

T 2123 EN

Self-operated Temperature Regulators · Type 4u Temperature Regulator

With balanced single-seated globe valve · DIN and ANSI versions



Application

Temperature regulator for cooling installations with control thermostats for set points from **-10 to +250 °C/15 to 480 °F** · Valve sizes **DN 15 to 150/NPS ½ to 6** · Pressure rating **PN 16 to 40/Class 125 to 300** · Suitable for temperatures up to **350 °C/660 °F**

The valve **opens** when the temperature **rises**.

The regulators consist of a balanced globe valve with flanged connections and reversing device as well as a control thermostat with temperature sensor, set point adjuster with excess temperature protection, capillary tube and operating element.

Special features

- Low-maintenance proportional regulators requiring no auxiliary energy
- Wide set point range and convenient set point adjustment with a dial
- Single-seated valve with a plug balanced by a balancing diaphragm or stainless steel bellows
- Suitable for liquids, gases and vapors, especially for coolants, such as cooling brine or cooling water
- Valve body optionally available in cast iron, spheroidal graphite iron, cast steel or cast stainless steel

Versions

DIN: Type 4 Temperature Regulators · Type 2422 Valve with flanged connections · Balanced by a bellows (DN 15 to 150) · Balanced by a diaphragm (DN 65 to 100) · PN 16 to 40 · Type 2231 to 2235 Control Thermostat · Reversing device · Further details on the application of control thermostats can be found in Information Sheet ▶ T 2010.

- **Type 2422/2231** (Fig. 1) · With Type 2422 Valve and Type 2231 Control Thermostat · Suitable for liquids · Set point adjustment at the sensor · Set points from -10 to +150 °C
- **Type 2422/2232** (Fig. 2) · With Type 2422 Valve and Type 2232 Control Thermostat · Suitable for liquids and steam · Separate set point adjustment · Set points from -10 to +250 °C
- **Type 2422/2233** · With Type 2422 Valve and Type 2233 Control Thermostat · Suitable for liquids, air and other gases · Set point adjustment at the sensor · Set points from -10 to +150 °C



Fig. 1: Type 4u with Type 2231 Control Thermostat

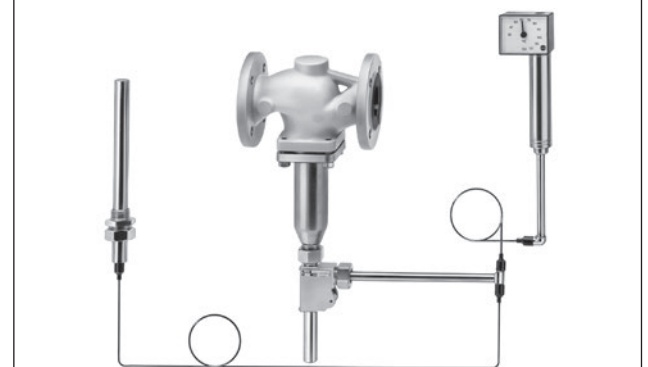


Fig. 2: Type 4u Temperature Regulator with Type 2232 Control Thermostat, version with separate set point adjustment

- **Type 2422/2234** · With Type 2422 Valve and Type 2234 Control Thermostat · Suitable for liquids, air and other gases · Separate set point adjustment · Set points from -10 to +250 °C
- **Type 2422/2235** · With Type 2422 Valve and Type 2235 Control Thermostat · Suitable for liquids, air and other gases · Separate set point adjustment · Set points from -10 to +250 °C

ANSI: Type 4u Temperature Regulators · Type 2422 Valve with flanged connections · Balanced by a bellows (NPS ½ to 6) · Balanced by a diaphragm (NPS 2½ to 4) · Class 125 to 300 · Type 2231 to 2234 Control Thermostat · Reversing device · Further details on the application of control thermostats can be found in Information Sheet ▶ T 2010.

- **Type 2422/2231** (Fig. 1) · With Type 2422 Valve and Type 2231 Control Thermostat · Suitable for liquids · Set point adjustment at the sensor · Set points from 15 to 300 °F
- **Type 2422/2232** (Fig. 2) · With Type 2422 Valve and Type 2232 Control Thermostat · Suitable for liquids and steam · Separate set point adjustment · Set points from 15 to 480 °F
- **Type 2422/2233** · With Type 2422 Valve and Type 2233 Control Thermostat · Suitable for liquids, air and other gases · Set point adjustment at the sensor · Set points from 15 to 300 °F
- **Type 2422/2234** · With Type 2422 Valve and Type 2234 Control Thermostat · Suitable for liquids, air and other gases · Separate set point adjustment · Set points from 15 to 480 °F
- **Type 2422/2235** · With Type 2422 Valve and Type 2235 Control Thermostat · Suitable for liquids, air and other gases · Separate set point adjustment · Set points from 15 to 480 °F

Special versions

- 10 or 15 m/33 or 50 ft capillary tube lengths
- Sensor of CrNiMo steel
- Capillary tube, copper with plastic coating
- Valve entirely of stainless steel
- Reduced K_{VS}/C_V coefficient
- Reversing device version with travel adjuster (with adjustment of minimum flow rate)

Principle of operation (see Fig. 3)

The regulators operate according to the liquid expansion principle.

The temperature sensor (12), capillary tube (9) and operating element (7) are filled with an expansion liquid. The temperature-dependent change in volume of this liquid causes the operating bellows in the operating element to move and, as a result, also moves the plug stem (5) with the attached plug (3). The position of the plug determines the flow rate of the heat transfer medium across the area released between the seat (2) and plug (3).

The position of the plug determines the flow rate of the heat transfer medium across the area released between the seat (2) and plug (3).

The temperature set point is adjustable with a key (10) to a value which can be read off from the dial (11).

Accessories

- **Thermowells with threaded or flanged connections** for Types 2231, 2232 and 2235 Bulb Sensors · G 1/1 NPT threaded connection, PN 40/Class 300, made of bronze, steel or CrNiMo steel · PN 16/Class 125, made of copper · Flanged connection, DN 32/NPS 1½, PN 40/Class 300, with thermowell made of CrNiMo steel/steel · Thermowell made of PTFE, PN 6 (flange PN 40/Class 300)

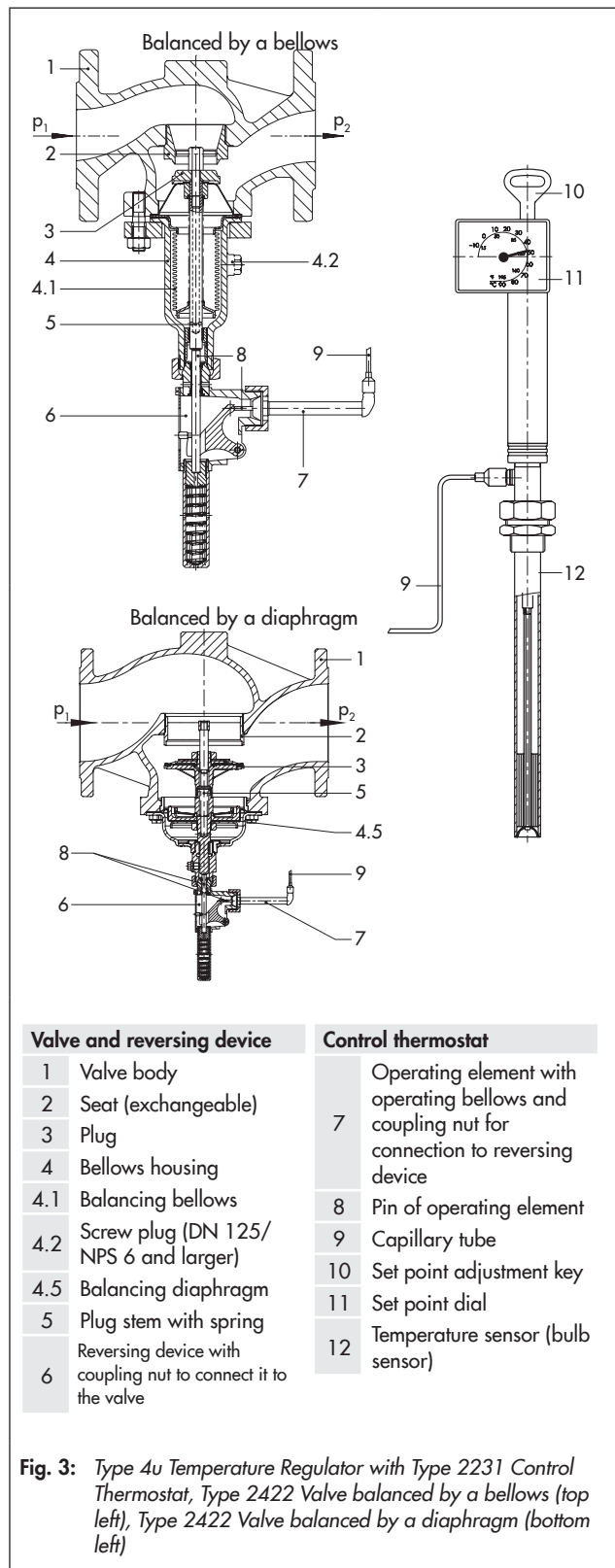


Fig. 3: Type 4u Temperature Regulator with Type 2231 Control Thermostat, Type 2422 Valve balanced by a bellows (top left), Type 2422 Valve balanced by a diaphragm (bottom left)

- **Thermowell for flammable gases** tested by DVGW, G 1/1 NPT threaded connection, PN 100/Class 600
- **Mounting parts** for Types 2233 and 2234 · Clamps for wall mounting · Perforated cover for thermostat
- **Extension piece or separating piece** · To protect the operating element from inadmissible operating conditions, an extension piece or separating piece must be installed between the valve and the operating element.

An **extension piece** (for valves **balanced by a bellows**) is needed for temperatures over 220 °C/430 °F. The standard version does not have sealing. The special version of the extension piece for DN 15 to 100/NPS ½ to 4 is made of stainless steel and has a bellows seal. It additionally acts as a separating piece.

In combinations with valves made of cast iron or spheroidal graphite iron together with Type 2212 Safety Temperature Limiter or Type 2213 Safety Temperature Monitor, an extension piece is required for temperatures over 150 °C/300 °F.

Separating piece made of brass (for water and steam) or CrNi steel (for water and oil). A separating piece must be used when a seal between thermostat and valve is required. Separating pieces made of CrNi steel must be used when all wetted parts are to be free of non-ferrous metals.

In addition, it prevents the medium from leaking while the thermostat is being replaced.

- **Do2 double adapter** for second thermostat · DoS with electric signal transmitter
- **Manual adjuster Ma** with travel indicator · MaS with electric signal transmitter

Typetested safety devices

The registration number is available on request.

The following versions are available:

- **Temperature regulators (TR)** with a Type 2231, 2232, 2233, 2234 or 2235 Thermostat and a Type 2422 Valve in DN 15 to 150/NPS ½ to 6, for which the maximum operating pressure must not exceed the maximum permissible differential pressure Δp specified in the technical data.
Sensors without thermowell: applicable up to PN 40/Class 300
Sensors with thermowell: only use SAMSON G 1/1 NPT version made of bronze, steel or stainless steel up to PN 40/Class 300, copper up to PN 16/Class 150
- **Thermowell for flammable gases typetested by DVGW**, G 1/1 NPT threaded connection, PN 100/Class 600
- **Safety temperature monitors (STM) and safety temperature limiters (STL)**. Details in Data Sheets ▶ T 2043 and ▶ T 2046.

Further details on the selection application of typetested equipment can be found in Information Sheet ▶ T 2040.

Installation

- **Valves**
Install the valve in horizontal pipelines. The thermostat connection must face downwards. The direction of flow must match the direction indicated by the arrow on the body. Other mounting positions on request.
- **Capillary tube**
The capillary tube must be run in such a way that the ambient temperature range cannot be exceeded, any deviations in temperature cannot occur and that the tube cannot be damaged. The smallest permissible bending radius is 50 mm/2".

Flow rate diagram for water

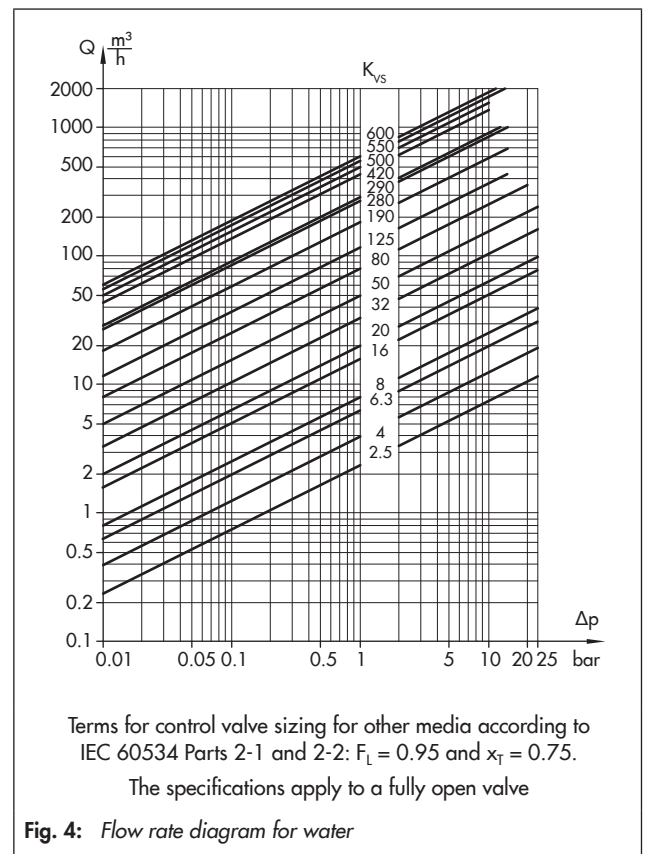


Fig. 4: Flow rate diagram for water

- **Temperature sensor**
The temperature sensor can be installed in any position as required. The entire temperature sensor must be immersed in the process medium.
Select the site of installation where overheating or considerable idling times cannot occur.
Only the combination of the same kind of materials is permitted (e.g. a stainless steel heat exchanger with thermowells made of stainless steel 1.4571).
- **Assembly**
Observe a minimum spacing of 50 mm/2" for assembly and maintenance purposes.

Dynamic behavior of the thermostats

The dynamics of the regulator are mainly determined by the response of the sensor with its characteristic time constant. Table 1 lists the response times of SAMSON sensors operating according to different principles measured in water.

Table 1: Dynamic behavior of SAMSON thermostats

Principle of operation	Control thermostat	Time constant [s]	
		Without thermowell	With thermowell
Liquid expansion	Type 2231	70	120
	Type 2232	65	110
	Type 2233	25	- ¹⁾
	Type 2234	15	- ¹⁾
	Type 2213	70	120
Adsorption	Type 2212	- ¹⁾	40

¹⁾ Not permissible

Technical data for DIN devices

Table 2: Technical data · Valves · All pressures in bar (gauge)

Type 2422 Valve · Balanced by a bellows · Balanced by a diaphragm				
Valve size		DN 15 to 50	DN 65 to 100	DN 125 to 150
Pressure rating		PN 16, 25, 40		
Permissible valve temperature	Balanced by a bellows	Max. 350 °C · See pressure-temperature diagram in ► T 2010		
	Balanced by a diaphragm	–	Max. 150 °C · See pressure-temperature diagram in ► T 2010	–
Leakage class according to IEC 60534-4	Balanced by a bellows	Metal seal: ≤ 0.05 % of K_{VS} coefficient		Soft seal: ≤ 0.01 % of K_{VS} coefficient
	Balanced by a diaphragm	–	Soft seal: ≤ 0.01 % of K_{VS} coefficient	–
Conformity		CE · EAC		

Table 3: Technical data · Control thermostats

Type 2231 to 2235 Thermostat		Size 150
Set point ranges		–10 to +90 °C, 20 to 120 °C or 50 to 150 °C For Types 2232, 2234 and 2335 also 100 to 200 °C, 150 to 250 °C
Perm. ambient temperature at the set point adjustment		–40 to +80 °C
Perm. temperature at the sensor		100 K above the adjusted set point
Perm. pressure at sensor	Type 2231 and Type 2232	Without/with thermowell: PN 40 · Thermowell with flange: PN 40 or 100 ¹⁾
	Type 2233, Type 2234 and Type 2235	Without thermowell: PN 40 · With flange on request
Capillary tube length		5 m (10 or 15 m as special version)

¹⁾ Thermowell (DVGW version)

Table 4: Materials · Material number according to DIN EN

Type 2422 Valve · Balanced by a bellows				
Valve size	DN 15 to 150			
Pressure rating	PN 16	PN 16 and 25	PN 16, 25 and 40	
Valve body	Cast iron EN-GJL-250	Spheroidal graphite iron EN-GJS-400-18-LT	Cast steel 1.0619	Cast stainless steel 1.4408
Valve seat	CrMo steel · Cr steel ⁶⁾			CrNiMo steel
Plug ²⁾	Up to DN 100 ¹⁾	CrNiMo steel		
	DN 125 to 250	CrNiMo steel, plug with PTFE seal		CrNiMo steel
Plug stem	CrNi steel			
Spring	CrNi steel			
Balancing bellows	CrNiMoTi steel · DN 125: CrNiMo steel			
Bellows housing	Cr steel			CrNi steel
Body gasket	Graphite on metal core			
Extension piece/separating piece ⁵⁾	Brass (for version free of non-ferrous metal: CrNi steel)			CrNi steel

¹⁾ Optionally with soft seal with standard K_{VS} coefficients

²⁾ Soft-seated plug with EPDM ring for temperatures up to 150 °C

³⁾ PN 16 only

⁴⁾ On request

⁵⁾ Select the material of the accessories to match that of the main valve

⁶⁾ For DN 65 to 100 only

Table 4: Materials · Material number according to DIN EN

Type 2422 Valve · Balanced by a diaphragm		
Valve size	DN 65 to 100	
Pressure rating	PN 16	PN 25
Valve body	Cast iron EN-GJL-250	Spheroidal graphite iron EN-GJS-400-18-LT
Valve seat	CrNiMo steel	
Plug	Brass, plug with EPDM soft seal	
Diaphragm cases	1.0619	
Pressure balancing	Diaphragm plate CrNi steel · EPDM balancing diaphragm, max. 150 °C or NBR diaphragm, max. 80 °C	
Type 2231, Type 2232, Type 2233, Type 2234 and Type 2235 Thermostats		
	Standard version	Special version
Operating element	Nickel-plated brass	
Sensor	Type 2231 and Type 2232	Bronze
	Type 2233 and Type 2234	Copper
	Type 2235	Copper
Capillary tube	Copper	Plastic-coated copper
Thermowell		
With G 1 threaded connection	Thermowell	Bronze, steel, copper ³⁾
	Threaded nipple	Brass · Steel
With flanges ⁴⁾	Thermowell	Steel
	Threaded nipple	Steel

1) Optionally with soft seal with standard K_{VS} coefficients

2) Soft-seated plug with EPDM ring for temperatures up to 150 °C

3) PN 16 only

4) On request

5) Select the material of the accessories to match that of the main valve

6) For DN 65 to 100 only

Table 5: K_{VS} coefficients, x_{FZ} values and max. permissible differential pressures Δp

Terms for control valve sizing according to IEC 60534, Parts 2-1 and 2-2: $F_L = 0.95$, $X_T = 0.75$

Type 2422 Valve · Balanced by a bellows													
Valve size	DN	15	20	25	32	40	50	65	80	100	125	150	
Valve travel	mm	10						16			22		
Standard K_{VS} coefficient		4	6.3	8	16	20	32	50	80	125	190	280	
Max. perm. differential pressure Δp		25 bar						20 bar			16 bar		12 bar
Reduced K_{VS} coefficient		2.5 · 4 · 6.3			6.3	8	16	32			80	125	
Max. perm. differential pressure Δp		25 bar									20 bar		16 bar
x_{FZ} value		0.65	0.6	0.55		0.45	0.4		0.35				
Type 2422 Valve · Balanced by a diaphragm													
Valve size	DN	65				80				100			
Valve travel	mm	16											
K_{VS} coefficient		50				80				125			
Max. perm. differential pressure Δp		10 bar											
x_{FZ} value		0.4				0.35							

Dimensional drawings: Type 2422 Valve · Balanced by a bellows · Balanced by a diaphragm · With connection for Type 2231 to Type 2234 Thermostat

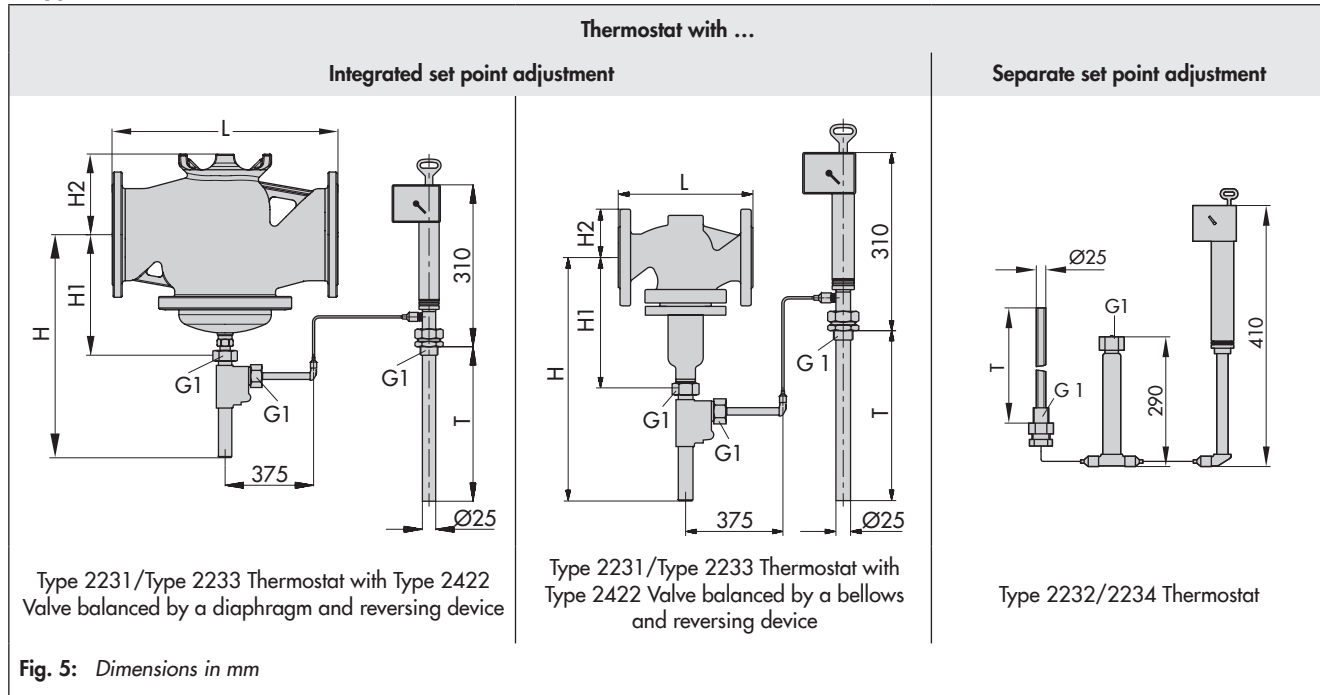


Table 6: Dimensions in mm and weights · Type 2422 Valve

Type 2422 Valve · Balanced by a bellows												
Valve size	DN	15	20	25	32	40	50	65	80	100	125	150
Length L		130	150	160	180	200	230	290	310	350	400	480
H2	Body	Forged steel	53	–	70	–	92	98	–			
		Other materials	55			72			100	120	145	175
H1		Up to 220 °C (without extension piece)	225						300	355	460	590
		Up to 350 °C (with extension piece)	365						440	495	600	730
H		Up to 220 °C (without extension piece)	425						500	555	660	790
		Up to 350 °C (with extension piece)	565						640	695	800	930
Weight ¹⁾ , approx. kg		5	5.5	6.5	13	13.5	16	27	32	40	70	113
Type 2422 Valve · Balanced by a diaphragm												
Valve size	DN	65			80			100				
Length L		290			310			350				
H2		98						118				
H1		201			202			218				
H		401			402			418				
Weight ¹⁾ , approx. kg		30			37.5			45				

¹⁾ Based on PN 16 and without extension piece: +15 % for PN 25 and 40

Table 7: Types 2231 to 2235 Control Thermostat

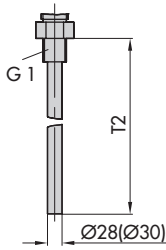
Control thermostat	Type 2231	Type 2232	Type 2233	Type 2234	Type 2235
Immersion depth T	290 ¹⁾	235 ¹⁾	430	460	3500 ¹⁾
Weight, approx. kg	3.2	4	3.4	3.7	5.0

¹⁾ Larger immersion depths on request

Thermowells for Type 2231 and Type 2232

Table 8: Thermowells for Type 2231 and Type 2232

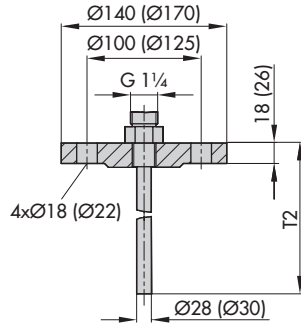
Control thermostat	Type 2231	Type 2232
Immersion depth T2	325 mm	250 mm



With threaded connection

G 1 for PN 40 and 100 (dimensions for PN 100 in parentheses)

Thermowell made of copper: PN 16

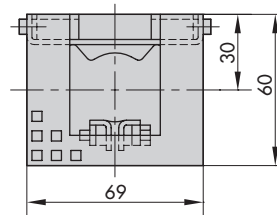
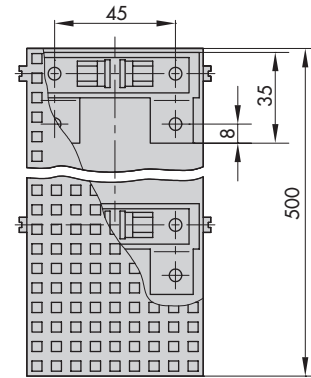


With flanges

DN 32 for PN 40
DN 40 for PN 100 (dimensions for PN 100 in parentheses)

Mounting parts for Type 2233 and Type 2234

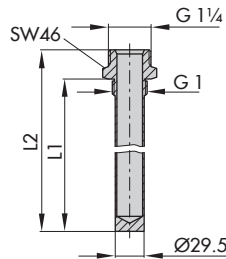
Clamps and perforated cover for wall mounting



Thermowells for Type 2231 and Type 2232

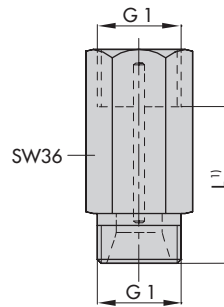
Table 9: Thermowells for flammable gases (G 1/PN 100)

Control thermostat	Type 2231	Type 2232
Length L1	315	255
Length L2	340	280



Thermowells for flammable gases

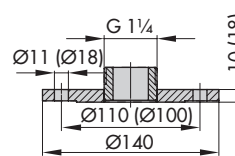
Extension piece/separating piece



Extension piece (standard)		
L (approx.)	mm	140
Weight, approx.	kg	0.5
With bellows seal (special version)		
L (approx.)	mm	180
Weight, approx.	kg	0.6
Separating piece with seals		
L (approx.)	mm	55
Weight, approx.	kg	0.2

¹⁾ Add the dimension L to H and H1 when these accessories are used.

Flange for Types 2233, 2234 and 2235



Steel/CrNiMo steel
Flanges PN 6
140 mm outside diameter
Flange PN 40/DN 32 (dimensions in parentheses)

Technical data for ANSI devices

Table 10: Technical data · Valves · All pressures in psi (gauge)

Type 2422 Valve · Balanced by a bellows · Balanced by a diaphragm				
Valve size		NPS ½ to 2	NPS 2½ to 4	NPS 6
Pressure rating		Class 125, 150 and 300		
Perm. valve temperature	Balanced by a bellows	Max. 660 °F · See pressure-temperature diagram in ► T 2010		
	Balanced by a diaphragm	–	Max. 300 °F · See pressure-temperature diagram in ► T 2010	–
Leakage class acc. to ANSI/FCI 70-2	Balanced by a bellows	Metal seal: ≤0.05 % of C _v coefficient		Soft seal: ≤0.01 % of C _v coefficient
	Balanced by a diaphragm	–	Soft seal: ≤0.01 % of C _v coefficient	–
Conformity		CE · ENEC		

Table 11: Technical data · Control thermostats

Type 2231 to 2234 Thermostat		Size 150
Set point ranges		15 to 195 °F, 70 to 250 °F or 120 to 300 °F For Types 2232, 2234 and 2335 also 210 to 390 °F, 300 to 480 °F
Perm. ambient temperature at the set point adjustment		–40 to +175 °F
Perm. temperature at the sensor		100 K above the adjusted set point
Perm. pressure at sensor	Type 2231 and Type 2232	Without/with thermowell: Class 300 · Thermowell with flange: Class 300 or 600 ¹⁾
	Type 2233, Type 2234 and Type 2235	Without thermowell: Class 300 · With flange on request
Capillary tube length		16 ft (33 or 55 ft as special version)

¹⁾ Thermowell (DVGW version)

Table 12: Materials · Material number according to ASME

Type 2422 Valve · Balanced by a bellows			
Valve size	NPS	1 to 6	½ to 6
Pressure rating		Class 125	Class 150 and 300
Valve body		Cast iron A126B	Cast steel A216 WCB/WCC Cast stainless steel A351 CF8M
Valve seat		CrMo steel · Cr steel ⁶⁾	
Plug ²⁾	Up to NPS 4 ¹⁾	CrNiMo steel	
	NPS 6	CrNiMo steel, plug with PTFE seal	CrNiMo steel
Plug stem		CrNi steel	
Spring		CrNi steel	
Balancing bellows		CrNiMoTi steel	
Bellows housing		Cr steel	CrNi steel
Body gasket		Graphite on metal core	
Extension piece/separating piece ⁵⁾		Brass (for version free of non-ferrous metal: CrNi steel)	CrNi steel

¹⁾ Optionally with soft seal with standard C_v coefficients

²⁾ Soft-seated plug with EPDM ring for temperatures up to 300 °F

³⁾ Class 125 only

⁴⁾ On request

⁵⁾ Select the material of the accessories to match that of the main valve

⁶⁾ For NPS 2½ to 4 only

Table 12: Materials · Material number according to ASME

Type 2422 Valve · Balanced by a diaphragm		
Valve size	NPS 2½ to 4	
Pressure rating	Class 125	Class 150
Valve body	Cast iron A126B	Cast steel A216 WCB/WCC
Valve seat	CrNiMo steel	
Plug	Brass, plug with EPDM soft seal	
Diaphragm cases	1.0619	
Pressure balancing	Diaphragm plate CrNi steel · EPDM balancing diaphragm, max. 300 °F or NBR diaphragm, max. 175 °F	
Body gasket	Graphite on metal core	
Type 2231, Type 2232, Type 2233, Type 2234 and Type 2235 Thermostats		
Version	Standard version	Special version
Operating element	Nickel-plated brass	
Sensor	Type 2231/2232	Bronze
	Type 2233/2234	Copper
	Type 2235	Copper
Capillary tube	Copper	Plastic-coated copper
Thermowell		
With threaded connection (1 NPT)	Immersion tube	Bronze, steel, copper ³⁾
	Threaded nipple	Brass · Steel
With flanges ⁴⁾	Immersion tube	Steel
	Threaded nipple	Steel

1) Optionally with soft seal with standard C_V coefficients

2) Soft-seated plug with EPDM ring for temperatures up to 300 °F

3) Class 125 only

4) On request

5) Select the material of the accessories to match that of the main valve

6) For NPS 2½ to 4 only

Table 13: C_V coefficients, x_{FZ} values and max. permissible differential pressures Δp

Terms for control valve sizing according to IEC 60534, Parts 2-1 and 2-2: $F_L = 0.95$, $X_T = 0.75$

Type 2422 Valve · Balanced by a bellows										
Valve size	NPS	½	¾	1	1½	2	2½	3	4	6
Valve travel	in	0.4					0.6			0.9
Standard C_V coefficient		5.0	7.5	9.4	23	37	60	94	145	330
Max. perm. differential pressure Δp		360 psi					290 psi		230 psi	175 psi
Reduced C_V coefficient		3.0 · 5.0 · 7.5		5.0	9.4	20	23	37	94	–
Max. perm. differential pressure Δp		360 psi						290 psi	230 psi	–
x_{FZ} value		0.65	0.6	0.55	0.45	0.4		0.35		
Type 2422 Valve · Balanced by a diaphragm										
Valve size	NPS	2½			3			4		
Valve travel	in	0.9								
C_V coefficient		60			94			145		
Max. perm. differential pressure Δp		150 psi								
x_{FZ} value		0.4			0.35					

Dimensional drawings: Type 2422 Valve · Balanced by a bellows · Balanced by a diaphragm · With connection for Type 2231 to Type 2234 Thermostat

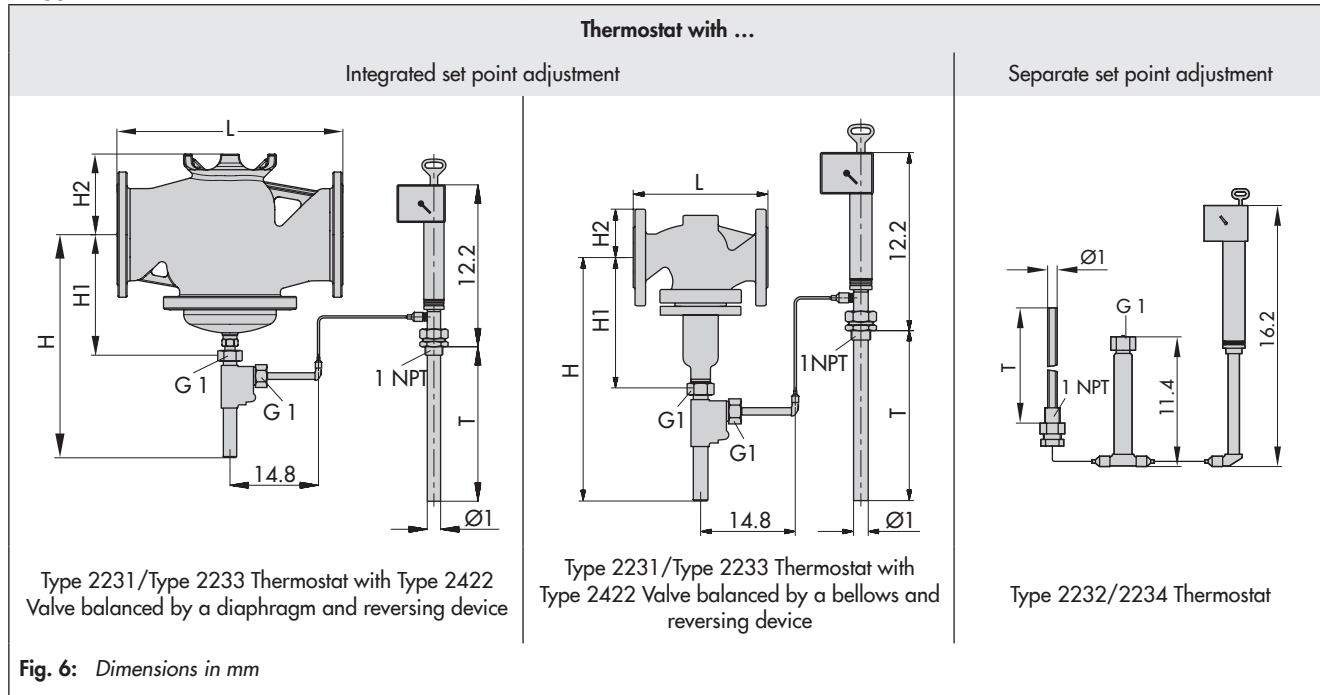


Table 14: Dimensions in inches and weights · Type 2422 Valve

Type 2422 Valve · Balanced by a bellows										
Valve size	NPS	½	¾	1	1½	2	2½	3	4	6
Length L	Class 125	–	–	7.25	8.75	10	10.9	11.75	13.9	17.75
	Class 150	7.25								
	Class 300	7.5	7.6	7.75	9.25	10.5	11.5	12.5	14.5	18.6
H2	Body									
	Forged steel	2	–	2.8	3.6	3.9	–			
	Other materials	2.2			2.8		3.9	4.7	6.9	
H1	Up to 430 °F (without extension piece)	8.9					11.8	14	23.2	
	Up to 660 °F (with extension piece)	14.4					17.3	19.5	28.7	
H	Up to 430 °F (without extension piece)	16.7					19.7	21.9	31.1	
	Up to 660 °F (with extension piece)	22.2					25.2	27.4	36.6	
Weight ¹⁾ , approx. lbs		12.5	12.23	15.4	30.9	37.5	62	73	90	254

Type 2422 Valve · Balanced by a diaphragm				
Valve size	NPS	2½	3	4
Length L		10.9	11.75	13.9
H2		3.86		24.7
H1		7.9	8	8.6
H		15.8	15.8	16.5
Weight ¹⁾ , approx. lbs		68.5	85	101.5

¹⁾ Based on Class 125 and without extension piece: +15 % for Class 150 and 300

Table 15: Types 2231 to 2235 Control Thermostat

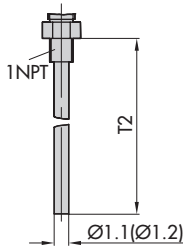
Control thermostat	Type 2231	Type 2232	Type 2233	Type 2234	Type 2235
Immersion depth T in	11.4 ¹⁾	9.25 ¹⁾	17	18.1	137.8
Weight, approx. lbs	7.1	9	7.5	8.2	11

¹⁾ Larger immersion depths on request

Thermowells for Type 2231 and Type 2232

Table 16: Thermowells for Type 2231 and Type 2232

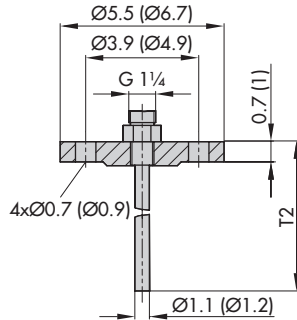
Control thermostat	Type 2231	Type 2232
Immersion depth T2	12.8 in	9.9 in



With threaded connection

1 NPT for Class 300 and 600 (dimensions for Class 600 in parentheses)

Copper thermowell:
Class 125

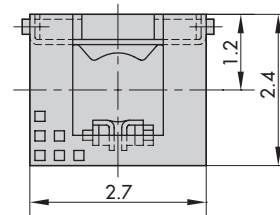
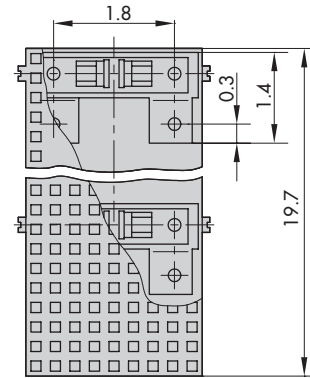


With flanges

NPS 1 1/4 · Class 300
NPS 1 1/2 · Class 600 (dimensions in parentheses)

Mounting parts for Type 2233 and Type 2234

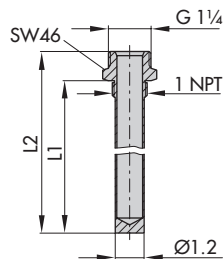
Clamps and perforated cover for wall mounting



Thermowells for Type 2231 and Type 2232

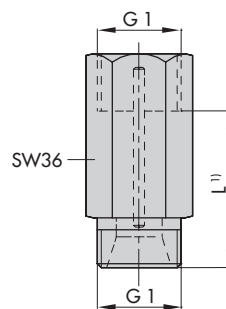
Table 17: Thermowells for flammable gases

Control thermostat	Type 2231	Type 2232
Length L1	12.4	10
Length L2	13.4	11



Thermowells for flammable gases
1 NPT · Class 600

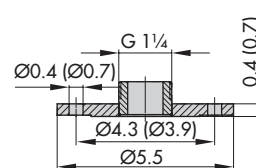
Extension piece/separating piece



Extension piece (standard)		
L (approx.)	in	5.5
Weight, approx.	lbs	1.1
With bellows seal (special version)		
L (approx.)	in	7.1
Weight, approx.	lbs	1.3
Separating piece with seals		
L (approx.)	in	2.1
Weight, approx.	lbs	0.4

1) Add the dimension L to H and H1 when these accessories are used.

Flange for Types 2233, 2234 and 2235



Steel/CrNiMo steel
Flanges PN 6
Outside diameter: 5.5"
Flange NPS 1 1/4 · Class 300
(dimensions in parentheses)

Ordering text (DIN)

Type 4u Temperature Regulator/....

DN ..., PN ...

Body material ...

Balanced by a bellows or diaphragm

With Type ... Thermostat, set point range ... °C

Capillary tube ... m

Optionally, special version ...

Optionally, accessories ...

Ordering text (ANSI)

Type 4u Temperature Regulator/....

NPS ..., Class ...

Body material ...

Balanced by a bellows or diaphragm

With Type ... Thermostat, set point range ... °F

Capillary tube ... ft

Optionally, special version ...

Optionally, accessories ...