

# Controller with Electric Actuator Type 5757-7



## Mounting and Operating Instructions

### EB 5757-7 EN

Firmware version 1.0x

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### General safety instructions



- ▶ *Assembly, start-up and operation of this device may only be performed by trained and experienced personnel familiar with the product. 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.*
- ▶ *Any hazards which could be caused in the connected valve by the process medium, operating pressure or moving parts are to be prevented by means of the appropriate measures.*
- ▶ *Proper transportation and storage are assumed.*
- ▶ *The actuators has been designed for use in electrical power installations. For wiring and maintenance, you are required to observe the relevant safety regulations. The actuator must be protected against unintentional reconnection of the power supply.*
- ▶ **Note:**  
*Actuators with a CE marking fulfill the requirements of the Directives 94/9/EC and 89/336/EEC.  
The Declaration of Conformity is available on request.*

## 1 Design and principle of operation

The Type 5757-7 consists of a digital controller integrated into the housing of an electric actuator.

The combination is especially designed for heating applications as well as for fixed set point control of heating systems in small to medium-sized buildings. It is particularly suitable for mounting to SAMSON Type 3222, Type 3222 N, Type 2488 and Type 3267 Valves (DN 15 to 25) and to special versions of Type 3226 and Type 3260 Valves.

The digital controller is connected to a flow sensor on the input side, which can be optionally upgraded by a return flow, outdoor or room sensor.

In addition to the Pt 1000 input, the digital controller has a potentiometer input (1000 to 1100  $\Omega$  or 1000 to 2000  $\Omega$ ) to measure the flow temperature. This input influences the heating characteristic in the case of outdoor temperature compensated control and the room temperature set point in the case of fixed set point control with room temperature influence.

Heating characteristic and set point parameters can be changed over the TROVIS-VIEW Operator Interface.

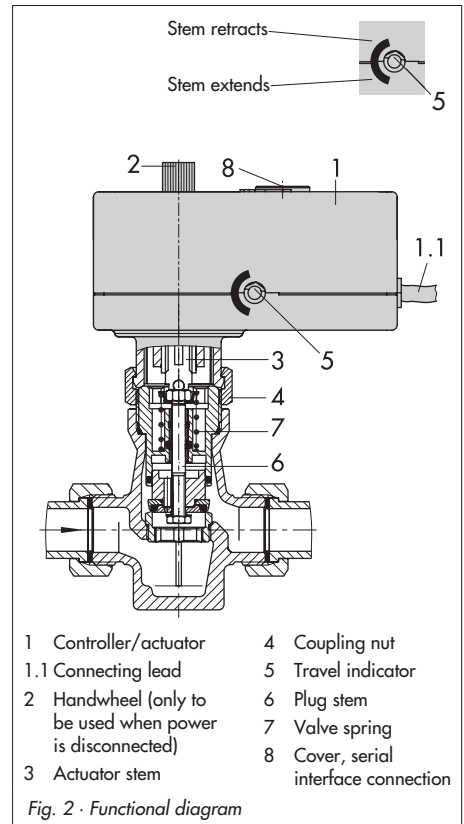
The output signal of the integrated digital controller is applied as a three-point stepping signal to the synchronous motor of the actuator. The signal is transferred over the connected gear to the actuator stem (3) and used as the positioning force.

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

The actuator is mounted onto the valve using a coupling nut (4).

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

The valve can be moved to any position when the **power supply is disconnected** by the handwheel (2). Travel and direction of action can be read off the travel indicator (5) on the side of the actuator housing.



## 1.1 Accessories

Heating applications, see section 5

- ▶ **Type 5267-2 Pt 1000 Contact Sensor**  
Permissible temperatures:  
Medium     -20 to 120 °C  
Ambient     -20 to 120 °C  
Degree of protection IP 42
- ▶ **Type 5257-2 Pt 1000 Room Sensor with potentiometer (remote adjuster)**  
Permissible temperatures:  
Medium     -35 to 70 °C  
Ambient     -35 to 70 °C  
Degree of protection IP 20
- ▶ **Type 5257-7 Room Panel with potentiometer and mode selector switch**  
Permissible temperatures:  
Medium     -20 to 60 °C  
Ambient     -20 to 60 °C  
Degree of protection IP 30
- ▶ **Type 5227-2 Pt 1000 Outdoor Sensor**  
Permissible temperatures:  
Medium     -35 to 85 °C  
Ambient     -35 to 85 °C  
Degree of protection IP 44

Communication, refer to section 6

- ▶ **TROVIS-VIEW** Configuration and Operator Interface (6661-1066) for Type 5757-7 Controller with Electric Actuator
- ▶ **Hardware package**  
Accessories for direct and indirect data transmission (including a memory pen, connecting cable and modular adapter), order no. 1400-7704
- ▶ **Memory pen**  
Indirect data transmission, order no. 1400-7697

## 1.2 Technical data

Type 5757-7 Controller with Electric Actuator	
Temperature sensor	Max. 3 x Pt 1000
Setting range	0 to 150 °C
Potentiometer input	1000 to 1100 Ω or 1000 to 2000 Ω
Binary output	230 V/50 Hz/1 A Circulation pump or external heat demand
Rated travel	6 mm
Transit time for rated travel	20 s
Nominal thrust	300 N
Supply voltage	230 V (±10 %) / 50 Hz
Power consumption	Approx. 3 VA
Permissible temperatures	
Ambient	0 to 50 °C
Storage	-20 to 70 °C
Degree of protection	IP 42
Mounting position	Any, but not suspended
Noise immunity	EN 61000-6-2
Noise emission	EN 61000-6-3
Weight	Approx. 0.7 kg

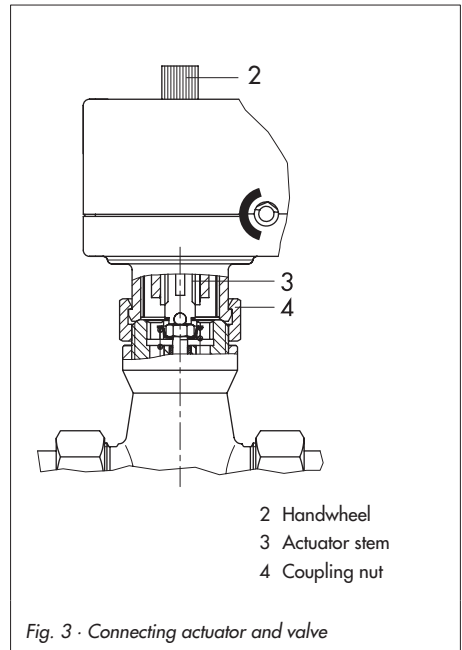
## 2 Connection to the valve

The actuator has a force-locking connection to the valve in de-energized state.

- ▶ Turn the handwheel (2) counterclockwise to retract the actuator stem as far as it will go.
- ▶ Place the actuator on the valve connection and screw coupling nut (4) tight (tightening torque 20 Nm).

### 2.1 Mounting position

Any mounting position may be used, however, may not be installed in a suspended position.



### 3 Electrical connection



*When installing electric lines, you are required to observe the regulations governing electrical power plant installation according to DIN VDE 0100 as well as the regulations of your local power supply company.*

*Use a suitable power supply which guarantees that no dangerous voltages reach the device in standard operation or in case of a fault in the system or any other system parts.*

The connected sensors are monitored for line breakages.

A fault in the line of a sensor is indicated by the red LED blinking slowly.



#### **Caution!**

*Connect the actuator to the electrical network only after the power supply has first been switched off. Make sure the power cannot be switched on unintentionally!*

*The pump output L' is non-floating (230 V~).*

The controller with electric actuator requires a Pt 1000 temperature sensor (e.g. Type 5267-2) to be connected to measure the flow temperature.

Depending on the control task, an outdoor sensor (e.g. Type 5227-2) or a room sensor (e.g. Type 5257-2) or a room panel (Type 5257-7 only) can be connected. Combining one of these sensors with a return flow sensor (e.g. Type 5267-2) is usually possible.

Additionally, the controller with electric actuator has a potentiometer input 1000 to 1100  $\Omega$  (e.g. Type 5257-7) or 1000 to 2000  $\Omega$  (e.g. Type 5257-2). This input is used to correct the room set point ( $\pm 5$  K) in case of fixed set point control with room temperature influence (see section 5.2). On using an outdoor sensor, it can change the adjusted heating characteristic (see section 5.1).

The non-floating pump output can alternatively be used as an binary output for an external request for heat demand.

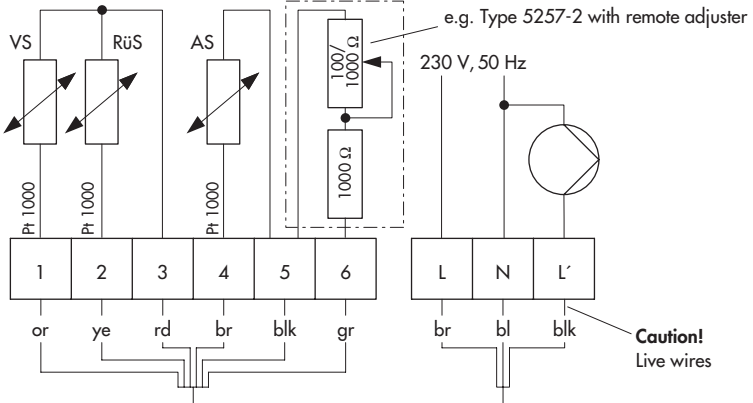
- ▶ Perform the electrical connection depending on the heating application according to one of the following wiring diagrams (Figs. 4 and 5).

As soon as the actuator is connected to the power supply, the initialization procedure starts.

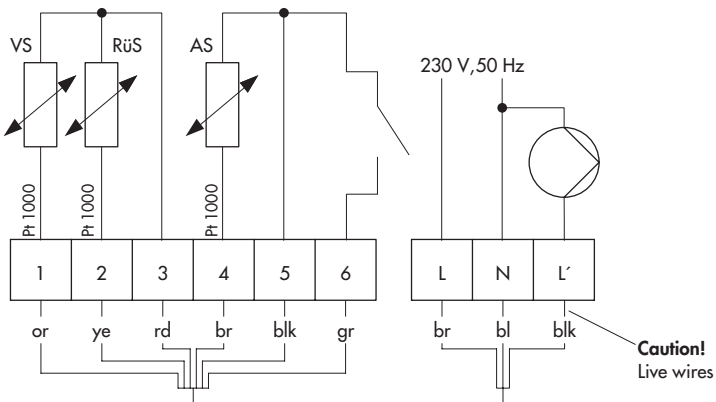
The actuator stem extends (with operating direction selected for globe valves) and the red and yellow LEDs are illuminated located under the cover on top of the actuator.

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





Application with flow, return flow, and outdoor sensors as well as potentiometer to adjust the set point

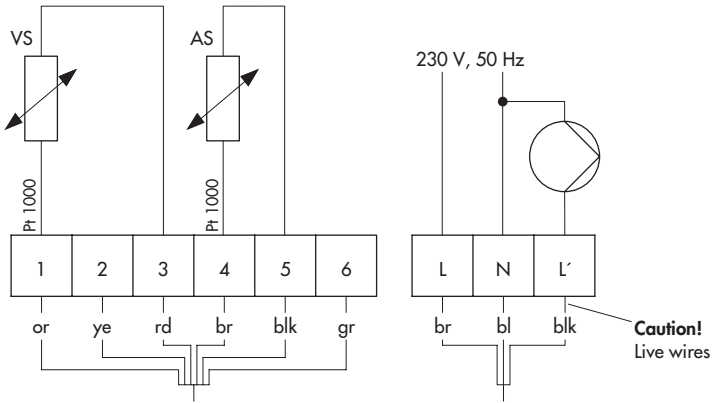


Application with flow, return flow, and outdoor sensors as well as binary input to switch between operating modes

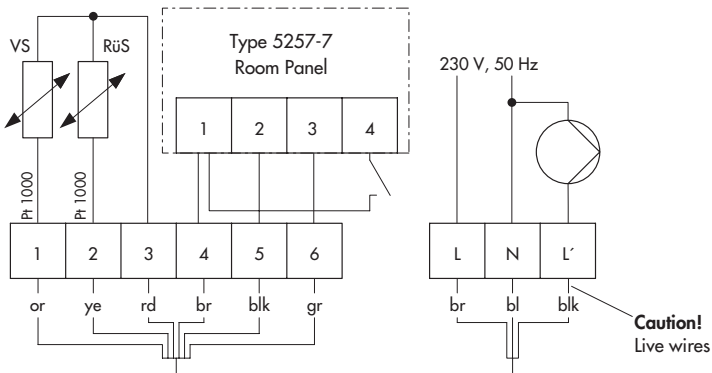
or	orange	br	brown	br	brown
ye	yellow	blk	black	bl	blue
rd	red	gr	green	blk	black

Fig. 4 · Wiring diagrams

**Note:** Terminals at point of installation, not included in scope of delivery



Application with flow sensor and outdoor sensors



Application with flow, return flow, and room sensors with mode selector switch and set point adjuster

- |    |        |     |       |     |       |
|----|--------|-----|-------|-----|-------|
| or | orange | br  | brown | br  | brown |
| ye | yellow | blk | black | bl  | blue  |
| rd | red    | gr  | green | blk | black |

Fig. 5 · Wiring diagrams

**Note:** Terminals at point of installation, not included in scope of delivery

## 4 Dimensions in mm

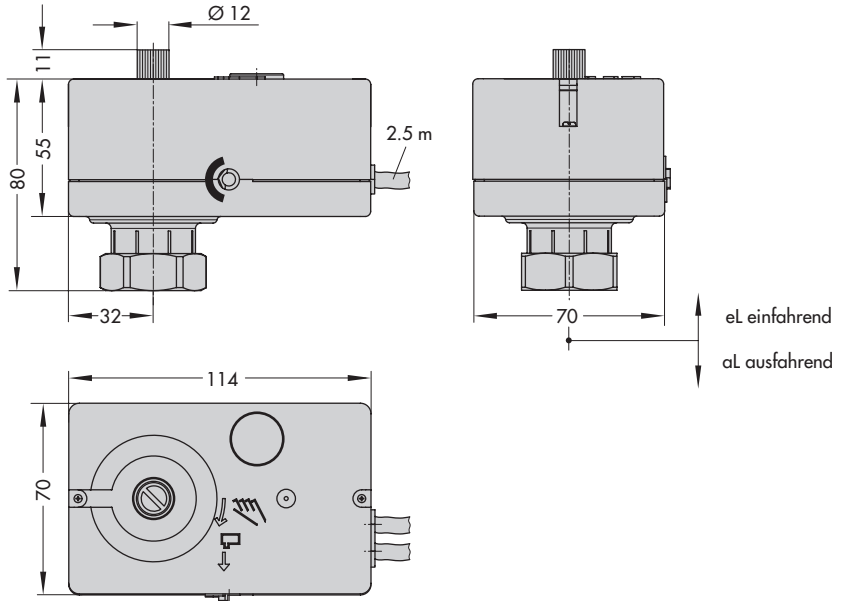
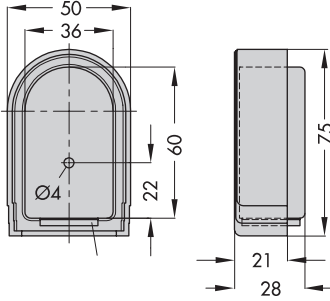
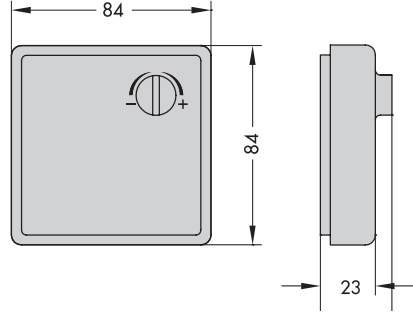


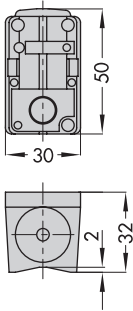
Fig. 6 · Type 5757-7 Controller with Electric Actuator



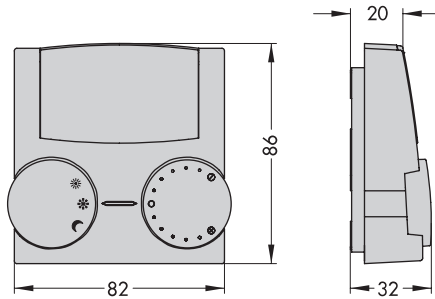
Type 5227-2 Outdoor Sensor,  
Pt 1000  
Color: RAL 9016



Type 5257-2 Room Sensor, Pt 1000  
(remote adjustment)  
Color: RAL 9010



Type 5267-2 Contact  
Sensor, Pt 1000  
(flow and return flow  
temperature measurement)



Type 5257-7 Room Panel, Pt 1000  
Color: Cover and knobs RAL 9016 · Base RAL 7047

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

Fig. 7 · Accessories for heating applications

## 5 Functions

Functions and parameters are entered in the TROVIS-VIEW Operator Interface (see section 6).

### 5.1 Outdoor temperature compensated control

In the outdoor temperature compensated control, the flow temperature ( $t_{VL}$ ) is automatically adjusted in relationship to the outdoor temperature ( $t_A$ ). The heating characteristic in the controller defines the set point for flow temperature as a function of the outdoor temperature (Fig. 8).

Basically, the following correlation exists: If the outdoor temperature drops, the flow temperature rises. 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 parallelly upwards or downwards.

In reduced operation, the flow temperature is reduced by the amount set in *Flow temperature setback in reduced operation*. The *Maximum flow temperature* and *Minimum flow temperature* parameters limit the flow temperature range. **Return flow temperature limitation** (see section 5.5) is an exception as it can reduce the flow temperature without restriction down to 20 °C flow temperature set point.

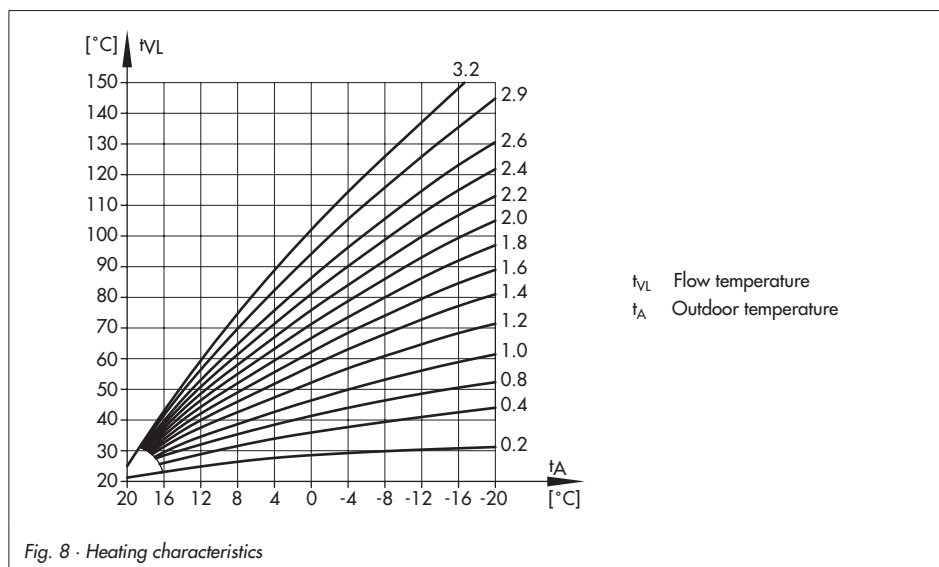
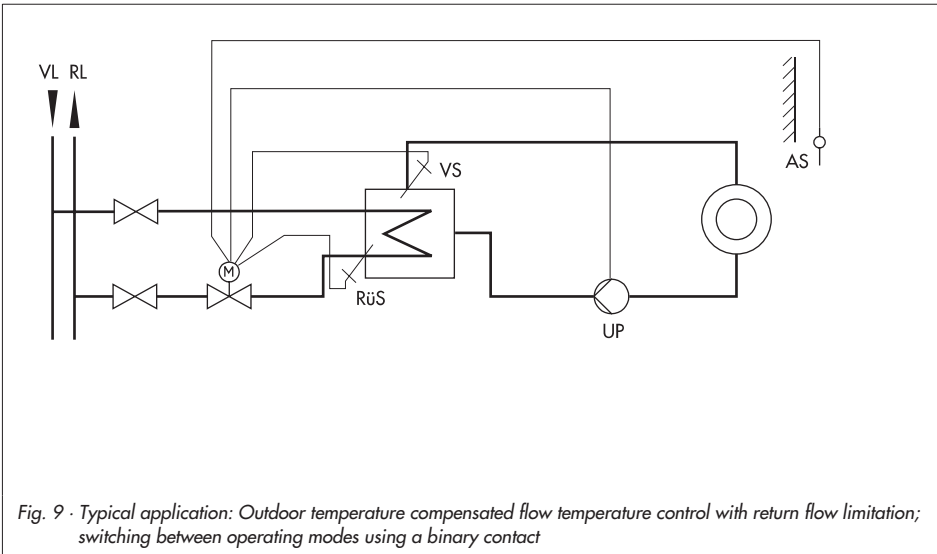


Fig. 8 · Heating characteristics

Functions	WE	Configuration
F01 – Control mode	1	F01 - 1
F02 – Selecting the reference variable	0	F02 - 0
Parameters	WE	Range of values
P02 – Flow temperature set-back in reduced operation	15 K	0 to 50 K
P03 – Min. flow temperature	20 °C	0 to 150 °C
P04 – Max. flow temperature	120 °C	0 to 150 °C
P05 – Heating characteristic gradient	1.6	0.2 to 3.2
P06 – Heating characteristic level	0 K	-30 to 30 K

**Examples for setting the heating 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



### 5.1.1 Override using potentiometer

The potentiometer input (e.g. by connecting Type 5257-2 with remote adjustment) can change either the heating characteristic level or gradient, depending on the configuration. The parameters *Gradient shift range via potentiometer* and *Level shift range via potentiometer* are used to adjust the range ( $\pm$ ) in which the influence is to take place.

Functions	WE	Configuration
F05 – Potentiometer input	0	F05 - 1
F06 – Resistance range of potentiometer	0	F06 - 1 (Type 5257-2)
F07 – Potentiometer function	0	F07 - 0: Level shift F07 - 1: Gradient shift

Parameters	WE	Range of values
P07 – Gradient shift range via potentiometer	1.0	0.0 to 1.5 (only with F 07 - 1)
P08 – Level shift range via potentiometer	15 K	0 to 30 K (only with F 07 - 0)

#### Examples:

- ▶ **Potentiometer function 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 ( $\pm 1.0$ ).
- ▶ **Potentiometer function F07 - 1**  
*Heating characteristic level* P06 = 0 K  
*Level shift range via potentiometer* P08 = 15 K  
 ⇒ The level can be adjusted between -15 K and +15 K ( $\pm 15$  K). The limits adjusted for the flow temperature still apply.

### 5.1.2 Summer mode

Should the outdoor temperature exceed 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 after the *Pump lag time* has elapsed.

The heating is switched on again when the outdoor temperature falls below the set point.

Parameters	WE	Range of values
P17 – Outdoor temperature limit value at rated operation	22 °C	0 to 50 °C
P18 – Outdoor temp. limit value at reduced operation	15 °C	0 to 50 °C
P22 – Pump lag time	5 min	1 to 999 min

### 5.1.3 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 decreases, increases or increases and 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* of 3 °C/h, the linear adaptation would take =  $\frac{12\text{ °C}}{3\text{ °C/h}} = 4\text{ h}$ .

**Note!**

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

Functions	WE	Configuration
F04 – Delayed outdoor temperature	0	F04 - 1
Parameter	WE	Range of values
P16 – Delayed value for outdoor temp. adaptation	3 °C/h	1 to 6 °C/h

## 5.2 Fixed set point control

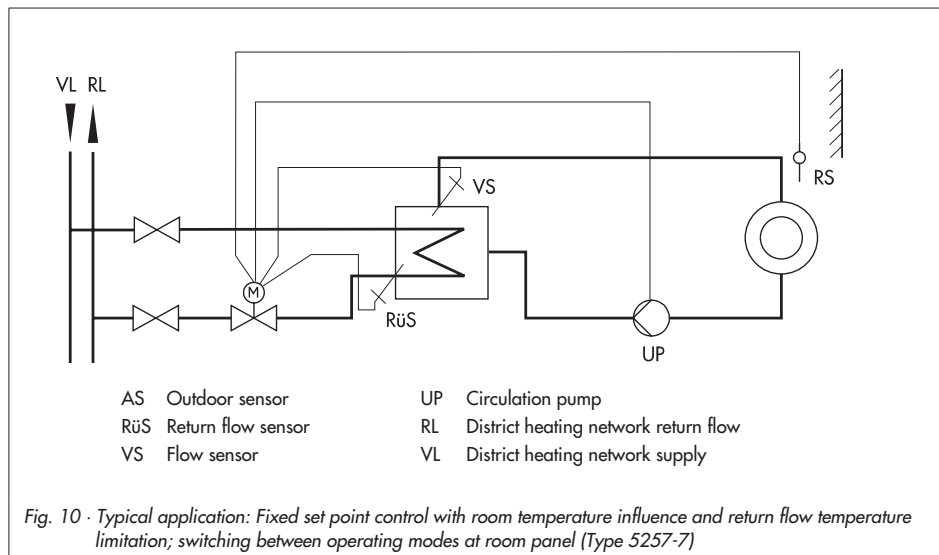
The flow temperature is controlled to the fixed value in *Flow temperature set point*. In reduced operation, the flow set point is used for the control reduced by the amount in *Flow temperature set-back in reduced operation*. A connected outdoor sensor does not have any effect on the control.

Functions	WE	Configuration
F01 – Control mode	1	F01 - 0
Parameters	WE	Range of values
P01 – Flow temperature set point	70 °C	0 to 150 °C
P02 – Flow temp. set-back in reduced operation	15 K	0 to 50 K

### 5.2.1 Room temperature influence

On connecting a **Type 5257-7 Room Panel**, the *Flow temperature set point* is influenced by the room temperature:





The heat supply is matched to the required amount over a permanently active flash adaptation. The room sensor is polled at regular intervals ( $T_r$  Flash adaptation). If the room temperature is lower than the *Room temperature limit at rated operation* or *Room temperature limit 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 *Maximum room temperature boost*, 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.

In the event, the parameter  $P12 - T_r$  Flash adaptation is set to 0, the control is a pure fixed set point control without room temperature influence.

### Note!

We recommend not to select a value that is too low for parameter  $P12$ . 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.

**Note!**

The set points for room temperature entered in TROVIS-VIEW can be reduced or raised by 5 K at the room panel.

Functions	WE	Configuration
F01 – Control mode	1	F01 - 1
F02 – Selecting the reference variable	0	F02 - 1

Parameters	WE	Range of values
P01 – Flow temperature set point	70 °C	0 to 150 °C
P12 – T <sub>r</sub> Flash adaptation	10 min	0 to 100 min
P19 – Room temperature limit at rated operation	20 °C	10 to 40 °C
P20 – Room temperature limit at reduced operation	15 °C	10 to 40 °C
P21 – Maximum room temperature boost	1 K	1 to 6 K
P22 – Pump lag time	5 min	1 to 999 min

## 5.3 Operating modes

### 5.3.1 Switchover via binary input

The active binary input determines which operating mode is used. Depending on the configuration, the following applies:

- ▶ F08 - 0    Open binary input – Rated operation  
                  Closed binary input – OFF/Frost protection
- ▶ F08 - 1    Open binary input – Rated operation  
                  Closed binary input – Reduced operation

**Note!**

It is not possible to connect the Type 5257-7 Room Panel at the same time in this case (see section 5.3.3 on Switchover via binary input in room panel).

Functions	WE	Configuration
F05 – Potentiometer input	0	F05 - 0
F08 – Binary input function	0	F08 - 0: Rated operation + OFF/Frost protect. F08 - 1: Rated and reduced operation

### 5.3.2 Switchover via room panel

The operating mode of the controller is determined at the mode selector switch on the Type 5257-7 Room Panel:

- ☼ Rated operation (day mode)
- ☾ Reduced operation (night mode)
- ❄ OFF/Frost protection

Functions	WE	Configuration
F05 – Potentiometer input	0	F05 - 1
F06 – Resistance range of potentiometer	0	F06 - 0 (Type 5257-7 Room Panel)

### 5.3.3 Switchover via binary input in room panel

The terminals 1 and 4 of the Type 5257-7 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	WE	Configuration
F05 – Potentiometer input	0	F05 - 1
F06 – Resistance range of potentiometer	0	F06 - 0 (Type 5257-7 Room Panel)

### 5.4 Frost protection

If the controller is in the operating mode OFF/Frost protection (see section 5.3), frost protection measures are initiated if the following applies:

- ▶ Outdoor temperature < 3 °C (outdoor temperature compensated control) or flow temperature < 15 °C (fixed set point control with room temperature influence)

The circulation pump is switched off and the flow temperature is kept at 20 °C.

### 5.5 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 network flow temperatures are predetermined. The flow temperature set point is reduced when the *Maximum return flow temperature* measured at the return flow sensor exceeds the limit temperature:

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

The return flow is not limited if the parameter setting *Tn Return flow temperature limitation* = 0 even if a return flow sensor is connected.

Function	WE	Configuration
F11 – Return flow temperature sensor	1	F11 - 1
Parameter	WE	Range of values
P13 – Maximum 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

## 5.6 Pump forced operation

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

Functions	WE	Configuration
F09 – Binary output function	0	F09 - 0
F10 – Anti-block protection of pump	1	F10 - 1

## 5.7 External request for heat demand

The controller with 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 binary output is not configured as a pump output.

Function	WE	Configuration
F09 – Binary output function	0	F09 - 1

## 5.8 Control principle

The controller with electric actuator functions with a PI algorithm (three-point stepping control). The valve reacts to pulses which the digital controller issues when a system deviation occurs. In particular, the length of the first pulse depends on the size of the system deviation and the selected gain  $K_p$  flow temperature control (the pulse length increases as the  $K_p$  rises). Pulse lengths and intervals change until the system deviation is eliminated. The interval between individual pulses is influenced considerably by the reset time  $T_n$  flow temperature control (the interval time increases as the  $T_n$  rises).

The valve transit time  $T_y$  actuator transit time at rated travel reflects the time that the valve needs to move through its travel range from 0 to 100 %.

### Note!

Do not change the default setting WE of P11 ( $T_y = 25$  s) for this device.

Parameters	WE	Range of values
P09 – $K_p$ flow temperature control	2.0	0.1 to 50.0
P10 – $T_n$ flow temperature control	120 s	0 to 999 s
P11 – $T_y$ actuator transit time at rated travel	25 s	10 to 240 s

## 5.9 Direction of action

Specify the direction of action depending on the valve used.

Function	WE	Configuration
F03 – Direction of stem action	0	F03 - 0: SAMSON globe valve F03 - 1: SAMSON three-way valve

### Globe valve (F03 - 0)

- ▶ Actual value < Set point: Actuator stem retracts (globe valve opens)
- ▶ Actual value > Set point: Actuator stem extends (globe valve closes)

### Three-way mixing valve (F03 - 1)

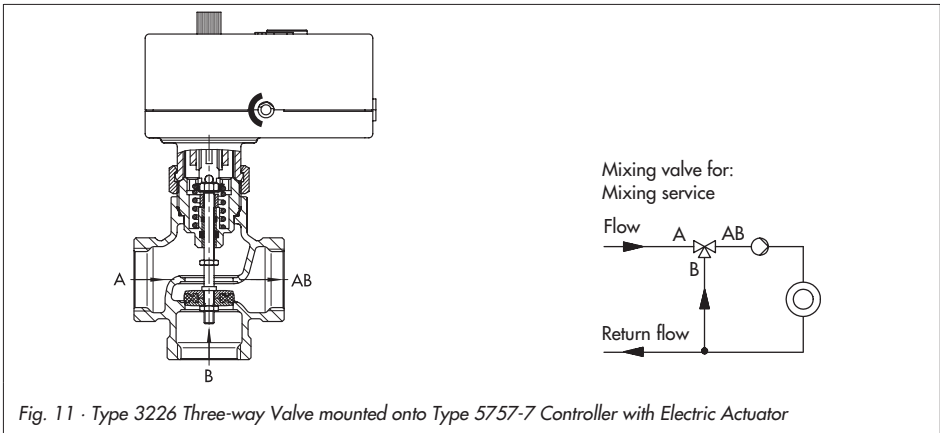


Fig. 11 · Type 3226 Three-way Valve mounted onto Type 5757-7 Controller with Electric Actuator

- ▶ Actual value < Set point: Actuator stem extends (three-way mixing valve opens port A → AB and closes port B → AB)
- ▶ Actual value > Set point: Actuator stem retracts (three-way mixing valve closes port A → AB and opens port B → AB)

## 6 Configuration and operation using TROVIS-VIEW interface

### 6.1 General

The TROVIS-VIEW software allows various smart SAMSON devices to be configured over a common operator interface. It consists of the operator interface, communication server, and the device-specific module. The software has a Windows Explorer look and feel.

The entire configuration of the controller with electric actuator can be performed over the TROVIS-VIEW Configuration and Operator Interface.

The TROVIS-VIEW software containing online help and the database module for Type 5757-7 Controller with Electric Actuator is delivered on a CD-ROM (order number 6661-1066).

Software updates are available in Internet (<http://www.samson.de>) in Products > Support and downloads.

---

#### **Note!**

*The following instructions include a description on the key functions of the TROVIS-VIEW software in conjunction with controllers with electric actuators. Refer to the online help in the ? menu for a detailed description.*

---

#### 6.1.1 System requirements

##### Hardware requirements

- ▶ PC with Pentium II processor or equivalent (300 MHz or higher), 500 MHz recommended
- ▶ Serial interface or USB/RS-232 adapter
- ▶ Min. 64 MB RAM, 96 MB RAM recommended
- ▶ Min. 150 MB free hard disk space plus approx. 10 to 15 MB additional hard disk space per SAMSON module
- ▶ SVGA graphic card (min. 800 x 600)
- ▶ CD-ROM drive

##### Software

- ▶ Operating system: Windows 98, ME, NT 4.xx, SP6, 2000 SP2, XP
- ▶ Microsoft.NET Framework Version 1.1 (included on the installation CD-ROM)
- ▶ Internet browser: MS Internet Explorer, version 6.0 and higher

## 6.2 Installing TROVIS-VIEW software

1. Insert the installation CD-ROM to start the installation program.  
Once inserted, the CD-ROM usually starts the installation program automatically, depending on the configuration of the operating system. If the program does not start automatically, double-click setup.exe in the root directory of the CD-ROM in order to install TROVIS-VIEW.
2. Follow the on-screen prompts and instructions of the installation program.  
The TROVIS-VIEW Operator Interface can be used for different SAMSON devices. Note that the installation program also offers you the option of installing a demo module. To use the software without restrictions, the software needs to be activated by entering a CD key as follows:
  3. After installation, a dialog box will appear, prompting you to enter the CD key, which you will find on the cover of the original CD-ROM.  
Once you have entered the correct CD key and initiated the activation process, a request code will be automatically generated which contains computer identification details.
  4. The *Activation* dialog box will come up displaying the generated request code and an Internet link to SAMSON's activation server. Enter the request code and a unique activation code will then be generated and displayed.  
([http://support.samson-ag.com:8082/activate\\_eng.html](http://support.samson-ag.com:8082/activate_eng.html))
  5. Enter this activation code in TROVIS-VIEW's *Activation* dialog box.  
The software is now ready for use without any restrictions in the purchased scope.

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### **Note!**

*Refer to the readme.txt file in the root directory of the CD-ROM for further information on installation, software updates and current system requirements.*

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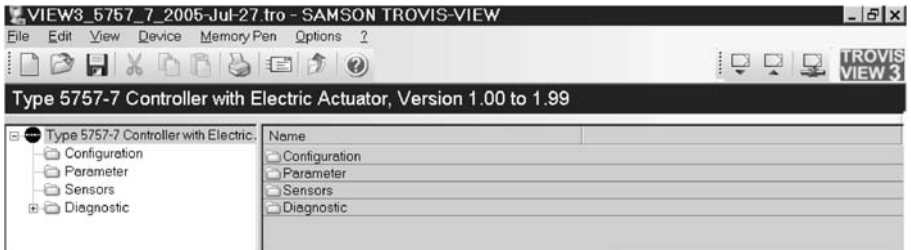
### 6.3 Starting TROVIS-VIEW and performing settings

You can perform the settings in TROVIS-VIEW either when the actuator is connected (online) to the PC or without direct connection (offline) (refer to section 7).

**Note!**

When the device is not connected, the default settings appear on the operator interface or, alternatively, a stored TROVIS-VIEW file (\*.tro) can be loaded and overwritten by selecting Open in File menu.

1. Start TROVIS-VIEW. The operator interface appears with menubar and toolbar as well as various folders.



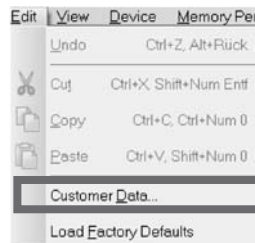
2. In *Options* menu, select *Languages* to change the interface language.

**Note!**









Languages in gray are not available.








3. Select *Customer data* in *Edit* menu to enter data relevant to the plant, e.g. project name, plant location, operator.
4. Select *Load Factory Defaults* in *Edit* menu (see sections 8.1 and 8.2) if you want to load default settings onto the operator interface.



Properties of data points are indicated by icons on clicking on a folder:

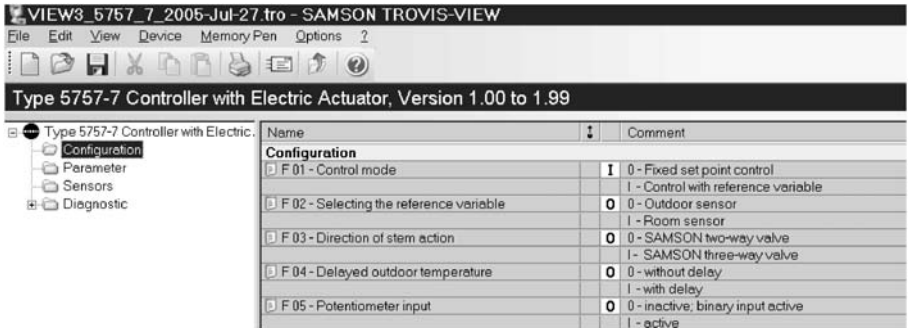
Icon	Meaning
	Data cannot be changed
	Data can be changed
	Data point can be executed
	Data point is user-defined
	Mark to indicate error
	Value has exceeded maximum limit
	Value has fallen below minimum limit
	Connection to the device is interrupted or there is a write protection error

Source of data:

	Value has been modified manually
	Value has been uploaded from the controller with electric actuator. In online mode, <sup>x</sup> in the icon indicates a value has been updated.
	Value originates from a stored file
	Value has been adopted from memory pen
	Value has been changed by the software

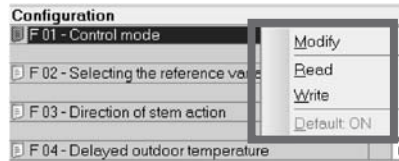
### 6.3.1 Activating/deactivating functions

1. Click on *Configuration* folder to view the function block settings.



2. Double-click the function block status (0 or I) to change the status of the function.

Right-click on a row to open pop-up window to modify configuration settings:

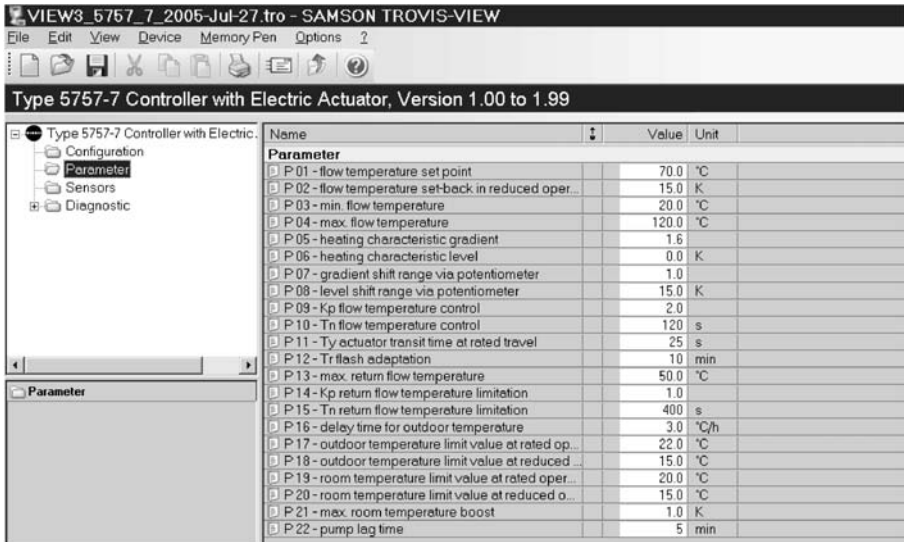


- Modify*      To change the status of the function block.
- Read*        Uploads status of the function block from device.
- Write*        Downloads status of the function block to device.
- Default: ...*    Resets function block to default setting  
(setting in gray to indicate that the status of the function block is the same as the default setting)

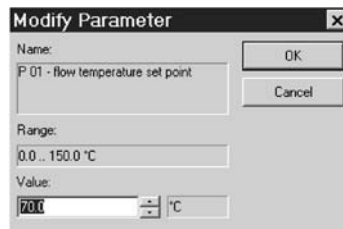
### 6.3.2 Setting parameters

1. Click on *Parameter* folder to view the parameter settings.

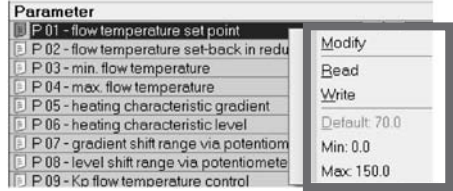
**Note!** The parameters listed in the screenshot below are default settings.



2. Double-click on the required parameter to open pop-up window to modify parameter settings.



Right-click on the required parameter to open pop-up window to modify parameter settings:



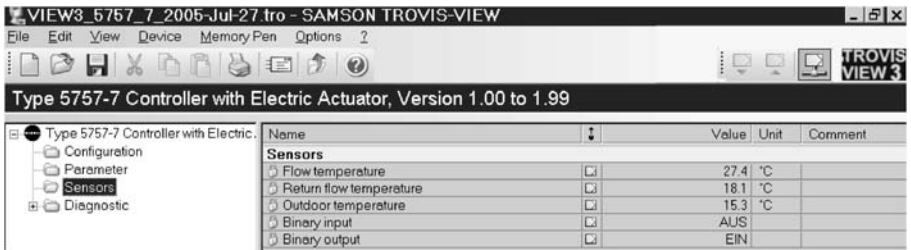
- Modify** Opens pop-up window to modify parameter settings.
- Read** Uploads parameter value from device.
- Write** Downloads parameter value to device.
- Default: ...** Resets parameter to default setting (setting in gray to indicate that the parameter value is the same as the default setting)
- Min ...** Set parameter to the displayed minimum value.
- Max ...** Set parameter to the displayed maximum value.

### 6.3.3 Reading operational information

**Note!**

Operational information can only be read when TROVIS-VIEW is directly connected to the controller with electric actuator (i.e. in online mode, refer to section 7).

- ▶ Select **Sensors** folder to display actual data measured by the connected sensors as well as from the binary input and output.



- ▶ Select the *Information* subfolder in the *Diagnostics* folder to display information concerning the actuator.

VIEW3\_5757\_7\_2005-Jul-27.tro - SAMSON TROVIS-VIEW

Type 5757-7 Controller with Electric Actuator, Version 1.00 to 1.99

Name	Value
<b>Device</b>	
Flow sensor	1.00
Serial number	6
<b>Identification</b>	
Device information	5757-7, 1.00
Production parameter	4. Juli 2005


- ▶ Select the *Error* subfolder in the *Diagnostics* folder to display current error messages.

VIEW3\_5757\_7\_2005-Jul-27.tro - SAMSON TROVIS-VIEW

Type 5757-7 Controller with Electric Actuator, Version 1.00 to 1.99

Name	
<b>Sensor failure</b>	
Flow sensor	<input type="checkbox"/> <input type="checkbox"/>
Return flow sensor	<input type="checkbox"/> <input type="checkbox"/>
Outdoor sensor / room sensor	<input type="checkbox"/> <input type="checkbox"/>
Potentiometer input	<input type="checkbox"/> <input type="checkbox"/>
<b>Exception error</b>	
Limit switch	<input type="checkbox"/> <input type="checkbox"/>
Heating switch off	<input type="checkbox"/> <input type="checkbox"/>
<b>EEPROM error</b>	
Configuration or parameter	<input type="checkbox"/> <input type="checkbox"/>
Calibration	<input type="checkbox"/> <input type="checkbox"/>
Serial number	<input type="checkbox"/> <input type="checkbox"/>
Production parameter	<input type="checkbox"/> <input type="checkbox"/>

## 7 Data transmission

The TROVIS-VIEW software installed on your PC allows you to configure the controller with electric actuator either in offline mode (device not connected to a PC) or in online mode (device connected to a PC). To activate online mode, click  on the device toolbar. The communication port must be set (see section 7.1)

### Online mode (direct data transmission)

The actuator and TROVIS-VIEW are connected constantly in online operation. Current configuration and operating data are uploaded from the actuator cyclically and displayed in TROVIS-VIEW. The settings configured in TROVIS-VIEW can be directly transferred to the controller with electric actuator.

To enable communication with the PC, connect the serial interface (COM port) to the serial interface (RJ-12 jack) of the controller with electric actuator using a SAMSON connecting cable.

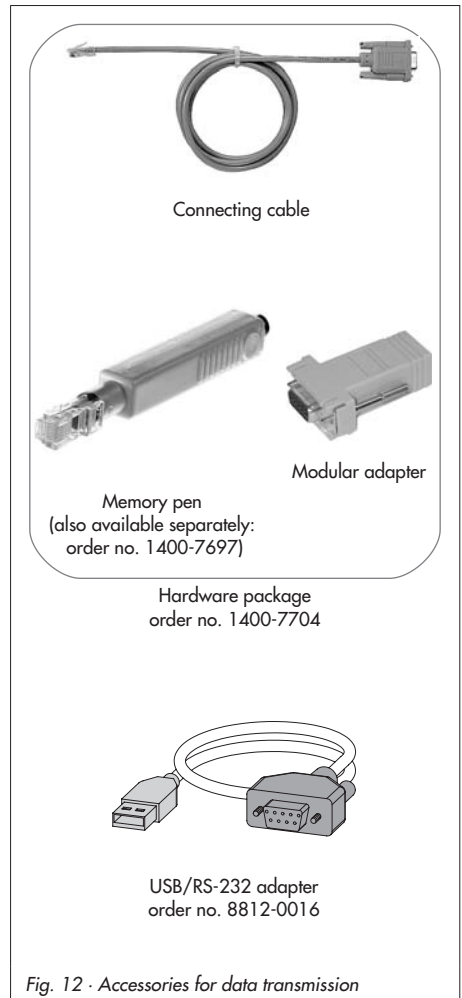
In case the PC does not have a COM port, a USB/RS-232 adapter can be used when Windows 98, ME, 2000, or XP operating systems are installed.

### Offline mode (indirect data transmission)

There is no constant data communication between the PC and actuator. Communication must first be established to upload from the actuator or download data to the actuator.

Data can be transferred to the serial interface over the SAMSON connecting cable or over a memory pen together with a modular adapter.

A memory pen allows you to simply copy and download configuration data onto other devices.



### Note!

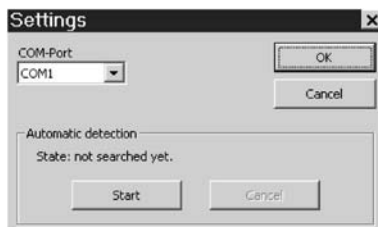
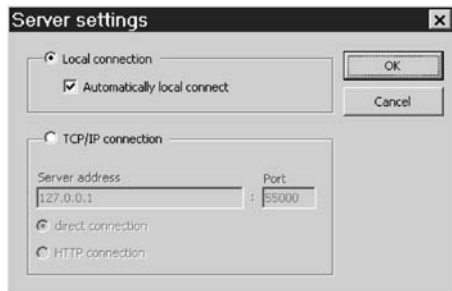
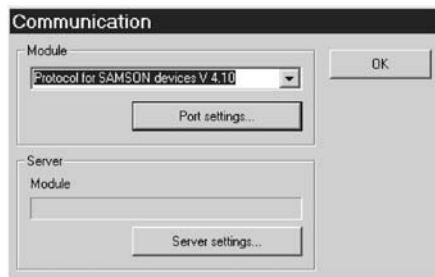
You can only transfer data to the controller with electric actuator after the electrical connection has been made as described in section 3.

## 7.1 Data transmission between TROVIS-VIEW and the actuator (connecting cable)

1. Connect the serial port of the PC using the SAMSON connecting cable to the serial interface connection of the actuator.
2. Select *Communications* in *Options* menu to open the server settings window. Click *Server settings* button.
3. Check *Local connection* and *Automatically local connect* boxes and click on OK button to confirm server settings.

The *Communication* window reappears.

4. Click *Port settings* button.
5. The settings window opens and *State: not yet searched* appears in the *Automatic detection* field. Click on *Start* button. TROVIS-VIEW has found the actuator when *State: Device found on ...* appears, click on OK button twice to confirm settings.






### 7.1.1 Offline operation (indirect data transmission)

In offline mode, there is no constant data communication between the PC and actuator. Communication must first be established to upload from the actuator and download data to the actuator.

#### Downloading data to the actuator:

Select *Download to the device* in *Device* menu to transfer data to the actuator. The actuator starts to control after data are downloaded from TROVIS-VIEW.

#### Uploading data from the actuator:

Select *Upload from device* in *Device* menu to transfer all the data from the actuator. Uploaded data are indicated in TROVIS-VIEW by the  icon.

---

#### Note!

*Data transmission can also be performed by clicking the icons in the device toolbar: click  to download data from TROVIS-VIEW to the actuator and, click  to upload data from the actuator and to display them in TROVIS-VIEW.*


---

### 7.1.2 Online operation (direct data transmission)

The actuator and TROVIS-VIEW are constantly connected in online operation. Current configuration and operating data are uploaded from the actuator cyclically and displayed in TROVIS-VIEW. Likewise, any settings performed in TROVIS-VIEW are directly transferred to the actuator.

In the event of a sensor breakage, the interruption in sensor connection is shown without delay in the *Sensors* folder.

#### Activate online operation:

Select *Online* in *Device* menu to activate online mode. In online mode,  in the device toolbar is animated.

#### Deactivate online operation:

Select *Online* in *Device* menu while the online mode is activated. The online mode is cancelled.

---

#### Note!

*Alternatively, click  in the device toolbar to activate and deactivate online operation.*

---

## 7.2 SAMSON memory pen

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

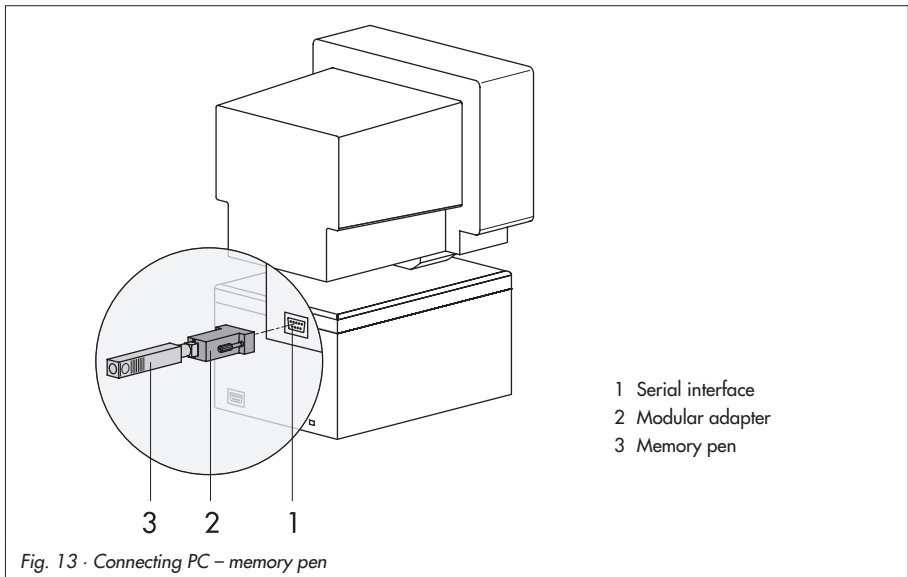
The memory pen can be loaded with data configured in TROVIS-VIEW and the settings transferred to one or several controllers with electric actuators. In the same way, the memory pen can be used to upload data from the actuator allowing you to simply copy the configuration data from one actuator to another actuator of the same type.

### **Note!**

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

### 7.2.1 Data transfer between TROVIS-VIEW and memory pen

1. Plug memory pen (3) together with modular adapter (2) into the serial interface (COM port) of the PC (Fig. 13).



2. Select *Interface* in the *Memory Pen* menu.
3. Click the *Start* button in Automatic detection field of the dialog box. The computer automatically searches for the interface assigned to the memory pen.  
Message: "Memory pen found at COM ..."  
Confirm interface setting by clicking *OK* button.

#### Downloading data from TROVIS-VIEW to the memory pen

4. Select *Download to Memory pen* in *Memory pen* menu
5. Click *OK* button to start data transmission.

#### Uploading data from memory pen to TROVIS-VIEW

4. Select *Upload from Memory pen* in *Memory pen* menu to start data transmission.

## 7.2.2 Data transmission between actuator and memory pen

- ▶ Perform steps 1 to 3 described in section 7.2.1.

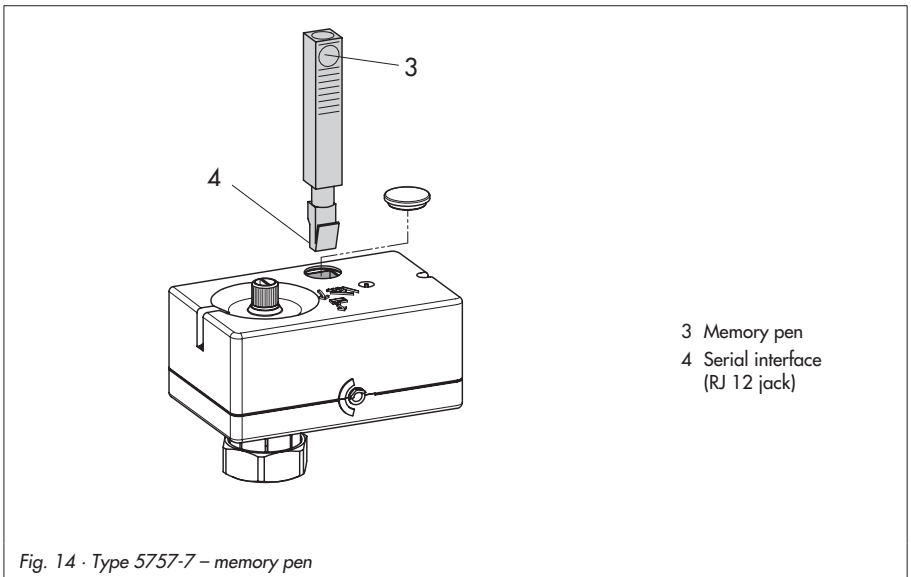
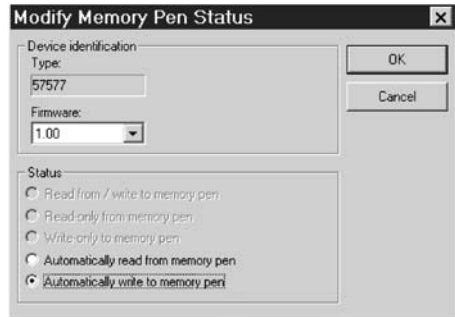


Fig. 14 · Type 5757-7 – memory pen

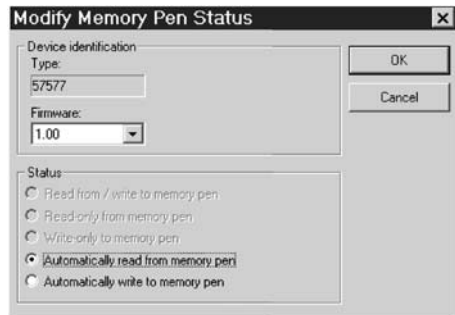
### Uploading data from the actuator to memory pen

4. Select *Modify memory pen status* in *Memory pen* menu.  
Check *Automatically write to memory pen* in the dialog box.  
Click **OK** button to confirm.
5. Remove memory pen from PC and plug it into the serial interface of the actuator (Fig. 14).  
Actuator data are uploaded onto the memory pen.  
The yellow LED under the serial interface **blinks twice** several times to indicate that data transmission is in progress.  
Data transmission is completed when the LED is illuminated continuously.  
Remove the memory pen from the actuator.



### Downloading data from the memory pen to the actuator

4. Select *Modify memory pen status* in *Memory pen* menu.  
Check *Automatically read from memory pen* in the dialog box.  
Click **OK** button to confirm.
5. Remove memory pen from PC and plug it into the serial interface of the actuator (Fig. 14).  
Data are downloaded from the memory pen into the actuator.  
The yellow LED under the serial interface **blinks** several times to indicate that data transmission is in progress.  
Data transmission is completed when the LED is illuminated continuously.  
Remove the memory pen from the actuator.



### 7.2.3 Copy function

The memory pen can be used to copy setting data to other Type 5757-7 Actuators as soon as the data from the actuator have been transferred to the memory pen (indicated by the yellow LED blinking twice several times). *Automatically write to memory pen* is reset after the first data transmission from the actuator.

### 7.2.4 Manual operation

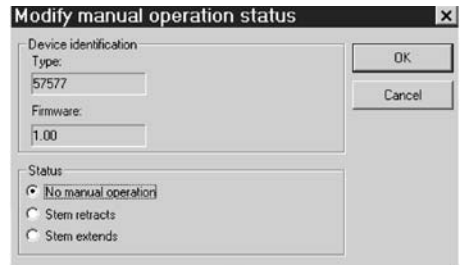
#### **Caution!**

*Activate the handwheel (red knob) only when the actuator is de-energized.*

The controller with electric actuator can be set to manual operation using the memory pen while the control operation is running:

▶ Perform steps 1 to 3 described in section 7.2.1.

4. Select *Modify manual operation status* in *Memory pen* menu.
5. Check either *Stem extends* or *Stem retracts* in the dialog box.
6. Click OK button to confirm.
7. Remove memory pen from PC and plug it into the serial interface of the actuator (Fig. 14).  
The valve stem extends or retracts according to the option selected previously.
8. After removing the memory pen from the actuator, the actuator returns to its normal control state.



#### **Reset manual operation status in memory pen**

1. Plug memory pen (3) together with modular adapter (2) into the serial interface (COM port) of the PC (Fig. 13).
2. Check *No manual operation* in the dialog box.
3. Click OK button to confirm.

## 8 Appendix

### 8.1 Function block list

The function blocks F01 to F11 have the following listed function.

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

F	Function	WE	Comment
01	Control mode	1	0 – Fixed set point control → Section 5.2 1 – Control with reference variable → Section 5.1
02	Selecting the reference variable	0	0 – Outdoor sensor → Section 5.1 1 – Room sensor → Section 5.2.1
03	Direction of stem action	0	0 – SAMSON globe valve → Section 5.9 1 – SAMSON three-way valve → Section 5.9
04	Delayed outdoor temperature	0	0 – Without delay 1 – With delay → Section 5.1.3
05	Potentiometer input	0	0 – Inactive, binary input active → Section 5.3.1 1 – Active → Section 5.1.1, 5.3.2, 5.3.3
06	Resistance range of potentiometer	0	0 – Type 5257-7 Room Panel (1000 ... 1100 Ohm) → Section 5.3.2, 5.3.3 1 – Type 5257-2 w. remote adjuster (1000 ... 2000 Ohm) → Section 5.1.1
07	Function of potentiometer	0	0 – Heating characteristic level shift → Section 5.1.1 1 – Gradient shift → Section 5.1.1
08	Function of binary input	0	0 – BI short-circuited: OFF w. frost protection → Section 5.3.1 1 – BI short-circuited: Reduced operation → Section 5.3.1
09	Function of binary output	0	0 – BO as circulation pump control → Section 5.6 1 – BO as heat demand → Section 5.7
10	Anti-block protection of pumps	1	0 – No anti-block protection 1 – When pumps are deactivated: switched on every 24 h for 1 min → Section 5.6
11	Return flow temperature sensor	1	0 – OFF 1 – ON → Section 5.5

## 8.2 Parameter list

The parameters have the setting ranges as listed below.

P = Parameter      WE = Default setting

P	Parameter	WE	Setting range
01	Flow temperature set point	70 °C	0 to 150 °C
02	Flow temperature set-back in reduced operation	15 K	0 to 50 K
03	Minimum flow temperature	20 °C	0 to 150 °C
04	Maximum flow temperature	120 °C	0 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	Ty actuator transit time at rated travel	25 s	10 to 240 s
12	Tr flash adaptation	10 min	0 to 100 min
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	Delayed time for outdoor temperature	3.0 °C/h	1.0 to 6.0 °C/h
17	Outdoor temperature limit at rated operation	22 °C	0 to 50 °C
18	Outdoor temperature limit at reduced operation	15 °C	0 to 50 °C
19	Room temperature limit at rated operation	20 °C	10 to 40 °C
20	Room temperature limit at reduced operation	15 °C	10 to 40 °C
21	Max. room temperature boost	1 K	1 to 6 K
22	Pump lag time	5 min	1 to 999 min

### 8.3 Customer settings

Function blocks		
F	WE	Setting performed
01	1	
02	0	
03	0	
04	0	
05	0	
06	0	
07	0	
08	0	
09	0	
10	1	
11	1	

Parameters			
P	WE	Setting performed	Setting range
01	70 °C		0 to 150 °C
02	15 K		0 to 50 K
03	20 °C		0 to 150 °C
04	120 °C		0 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	25 s		10 to 240 s
12	10 min		0 to 100 min
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		1.0 to 6.0 °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	1 K		1 to 6 K
22	5 min		1 to 999 min





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