

Features



- Wide regulating range
- Small dimensions
Space-saving - easy to install in panels
- Ultra-short bounce time.
Limits wear to an absolute minimum and increases reliability.
- Electrical connection at front of unit.
Makes rack mounting easier and also saves space
- Suitable for both alternating current and direct current
- Cable entry for 6-14 mm diameter cables
- Screwed cable entry makes rewiring easy
- Standard screwed cable entry Pg 13.5 and Pg 16

Description

Danfoss KP thermostats are used for regulating, monitoring and alarm systems in industry. KP thermostats are temperature-operated electric circuit breakers. The thermostats are fitted with a single-pole switch (SPDT)

The position of the switch depends on the thermostat setting and sensor temperature. A KP thermostat can be connected and switch to single-phase alternating current motors of up to about 2 kW.

Definitions

Differential

The difference between cut-in and cut-out temperature. The differential is a condition for stable automatic plant operation.

Mechanical differential (intrinsic differential)

The differential set on the differential spindle of the unit.

Working differential (thermal differential)

The differential on which the plant operates. The working differential is the sum of the mechanical differential and the differential arising from the time constant.

Reset

1. *Manual reset.*

Resets only when the reset button is pressed. Min. reset units will restart after the temperature at the thermostat sensor has risen by a value greater than that of the fixed differential. Max. reset units will restart after the temperature at the thermostat sensor has fallen by a value greater than that of the fixed differential

2. *Automatic reset.*

Units with automatic reset restart automatically after stop.

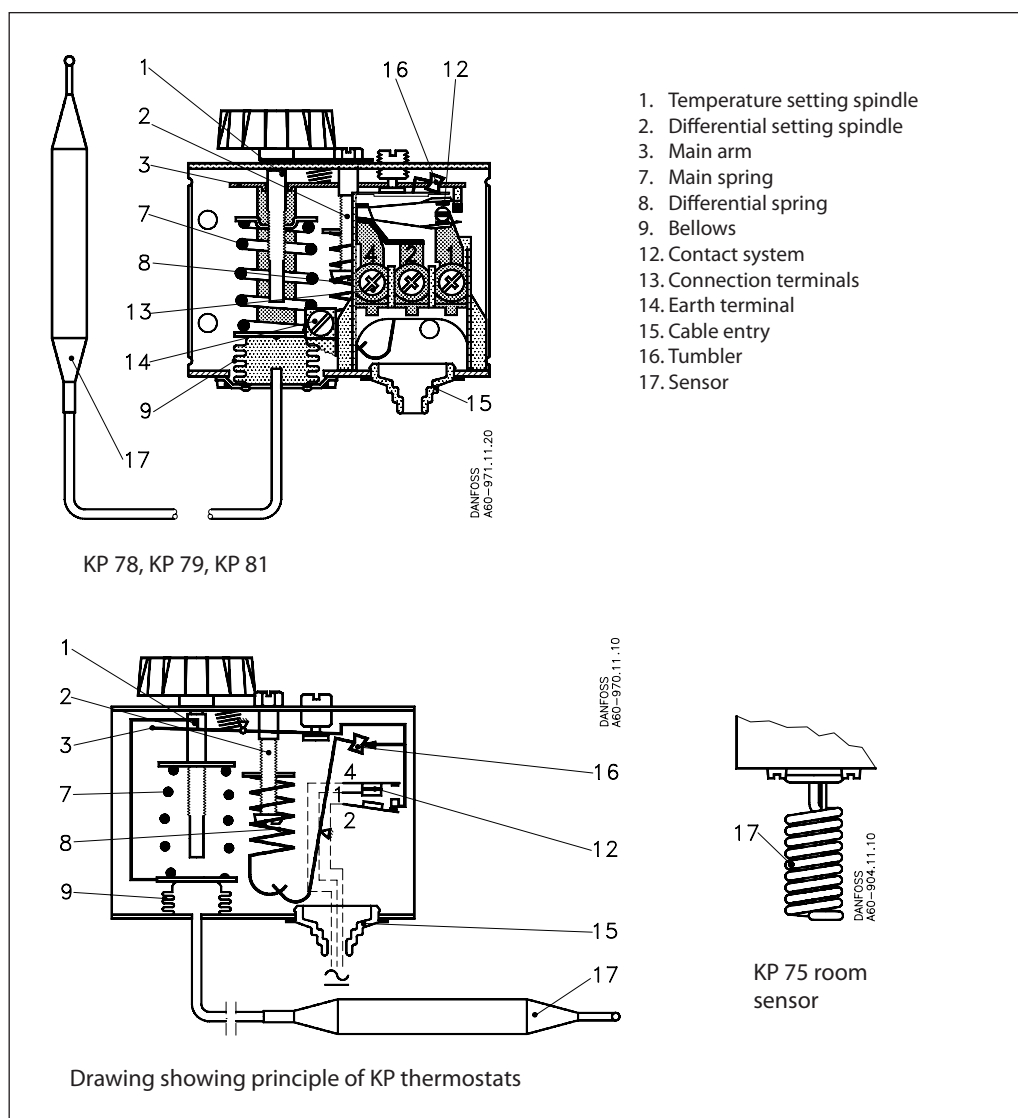
Ordering
Thermostats type KP 75 - KP 81

Setting range [C°]	Differential [C°]	Max. sensor temperature [C°]	Capillary tube length m	Contact material	Code no.	Type
0 → 40	3 → 10	80	Room sensor	Ag	060L121266	KP 75
				Au	060L117166	
30 → 90	5 → 15	150	2	Ag	060L118466	KP 78
50 → 100	5 → 15	150	2	Ag	060L112666	KP 79
80 → 150	7 → 20	200	2	Ag	060L112566	KP 81
80 → 150	7 → 20	200	3	Ag	060L118366	KP 81
80 → 150	7 → 20	200	5	Ag	060L117066	KP 81
80 → 150	8 (max. reset)	200	2	Ag	060L115566	KP 81 (max. reset)

Technical data

Ambient temperature °C	-40 °C - +65 °C (for short periods up to +80 °C)
Sensor material	Tinned copper Cu/Sn5
Contact system	<p>Single-pole changeover switch (SPDT)</p>
Contact load, Ag contact set	Alternating current: AC-1: 16 A, 400 V AC-3: 16 A, 400 V AC-15: 10 A, 400 V
Contact material AgCdO	Direct current: DC-13: 12 W, 220 V
Contact load, Au contact set	See Information page 14
Enclosure, IP 33 grade	Unit must be mounted on a flat surface / a flat fitting and all unused holes covered
Enclosure, IP 44 grade	Mounted as IP 33 plus fitting of top cover, code no. 060-109766
Approvals	EN 60 947-4. -5 RINA, Registro Italiano Navale RMRS, Maritime Reg. of Shipping, Russia Bureau Veritas Germanischer Lloyd, Germany DNV, Det Norske Veritas, Norway UL approved version are available CCC, China Compulsory Certificate
Cable connection	Entry for 6-14 mm diameter cable
Mounted on backplate or wall bracket	Vibration-proof in the range 0-1000 Hz, 4 g (1 g = 9.81 m/s ²)
Mounted on angle bracket	Not recommended for areas where vibration occurs

Design and function



The contact system in KP thermostats has a snap function. This means that the bellows is active only when the cut-in or cut-out value is reached.

The design of KP thermostats gives the following advantages:

- High contact load
- Ultra-short bounce times. Limits wear to an absolute minimum and increases reliability.
- Vibration-proof in the range 0-1000 Hz, 4 g (1 g = 9.81 m/s²)
- Long operating life

Setting

Thermostats with automatic reset
 Set the upper limit temperature on the range scale. Then set the differential on the DIFF scale.
 The temperature set on the range scale is also the temperature at which contact changeover re-occurs on rising temperature.
 The contacts changeover when the temperature has fallen to a value lower than that set on the DIFF scale.
 If at lower settings the plant will not start/stop, the reason might be that the differential has been set too high.

Thermostats with minimum reset
 Set the temperature on the range scale. The differential setting is fixed.
 Min. reset units will restart after the temperature at the thermostat sensor has risen by a value greater than that of the fixed differential.

Thermostats with maximum reset
 Set the stop temperature on the range scale. The differential setting is fixed.
 Max. reset units will restart after the temperature at the thermostat sensor has fallen by a value greater than that of the fixed differential

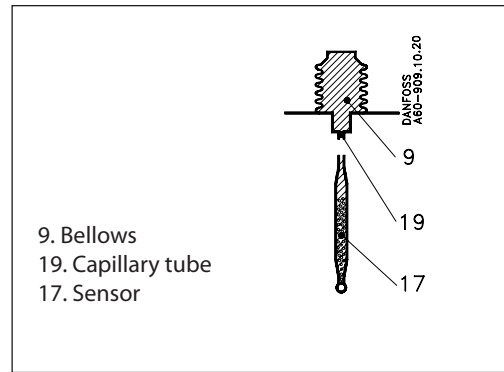
Charges

Absorption charge

The charge consists partly of a superheated gas and partly of a solid substance with a large absorption surface.

The solid substance is concentrated in the sensor (17), and consequently it is always the sensor that comprises the temperature-regulating part of the thermostatic element.

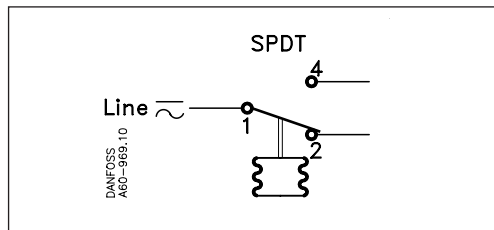
The sensor can be placed both warmer or colder than the thermostat housing and capillary tube. However, placing it in an ambient temperature higher or lower than +20 °C can affect the accuracy of the scale.



Gold contacts

Contact system

Single-pole changeover switch (SPDT)
Contact material: Gold-plated silver

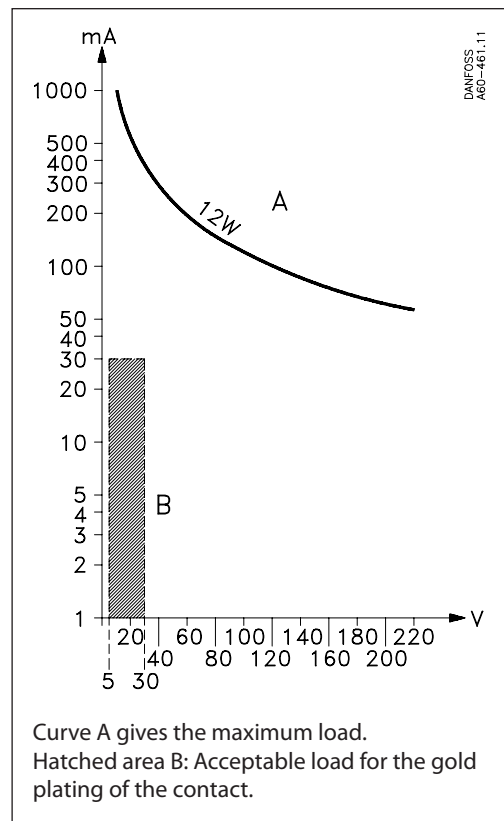


Contact load (when Au surface is burnt away)

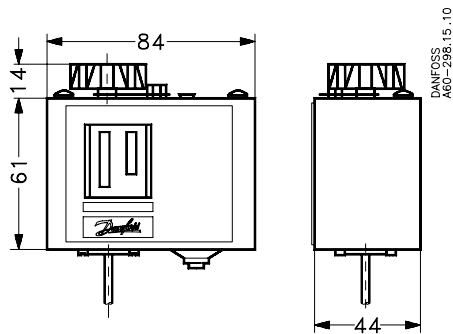
Alternating current:

- Ohmic load: AC-1: 10 A, 440 V
- Inductive load: AC-3: 6 A, 440 V
- AC-15: 4 A, 440 V

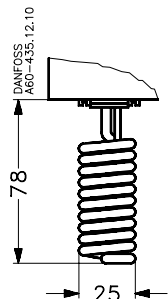
Direct current: DC-13: 12 W, 220 V



Dimensions and weight

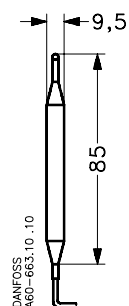


Thermostats KP 75, KP 78, KP 79, KP 81
Weight approx. 0.4 kg

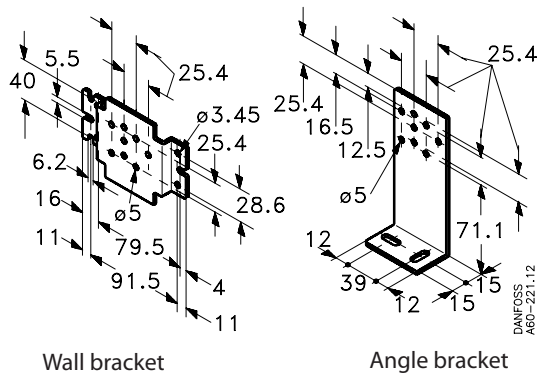


KP 62

KP 75
Sensor: Tinned copper Cu/Sn 5



KP 78, 79, 81
Sensor: Tinned copper Cu/Sn 5



Wall bracket

Angle bracket

Accessories for KP thermostats

Part	Symbol	Description	Total	Code no.
Brackets with mounting screws and washers		Wall bracket for KP	10	060-105566
		Angle bracket for KP	10	060-105666
Capillary tube gland		Oil-resistant rubber gasket for max. 110°C and 90 bar	5	060-422066
Sensor holder		Sensor holder for wall mounting with four capillary tube clips and 9-off 12 mm pins	20	017-420166
Knob			20	060-106366
Screwed cable entry		PG 13.5 with special nut For 6-14 mm diameter cables A standard Pg 16 cable entry can be used for 8-16 mm diameter cables	5	060-105966
Sealing screw		For sealing the setting on KP	20	060-105766
Top cover		If a bracket is mounted on the backplate of the housing, the KP thermostat will have an IP 44 grade of enclosure. The cover protects the setting spindles.	10	060-109766
Protective cap		Protective cap for KP thermostats. To protect the unit against rain and humidity. Grade of enclosure: IP 44 Material: Polyethylene Max. ambient temperature: 65°C Min. ambient temperature: -40°C	7	060-003166
Sensor pocket		For all KP thermostats with cylindrical remote sensor. Sensor pocket, gasket and union for screwing into G $\frac{1}{2}$ connectors welded onto tubes, containers, etc.		
		Int. diameter 9.6 mm, insert depth 112 mm (brass). Ext. diameter 11 mm	1	017-437066
		Int. diameter 9.6 mm, insert depth 112 mm (st 18/8). Ext. diameter 11 mm	1	017-436966
	Int. diameter 9.6 mm, insert depth 465 mm (brass). Ext. diameter 11 mm	1	017-421666	
	Media temperature for sensor : 250 °C This temperature can be increased by applying a different gasket material			
Heat-conductive aluminium paste		For KP and RT thermostats with sensor mounted in a sensor pocket. Temperature range: -20 to 150°C (short-lived + 220°C) Tube with 5 g aluminium paste	1	041E0114

IP 33/44 enclosure

IP 33 grade of enclosure is obtained by mounting the unit on a flat surface or a flat fitting and then covering all unused holes. IP 44 grade of enclosure is obtained by mounting the unit as for IP 33 grade of

enclosure and then fitting a top cover, code no. **060-109766**. Alternatively the unit can be mounted in a poly-ethylene protective cap, type no. **060-003166**.

IP testing

An IP grade of enclosure certification is obtained when the product has been submitted to an IP test. The IP classification contains two digits, the first IP digit denoting

the degree of enclosure against foreign bodies, the second digit denoting the degree of watertightness. The corresponding tests are as follows:

IP 1st digit	Foreign body test	IP 2nd digit	Watertightness test ¹⁾
0	No test	0	No test
1	A ball of Ø50 mm cannot enter	1	Vertically falling drops, dripping water
2	A ball of Ø12.5 mm and a test probe of Ø12 mm, L = 80 mm, cannot be inserted	2	Vertically (±15°) falling drops
3	A rod of Ø2.5 mm cannot enter	3	Water sprays ±60° from vertical
4	A wire of Ø1 mm cannot enter	4	Water sprays from all directions
5	As 4 + Dust in amounts that might cause damage cannot enter	5	Water jets from all directions, 12 l/mm
6	As 4 + Dust cannot enter	6	Water jets from all directions, 100 l/mm
		7	Immersion in 1 m water
		8	Subject to agreement

¹⁾ After all these tests, water in amounts that might cause damage must not have entered the enclosure and not have collected in electrically conductive parts or cable entries.

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