![Danfoss logo]

**Data Sheet**  **Radio controlled, programmable radiator thermostat RA PLUS-w**

**Application**



RA-PLUS-w is a radio controlled radiator thermostat that enables users to lower the individual room temperature by approx. 3° C during selected periods of the 24 hours of a day, thereby reducing heat consumption without any detrimental effects on comfort.

The thermostat communicates with Z-wave compatible home controls and it is easily integrated in commercial radio systems.

The electronics module can be removed, in which case the thermostat functions as a normal proportional regulator with a narrow P-band. The thermostat has integral frost protection.

This thermostat is available with direct connection for all new and older Danfoss radiator valves and for valves with M30 x 1.5 connection.

The colour is RAL 9010 (white)



Z-Wave™ is a wireless RF-based communications technology designed for residential and light commercial control and status reading applications such as meter reading, lighting and appliance control, HVAC, access control, intruder and fire detection, etc. Z-Wave transforms any stand-alone device into an intelligent networked device that can be controlled and monitored wirelessly.

**Ordering and technical data**

| Type | Valve connection | Temperature range* | Code no. |
|------|------------------|--------------------|----------|
| RA PLUS-w | Danfoss RA 2000 | 8-28 °C | 013G2755 |
| RA/V PLUS-w | Danfoss RAV | 8-28 °C | 013G2785 |
| RA/VL PLUS-w | Danfoss RAVL | 8-28 °C | 013G2795 |
| RA-K PLUS-w | M30 x 1.5 connection | 8-28 °C | 013G2735 |

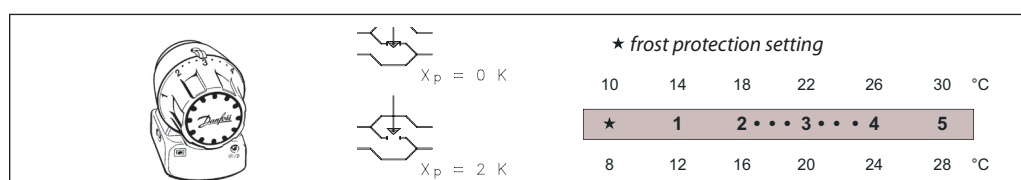*At Xp = 2 K. (Temperature at which the valve shuts off)*

*Accessories*

| Product | Code no. |
|---------|----------|
| Anti theft protection clips, 20 pcs. | 013G5245 |
| Special tool to stop the anti-theft protection | 013G1231 |

**Data sheet**  **Programmable radiator thermostat RA PLUS-w**

## Technical data of the electronics module

| | |
|---|---|
| Transmission power/range | <10mW/approx. 30 m in buildings |
| Programmes | Max. 4 daily heat periods |
| Communication/frequency | Wireless Z-wave / 868.42 MHz |
| Power supply | 2 x type MN1500/LR6/AA batteries, not rechargeble |
| Buttons | Comfort/set back switch |
| Control light | Flashes when batteries are low |
| Specific device class | Set back sceduled thermostat |
| Battery life time | Approx. 3 years |
| Surrounding temperature | 0 to 45° C |
| Transport temperature | -20 to 60° C |
| Protection class | IP40 |
| Weight, thermostat and box | 320 g |
| Approvals | EMC, CE, CEN, R&TTE |

## Temperature setting

| | | | | | | |
|---|---|---|---|---|---|---|
| $X_p = 0$ K | | ★ frost protection setting | | | | |
| | 10 | 14 | 18 | 22 | 26 | 30  °C |
| | ★ | 1 | 2 • • • 3 • • • 4 | | | 5 |
| $X_p = 2$ K | 8 | 12 | 16 | 20 | 24 | 28  °C |

The required room temperature can be obtained by turning the handle of the thermostat unit.

The room temperatures that correspond to the setting figures on the units can be seen from the temperature scales. Indications are for guidance only, since the room temperatures obtained are often affected by such factors as the conditions of unit integration.
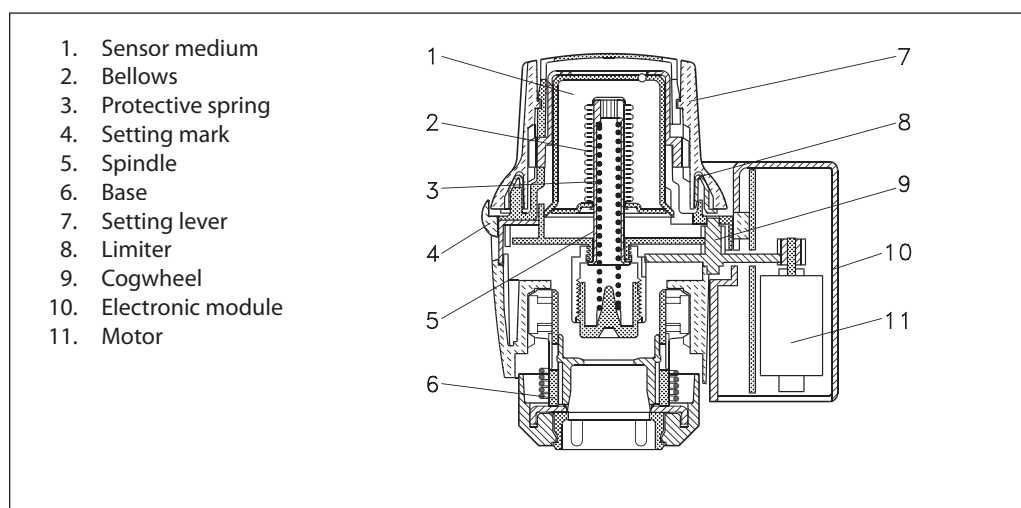The temperature scales are stated according to European standards at Xp = 0 and Xp = 2° C.

Xp = 0° C is the room temperature at which the valve shuts off, while Xp = 2° C shows the room temperature in the case of a proportional band of 2° C.
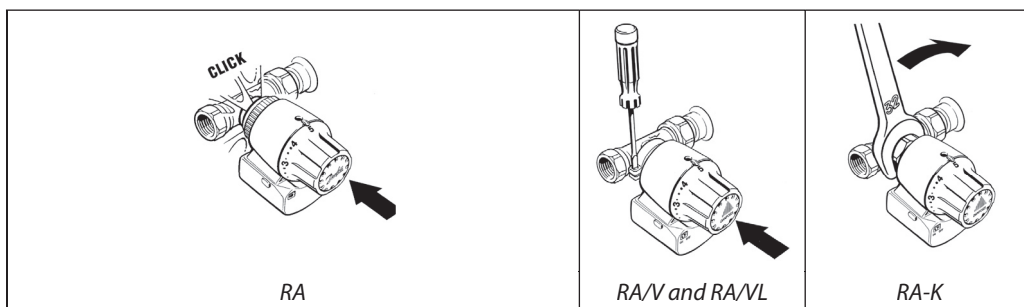
The effective, obtainable room temperature and lowering temperature depend on such factors as the heat installation, the room and the duration of the temperature lowering period.
The electronic module in RA-PLUS-w sets back temperature settings by approx. 3°C.

## Construction

1. Sensor medium
2. Bellows
3. Protective spring
4. Setting mark
5. Spindle
6. Base
7. Setting lever
8. Limiter
9. Cogwheel
10. Electronic module
11. Motor

## Mounting



*RA*        *RA/V and RA/VL*        *RA-K*

*RA PLUS-w with snap-on coupling*
is easy to mount and it requires no use of tools. The unit is fitted to the valve by applying a gentle pressure. When the unit is in place, the snap-on mechanism is activated and the unit has been correctly mounted.
The snap-on mechanism has been tightened at the works, ready for mounting. If mounting and dismounting are carried out again, the mechanism must be tightened manually by turning the tightening ring.

*RA/V and RA/VL PLUS-w*
have a tightening clamp that is fitted round the valve neck.

*RA-K PLUS-w*
is mounted with an open-end spanner.

The thermostat should always be placed where the air can circulate freely around it.

## Radio communication

Z-Wave is a technology that allows users to create a wireless, two-way mesh network. This network allows complete control of a large number of compatible devices throughout the home/building from a single remote control, wall panel, PC or even internet interface.
Its ability to operate as a mesh network is one of Z-Wave's greatest advantages. Rather than depending solely on line-of-sight communications like other technologies, Z-Wave is able to get around obstacles by routing commands through other devices in the network when required.

The RA PLUS-w thermostat is conveniently integrated into commercial systems.
PC tools makes it easy for the installer to configure the system and check radio connections and routing in detail.
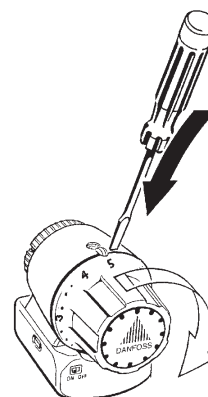
## Adjusting Temperature Control Range

Using a small screwdriver it is possible to adjust the setting range of the thermostat.

For example with 4 as the highest possible temperature selection:
1. Turn the handle to max. position
2. Keep the limiter tab to the right of the scale pointer pressed down with a small screwdriver.
3. Turn the handleround to 4 and release the tab.
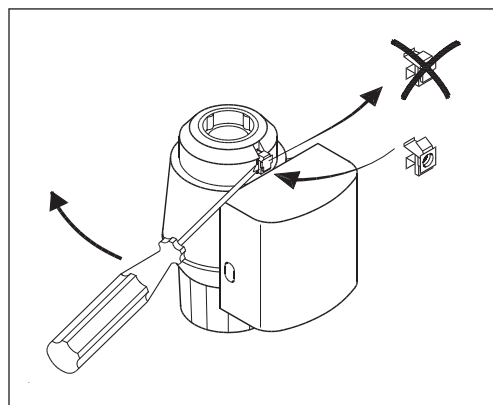
or with 2 as the lowest possible temperature selection:
1. Turn the handle to min. position.
2. Keep the limiter tab to the left of the scale pointer pressed down with a small screwdriver.
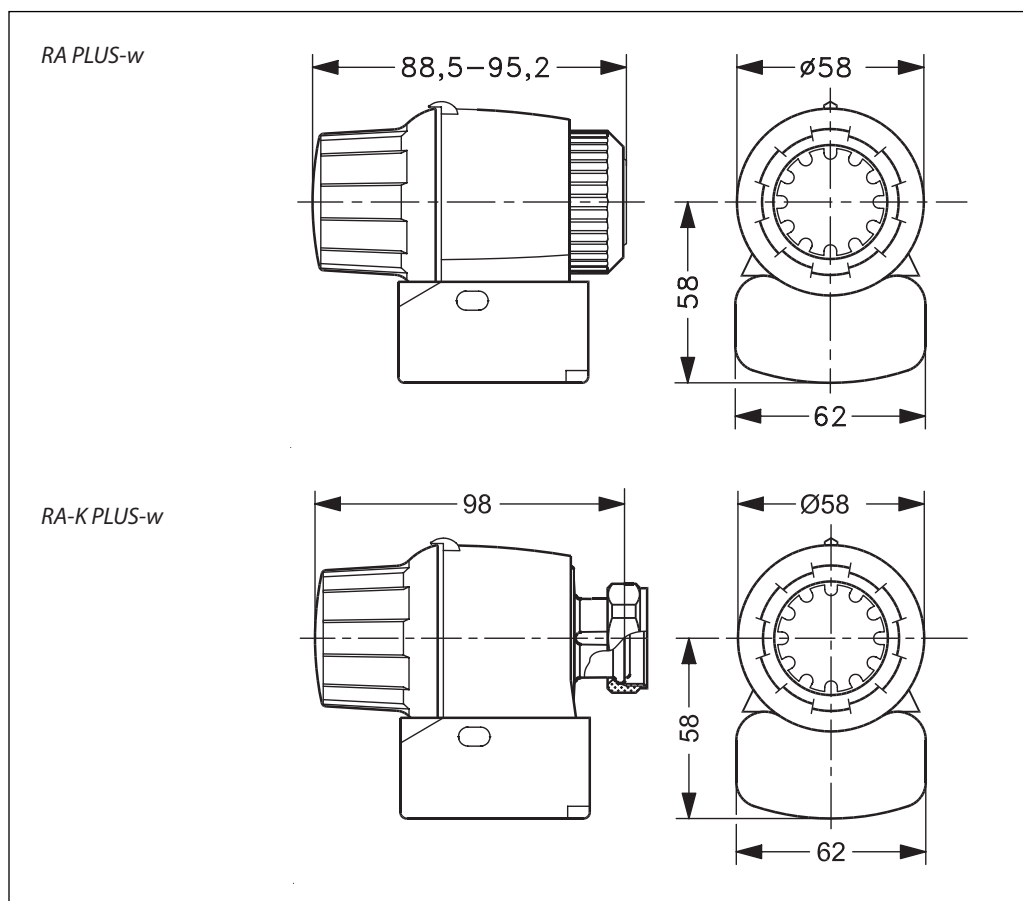3. Turn the handle to 2 and release the tab.

**Anti-theft protection**

RA-PLUS with snap-on coupling can be protected against unintended dismounting.
An anti-theft protection unit is placed in the lock ring instead of the cover plate. The anti-theft protection is activated when the unit has been mounted.
The protection can only be stopped using Danfoss' special tools.

| Product | Code no. |
|---|---|
| Burglar protection unit | 013G5245 |
| Special tool | 013G1231 |

**Dimensions**

*RA PLUS-w*

88,5–95,2    ø58    58    62

*RA-K PLUS-w*

98    Ø58    58    62

**Software**

Supported:
 COMMAND_CLASS_ASSOCIATION
 COMMAND_CLASS_BATTERY
 COMMAND_CLASS_CLIMATE_CON-
  TROL_SCHEDULE
 COMMAND_CLASS_MANUFACTURER_
  SPECIFIC
 COMMAND_CLASS_MULTI_CMD
 COMMAND_CLASS_VERSION
 COMMAND_CLASS_WAKE_UP

Controlled:
 COMMAND_CLASS_CLIMATE_CON-
  TROL_SCHEDULE
 COMMAND_CLASS_CLOCK