

Controller with Electric Actuator Type 5724, without fail-safe action Type 5725, with fail-safe action



for domestic hot water heating

Application

Electric actuator with integrated digital controller for heating, ventilation and air-conditioning systems.

For globe and three-way valves, e.g. Types 3213, 3214, 3260, 3222 or 3226 Valves in nominal sizes DN 15 to 50.



The Type 5724 and Type 5725 are a combination of a linear actuator and an integrated digital controller.

They are especially designed for DHW heating in instantaneous heating systems for small to medium-sized buildings and for fixed set point control circuits in mechanical engineering applications. They are particularly suitable for mounting to SAMSON Types 3213, 3214, 3260, 3222 and 3226 Valves.

The Type 5724 Actuator is without fail-safe action and the Type 5725 with fail-safe action. The Type 5724 has a manual override to manually move the valve in de-energized state.

Special features

- Control using two different set points, e.g. DHW temperature and DHW temperature for thermal disinfection
- Manual setting possible at the set point potentiometer or over TROVIS-VIEW Configuration and Operator Interface
- Function to maintain water temperature constant, preventing the heat exchanger from cooling down since the last hot water was tapped
- Pump output to control a circulating pump or a circulation circuit can alternatively be used as a fault alarm output
- Direction of action reversible:
 - Globe valve opens when the actuator stem retracts (increasing/increasing)
 - Three-way mixing valve mixes/diverts the flow(s) when the actuator stem extends (increasing/decreasing)
- Limit value monitoring:
 - The valve is closed by the actuator when the maximum adjustable limit value is exceeded.
 - The frost protection function is started when the temperature falls below the minimum adjustable limit.
- Configuration, parameterization, diagnostic function, and direct connection for monitoring over TROVIS-VIEW software:
 - Direct data transmission over a connecting cable (direct connection to PC)
 - Data transmission over a memory pen

Typetested version

The Type 5725 Controller with Electric Actuators are typetested in the force-locking version together with various SAMSON valves by the German Technical Inspectorate (TÜV) according to DIN EN 14597. Register number available on request.



Fig. 1 · Type 5724/5725 Controller with Electric Actuator

Note:

Refer to Data Sheets T 5768 EN, T 5769 EN, T 5761 EN, T 5766 EN and T 5763 EN for more details about Types 3213, 3214, 3260, 3222 and 3226 Valves.

Accessories

- TROVIS-VIEW software (6661-1060) for Type 5724/5725 Controller with Electric Actuator
- Hardware package with a memory pen – 64, connecting cable and modular adapter, order no. 1400-9998
- Memory pen – 64, order no. 1400-9753
- Type 5207-0060 Pt 1000 Sensor
- Sensor pocket, order no. 1990-9249
- Flow rate sensor with extension cable with mating connector, order no. 1400-9246
- Flow switch, order no. 1400-9247

Principle of operation

The actuator consists of a digital controller which is integrated into the electric actuator housing.

The digital controller is connected to a temperature sensor on the input side which can be optionally upgraded by a flow rate sensor or a flow switch.

The set point of the digital controller can be set manually or with the help of the TROVIS-VIEW configuration software.

The electric actuator consists of a reversible synchronous motor and maintenance-free gearing. The motor is switched off by torque-dependent switches when an end position is reached or in case the motor is overloaded.

The force of the electric motor is transmitted to the actuator stem (3) via gearing and crank disk. When the actuator stem extends, it presses on the plug stem (10) of the valve. When the actuator stem retracts, the plug stem follows the movement of the return spring in the valve. Actuator and valve are connected by the coupling nut (4).

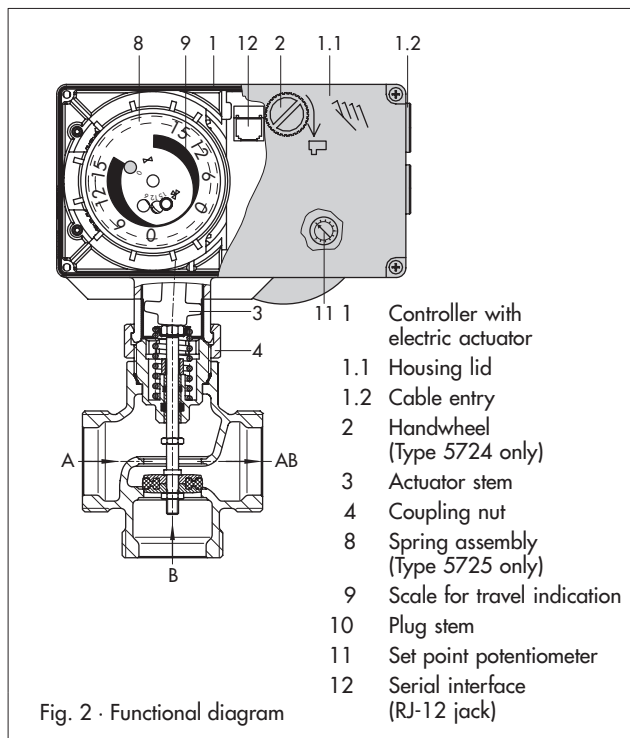
Type 5724

The controller with electric actuator **without fail-safe action** has a handwheel (2) used to manually position the valve (only when the actuator is disconnected from the power supply). Travel and direction of action can be read off the travel indicator (9) on the side of the actuator housing.

Type 5725

The controller with electric actuator **with fail-safe action** is basically the same as Type 5724. However, it contains a spring assembly (8) and an electromagnet which in de-energized state move the connected valve to the appropriate fail-safe position. The Type 5725 Actuator is only available with fail-safe action "Actuator stem extends".

A handwheel (2) is not fitted. On disconnecting the actuator from the power supply and removing the housing lid (1.1), you can use a key to adjust the actuator manually. As soon as the key is released, the actuator immediately resumes its initial position.



Electrical equipment

The actuator requires a Pt 1000 temperature sensor (e.g. Type 5207-0060) to be connected for it to function. Alternatively, a sensor with a mA signal can be used for mechanical engineering applications.

The fast-responding Pt 1000 sensor allows the temperature to be controlled to the set point almost immediately. The set point default setting is 60 °C. It can be adjusted between 10 and 100 °C over the integrated potentiometer. It can also be changed over the TROVIS-VIEW Configuration Interface connected at the RS-232 interface.

Option to improve control accuracy in small installations

The use of the Type 5207-0060 Pt 1000 Sensor is recommended in conjunction with a sensor pocket to provide the best positioning of the temperature sensor at the heat exchanger. In addition, a flow rate sensor or a flow switch can be connected to quickly recognize when hot water is being tapped or to improve the control accuracy even further.

A hot water circulation circuit improves the control accuracy considerably.

Switching output

The switching output can be configured as either a pump output (circulation pump for the DHW circuit or heating circuit), a fault alarm output or an output to report when hot water is tapped.

Installation

Before you attach the actuator to the valve, make sure that the actuator stem is retracted. In order to retract the actuator stem of Type 5725, remove the housing lid and retract and retain the actuator stem by turning the actuating shaft counterclockwise using a 4 mm Allen key. Only then proceed to tighten the coupling nut.

Ordering text

Controller with Electric Actuator

Without/with fail-safe action **Type 5724/Type 5725**

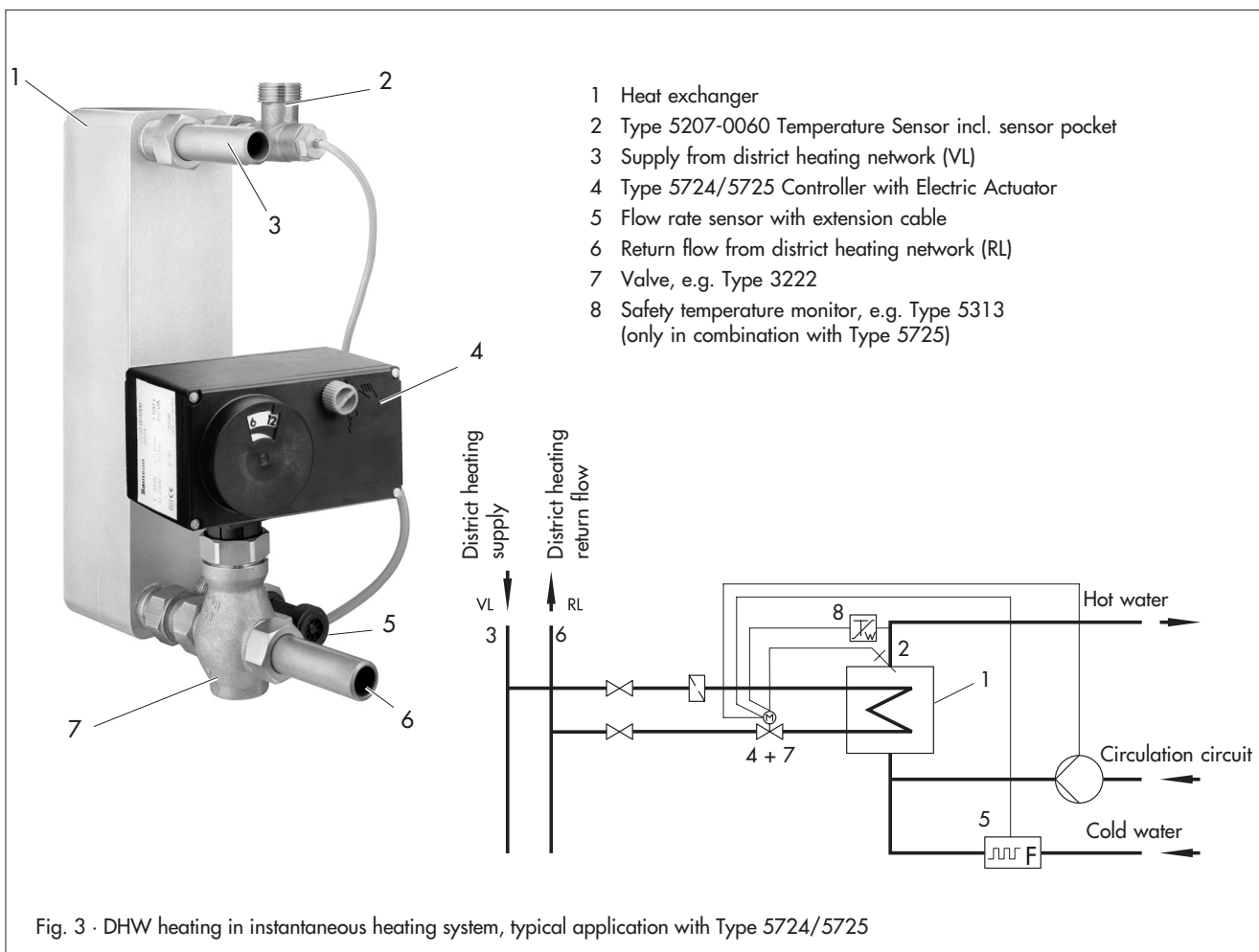
Closing force ... N

Valve travel ... mm

Supply voltage 230 V, 50 Hz

Type 5207-0060 Pt 1000 Sensor · Optimized temperature sensor with fast response which is simple to install	
Connection	Wire ends fitted with wire end ferrules with plastic sleeve
Connecting lead	PVC; 2000 mm long
Perm. ambient temperature	-5 to 80 °C
Perm. medium temperature	-5 to 90 °C
Threaded connection	Male thread G ¼, brass (2.0401.20)
Protective tubing	Stainless steel Inconel 600 (2.4816)
Time response	$t_{0,5} < 1 \text{ s}$ · $t_{0,9} < 3 \text{ s}$, in water 0.4 m/s
Thread length	52 mm
Nominal pressure	PN 16
Sensor pocket, order no. 1400-9249 · For Type 5207-0060 Pt 1000 Sensor for mounting on the heat exchanger, to provide the best positioning in DHW heating in instantaneous heating systems	
Material	Red brass CC491K (2.1096.01)
Threaded connection	
Male thread G ¾	Pipe connection for ½" pipe
Female thread G ¼	Sensor connection
Coupling nut G ¾	Heat exchanger connection
Nominal pressure	PN 16

Flow rate sensor, order no. 1400-9246 · Axial turbine flow-meter for liquids	
Measuring range	1 to 30 l/min
Measuring accuracy	±1 % of upper measuring range value
Threaded connection	Male thread G ¾
Nominal size	DN 10
Nominal pressure	PN 10
Max. medium temperature	70 °C, briefly 90 °C
Supply voltage	4.5 to 24 V DC
Degree of protection	IP 54
Electrical connection	3 single wires with connector (JST) approx. 150 mm long
Sensor	Hall sensor
Pressure loss	0.25 bar at 15 l/min
Pipe socket/vane wheel	PPO Noryl
Flow switch, order no. 1400-9247	
Electrical connection	Wire ends fitted with wire end ferrules
Connecting lead	PVC; length 1500 mm
Mechanical connection	Male thread G ½ Coupling nut G ¾
Switching point	2.5 ±0.5 l/min increasing = closing
Pressure loss	0.25 bar at 15 l/min
Mounting position	Horizontal



Technical data

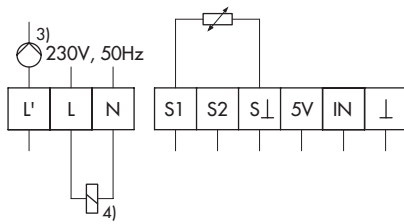
Actuator Type	5724						5725					
	-10	-13	-20	-23	-30	-33	-10	-13	-20	-23	-30	-33
Fail-safe action	Without						With					
Connection to valve	Force-locking			Form-fit			Force-locking			Form-fit		
Rated travel	6 mm	6 mm	12 mm	12 mm	15 mm	15 mm	6 mm	6 mm	12 mm	12 mm	15 mm	15 mm
Transit time for rated travel	35 s	18 s	70 s	35 s	90 s	45 s	35 s	18 s	70 s	35 s	90 s	45 s
Transit time in case of fail-safe action	-						4 s	6 s		7 s		
Fail-safe action	-						Stem extends					
Nominal thrust	700 N						500 N			280 N		
Power supply	230 V (±10 %), 50 Hz						230 V (±10 %), 50 Hz					
Power consumption, approx.	3 VA	7 VA	3 VA	7 VA	3 VA	7 VA	5 VA	9 VA	5 VA	9 VA	5 VA	9 VA
Manual override	Yes						Possible ¹⁾					
Perm. ambient temperature	0 to 50 °C						0 to 50 °C					
Perm. storage temperature	-20 to 70 °C						-20 to 70 °C					
Perm. temperature at connecting stem	0 to 130 °C						0 to 130 °C					
Degree of protection (upright position)	IP 54						IP 54					
Noise immunity	EN 61000-6-2						EN 61000-6-2					
Noise emission	EN 61000-6-3						EN 61000-6-3					
Weight, approx.	1.1 kg						1.3 kg					
Binary input BE1 ³⁾	Floating contact to switch between internal set points or to deactivate the function to keep DHW at a constant temperature											
Binary input BE2 ³⁾	Flow switch											
Switching output	230 V/50 Hz, max. 1 A											
Additional electrical equipment												
Temperature sensor	Pt 1000											
Flow rate sensor	530 pulses/l											
Flow switch	Yes ²⁾ · Alternative to flow rate sensor											

1) Manual override using a 4 mm Allen key (after removing the housing cover), always returns to fail-safe position after safety release.

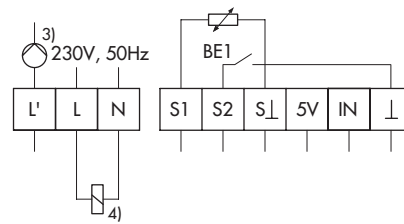
2) The flow switch or flow rate sensor is not required in DHW heating in instantaneous systems with a constant circulation.

3) Recommendation: Use devices with gold contacts when using relays.

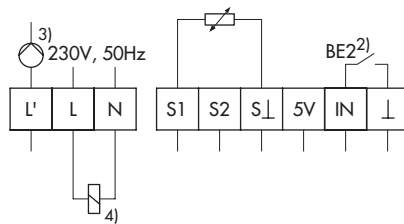
DHW heating in instantaneous heating system



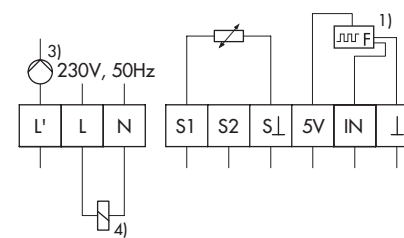
Operation with Pt 1000 sensor



Operation with Pt 1000 sensor and binary contact to switch between set points

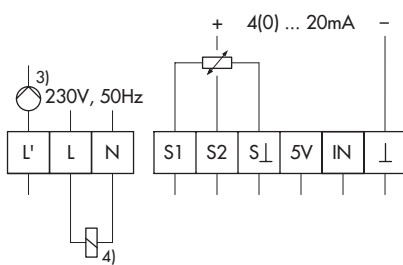


Operation with Pt 1000 sensor and flow switch

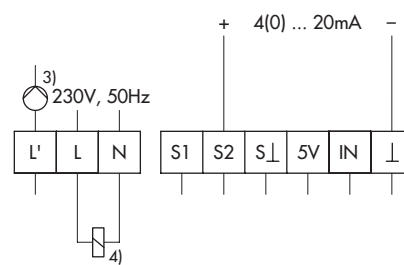


Operation with Pt 1000 sensor and flow rate sensor
(refer to Fig. 4 for information on connection of flow rate sensor)

Mechanical engineering applications



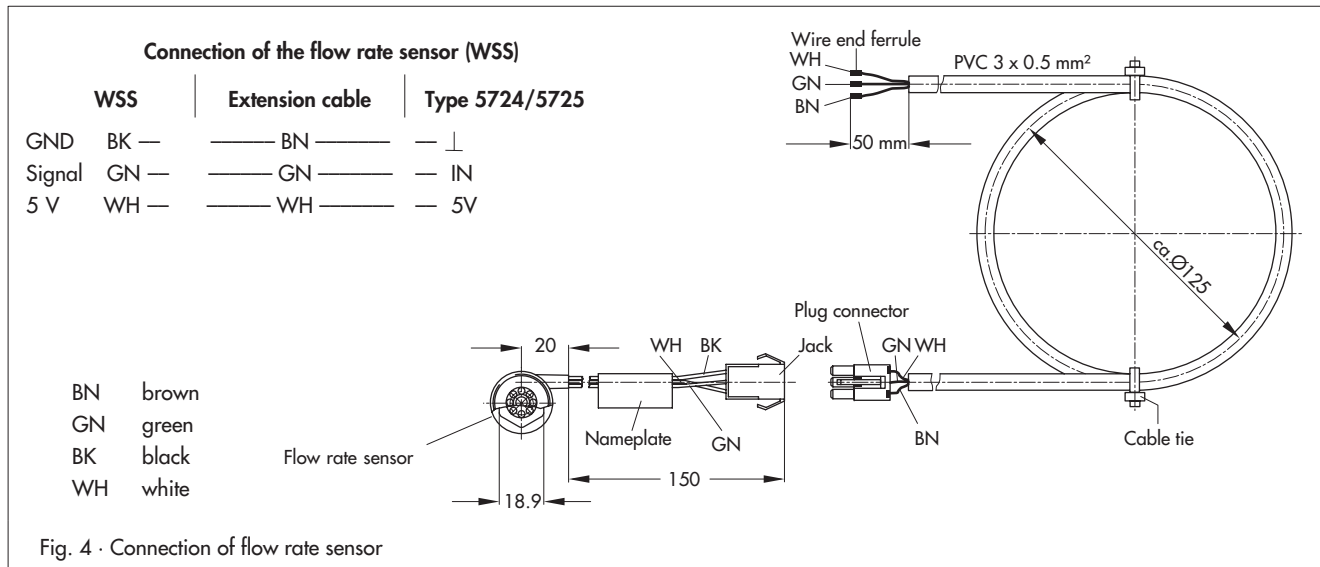
Operation with Pt 1000 sensor and external set point over a current signal



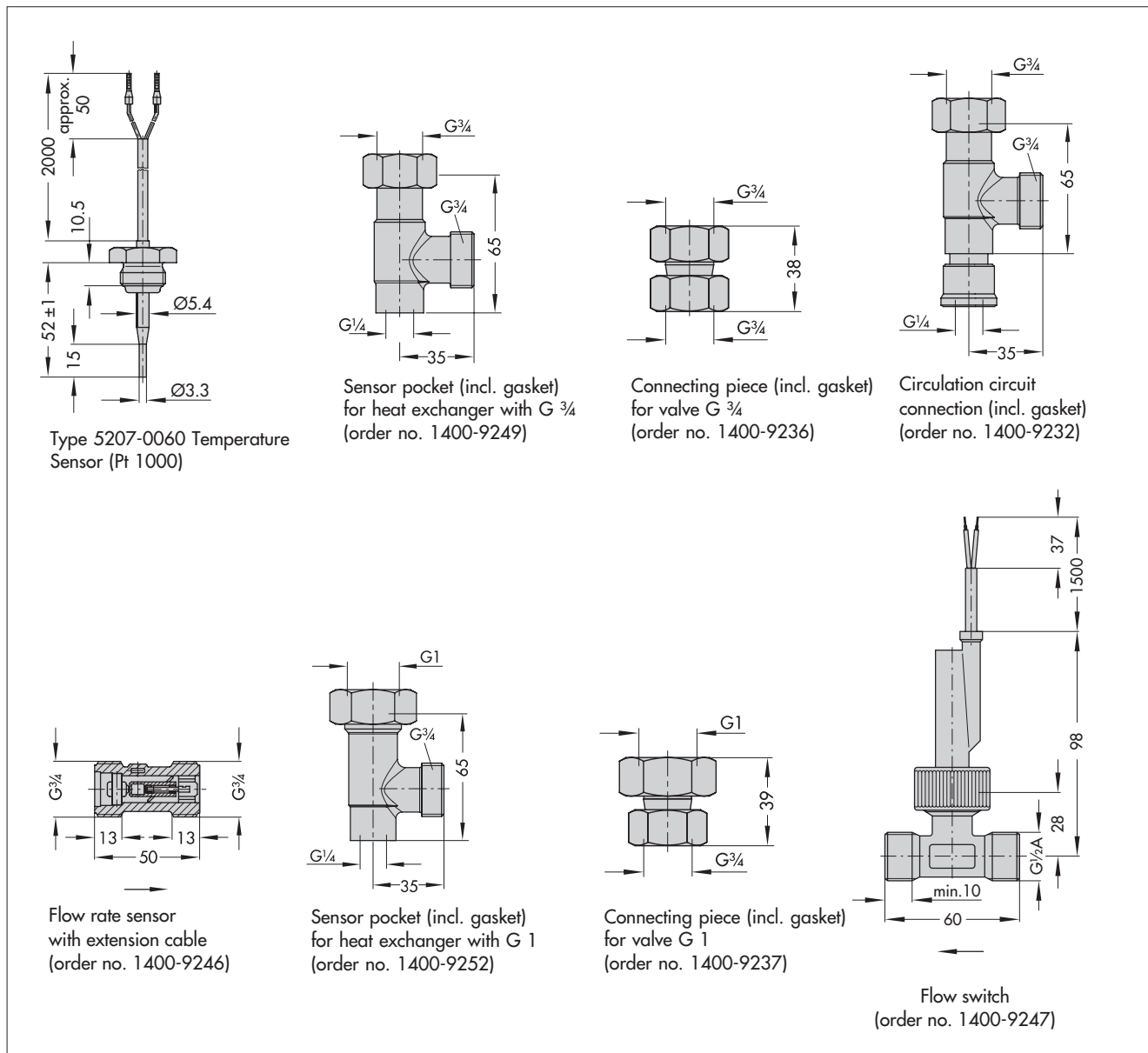
Operation with a current signal

- 1) Flow rate sensor
- 2) Flow switch
- 3) Pump or fault alarm output
- 4) Electromagnet, in Type 5725 only

Information on connection of the flow rate sensor

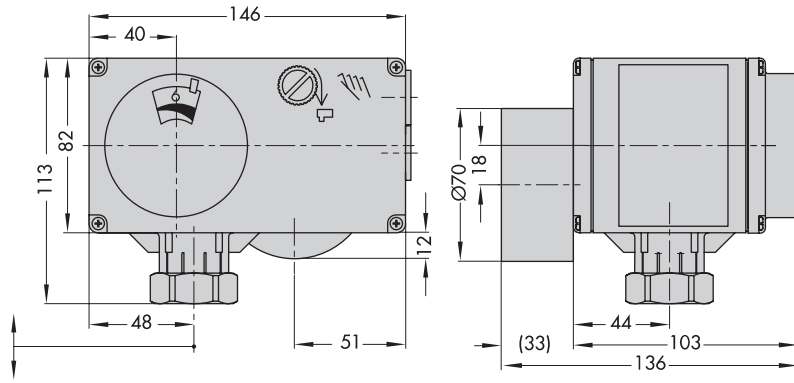


Dimensions in mm · Accessories



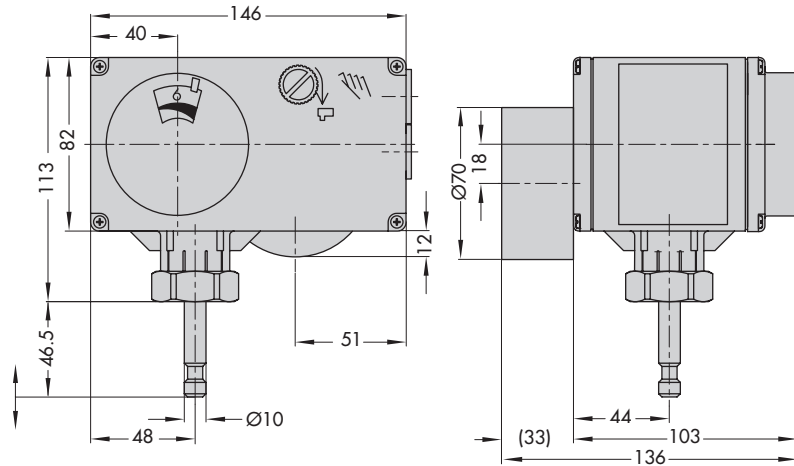
Types 5724-13/-23
Types 5725-13/-23

eL Stem retracts
aL Stem extends



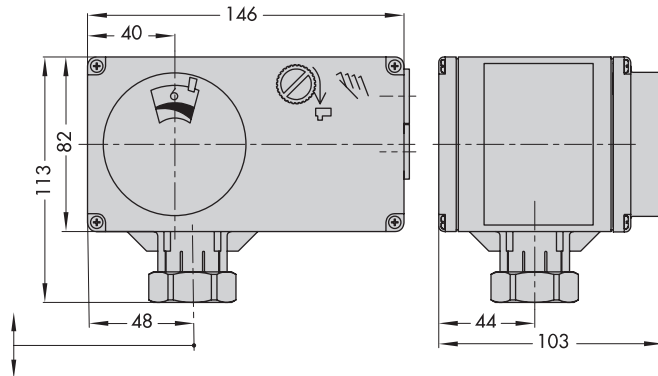
Type 5724-33
Type 5725-33

eL Stem retracts
aL Stem extends



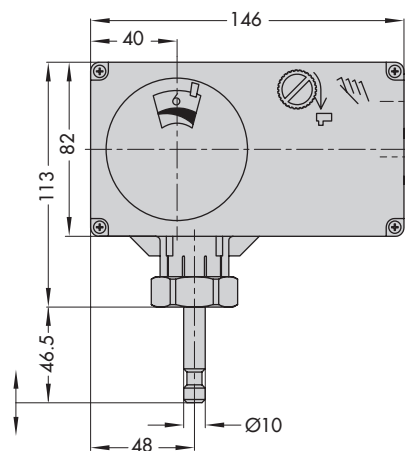
Types 5724-10/-20
Types 5725-10/-20

eL Stem retracts
aL Stem extends



Type 5724-30
Type 5725-30

eL Stem retracts
aL Stem extends



Specifications subject to change without notice.



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