Self-operated Temperature Regulators
Safety Temperature Monitors (STM) with Safety Thermostat Type 2213

Application

Safety temperature monitoring of the energy supplied to heat generators or heat exchangers by closing the valve.

For limit signals from **–10** to **120 °C** · With valves in sizes **DN 15** to **DN 150** · **PN 16** to **PN 40** · Max. **350 °C**

Note

Devices typetested acc. to DIN EN 14597 are available for installations acc. to DIN 4747 or DIN EN 12828. Refer to Information Sheet T 2040 EN for details on the use of the safety temperature monitors.

Safety temperature monitors with a valve and a Type 2213 Safety Thermostat operate without auxiliary energy and are designed for Extended Safety acc. to DIN EN 14597. The valve is closed by a spring mechanism when the temperature reaches an adjusted limit value, when the capillary tube breaks or when leakage occurs in the sensor system. The thermostat is reset and the regulator put back into operation automatically as soon as the temperature has fallen below the limit value and the fault has been removed.

Versions

Safety temperature monitors consist of a **Type 2111** or **Type 2114** Globe Valve or a **Type 2118** or **Type 2119** Three-way Valve and a **Type 2213** Safety Thermostat · The **Type 2213** Safety Thermostat consists of a temperature sensor (including thermowell f required) with limit value adjuster, capillary tube and operating element with spring mechanism.

Safety temperature monitors (Figs. 1 and 3)

Type 2111/2213 · With Type 2111 Globe Valve for DN 15 to DN 50 and Type 2213 Thermostat · Unbalanced · With flanges

Type 2114/2213 · With Type 2114 Globe Valve for DN 15 to DN 150 and Type 2213 Thermostat · Balanced · With flanges

Type 2118/2213 · With Type 2118 Three-way Valve for DN 15 to DN 50 and Type 2213 Thermostat · Unbalanced With flanges

Type 2119/2213 · With Type 2119 Three-way Valve for DN 15 to DN 150 and Type 2213 Thermostat · Balanced[1)] With flanges

Temperature regulators and **safety temperature monitors (TR/STM)** (Figs. 2 and 4) consist of one of the above mentioned instruments Type .../2213 and a Type 2231 Control Thermostat typetested acc. to DIN EN 14597, for example:

Type 2114/2231/2213 · With Type 2114 Valve for DN 15 to DN 150 · PN 16 to PN 40 · Type 2231 Control Thermostat and Type 2213 Safety Thermostat

In these combinations, the Type 2231 Control Thermostat can also be replaced by Types 2232 to 2235 Control Thermostats typetested acc. to DIN EN 14597.

Details and technical data can be found in the Data Sheets:
T 2111 EN · With Type 2111 Globe Valve
T 2121 EN · With Type 2114 Globe Valve
T 2131 EN · With Type 2118 Three-way Valve
T 2133 EN · With Type 2119 Three-way Valve

1) DN 15 to DN 25 unbalanced

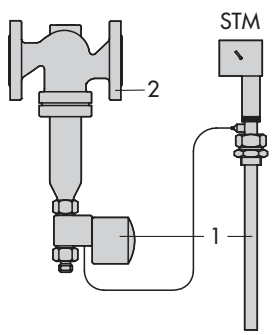


Fig. 1 · Type 2111/2213 or Type 2114/2213 Safety Temperature Monitor (STM)

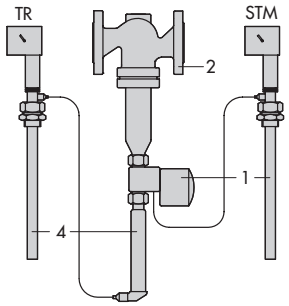


Fig. 2 · Type 2111/2231/2213 or Type 2114/2231/2213 Temperature Regulator and Safety Temperature Monitor (TR/STM)

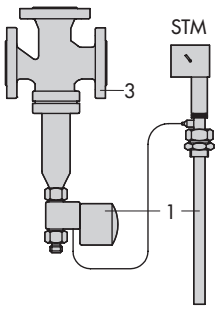


Fig. 3 · Type 2119/2213 Safety Temperature Monitor (STM)

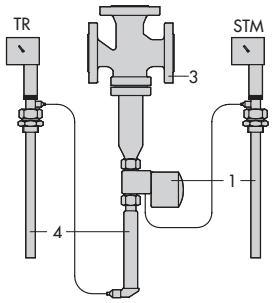


Fig. 4 · Type 2119/2231/2213 Temperature Regulator and Safety Temperature Monitor (TR/STM)

1 Type 2213 Safety Thermostat
2 Globe valve (Type 2111 or Type 2114)
3 Three-way valve (Type 2118 or Type 2119)
4 Type 2231 Control Thermostat

Principle of operation (Fig. 5)

The safety temperature monitors work according to the liquid expansion principle. The temperature sensor (12), the capillary tube (9) and the operating element (8) are filled with an expansion liquid.

The temperature-dependent change in volume of the liquid contained in the bulb sensor (12) causes the piston in the operating element (8) to move, thus also moving the pin of the operating element (7) and consequently the plug stem (5) with the attached plug (3). The temperature limit is adjustable with a key (10). This limit value is indicated on the dial (11).

The thermostat closes the associated valve when the temperature reaches the adjusted temperature limit. The thermostat resets itself automatically when the temperature has fallen to a value of approx. 5 K below the adjusted limit.

The spring mechanism is released when the capillary tube breaks or when there is a leak in the sensor. It moves the plug stem (5) with the attached plug (3) over the pin (7) and closes and locks the valve.

Installation

- **Valve**

Install the valve in a horizontal pipeline with the operating element of the thermostat vertically suspended. Make sure the direction of flow through the valve matches the arrow on the body.

- **Temperature sensor**

The temperature sensor can be installed in any desired position. Its entire length must be immersed in the process medium. Choose a place of installation where neither overheating nor considerable idle times occur.

When combining a Type 2213 Safety Temperature Monitor with a Type 2231, 2232, 2233, 2234 or 2235 Control Thermostat, make sure there is a minimum difference of approx. 15 K between the adjusted limit temperature and the set point temperature.

- **Capillary tube**

Install the capillary tube such that it is not exposed to large temperature fluctuations and cannot be damaged. Make sure the permissible ambient temperature range (approx. temperature: 20 °C) is not exceeded. The smallest permissible bending radius is 50 mm.

Only use the same kind of materials together, for example thermowells made of stainless steel 1.4571 can be installed in stainless steel heat exchangers.

Special installation regulations according to VdTÜV

Only install the valve with a strainer (e.g. Type 2 NI according to Data Sheet T 1015 EN) mounted upstream of the valve inlet. Only use the supplied SAMSON thermowells.

Register numbers of devices tested acc. to DIN EN 14597

The test marks assigned in the typetest of the Type 2213 Safety Thermostat (STM) with Types 2111, 2114, 2118 and 2119 Valves and Types 2231, 2232, 2233, 2234 and 2235 Control Thermostats are available on request.

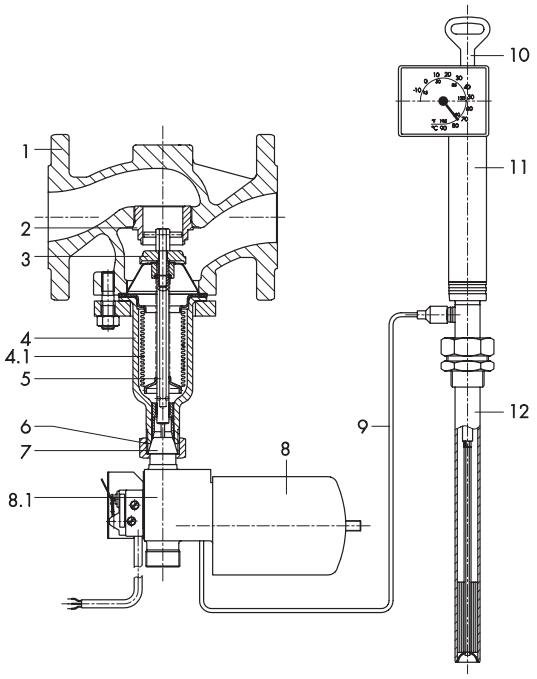


Fig. 5 · Type 2114/2213 Safety Temperature Monitor (STM)

Type 2114 Globe Valve and **Type 2213** Safety Thermostat

1 Valve body
2 Seat (exchangeable)
3 Plug
4 Bellows housing
4.1 Balancing bellows
5 Plug stem with spring
6 G 1 coupling nut
7 Connection piece with pin of the operating element
8 Operating element with spring element
8.1 Electric signal transmitter
9 Capillary tube
10 Key to adjust the limit value
11 Limit value dial
12 Temperature sensor (bulb sensor) with thermowell

Accessories

Extension piece to protect the operating element against excessive temperatures[1)] made of

– Brass
– CrNi steel
– CrNi steel with a seal for water or oil.

Thermowell with G 1 threaded connection made of

– Bronze, PN 40
– CrNiMo steel, PN 40

Special versions

– Electric signal transmitter for remote transmission of plant states. This transmitter contains a microswitch (max. permissible load: 230 V, 10 A at ohmic load), which provides a limit signal when the temperature has exceeded the limit value or the sensor fails (capillary tube breakage)
– Special K_{VS} coefficient (reduced) for Type 2111 or Type 2114/2213
– 5, 10 or 15 m capillary tube made of copper or plastic-coated copper (10/15 m not typetested)

1) Type 2118: The use of an extension piece does not permit the maximum permissible temperature to be increased

Table 1 · **Technical data** · All pressures in bar (gauge)

Valves														
Nominal size	**DN**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**[1]	**250**[1]
Type 2111	Further details on the technical data of the valves and control thermostats can be found in the listed data sheets.	See Data Sheet T 2111 EN						–						
Type 2114		See Data Sheet T 2121 EN												
Type 2118		See Data Sheet T 2131 EN						–						
Type 2119		See Data Sheet T 2133 EN											–	
Nominal pressure		PN 16 to PN 40												
Type 2213 Safety Thermostat for **STM**														
Adjustable limit value range		–10 to 90 °C · 20 to 120 °C												
Permissible ambient temperature range at the limit value adjuster		–40 to +80 °C												
Permissible temperature at the sensor		100 K above adjusted temperature limit												
Permissible pressure at the sensor														
	With G 1 thermowell	PN 40 (copper version: PN 16)												
	Without thermowell	PN 10												
Capillary tube length		3 m[2]												

[1] Type 2114 only: on request

[2] Special version 5, 10, 15 m and of plastic-coated copper (10/15 m not typetested)

Table 2 · **Materials** · Material numbers according to DIN EN

Type 2213 Safety Thermostat for **STM**				
		Standard version	**Special version**	
Operating element		Nickel-plated brass		
Sensor		Nickel-plated bronze	–	
Capillary tube		Nickel-plated copper	Plastic-coated copper	
Thermowell with conductive sheet				
G 1	Immersion tube	Nickel-plated bronze	Nickel-plated copper	Stainless steel 1.4571
	Threaded nipple	Nickel-plated brass		

Ordering text

Safety Temperature Monitor (STM)
Type 2111/2213, Type 2114/2213, Type 2118/2213 or Type 2119/2213
PN ..., DN ...
K_{VS} coefficient ...
Body material …

With **Type 2213** Safety Thermostat
Limit value range ... °C
Optionally, accessories ...
Optionally, special version

Temperature Regulator with Safety Temperature Monitor (TR+STM)
Type 2111/2231/2213, Type 2114/2231/2213,
Type 2118/2231/2213 or Type 2119/2231/2213
PN ..., DN ...,
K_{VS} coefficient ...,
Body material …

With **Type 2231 Thermostat**
Capillary tube ... m, set point range ...°C
and
Type 2213 Safety Thermostat
Capillary tube ... m, limit value range ... °C
Optionally, accessories …
Optionally, special version

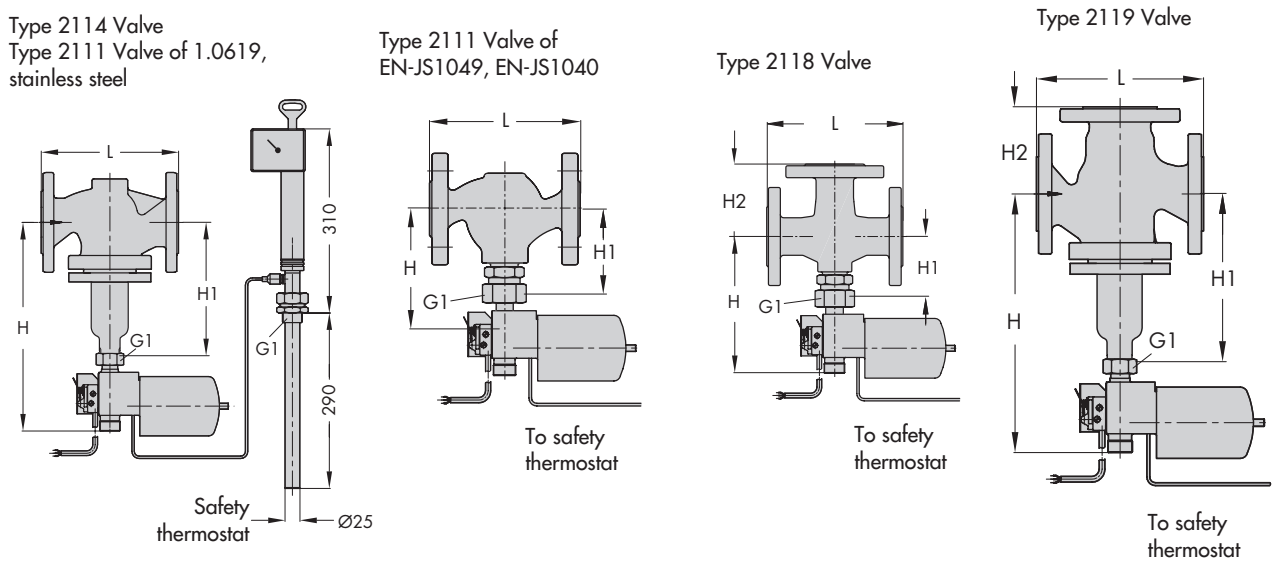
Table 3 · Dimensions in mm and weights

Nominal size	**DN**	**15**	**20**	**25**	**32**	**40**	**50**	**15**	**20**	**25**	**65**	**80**	**100**	**125**	**150**
Valve		**Type 2114**			**Type 2111 (2114)**			**Type 2111**			**Type 2114**				
Length L		130	150	160	180	200	230	130	150	160	290	310	350	400	480
H1	Without extension piece	225			225[3]/152[4]/(225)			225[3]/82[4]			300		355	460	590
	With extension piece	365			365[3]/–[4]/(365)			365[3]/–[4]			440		495	600	730
Weight (body PN 16)[2]	Approx. kg	5	5.5	6.5	13	13.5	16	4	4.5	5.5	27	32	40	70	113
Valve		**Type 2119**			**Type 2118/2119**			**Type 2118**			**Type 2119**				
Length L		130	150	160	180	200	230	130	150	160	290	310	350	400	480
H2		70	80	85	100	105	120	70	80	85	130	140	150	200	210
H1	Without extension piece[1]	235			88/245			78			320		355	395	500
	With extension piece[1]	375			–/385			–			460		495	535	640
Weight (body PN 16)[2]	Approx. kg	6	7	8.5	12.5/15	14.5/17	17/19	5	6.5	8	32	50	71	On request	
Overall height H	Type .../2213 STM	H = H1 + 125													
	TR/STM	H = H1 + 415													
Type 2213 Safety Thermostat															
Approx weight in kg	Thermostat	5													
	Thermowell	0.5													

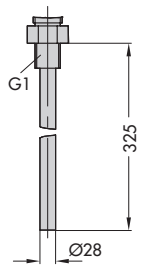
[1] Type 2118: The use of an extension piece does not permit the maximum permissible temperature to be increased
[2] +15 % for PN 25 or PN 40
[3] Type 2111: valve made of 1.0619 (GS-C25) and stainless steel
[4] Type 2111: valve made of EN-JS1049 (GGG-40.3) and EN-JL1040 (GG-25)

Dimensions

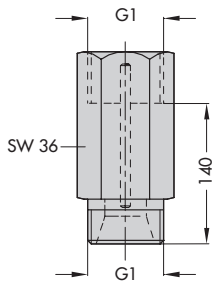
Type 2111/2213 · Type 2114/2213 · Type 2118/2213 · Type 2119/2213 Safety Temperature Monitors



Accessories



Thermowell for **Type 2213**
With G 1 threaded connection for PN 40
(copper version, PN 16)



Extension piece
(weight approx. 0.5 kg)

Fig. 6 · Dimensions

Specifications subject to change without notice.

SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · 60314 Frankfurt am Main · Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
Internet: http://www.samson.de