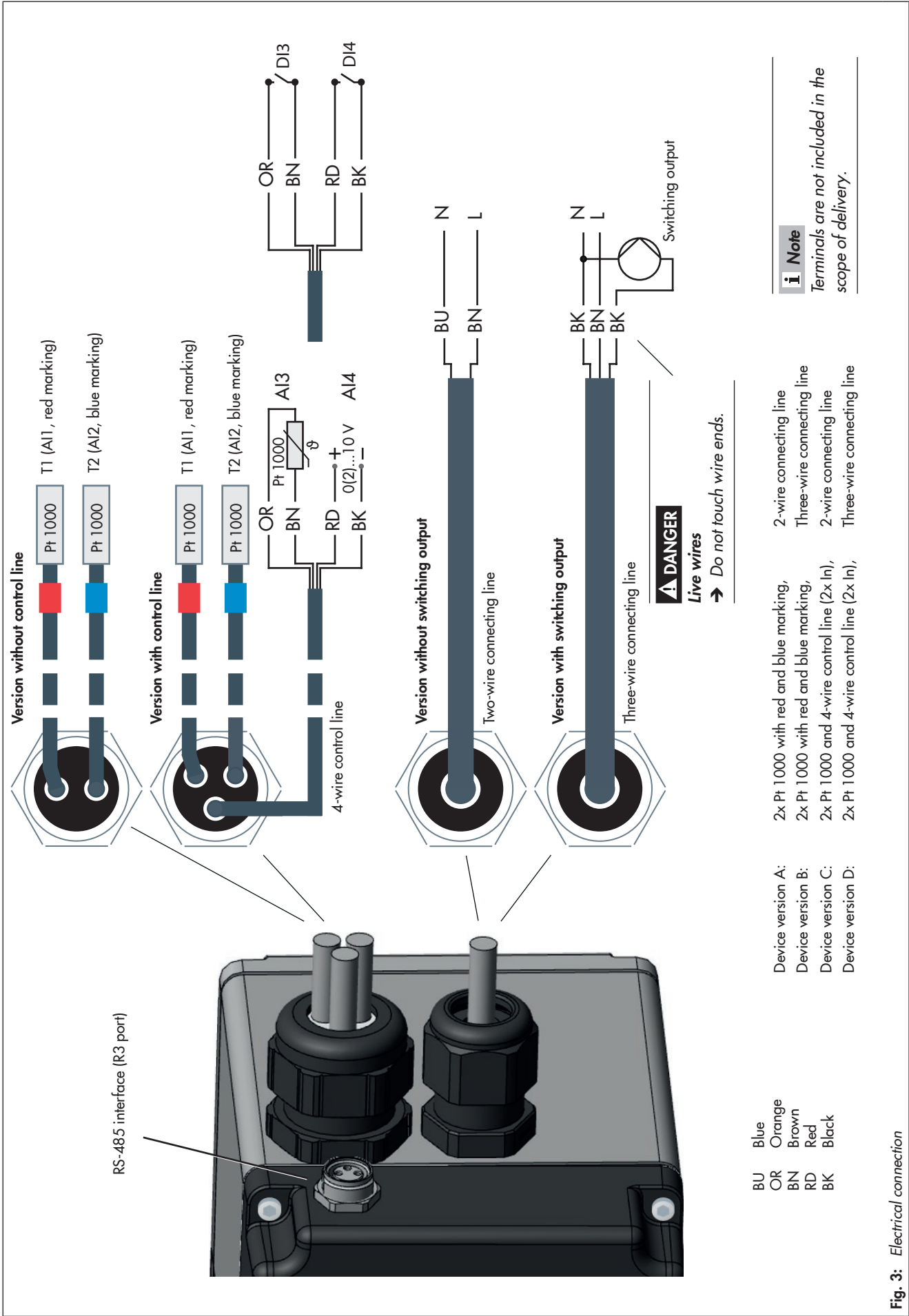


Fig. 3: Electrical connection

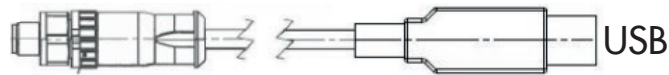
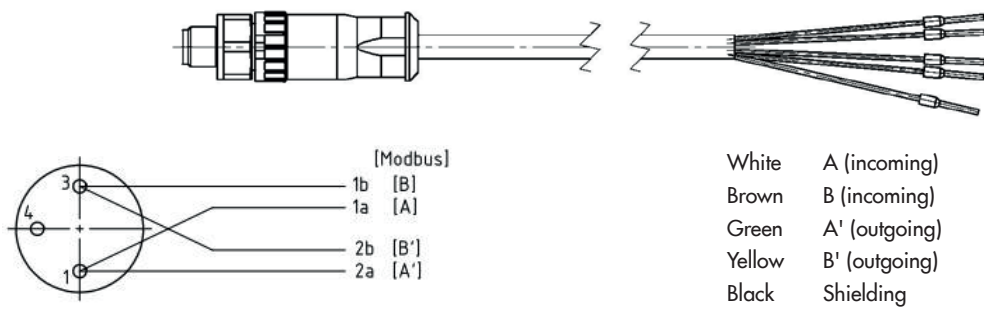


Fig. 4: USB to RS-485 connecting cable with 3-pin R3 round connector



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

Fig. 5: Bus connection line with three-pin R3 round connector

Technical data

Table 1: Technical data

Electric actuator with process controller	TROVIS	5724-810	5725-810	5724-820	5725-820	5724-830	5725-830
Fail-safe action		Without	Extends	Without	Extends	Without	Extends
Rated travel		6 mm		12 mm		15 mm	
Stroking speed		0.18 mm/s					
Transit time for rated travel		35 s		70 s		90 s	
Transit time for fail-safe action		–	Approx. 4 s	–	Approx. 6 s	–	Approx. 7 s
Thrust		700 N	500 N	700 N	500 N	700 N	280 N
Attachment		Force-locking				Form-fit	
Manual override		With	Without	With	Without	With	Without
Supply voltage		230 V (±10 %), 50 Hz					
Power consumption		5 VA					
Permissible temperature ranges ¹⁾							
Ambient		0 to 50 °C					
Storage		–20 to +70 °C					
Safety							
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 version		[A], [B], [C], [D]					

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		
Type	5277-2	5277-3
Number of Pt 1000 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	IP 54	
Weight	Approx. 0.23 kg	
Connecting cable length	2 m	3 m
Marking	Blue	Red
Wiring	AI2	AI1

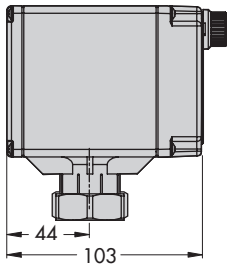
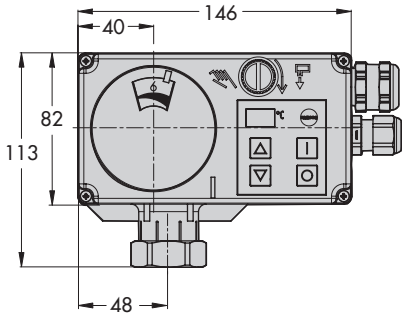
Connecting cable		
Version	Two-wire	Three-wire
Length	5 m	2.5 m
Wire coding	N = Blue L = Brown	N = Blue L = Brown L' = Black

Switching output	
Max. permissible current	1 A
Voltage	230 V

Control line		
Version	AI3	AI4
Wire coding	+ = Orange - = Brown	+ = Red - = Black

Dimensions and mounting position

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



TROVIS 5724-830 and TROVIS 5725-830

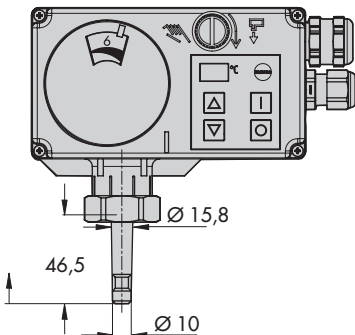


Fig. 6: Dimensions in mm

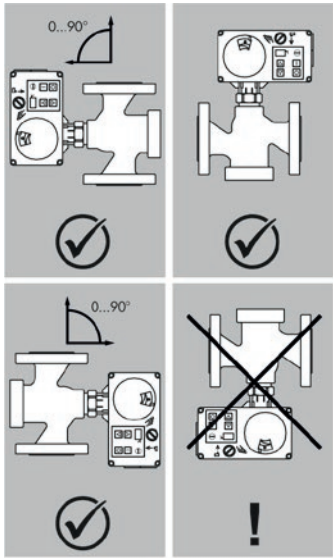


Fig. 7: Mounting orientation

Accessories

Table 2: *Accessories*

For communication	Order no.
USB to RS-485 adapter R3, approx. 1.5 m long	1402-1300
R3 to RS-485 connecting cable, approx. 5 m long	1380-2689
Software	
TROVIS-VIEW (free of charge)	► www.samsongroup.com > Service & Support > Downloads > TROVIS-VIEW
For sensors	Order no.
Mounting kit for a Pt 1000 cable sensor as contact sensor	100000722
Brass thermowell, G ½, 80 mm immersion length, PN 16	1099-0807
Stainless steel thermowell, G ½, 80 mm immersion length, PN 40	1099-0805
Stainless steel thermowell, G ½, 250 mm immersion length, PN 40	1099-0806
Brass thermowell, G ½, 160 mm immersion length, PN 16	8525-5005
Stainless steel thermowell, G ½, 160 mm immersion length, PN 40	8525-5011

Ordering text

TROVIS 5724-8xx/TROVIS 5725-8xx Electric Actuator with Process Controller

Fail-safe action:

- Without
- Extends

Device version:

- (A) With two sensors without switching output
- (B) With two sensors with switching output
- (C) With two sensors + control line without switching output
- (D) With two sensors + control line with switching output

Supply voltage:

230 V, 50 Hz

Rated travel:

- 6 mm
- 12 mm
- 15 mm

Thrust:

- 280 N
- 500 N
- 700 N

Communication:

- R3 port with RS-485 interface
- Modbus RTU or SSP protocol

Associated mounting and operating instructions

- TROVIS 5724-8/5725-8 ► **EB 5724-8**
- TROVIS-VIEW ► **EB 6661**

Associated Data Sheet

- TROVIS-VIEW ► **T 6661**

Associated configuration manual

- TROVIS 5724-8/5725-8 ► **KH 5724-8**

Quick Guide

- TROVIS 5724-8/5725-8 ► **KA 5724-8**

Associated Information Sheet

- Control valve for heating, ventilation and air-conditioning systems ► **T 5800**