ESTIA 4 series
Product Overview

Nov. 2013
Product View

ESTIA series

Hydro unit

Hot water tank

Buffer tank (Local supply)

Outdoor unit

Mixing valve (Local supply)

Temperature sensor

Heating - Floor heating, Panel radiator, Fan coil unit

Hot water supply – Kitchen, Shower, Bathroom

Hot water supply – Kitchen, Shower, Bathroom
Contents

◆ ESTIA product features

1. No.1

2. Application flexibility

3. 2 zone temperature control

◆ Difference from 3 series

◆ Product Specification
Contents

◆ ESTIA product features

1. No.1

2. Application flexibility

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◆ Product Specification
Product Features

1. No1 COP in the industry

R410A, DC twin rotary compressor,

DC inverter, Split type A2W.
2. Application flexibility

Available existing heat source combination system with Gas/Oil boiler and other heating related applications
3. 2 zone temperature control

Available to control water temperature in case of different type of heating emitters in a system Radiator, Under floor heating, FCU.
Contents

◆ ESTIA product features

1. No.1 COP  
2. Application flexibility

3. 2 zone temperature control

◆ Difference from 3 series

◆ Product Specification
No.1 COP in the industry

No1 COP achieved with Super Digital Inverter technology.

<table>
<thead>
<tr>
<th></th>
<th>ESTIA series 4</th>
<th>Competitor xy</th>
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<tbody>
<tr>
<td>8kW model</td>
<td>4.46</td>
<td>4.45</td>
</tr>
<tr>
<td>11kW model</td>
<td>4.88</td>
<td>4.39</td>
</tr>
<tr>
<td>14kW model</td>
<td>4.50</td>
<td>4.29</td>
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</tbody>
</table>
High energy efficiency outdoor unit

ESTIA outdoor unit (11kW, 14kW)

- High efficiency heat-transfer by flat fin
- High efficiency DC fan motor
- Wide flow grill
- Vector-controlled inverter
- R410A refrigerant
- Economy drive control of DC twin-rotary compressor

New comp. 5% Weight Saving
Contents

◆ ESTIA product features

1. No.1 COP in the industry

2. Application flexibility

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◆ Difference from 3 series

◆ Product Specification
A class pump: Duty output

PWM control is configurable via function code, allowing the adjustment of the pump speed

<table>
<thead>
<tr>
<th>FC A0</th>
<th>Pump Duty</th>
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<tr>
<td>00</td>
<td>100%</td>
</tr>
<tr>
<td>01</td>
<td>90%</td>
</tr>
<tr>
<td>02</td>
<td>80%</td>
</tr>
<tr>
<td>03</td>
<td>70%</td>
</tr>
<tr>
<td>04</td>
<td>60%</td>
</tr>
<tr>
<td>05</td>
<td>50%</td>
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</tbody>
</table>

[ Duty Output ]
PWM signal line connector (Hydro unit)

Benefit: More installation opportunity

- Reduced noise level allows for a more flexible hydro unit installation
- Install hydro unit to residence without basement / warehouse

*Please make sure before setting that the flow rate is above the minimum by checking QH characteristic.
Existing boiler combined operation

Control boiler operation by Hydro unit to assist heating capacity in low outdoor temperature condition.
Local hot water cylinder connection is available

Toshiba now allow the connection of local supplied cylinder as well as continuing to offer the Toshiba cylinder. This offering increased flexibility.
System reference - Booster heater

Booster heater combined operation

Control boiler operation by Hydro unit to assist heating capacity in low outdoor temperature condition.
System reference _ Room thermostat

Room thermostat operation

Heat pump operate according to room temperature by using local temperature thermostat controller.
Option PC board

These applications can be combined by using option I/O PCB. Various function to be available.

Options

<table>
<thead>
<tr>
<th>Model name</th>
<th>Appearance</th>
<th>Function</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td>TCB-PCIN3E</td>
<td></td>
<td>Boiler operation signal output</td>
<td>Same model as SMMS option PCB. Connector wire length will be changed.</td>
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<tr>
<td></td>
<td></td>
<td>Alarm signal output</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Operation signal output</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Defrost signal output</td>
<td></td>
</tr>
<tr>
<td>TCB-PCMO3E</td>
<td></td>
<td>Room thermostat input</td>
<td>Same as SMMS option PCB. Connector wire length will be changed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emergency operation stop input</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ON/OFF signal input</td>
<td></td>
</tr>
</tbody>
</table>
Contents

◆ ESTIA product features

1. No.1 COP in the industry

2. Application flexibility

3. 2 zone temperature control

◆ Difference from 3 series

◆ Product Specification
2 zone temperature control

Control circulate water temperature for different heating emitters.

Under floor heating
35°C

Radiator heating
45°C
System reference _2 zone

- Outdoor unit
- Hydro unit
- Hot water cylinder
- Temp sensor
- TTW
- Buffer tank
- Motorized mixing valve
- 3way valve
- Underfloor heating
- Radiator
**Advanced temperature control**

More precise temperature control in floor heating

### Control

- **A' zone**: Thermo off
- **A zone**: Thermo off (X)
- **B zone**: Down water temp
- **C zone**: Keep water temp
- **D zone**: Up water temp

<table>
<thead>
<tr>
<th>Zone</th>
<th>Setting Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>D zone</td>
<td>Setting is corrected upward</td>
</tr>
<tr>
<td>C zone</td>
<td>No correction</td>
</tr>
<tr>
<td>B zone</td>
<td>Setting is corrected downward</td>
</tr>
<tr>
<td>A zone</td>
<td>Thermo off, but if inlet water detect less 25°C, then heat pump restart.</td>
</tr>
<tr>
<td>A’ zone</td>
<td>Thermo off</td>
</tr>
</tbody>
</table>

![Diagram](image)
Upgrade  Advanced temperature control

More precise temperature control in floor heating → Feel more comfortable

Usage temperature

30  35  40  50  55  60 °C

Floor heating

Radiator

Control upgraded

Outdoor unit

Hydro unit

Remote control temp. detection

Floor heating supply

Floor heating return

Water outlet

Water inlet

Floor heating
Turkey: ESTIA – Under floor Cooling

**Features**
- Under floor cooling in 200 low energy houses (and AHI)
- Each installation requires 14kW system
- System configured as 1 zone heating/cooling with domestic hot water
Contents

◆ ESTIA product features

1. No.1 COP in the industry

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◆ Difference from 3 series

◆ Product Specification
Differences from 3 series

✓ **COP improvement**
   By adapting A class pump, COP has greatly increased.

<table>
<thead>
<tr>
<th></th>
<th>ESTIA series 4</th>
<th>Series 3</th>
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</thead>
<tbody>
<tr>
<td>8kW model</td>
<td>4.46</td>
<td>4.40</td>
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<tr>
<td>11kW model</td>
<td>4.88</td>
<td>4.77</td>
</tr>
<tr>
<td>14kW model</td>
<td>4.50</td>
<td>4.50</td>
</tr>
</tbody>
</table>

✓ **A class pump installed**
   Possibilities for more incentive programs in many countries.
   Efficient pump, power input : 190W (ser3) → 87W (ser4)

✓ **7°C water temperature available in cooling mode**
   Expanded water temperature in cooling mode down to 7°C.
ESTIA Intelligence

☑ Adjustable timing of heat pump operation for DHW prior to heater operation

This allowing more efficient operation, as the heat pump can be operated longer, limiting the use of the DHW cylinder immersion heater.

30min. (ser3) → option of 30, 60, 90, 120min. (ser4)

☑ Anti seize protection _ New pump control

This providing improved reliability. Pump automatically starts rotation for 10 min every 72 hours during the system does not operate, and which protects water from stagnating and consequent failures. (Need to be set by DIP switch 10_4)

☑ Efficient pump control _ HP/Boiler integration

Hydro unit pump stops when only boiler operates. This providing increased efficiency.
Contents

◆ ESTIA product features

1. No.1 COP in the industry

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◆ Difference from 3 series

◆ Product Specification
**1ph Outdoor unit**

CDU HWS-***4H-E

- Designed based on SDI CDU.
- Control designed for A2W.
- Capacity line up
  - 8kW-11kW-14kW 3 models
- 1 phase 220-230V
- Max COP 4.88 (11kW model)
- Outdoor operation range
  - Heating: -20°C to 35°C
  - Cooling: 10°C to 43°C
  - Hot water: -20°C to 35°C

### Specifications

<table>
<thead>
<tr>
<th>Outdoor unit</th>
<th>HWS-804H-E</th>
<th>HWS-1104H-E</th>
<th>HWS-1404H-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Inverter</td>
<td>Heating &amp; Cooling</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Capacity kW</td>
<td>8.00</td>
<td>11.20</td>
</tr>
<tr>
<td></td>
<td>Input kW</td>
<td>1.79</td>
<td>2.30</td>
</tr>
<tr>
<td></td>
<td>COP W/W</td>
<td>4.46</td>
<td>4.88</td>
</tr>
<tr>
<td>Heating</td>
<td>Capacity kW</td>
<td>6.00</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>Input kW</td>
<td>1.94</td>
<td>3.26</td>
</tr>
<tr>
<td></td>
<td>COP W/W</td>
<td>3.10</td>
<td>3.07</td>
</tr>
<tr>
<td>Cooling</td>
<td>Power supply</td>
<td>1~ 220V-230V 50Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refrigerant</td>
<td>R410A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dimension</td>
<td>H x W x D (mm)</td>
<td>890 x 900 x 320</td>
</tr>
</tbody>
</table>
CDU HWS-***4H8(R)-E

- Designed based on SDI 3phase CDU.
- Control designed for A2W.
- Capacity line up
  - 11kW-14kW-16kW 3models
- 3 Phase 380-400V
- Max COP 4.80 (11kW model)
- Outdoor operation range
  - Heating: -20°C to 35°C
  - Cooling: 10°C to 43°C
  - Hot water: -20°C to 35°C

### Outdoor unit

<table>
<thead>
<tr>
<th>Function</th>
<th>Heating &amp; Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Inverter</td>
</tr>
<tr>
<td>Capacity kW</td>
<td>11.20</td>
</tr>
<tr>
<td>Input kW</td>
<td>2.34</td>
</tr>
<tr>
<td>COP W/W</td>
<td>4.80</td>
</tr>
<tr>
<td>Capacity kW</td>
<td>10.00</td>
</tr>
<tr>
<td>Input kW</td>
<td>3.26</td>
</tr>
<tr>
<td>COP W/W</td>
<td>3.07</td>
</tr>
<tr>
<td>Power supply</td>
<td>3N~ 380~400V 50Hz</td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R410A</td>
</tr>
<tr>
<td>Dimension H x W x D (mm)</td>
<td>1340 x 900 x 320</td>
</tr>
</tbody>
</table>
Hydro unit

Hydro unit  HWS-***4XWH**-E

- Capacity line up
  Unit for 8kW, Unit for 11kW&14kW

- Electric heater fitted for back up heating
  1 phase 230V 3kW
  3 phase+N 400V 6kW/9kW

- 6 models of combination with heating capacity and electric heater capacity

- Single phase 230V

- Remote controller attached

- Only pump energized mode

<table>
<thead>
<tr>
<th>Hydro unit</th>
<th>804XWHM3-E</th>
<th>804XWHT6-E</th>
<th>804XWHT9-E</th>
<th>1404XWHM3-E</th>
<th>1404XWHT6-E</th>
<th>1404XWHT9-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back-up heater kW</td>
<td>3 6 9</td>
<td>3</td>
<td>6 9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply 1~ 220V-230V 50Hz 3N~ 380V-400V 50Hz 3N~ 380V-400V 50Hz 1~ 220V-230V 50Hz 3N~ 380V-400V 50Hz 3N~ 380V-400V 50Hz</td>
<td></td>
<td></td>
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<tr>
<td>Outer dimension Height mm</td>
<td>925</td>
<td>525</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Width mm</td>
<td>525</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Depth mm</td>
<td>355</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation water temp Heating °C</td>
<td>20~55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling °C</td>
<td>7~30</td>
<td></td>
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</tbody>
</table>

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Hydro unit : Components

Hydro unit HWS-**4XWH**-E

H930 x D525 x W375

- Control PCB
- Plate heat exchanger
- Water inlet
- Refrigerant pipes
- Water outlet
- Water pump
- Expansion vessel
- Pressure relief valve
- Air vent valve
- Backup heater
Remote controller

- Variety of function
  Night set back
  Frost protection
  Hot water boost
  Anti bacteria
  Weekly schedule operation
  Nighttime low noise operation
- Easy setting for initial installation
  Heat curve setting
  Test operation
  Electric heater operation setting
Hot Water Cylinder

HWS-**1CSHM3-E

- Line up
  150L / 210L / 300L 3 models
- Immersion heater controlled by Hydro unit
- Temperature sensor attached
- Safety thermo element (82C +/- 3C) installed
- Stainless steel type

<table>
<thead>
<tr>
<th>Hot water cylinder (option)</th>
<th>HWS-1501CSHM3-E HWS-1501CSHM3-UK</th>
<th>HWS-2101CSHM3-E HWS-2101CSHM3-UK</th>
<th>HWS-3001CSHM3-E HWS-3001CSHM3-UK</th>
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<tbody>
<tr>
<td>Water volume</td>
<td>litres</td>
<td>150</td>
<td>210</td>
</tr>
<tr>
<td>Max water temperature</td>
<td>(°C)</td>
<td></td>
<td>75</td>
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<tr>
<td>Electric heater</td>
<td>(kW)</td>
<td>2.75 (230 V ~)</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>(mm)</td>
<td>1,090</td>
<td>1,474</td>
</tr>
<tr>
<td>Diameter</td>
<td>(mm)</td>
<td></td>
<td>550</td>
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<tr>
<td>Material</td>
<td></td>
<td>Stainless steel</td>
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## Components Combination

### ESTIA 4 series

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<td>HWS-804XWHM3-E</td>
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<td>HWS-804XWHT6-E</td>
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<td>HWS-1404XWHT6-E</td>
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<tr>
<td>HWS-1404XWHT9-E</td>
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<table>
<thead>
<tr>
<th>Hydro unit</th>
<th>Hot water tank</th>
<th>HWS-1501CSHM3-E</th>
<th>HWS-2101CSHM3-E</th>
<th>HWS-3001CSHM3-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWS-804XWHM3-E</td>
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<tr>
<td>HWS-804XWHT6-E</td>
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<td>HWS-804XWHT9-E</td>
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<td>HWS-804XWHT6TR</td>
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<td>HWS-1404XWHT6TR</td>
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<tr>
<td>HWS-1404XWHT9TR</td>
<td></td>
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</tbody>
</table>
ESTIA unique selling point

✓ The highest energy performance
   Industry No.1 energy efficient heat pump

✓ Application flexibility
   Variety of functions and auxiliary heat source combination.

✓ 2 Zone temperature control
   For comfort zone heating operation
Thank you.