Data sheet



Thermostat

KP

For industrial applications

Description

The KP thermostats are used for control, monitoring and alarm systems in a wide variety of industry applications.

Features & benefits

- Wide setting range
- Shock and impact resistant
- Snap action electrical contacts minimize chatter, bounce, and wear, and ensure long term electrical and mechanical reliability
- Small dimensions – space saving and easy to install in panels
- Electrical connection from front of the unit makes rack mounting easier and also saves space
- Suitable for alternating current and direct current
- Fitted with a single pole double throw contact system (SPDT)
- Manual trip function enables electrical connections verification without any tools or temperature changes in the application
- Versions with automatic and manual reset available

Ordering

Product code numbers

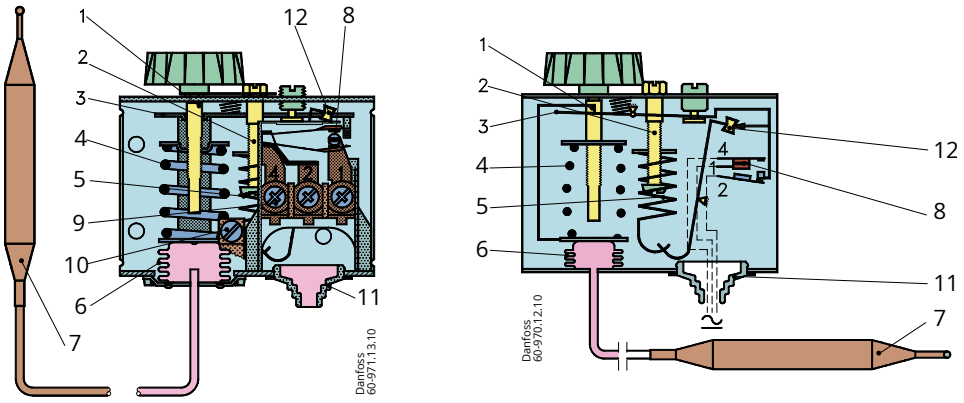
Type	Temperature range [°C] [min]	Temperature range [°C] [max]	Diff. @ Min. range setting[°C] [min]	Diff. @ Min. range setting[°C] [max]	Reset function	Sensor type	Capillary tube length [mm]	Contact function	Code number	Packing format
KP75	0	35	3.5	16.0	Auto	Remote bulb	2000	SPDT	060L113766	Multi pack
KP75	0	35	3.5	16.0	Auto	Remote duct sensor	2000	SPDT	060L112066	Multi pack
KP75	0	40	4.0	10.0	Auto	Room sensor		SPDT gold	060L117166	Multi pack
KP75	0	40	4.0	10.0	Auto	Room sensor		SPDT	060L121266	Multi pack
KP78	30	90	4.5	20.0	Auto	Rigid Sensor		SPDT	060L122966	Multi pack
KP78	30	90	4.5	20.0	Auto	Remote bulb	2000	SPDT	060L118466	Multi pack
KP79	50	100	5.0	15.0	Auto	Rigid Sensor		SPDT	060L127466	Multi pack
KP81	80	150			Manual Max	Remote bulb	2000	SPDT	060L115566	Multi pack
KP81	80	150	6.0	20.0	Auto	Remote bulb	2000	SPDT	060L115766	Industrial pack
KP81	80	150	6.0	20.0	Auto	Remote bulb	2000	SPDT	060L112566	Multi pack
KP81	80	150	6.0	20.0	Auto	Remote bulb	5000	SPDT	060L117066	Multi pack
KP81	80	150	6.0	20.0	Auto	Remote bulb	3000	SPDT	060L118366	Multi pack
KP81	80	150			Manual Max	Remote bulb	2000	SPDT	060L115666	Industrial pack

Accessories code numbers

Type designation	Material Description	Parts included	Used for product	Quantity per packing format	Code number
Sensor holder kit	Sensor Holder Kit	4x cable bearers	KP RT	20	017-420166
Sensor clamp	Sensor Clamp	1x screw 4x20	RT KP	20	017-420366
Clamping band	Clamping Band Ass'y	1x screw 4x20	KP RT	10	017-420466
Sensor pocket	Sensor Pocket	Gasket set	RT KP	12	017-421666
Capillary tube gland	Tube Gland For RT	1x gasket	RT KP AVTA	5	017-422066
Sensor pocket	Sensor Pocket KP/RT Stainless 112mm G ½"	Gasket set	RT KP	10	017-436966
Sensor pocket	Sensor Pocket KP/RT 112mm G½"		KP RT	10	017-437066
	Heat conduct compound, 6 g			50	041E0115
Cap	Protective Cap For KP Single		KP single	7	060-003166
IP55 enclosure	IP55 Enclosure For KP (Single)		KP single	30	060-033066
IP55 enclosure	IP55 Transparent Enclosure		KP single	30	060-062866
Angle bracket	Bracket Angle	4x screw 10-32 UNF	MP KP	10	060-105366
Wall bracket	Wall Bracket Straight	4x screw M4x6	KP MP	10	060-105566
Angle bracket	Wall Bracket Angle	4x screw M4x6	KP MP	10	060-105666
Seal screw	Sealing Screw	seal screw (M3 x 5)	KP	20	060-105766
Cable gland	Screwed Cable Entry With Nut	KP screwed on	KP	5	060-105966
Top cover	Top Plate For KP Single		KP single	10	060-109766
Seal Kit	Gasket Set For Sensor Pocket		KPS CAS RT MBC	10	060L327366

Functions

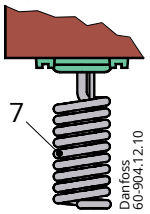
Figure: Key sketch of KP thermostat, types KP 78, KP 79, KP 81



1	Temperature setting spindle
2	Differential setting spindle
3	Main arm
4	Main spring
5	Differential spring
6	Bellows

7	Sensor
8	Contact system
9	Connection terminals
10	Earth terminal
11	Cable entry
12	Tumbler

Figure: KP 75 room sensor



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.

Settings

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.

Product details

General data

Table: Thermostat

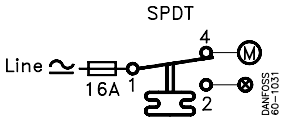
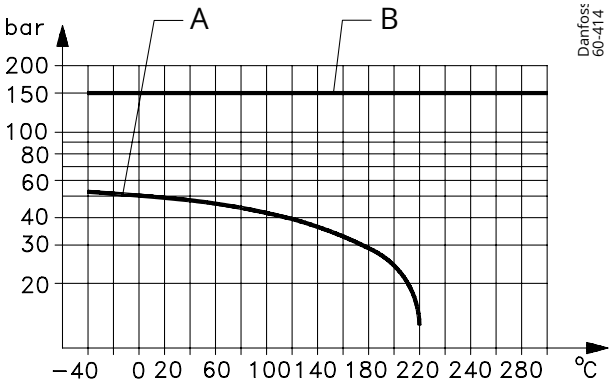
Ambient temperature	-40 – 65 °C (for max. 2 hours up to 80 °C)
Sensor material	Tinned copper Cu/Sn5
Contact system	
	Single-pole double throw (SPDT)
Contact load, Silver	**Alternating current:** AC-1: 16 A, 400 V AC-3: 16 A, 400 V AC-15: 10 A, 400 V
	Direct current: DC-13: 12 W, 220 V
Contact load, Gold plated contact set	See table (Gold contacts)
Enclosure, IP30 grade	Unit must be mounted on a flat surface / a flat fitting and all unused holes covered
Enclosure, IP44 grade	Mounted as IP30 plus fitting of top cover, code no. 060-109766
Enclosure, IP55 grade	Unit mounted in a special IP55 enclosure, code no. 060-033066 or 060-062866. Exception: KP 75
Cable entry	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

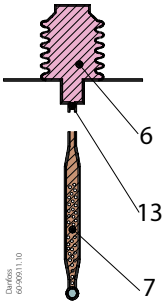
Figure: Permissible media pressure on the sensor pocket as a function of temperature



A	Brass
B	Stainless steel

Charges

Figure: Charges



6	Bellows
7	Sensor
13	Capillary tube

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, 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.

Dimensions

Figure: KP 75, 78, 79, 81 (net weight 0.4 kg)

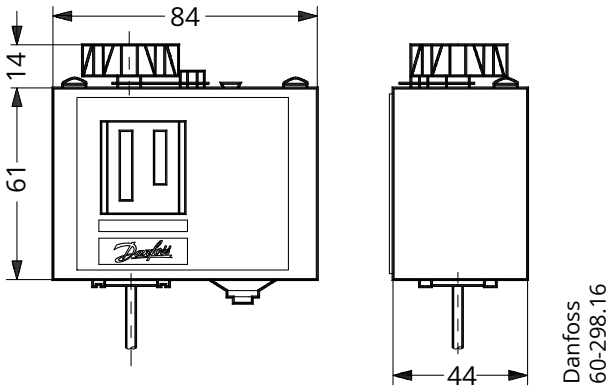


Figure: IP55 enclosure

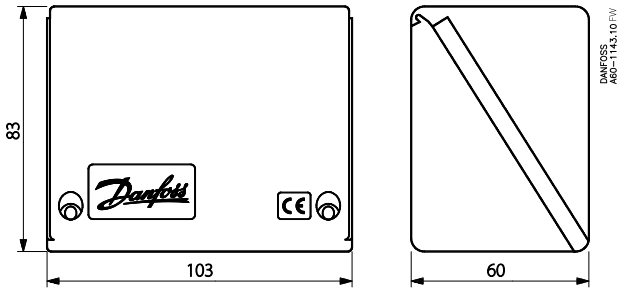


Figure: KP 75 Sensor: Tinned copper Cu/Sn 5

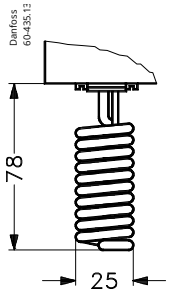


Figure: KP 78, 79, 81 Sensor: Tinned copper Cu/Sn 5

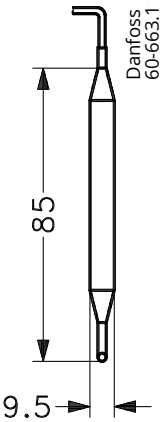


Figure: Wall bracket

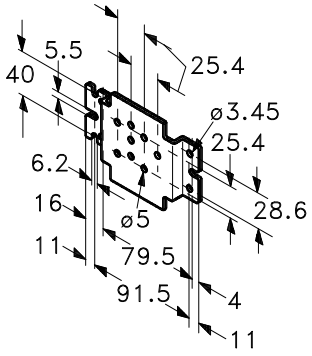
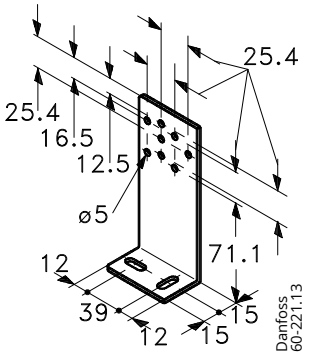


Figure: Angle bracket



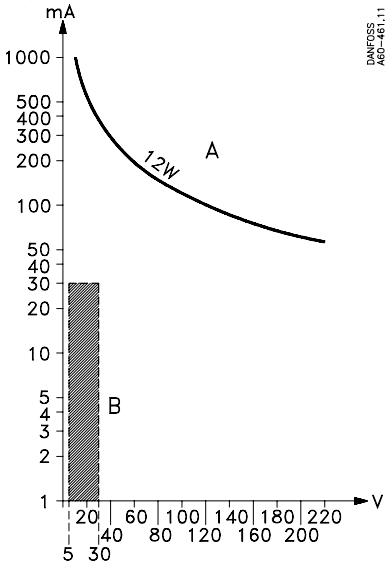
Service

General information

Table: Gold contacts

Contact material	Gold-plated silver
Contact system	SPDT Danfoss 60-969 4 Line 1 2
	Single-pole double throw (SPDT)
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 and AC-15: 4 A, 440 V **Direct current:** DC-13: 12 W, 220 V

Figure: Contact load



A	Gives the maximum load
B	Acceptable load for the gold plating of the contact (DC-13)

Terminology

Range setting / Set point
The temperature range within which the unit will give a signal (contact changeover).

Differential
The difference between contact changeover on rising and falling temperature. The differential is a condition for stable automatic plant operation.

Manual reset
A unit with manual reset can only be restored to operational mode by activation of the external reset button. Min. reset units will restart after the temperature has risen by a value greater than that of the fixed differential. Max. reset units will restart after the temperature has fallen by a value greater than that of the fixed differential.

Automatic reset
Units with automatic reset restart automatically after stop.

Snap function
A specific contact force is maintained until snap is initiated. The time over which contact force reaches zero is a few milliseconds; therefore, contact bounce cannot occur as a result, for example, of slight vibrations before cut-out.
The snap-action contact system will continue to function even when micro-welds are created between the contacts during cut-in.

The force created to separate the contacts is strong, and instantly shears off all contact surface welds that have been created as the result of cut-in action.
These design features ensure that the cut-out point of the KP control remains very accurate and completely independent of the magnitude of the current load.

Current ratings

AC – 1	The alternating current rating, in amperes, of the non-inductive, slightly inductive loads or resistive furnaces
AC – 3	The alternating current rating, in amperes, of the squirrel-cage motors: starting, plugging, inching
AC – 15	The alternating current rating, in amperes, of electromagnetic loads (> 72 VA)
DC – 13	The direct current rating, in amperes, of electromagnets

Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Issuer	Approval topic
CCC Declaration	Danfoss CCC 2020970305003385	Danfoss	CCC
Mechanical Safety Certificate	UL MH27572	UL - Underwriters Laboratories inc.	
Electrical Safety Certificate	UL E31024	UL - Underwriters Laboratories inc.	
Electrical Safety Certificate	EAC KZ 7100841.01.01.01391	EAC - Eurasian Customs Union	EMC
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.05-22	LLC CDC EURO TYSK - Ukraine	Pressure
Marine Certificate	BV 02281-K0 BV	BV - Bureau Veritas	Marine
Marine Certificate	DNV TAA000026F Rev.01	DNV	
CCC Declaration	Danfoss CCC 2024010305641303	CCC - China Compulsory Certification	CCC
EU Declaration	Danfoss EU 060-9650AF	Danfoss	LVD, EU RoHS
Export Control Declaration	Pressure switches & Thermostats	Danfoss	
Electrical Safety Certificate	Certificate UL-US-L31024-13-30303891-3	UL - Underwriters Laboratories inc.	UL-CSA
Marine Certificate	RINA ELE290225XG	RINA - Registro Italiano Navale	
Manufacturer's Declaration	Danfoss MD 060-9638.AB	Danfoss	China RoHS
EU Declaration	EU DOC PL01 Packaging	Danfoss	Packaging

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