TP5000 Si Range

Electronic Programmable Thermostats now with additional features

- Mains Powered Versions
- Service Interval Function
- Factory Set Clock
- Automatic BST/GMT Time Change
- Stylish modern design
- Large easy to read LCD display

- Easy to programme and operate
- Available in hard-wired, wireless and remote sensor versions
- Battery powered versions for ease of installation
- Many additional advanced features

www.heating.danfoss.co.uk
The TP5000 Si is an easy to install-and-use 5/2 day programmable room thermostat which offers up to six time and temperature changes each day with different programmes for weekdays and weekends. However the TP5000 Si goes far beyond this. Mains or battery powered for ease of installation, the TP5000 Si has a large, easy-to-read LCD display. It is easy to programme and operate because of a built-in switching programme that the user can easily change to suit individual heating requirements. The TP5000 Si is also available in battery powered, hard-wired and wireless (RF) versions. A big plus with the TP5000 Si is that it incorporates a real time clock and calendar function which eliminates the need for time-setting and BST/GMT time changes. Time and date are factory-set making time setting or adjustment unnecessary.

Chrono-proportional control is the standard setting for the TP5000 Si but advanced conventional ON/OFF control is an installer-set option. This modulating control mode uses a cycling pattern within which boiler on/off percentages are varied to satisfy heating requirements. Chrono-proportional cycling rates of 3, 6, 9 or 12 per hour can be selected.

Other features
Some other features of the TP5000 Si are:
- Mains, battery-powered hard-wired and RF versions.
- Selectable 6, 4 or 2 events per day.
- Programmable remote sensor inputs including remote room sensing, limit sensing for floor heating applications and tele-switch or window switch sensing.
- Selectable operating modes 5/2 day, 24 hour or A/B block programming.
- Fixed time, delayed start or optimum start options.
- All user settings, including overrides, stored in non-volatile memory independent of battery state.
- Thermostat mode and frost protection.

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**TP5000 Si Range**

**Electronic Programmable Thermostats**

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**Service Interval function**

The optional Service Interval function incorporated into the TP5000 Si helps landlords meet the boiler servicing requirements of Gas Safety Regulation 36. The unit provides audible and visual warnings from 28 days before servicing is due and ultimately reduces the heating output should the due date pass. Full heating operation can only be restored by an authorised installer.

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<table>
<thead>
<tr>
<th>Hard-wired versions</th>
<th>TP5000 Si</th>
<th>TP5000A Si</th>
<th>TP5000M Si</th>
<th>TP5000MA Si <em>(4)</em></th>
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<tr>
<td>Code No.</td>
<td>087N791000</td>
<td>087N791100</td>
<td>087N791700</td>
<td>087N791800</td>
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<tr>
<td>Wireless versions</td>
<td>TP5000-RF Si</td>
<td>TP5000A-RF Si</td>
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<td>-</td>
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<tr>
<td>Code No. without receiver</td>
<td>087N791200</td>
<td>087N791300</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Code No. for set c/w single channel receiver</td>
<td>087N791400</td>
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<td>-</td>
<td>-</td>
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<td>Programmable 5/2 day operation</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Number of events per day</td>
<td>6, 4 or 2</td>
<td>6, 4 or 2</td>
<td>6, 4 or 2</td>
<td>6, 4 or 2</td>
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<tr>
<td>Temperature range</td>
<td>Off, 5-30°C</td>
<td>Off, 5-30°C</td>
<td>Off, 5-30°C</td>
<td>Off, 5-30°C</td>
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<td>Clock display</td>
<td>24 hour</td>
<td>24 hour</td>
<td>24 hour</td>
<td>24 hour</td>
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<tr>
<td>Factory pre-set programmes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Room temperature override</td>
<td>Yes</td>
<td>Adjustable</td>
<td>Yes</td>
<td>Adjustable</td>
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<tr>
<td>Display time or temperature option</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Thermostat mode &amp; frost protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Weekend into weekday override</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Chrono-proportional or on/off control option</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Power supply, thermostats</td>
<td>2 x AA/MN1500/LR6 alkaline batteries <em>(1)</em></td>
<td>2 x AA/MN1500/LR6 alkaline batteries</td>
<td>230Vac, 50Hz</td>
<td>230Vac, 50Hz</td>
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<tr>
<td>Maximum ambient temperature</td>
<td>45°C</td>
<td>45°C</td>
<td>45°C</td>
<td>45°C</td>
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<tr>
<td>Contact type and rating (hard-wired models)</td>
<td>10-230 Vac, 3(1)A</td>
<td>10-230 Vac, 3(1)A</td>
<td>10-230 Vac, 3(1)A</td>
<td>10-230 Vac, 3(1)A</td>
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<tr>
<td>Transmitter/receiver frequency (RF models)</td>
<td>433.92 MHz</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Transmitter range (RF models)</td>
<td>30 metres max. <em>(2)</em></td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Dimensions (mm)</td>
<td>110 wide x 88 high x 28 deep</td>
<td>110 wide x 88 high x 28 deep</td>
<td>110 wide x 88 high x 28 deep</td>
<td>110 wide x 88 high x 28 deep</td>
</tr>
</tbody>
</table>

**Notes:**

(1) Memory is retained for life of the product in non-volatile memory.
(2) Please ensure there are no large metal objects between thermostat and receiver as these will interfere with radio signal.
(3) Can be configured by installer for remote temperature sensor, limit sensor, window contact or telephone activated switch contact.
(4) Remote sensor is supplied as an accessory, if remote room sensor is required order TS2 sensor, code 087N681100

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<table>
<thead>
<tr>
<th>Receivers (RF models)</th>
<th>RX-1</th>
<th>RX-2</th>
<th>RX-2C</th>
<th>RX-3</th>
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<tr>
<td>Code No.</td>
<td>087N747600</td>
<td>087N747700</td>
<td>087N747900</td>
<td>087N747800</td>
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<tr>
<td>Number of zones receiver covers</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Power supply (receivers)</td>
<td>230 Vac, ±15%, 50/60 Hz</td>
<td>230 Vac, ±15%, 50/60 Hz</td>
<td>230 Vac, ±15%, 50/60 Hz</td>
<td>230 Vac, ±15%, 50/60 Hz</td>
</tr>
<tr>
<td>Contact details</td>
<td>1-SPDT</td>
<td>1-SPDT</td>
<td>1-SPST</td>
<td>2-SPDT</td>
</tr>
<tr>
<td>Contact rating</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>138 wide x 88 high x 32 deep</td>
<td>138 wide x 88 high x 32 deep</td>
<td>138 wide x 88 high x 32 deep</td>
<td>138 wide x 88 high x 32 deep</td>
</tr>
</tbody>
</table>
If a property has a mechanical thermostat installed, then the energy-saving benefits of a replacement high-efficiency condensing boiler will not be realised as the boiler will rarely be running in condensing mode. Switching to an on/off electronic room thermostat produces reductions of over 2% in both energy cost and carbon emissions.

Use of an electronic thermostat with chrono-proportional capability provides closer temperature control plus possible reductions of 10% in both fuel cost and carbon emissions (see Fig. 1). These results are from tests using Danfoss controls. Tests carried out with other manufacturers’ on/off controls produced similar figures.

With a condensing gas boiler Chrono-6 also has the benefit of ensuring the boiler remains in condensing mode more often than might be achieved with a more basic on/off mode of operation. This occurs due to the faster reaction rate ensuring the returned water maintains the boiler in condensing mode over more of its operating cycle, even at low heat loads.

With slower reacting controls the water can cool in the system too much and hence require full circulation before the condensing cycle is functional and with a low load this might actually not occur, hence a condensing boiler might only give the performance on a non-condensing type when in low load with a slow control.

Energy Savings
In tests at Danfoss Randall we have observed energy savings of over 10% on a weekend profile and over 6% on a week-day (2-heating period or “bi-modal”) profile when running a system with a chrono-proportional control rather than a mechanical thermostat.

Conclusions
Changing the boiler alone from non-condensing to condensing in a domestic central heating system will not necessarily optimise potential energy and carbon emission savings. An electronic room temperature control, preferably with chrono-proportional capability, is often needed to make the cost of replacing the boiler worthwhile.

Source: Danfoss Randall Ltd. test laboratory 2007

### Wiring Details

<table>
<thead>
<tr>
<th>Control</th>
<th>Energy Cost (£)</th>
<th>Energy Saving (%)</th>
<th>Carbon Emissions (kg CO₂)</th>
<th>Carbon Saving (%)</th>
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</thead>
<tbody>
<tr>
<td>Mechanical On/Off</td>
<td>2.39</td>
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<td>13.56</td>
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<tr>
<td>Electronic On/Off</td>
<td>2.34</td>
<td>2.10</td>
<td>13.25</td>
<td>2.31</td>
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<tr>
<td>Chrono-Proportional</td>
<td>2.14</td>
<td>10.35</td>
<td>12.11</td>
<td>10.71</td>
</tr>
</tbody>
</table>

**Figure 1**

**Impact of Control Technology on Condensing Boilers**

**Standard A-Rated Condensing Boiler**

- Red: Mechanical Room Thermostat
- Blue: Electronic Room Thermostat
- Green: Electronic Room Thermostat with Chrono-proportional control
Literature Service

<table>
<thead>
<tr>
<th>Product Range</th>
<th>Type</th>
<th>Part No.</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Selection Guide</td>
<td>Catalogue</td>
<td>028</td>
<td></td>
</tr>
<tr>
<td>Wireless Control Packs</td>
<td>Catalogue</td>
<td>662</td>
<td></td>
</tr>
<tr>
<td>Underfloor Heating Product &amp; System Guide</td>
<td>Catalogue</td>
<td>438</td>
<td></td>
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<tr>
<td>RA2000 Commercial Radiator Thermostats</td>
<td>Catalogue</td>
<td>410</td>
<td></td>
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</table>

**Radiator Thermostats**

- RAS-C* Revolver Radiator Thermostats, incl. push-fit versions: Sales Leaflet* 250
- RAS-D* Domestic Revolver Radiator Thermostats, incl. push-fit versions: Sales Leaflet* 336
- RA2000 Commercial Radiator Sensors: Datasheet VDBE122
- RA Plus Programmable Radiator Thermostats: Datasheet VDS3P102
- RA-FN, RA-C Commercial Valve Bodies: Datasheet VDS1Q102
- RA-N Commercial Valve Bodies: Datasheet VDS1G802
- RLV-D Domestic Lockshield Valves, including push-fit versions: Datasheet VD3E202
- RLV Commercial Lockshield Valves: Datasheet VD3SD102
- H Pieces & Sensors: Datasheet VDS3C102
- Bathroom Solutions - RA-URX Towel Rail: Sales Leaflet 580
- Bathroom Solutions - RA-URX Towel Rail: Datasheet VD3IB102
- Replacement Sensors RA-V & RA-VL: Datasheet VDULY102

**Time Controls**

- Time Controls - TS715 Si, CP715 Si & FP715 Si: Sales Leaflet 334
- Time Controls, Compatibility Guide: Sales Leaflet 196
- T5975 & FP975 Replacement Time Controls: Datasheet 208
- GP Time Controls - 102, 102ES, 102E7, 103, 103ES & 103E7: Sales Leaflet 582
- Set Range - SET1E, SET2E & SET3M: Sales Leaflet 188
- Programmers - 3020P & 4033: Datasheet 040
- Commercial Time Controls: Sales Leaflet 606

**Electric Thermostats**

- TP4000 Programmable Room Thermostat: Sales Leaflet 238
- TP5000 Si including RF versions: Sales Leaflet* 296
- TP7000 Programmable Room Thermostats: Sales Leaflet* 594
- HC6000 Heat/Cool Thermostats: Sales Leaflet* 596
- TP9 Programmable Thermostat with Hot Water Time Control: Datasheet 318
- Programmable Hot Water Thermostat - WP75RF: Sales Leaflet* 282
- RMT/RET Room Thermostats: Sales Leaflet* 584
- RET Electronic Room Thermostats with Function Switches: Sales Leaflet* 592
- RET230 HC & HCW Heat/Cool Thermostats: Datasheet 660
- Battery Room Thermostats RET B plus RF versions: Sales Leaflet* 588
- RET-MD & RET-M Room Thermostats: Sales Leaflet* 590
- Cylinder, Pipe & Frost Thermostats - ATI, ATC & RET230F: Datasheet 374
- Immersion Thermostats - RTC, DTH, DTD: Datasheet 374

**Underfloor Heating Controls**

- Underfloor Heating Product & System Guide: Catalogue 438
- Electric Underfloor Heating Mat: Sales Leaflet* 628
- FH-WC Hard Wired Zone Control: Datasheet 620
- FH-BU Wireless Zone Control: Datasheet 622
- FHV Valves for Underfloor Heating: Sales Leaflet* 476
- Thermal Actuators TWA: Datasheet VDSAP112

**Motorised Valves & Other Controls**

- Control Packs: Sales Leaflet* 120
- Wiring Centre WC4B: Instructions 39917
- Wireless Controls Packs WP75-RF: Datasheet 408
- H Series Motorised Valves: Sales Leaflet* 192
- Domestic Bypass Valves AVDO: Datasheet 062
- Domestic Bypass Valves ARV22: Datasheet 380
- Thermal Actuators TWA: Datasheet VDSAP112
- AB-QM Balancing Valves: Datasheet VDA2W112
- AB-QM Balancing Valves: Sales Leaflet VBAZ102
- Thermostatic Cylinder Controls RAV: Datasheet 240
- Climate Control Range - FEK, FEY & FEZ: Catalogue 346

**Ordering Literature**

To obtain copies of individual product sales leaflets and datasheets please photocopy this page and complete your personal details and the literature quantities you require and fax this form to:

UK 0845 1217 515
Ireland 1800 930 242

**Datasheets**

* Denotes that datasheets are also available. Please use the space below to indicate which datasheet you would like to order.

<table>
<thead>
<tr>
<th>Datasheet</th>
<th>Quantity</th>
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</table>

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