



## EB 5757-7 EN

Translation of original instructions



## TROVIS 5757-7 Electric Actuator with Process Controller

For heating and cooling applications

Firmware version 2.04

Edition January 2020

## Note on these mounting and operating instructions

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

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



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

## Definition of signal words

### **DANGER**

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

### **WARNING**

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

### **NOTICE**

*Property damage message or malfunction*

### **Note**

*Additional information*

### **Tip**

*Recommended action*

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# 1 General

The functions and parameters are changed in the TROVIS-VIEW software. To transfer settings from the software to the electric actuator or vice versa, they must be connected. See

▶ EB 6661.

### **⚠ WARNING**

***Any hazards that could be caused in the valve by the process medium, the operating pressure, the signal pressure or by moving parts.***

*The software in online mode has a direct influence on the connected device and, as a result, 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.*

→ *Observe hazard statements, warning and caution notes in the referenced documents (plant operators and operating personnel).*

### **Accessories for communication:**

The TROVIS-VIEW software is required for the TROVIS 5757-7 Electric Actuator with Process Controller. The TROVIS-VIEW software can be downloaded free of charge from our website (▶ [www.samsongroup.com](http://www.samsongroup.com) > SERVICE & SUPPORT > Downloads > TROVIS-VIEW). The software can also be supplied on a CD-ROM. Further details can be found in Data Sheet

▶ T 6661.

## 2 Functions and parameters

Functions and parameters are entered in the TROVIS-VIEW software separately for level #1 and level #2 (see section 3).

### 2.1 Outdoor-temperature-compensated control

When outdoor-temperature-controlled control is used, the flow temperature ( $t_{VL}$ ) is controlled according to the outdoor temperature ( $t_A$ ). The heating characteristic in the controller defines the flow temperature set point as a function of the outdoor temperature (see Fig. 1).

Basically, the following rule applies: a decrease in the outdoor temperature causes the flow temperature to increase. By varying the 'Gradient' and 'Level' parameters, the characteristic can be adapted to individual requirements: An increased 'Gradient' causes an increase in flow temperature, whereas a reduced 'Gradient' causes a lower flow temperature. The 'Level'

parameter shifts the heating characteristic parallel upwards or downwards. In reduced operation, the flow temperature is reduced by the amount set in 'Flow temperature set-back in reduced operation'. The 'Max. flow temperature' and 'Min. flow temperature' parameters mark the upper and lower limits of the flow temperature. **Return flow temperature limitation** (see section 2.5) is an exception as it can reduce the flow temperature without restriction down to 20 °C flow temperature set point.

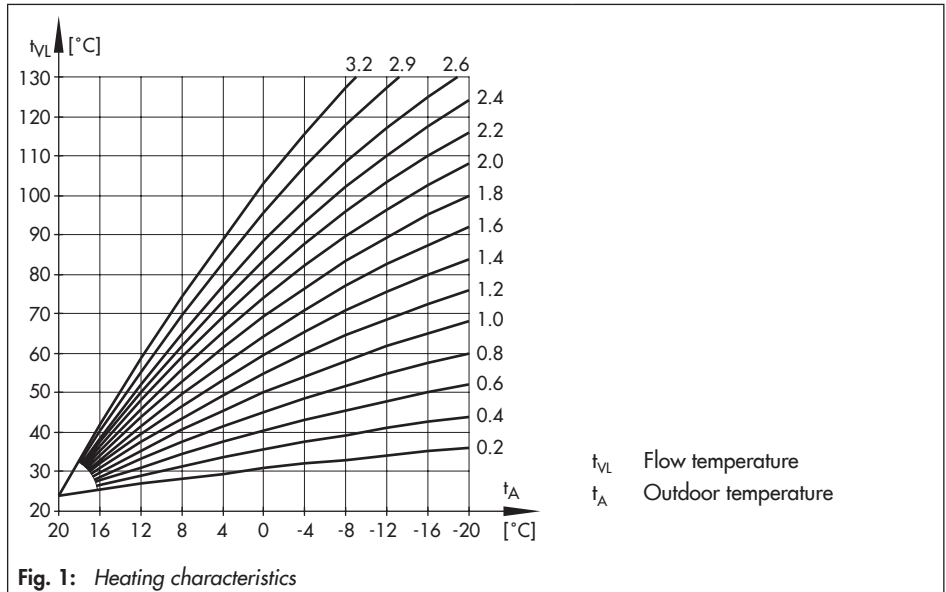


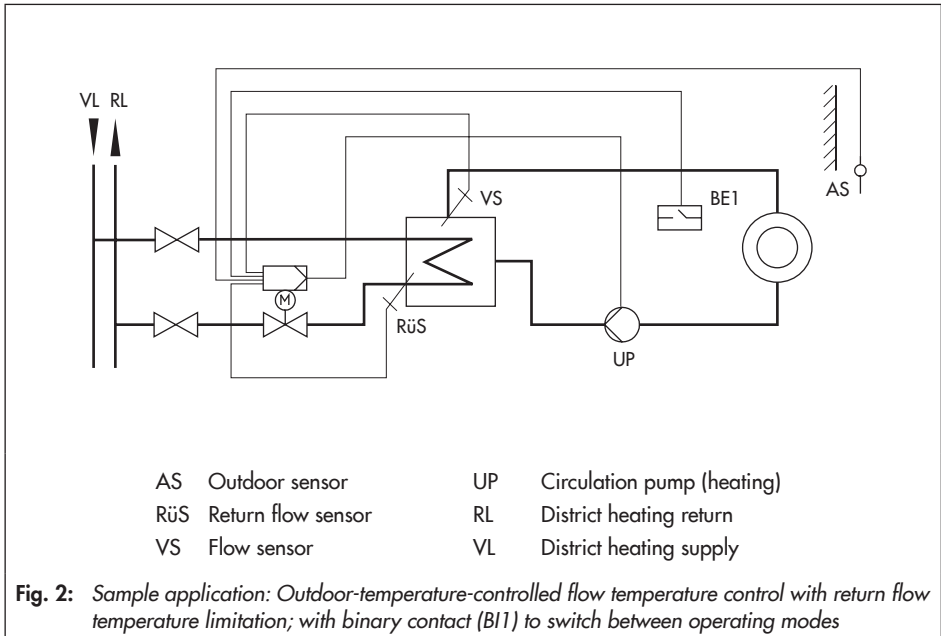
Fig. 1: Heating characteristics

Functions	Default	Configuration
F01 – Control mode	1	F01 - 1
F02 – Reference variable (only with F01 -1)	0	F02 - 0
Parameters	Default	Value range
P02 – Flow temperature set-back in reduced operation	15 K	0 to 50 K
P03 – Min. flow temperature	20 °C	0 to 120 °C
P04 – Max. flow temperature	120 °C	20 to 150 °C
P05 – Heating characteristic gradient	1.6	0.2 to 3.2
P06 – Heating characteristic level	0 K	-30 to +30 K

## Functions and parameters

### Examples for adjusting the characteristic:

- Old building, radiator design 90/70: Gradient approx. 1.8
- New building, radiator design 70/55: Gradient approx. 1.4
- New building, radiator design 55/45: Gradient approx. 1.0
- Underfloor heating depending on arrangement: Gradient smaller than 0.5



### 2.1.1 Override using potentiometer

The potentiometer input can change either the heating characteristic level or gradient, depending on the configuration. The 'Gradient shift range via potentiometer' and 'Level shift range via potentiometer' parameters are used to adjust the range ( $\pm$ ) in which the override is to take place.

Functions	Default	Configuration
F05 – Potentiometer input	0	F05 - 1
F06 – Resistance range of potentiometer (only with F05 - 1)	0	F06 - 0: 1000 to 1100 Ω F06 - 1: 1000 to 2000 Ω
F07 – Function of potentiometer (only with F02 - 0 and F05 - 1)	0	F07 - 0: Level shift F07 - 1: Gradient shift

Parameters	Default	Value range
P07 – Gradient shift range via potentiometer (only with F07 - 1)	1.0	0.0 to 1.5
P08 – Level shift range via potentiometer (only with F07 - 0)	15 K	0 to 30 K

**Examples:**

- **Function of potentiometer F07 - 0**  
 Heating characteristic gradient P05 = 1.6  
 Gradient shift range via potentiometer P07 = 1.0  
 → The gradient can be shifted between 0.6 and 2.6 ( $\pm 1.0$ ).
- **Function of potentiometer F07 - 1**  
 Heating characteristic level P06 = 0 K  
 Level shift range via potentiometer P08 = 15 K  
 → The level can be shifted between -15 K and +15 K ( $\pm 15$  K).  
 The limits adjusted for the flow temperature still apply.

## 2.1.2 Summer mode

If the outdoor temperature exceeds the 'Outdoor temperature limit value (rated operation/reduced operation)', the controller switches off the heating, i.e. the valve is closed and the circulation pump is switched off after the 'Pump lag time' (P23) has elapsed. The heating is switched on again when the outdoor temperature falls below the limit.

Parameters	Default	Value range
P17 – Outdoor temperature limit value at rated operation	22 °C	0 to 50 °C
P18 – Outdoor temperature limit value at reduced operation	15 °C	0 to 50 °C
P23 – Pump lag time	5 min	1 to 999 min

### 2.1.3 Delayed outdoor temperature adaptation

The calculated outdoor temperature is used to determine the flow temperature set point. The heat response is delayed when the outdoor temperature either increases or decreases.

If the outdoor temperature varies by, for example 12 °C within a very short period of time, the calculated outdoor temperature is adapted to the actual outdoor temperature in small steps. Assuming a 'Delay time of outdoor temperature' of 3 °C/h, the linear adaptation would take  $t = \frac{12\text{ °C}}{3\text{ °C/h}} = 4\text{ h}$ .

#### **i** Note

*The delayed outdoor temperature adaptation helps avoid unnecessary overloads of central heating stations in combination with either overheated buildings occurring, for example due to cool winds or temporarily insufficient heating due to the outdoor sensor being exposed to direct sunshine.*

Functions	Default	Configuration
F04 – Delayed outdoor temperature (only with F01 - 1 and F02 - 0)	0	F04 - 1

Parameters	Default	Value range
P16 – Delay time for outdoor temperature	3 °C/h	1 to 6 °C/h

## 2.2 Fixed set point control

The flow temperature is controlled to the fixed value in 'Flow temperature set point'. In reduced operation, the flow set point is used for the control reduced by the amount in 'Flow temperature set-back in reduced operation'. A connected outdoor sensor does not have any affect on the control.

Functions	Default	Configuration
F01 – Control mode	1	F01 - 0

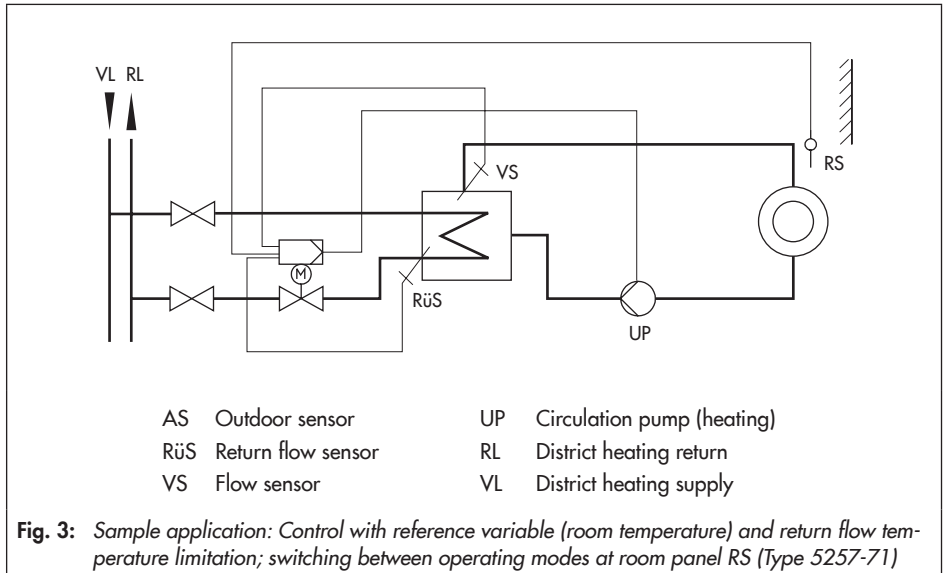
  

Parameters	Default	Value range
P01 – Flow temperature set point	70 °C	20 to 120 °C
P02 – Flow temperature set-back in reduced operation	1.5 K	0 to 50 K



**i Note**

The return flow limitation and the potentiometer override are still active when configured correspondingly.



## 2.2.1 Control with reference variable (room temperature)

On connecting a **Type 5257-71 Room Panel**, the 'Flow temperature set point' is influenced by the room temperature: A permanently active flash adaptation adapts the supply of heat to the required demand by changing the flow temperature. The room sensor is polled at regular intervals ('Time interval for flash adaptation'). If the room temperature is lower than the 'Room temperature set point at rated operation' or 'Room temperature set point at reduced operation', the flow temperature is raised based on the 'Flow temperature set point'.

If the room temperature exceeds the room temperature set point (rated operation/reduced operation) by the amount in 'Max. room temperature boost for switch-off', the heating is switched off, i.e. the valve is closed and the circulation pump is switched off after the 'Pump lag time' has elapsed.

The set point of the flow temperature is not affected when the P22 parameter ('Time interval for flash adaptation') is set to 0. The heating deactivation remains active when the room tem-

## Functions and parameters

perature exceeds the value in 'Room temperature set point' (P19/P20) plus 'Room temperature boost for switch-off' (P21).

### **i** Note

- We recommend not to select a value that is too low for the P22 parameter. In particular, in cases where cooling loads, such as drafts or open windows, affect the control process, short cycles usually have a negative effect. The heating is directly switched off after the cooling stops.
- The set points for room temperature entered in TROVIS-VIEW can be reduced or raised by 5 K at the room panel (F05 - 1).

Functions	Default	Configuration
F01 – Control mode	1	F01 - 1
F02 – Reference variable (only with F01 -1)	0	F02 - 1
F05 – Potentiometer input	0	F05 - 1

Parameters	Default	Value range
P01 – Flow temperature set point	70 °C	20 to 120 °C
P19 – Room temperature set point at rated operation	20 °C	10 to 40 °C
P20 – Room temperature set point at reduced operation	15 °C	10 to 40 °C
P21 – Room temperature boost for switch-off	2 K	1 to 6 K
P22 – Time interval for flash adaptation	10 min	0 to 100 min
P23 – Pump lag time	5 min	1 to 999 min

## 2.3 Changing the operating modes

### 2.3.1 Switchover using binary input

The electric actuator with process controller can be configured to allow one of two active binary inputs to determine which operating mode is used. Depending on the configuration, the following applies:

<b>Binary input B11:</b>	F08 - 0	Open binary input B11 – Rated operation Closed binary input B11 – OFF/Frost protection
	F08 - 1	Open binary input B11 – Rated operation Closed binary input B11 – Reduced operation

<b>Binary input BI2</b>	F12 - 0	Open binary input BI2 – Rated operation Closed binary input BI2 – OFF/Frost protection
	F12 - 1	Open binary input BI2 – Rated operation Closed binary input BI2 – Reduced operation

**i Note**

A Type 5257-71 Room Panel cannot be connected when binary input BI1 is active (see section 2.3.1). The binary input BI2 can be used, provided a return flow sensor is not activated.

Functions	Default	Configuration
<b>Binary input BI1</b>		
F05 – Potentiometer input	0	F05 - 0
F08 – Function of binary input 1 (only with F05 - 0)	0	F08 - 0: OFF with frost protection F08 - 1: Reduced operation
<b>Binary input BI2</b>		
F11 – Return flow temperature sensor	1	F11 - 0
F12 – Function of binary input 2 (only with F11 - 0)	0	F12 - 0: OFF with frost protection F12 - 1: Reduced operation




### 2.3.2 Switchover using room panel

The operating mode is determined at the mode selector switch on the Type 5257-71 Room Panel:

- ☀ Rated operation (day mode)
- ☾ Reduced mode (night mode)
- ❄ OFF/frost protection

Functions	Default	Configuration
F05 – Potentiometer input	0	F05 - 1
F06 – Resistance range of potentiometer (only with F05 - 1)	0	F06 - 0 (Type 5257-71 Room Panel)

### 2.3.3 Switchover using binary input in room panel

The terminals 1 and 4 of the Type 5257-71 Room Panel can be bridged by means of an external floating contact (e.g. by a time switch with downstream contactor relay with floating make or break contact). This enables the controller to switch to the rated operation mode  when the mode selector switch is set to reduced operation  or OFF/Frost protection .

The following applies:

- BI break contact Operating mode is the same as the mode set at the mode selector switch
- BI make contact Operating mode is rated operation, regardless of the mode set at the mode selector switch

Functions	Default	Configuration
F05 – Potentiometer input	0	F05 - 1
F06 – Resistance range of potentiometer (only with F05 - 1)	0	F06 - 0 (Type 5257-71 Room Panel)

## 2.4 Frost protection

Frost protection measures are initiated when the controller is in the operating mode OFF/Frost protection (see section 2.3).

Conditions that apply:

- Outdoor temperature  $< 3\text{ °C}$  (outdoor-temperature-controlled control)  
The flow set point is set to  $20\text{ °C}$ . The binary output remains activated until the outdoor temperature rises above  $3.5\text{ °C}$ .
- Flow temperature  $< 15\text{ °C}$  (control with reference variable (room temperature))  
The flow set point is set to  $20\text{ °C}$ . The binary output remains activated for 5 minutes. After that, the heating is deactivated when the flow temperature is higher than  $15\text{ °C}$ .

## 2.5 Return flow temperature limitation

The temperature difference between the flow and return flow in a network indicates how well the energy is used: the greater the difference, the higher the efficiency.

A return flow sensor is sufficient to evaluate the temperature difference when the flow temperatures are predefined. The flow temperature set point is reduced when the 'Max. return flow temperature' measured at the return flow sensor exceeds the 'Flow temperature set point': the reduction amount is calculated from the deviation of the return flow temperature multiplied by the factor 'Kp return flow temperature limitation'. The rate at which the return

flow temperature is reduced by the calculated amount is determined by 'Tn return flow temperature limitation'.

The yellow LED blinks slowly if the flow temperature is reduced due to the **Return flow temperature limitation** function.

Functions	Default	Configuration
F11 – Return flow temperature sensor	1	F11 - 1

Parameters	Default	Value range
P13 – Max. return flow temperature	50 °C	10 to 90 °C
P14 – Kp return flow temperature limitation	1.0	0.1 to 50.0
P15 – Tn return flow temperature limitation	400 s	0 to 999 s

## 2.6 Pump forced operation

A deactivated circulation pump is forced-operated every 24 hours for one minute. This function is deactivated by selecting F10 - 0 or F09 - 1.

Functions	Default	Configuration
F09 – Function of switching output	0	F09 - 0
F10 – Pump protection (only with F09 - 0)	1	F10 - 1

## 2.7 External heat demand

The electric actuator can issue a heat demand to a higher-level controller over the binary output BO in rated or reduced operation. In this case, a coupling relay (contactor relay with floating contact) must be used to adapt the electrical connection.

This function is only possible when the switching output is not configured as a pump output.

Functions	Default	Configuration
F09 – Function of switching output	0	F09 - 1

## 2.8 Control principle

Parameters	Default	Value range
P09 – Kp flow temperature control	2.0	0.1 to 50.0
P10 – Tn flow temperature control	120 s	0 to 999 s
P11 – Actuator transit time Ty	24.0 s	10.0 to 240.0 s
P12 – Dead band (switching range)	2.0 %	0.5 to 5.0 %

## 2.9 Operating direction

### Increasing/increasing (F03 - 0)

- Actual value < Set point: actuator stem retracts
- Actual value > Set point: actuator stem extends

### Increasing/decreasing (F03 - 1)

- Actual value < Set point: Actuator stem extends
- Actual value > Set point: Actuator stem retracts

### Actuator stem extended

With globe valves: Valve closed

With three-way mixing valves: Port A -> AB open, B -> AB closed (see Fig. 4)

With three-way diverting valves: Port AB -> A closed, AB -> B open

Port A -> AB open, B -> AB closed (see Fig. 4)

Port AB -> A closed, AB -> B open

### Actuator stem retracted

With globe valves: Valve open

With three-way mixing valves: Port A -> AB closed, B -> AB open (see Fig. 4)

With three-way diverting valves: Port AB -> A open, AB -> B closed

Port A -> AB closed, B -> AB open (see Fig. 4)

Port AB -> A open, AB -> B closed

Functions	Default	Configuration
F03 - Direction of stem action	0	F03 - 0: Increasing/increasing >> F03 - 1: Increasing/decreasing <<

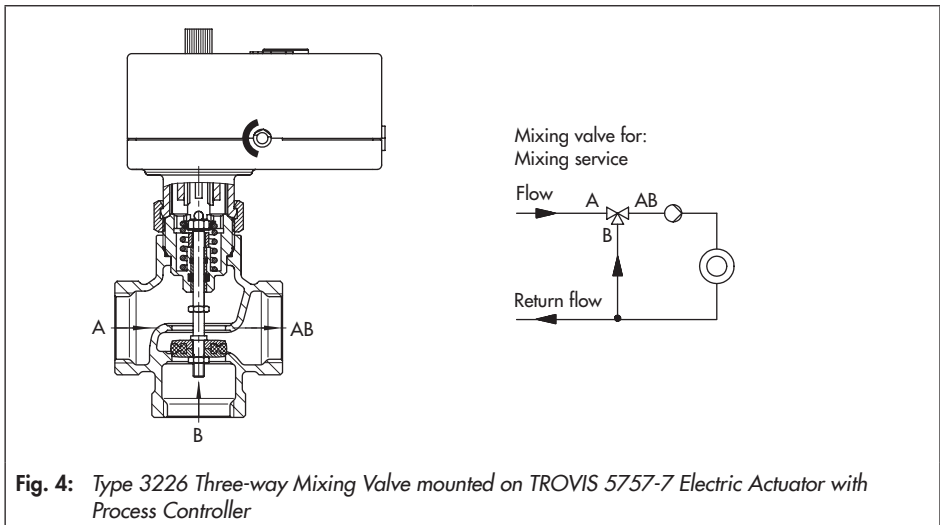


Fig. 4: Type 3226 Three-way Mixing Valve mounted on TROVIS 5757-7 Electric Actuator with Process Controller

## 2.10 Manual mode

### 2.10.1 Function block F13 for manual mode

The electric actuator with process controller can be transferred into the manual mode while the actuator is closed-loop operation over function block F13. In manual mode, the switching output (with F09 - 0) can be switched to 'I' (ON) and the position of the actuator stem can be controlled, depending on the configuration of function block F05 over the binary input BI1 or over the potentiometer.

#### Open loop control with binary input BI1 (F05 - 0)

- Increasing/increasing (F03 - 0): BI closed The actuator stem retracts.  
BI open The actuator stem extends.
- Increasing/decreasing (F03 - 1): BI closed The actuator stem extends.  
BI open The actuator stem retracts.

#### Open loop control with potentiometer (F05 - 1)

- Increasing/increasing (F03 - 0): 0 % The actuator stem extends.  
100 % The actuator stem retracts.
- Increasing/decreasing (F03 - 1): 0 % The actuator stem retracts.  
100 % The actuator stem extends.

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**i Note**

*If just one level is used for closed-loop control, the slider switch (► EB 5757-7) can be used to switch over to manual mode, provided the setting of function F13 varies in level #1 and level #2. For example, if the function block F13 - 0 is configured for level #1, the closed-loop control is performed according to the specifications in level #1 when the slider switch is positioned at #1. When the slider switch is positioned at #2, the electric actuator moves to manual operation, provided the function block F13 - 1 is configured in level #2.*

---

Functions	Default	Configuration
F13 Manual mode	0 <sup>1)</sup>	F13 - 1

<sup>1)</sup> The default setting F13 - 1 applies for level #2.

### 2.10.2 Manual level in TROVIS-VIEW

The electric actuator with process controller can be switched to the manual mode using the TROVIS-VIEW software.

Service folder (Functions > Manual level)

The following actions are possible in the manual level:

- Retract actuator stem
- Extend actuator stem
- Move the stem to position selected in manual mode  
(first enter the required value in Stem position in manual mode)
- LED operation
- Switching output

The actuator leaves the manual mode as soon as you exit the manual level or the online mode in TROVIS-VIEW.

### 2.10.3 Command mode

A memory pen can be configured in TROVIS-VIEW to be a command pen. The command pen allows the actuator stem to be moved to the upper or lower end positions.

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**i Note**

*The action of retracting/extending the actuator stem on inserting the command pen has absolute priority. The input signal is overridden.*

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The configuration of the memory pen is explained in ► [EB 6661](#).

### 2.10.4 Handwheel

See ► [EB 5757-7](#).



### 3 Device-specific readings and functions of the TROVIS-VIEW software

The TROVIS-VIEW software is explained in detail in the Operating Instructions ► EB 6661. Select [?] menu in the software to access these instructions or download them from the SAMSON website (► [www.samsongroup.com](http://www.samsongroup.com) > SERVICE & SUPPORT > Downloads > TROVIS-VIEW).

This section describes the device-specific readings and functions which are not covered in the Operating Instructions EB 6661.

#### 3.1 [Operating values] folder

The following operating values can be read in the [Operating values] folder in the TROVIS-VIEW software:

<p><b>[Measured values] folder</b></p> <ul style="list-style-type: none"> <li>Flow temperature</li> <li>Return flow temperature</li> <li>Outdoor temperature</li> </ul>
<p><b>[Output] folder</b></p> <ul style="list-style-type: none"> <li>Slider switch position</li> <li>Operating status</li> <li>Cause for operating status</li> <li>Positioning value</li> <li>Calculated actuator travel</li> </ul>
<p><b>[Binary signals] folder</b></p> <ul style="list-style-type: none"> <li>Binary input 1</li> </ul>
<p><b>[Limit contact] folder</b></p> <ul style="list-style-type: none"> <li>Actuator stem retracted</li> <li>Actuator stem extended</li> </ul>
<p><b>[Switching output] folder</b></p> <ul style="list-style-type: none"> <li>Remaining time for pump lag</li> <li>Remaining time until pump protection</li> <li>State</li> </ul>

### 3.1.1 [Closed loop control] folder

<b>[Set points] folder</b> Flow temperature set point Set point reduction due to return limit temperature being exceeded Effective gradient Effective level
<b>[Closed loop control] folder</b> P component I component

### 3.2 [Service] folder

The following operating values can be read in the [Service] folder in the TROVIS-VIEW software:

<b>[Operating states] folder</b> Error messages (if they exist)
<b>[Functions] folder</b> <b>[Manual level] folder</b> → See section 2.10.2 for manual level <b>[Functions] folder</b> → Perform reset → Load default settings in actuator → Start transit time measurement

**[Status messages] folder**

**[Actuator] folder**

Firmware version

Serial number

Device information

Manufacturing parameters

**[Operation] folder**

Operating hours

Operating hours at excess temperature

Temperature inside device

**[Statistics] folder**

**[Device failures counters] folder**

Supply voltage activated

Program interruptions

**[Alarms counters] folder**

Sensor failures

Collective error messages

**[Binary signals counters] folder**

Binary input 1 activated

Switching output activated

### 3.3 Memory pen

The memory pen serves as a data carrier and is able to load and store data in its non-volatile memory.

Used in conjunction with the TROVIS 5757-7 Electric Actuator with Process Controller, various functions of the memory pen are available:

- **Read data from the memory pen**
- **Write data to the memory pen**
- **Command mode** (retract actuator stem, extend actuator stem, manual operation using potentiometer or binary input)
- **Data logging** to save the following data:
  - Flow temperature
  - Return flow temperature
  - Binary input state
  - Switching output state
  - Position of the slider switch
  - Flow temperature set point
  - Set point reduction
  - Operating state
  - Cause for operating status
  - Remaining time for pump lag
  - Remaining time until pump protection
  - Status of limit contact
  - Current position of the actuator stem
  - Current correction value for closed loop control
  - P component from closed loop control
  - I component from closed loop control
  - Temperature inside device

The data are logged until the memory capacity of the memory pen is full.

Data in the memory pen can be saved as a data logging file using the TROVIS-VIEW software.

**The configuration of the memory pen is explained in ► EB 6661.**

## 4 Configuration list and customer-specific data

### Function block list

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

The function blocks F01 to F13 have the following listed functions.

F = Function block      WE = Default setting

F	Function	WE	Meaning
01	Control mode	1	0 – Fixed set point control 1 – Control with reference variable
02	Reference variable (only effective when F01 - 1)	0	0 – Outdoor sensor 1 – Room sensor
03	Operating direction	0	0 – Increasing/increasing >> 1 – Increasing/decreasing <<
04	Delayed outdoor temperature (only effective when F01 - 1 and F02 - 0)	0	0 – Without delay 1 – With delay
05	Potentiometer input	0	0 – Inactive, binary input 1 active 1 – Active
06	Resistance range of potentiometer (only effective when F05 - 1)	0	0 – Type 5257-71 Room Panel (1000 to 1100 Ω) 1 – Type 5257-2 with remote adjuster (1000 to 2000 Ω)
07	Function of potentiometer (only effective when F02 - 0 and F05 - 1)	0	0 – Heating characteristic level shift 1 – Gradient shift
08	Function of binary input 1 (only effective when F05 - 0)	0	0 – OFF with frost protection 1 – Reduced operation
09	Function of switching output	0	0 – Circulation pump (heating) 1 – Demand (ON in rated operation)
10	Pump protection (only effective with F09 = 0)	1	0 – Not active 1 – Active
11	Return flow temperature sensor	1	0 – Inactive, binary input 2 active 1 – Active, with return flow temperature limitation
12	Function of binary input 2 (only effective when F11 - 0)	0	0 – OFF with frost protection 1 – Reduced operation
13	Manual mode	0 <sup>1)</sup>	0 – Not active 1 – Active

## Configuration list and customer-specific data

### Parameter list

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

The parameters have the setting ranges as listed below.

P = Parameter      WE = Default setting

P	Parameters	WE	Adjustment range
01	Flow temperature set point	70 °C	20 to 120 °C
02	Flow temperature set-back in reduced operation	15 K	0 to 50 K
03	Min. flow temperature	20 °C	0 to 120 °C
04	Max. flow temperature	120 °C	20 to 150 °C
05	Heating characteristic gradient	1.6	0.2 to 3.2
06	Heating characteristic level	0 K	-30 to +30 K
07	Gradient shift range via potentiometer	1.0	0.0 to 1.5
08	Level shift range via potentiometer	15 K	0 to 30 K
09	Kp flow temperature control	2.0	0.1 to 50.0
10	Tn flow temperature control	120 s	0 to 999 s
11	Actuator transit time Ty	24.0 s	10.0 to 240.0 s
12	Dead band (switching range)	2.0 %	0.5 to 5.0 %
13	Max. return flow temperature	50 °C	10 to 90 °C
14	Kp return flow temperature limitation	1.0	0.1 to 50.0
15	Tn return flow temperature limitation	400 s	0 to 999 s
16	Delay time for outdoor temperature	3.0 °C/h	1 to 6 °C/h
17	Outdoor temperature limit value at rated operation	22 °C	0 to 50 °C
18	Outdoor temperature limit value at reduced operation	15 °C	0 to 50 °C
19	Room temperature set point at rated operation	20 °C	10 to 40 °C
20	Room temperature set point at reduced operation	15 °C	10 to 40 °C
21	Max. room temperature boost for switch-off	2 K	1 to 6 K
22	Time interval for flash adaptation	10 min	0 to 100 min
23	Pump lag time	5 min	1 to 999 min

Customer-specific data

<b>Station</b>	
<b>Operator</b>	
<b>SAMSON office</b>	

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

<sup>1)</sup> The default setting F13 - 1 applies for level #2.

Parameters				
		Setting		
P	WE	#1	#2	Adjustment range
01	70 °C			20 to 120 °C
02	15 K			0 to 50 K
03	20 °C			0 to 120 °C
04	120 °C			20 to 150 °C
05	1.6			0.2 to 3.2
06	0 K			-30 to +30 K
07	1.0			0.0 to 1.5
08	15 K			0 to 30 K
09	2.0			0.1 to 50.0
10	120 s			0 to 999 s
11	24.0 s			10.0 to 240.0 s
12	2.0 %			0.5 to 5.0 %
13	50 °C			10 to 90 °C
14	1.0			0.1 to 50.0
15	400 s			0 to 999 s
16	3.0 °C/h			1 to 6 °C/h
17	22 °C			0 to 50 °C
18	15 °C			0 to 50 °C
19	20 °C			10 to 40 °C
20	15 °C			10 to 40 °C
21	2 K			1 to 6 K
22	10 min			0 to 100 min
23	5 min			1 to 999 min



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