

Technical Note:

Thermino® xPlus & Kensa Shoebox HP wiring  
instructions



**NOTICE**

Please read & understand all these instructions before commencing installation.

Failure to install and operate this system in accordance with these instructions will invalidate the manufacturer's warranty. Please leave this technical note with the customer for future reference.

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# 1. INTRODUCTION

## 1.1 GENERAL

The following instructions provide guidance for the installer and end-user of Thermino® xPlus Heat Batteries when integrated with Kensa Shoebox & Shoebox NX Heat Pumps.

These instructions must be read in conjunction with the Installation and User Instructions Manual for the Thermino xPlus (D0084) product.

All installations must be carried out by a competent installer in accordance with local codes and regulations for plumbing, electrical installations and potable water supply.

## 1.2 SYMBOLS USED

In these instructions the following symbols are being used to draw the user's attention to information of particular importance.



### WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.



### CAUTION

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury or material damage.



### NOTICE

Signals information that is considered important but not hazard related.

### 1.3 ABBREVIATIONS

The following abbreviations are used throughout the manual:

- AC - Alternating Current
- dT - delta T (change in Temperature)
- DHW - Domestic Hot Water
- HP - Heat Pump
- kW - Kilo Watt
- PCB - Printed Circuit Board
- PVC - Polyvinyl Chloride

## 2. SAFETY

### 2.1 GENERAL SAFETY NOTICES



#### WARNING

Only competent persons suitably qualified to carry out plumbing and electrical work may undertake installations, repairs or relocations of the appliance.

Product training on the full range of Thermino Heat Batteries is available from Sunamp or authorised training partners.



#### WARNING

Risk of electric shock – potential dual supply. Always isolate the power supplies to the Heat Battery controller before working on the Heat Battery.



#### CAUTION

These instructions must be read in conjunction with the Installation and User Instructions for the Thermino xPlus (D0084) products.



#### CAUTION

Do not operate the immersion heater until all heat exchanger circuits have been filled and the plumbing has been appropriately commissioned.

### 3. HEAT PUMP SIZING GUIDELINE

This section details the sizing guidance for the Thermino xPlus range of products with Heat Pumps. Its purpose is to assist and offer a guideline for choosing the correct size of Thermino xPlus Heat Battery to Heat Pump Capacity and promote sizing.

The graph below details the relationship between Flow Rate (l/min) and Power (kW) at dT's of 5 and 7, which are the most common range of operation for heat pumps used in Domestic Hot Water (DHW) mode.

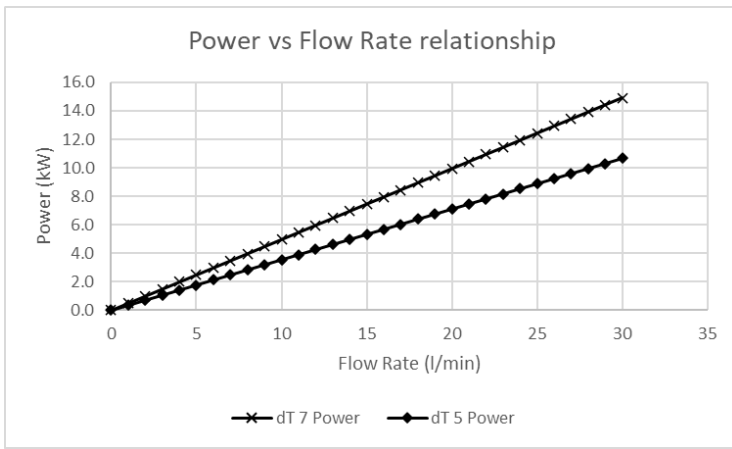


Figure 1 - Power vs Flow Rate relationship

The Thermino xPlus Heat Batteries work to an ideal recommended flow rate for charging via Heat Pumps as detailed in the Installation Manual (D0084 - Table 1). Therefore, the following compatibility table can be used as a sizing guide between Heat Pump Capacity and Heat Battery size:

Heat Battery Size	Heat Pump Capacity Range (kW)			
	(3 to 5)	(5.5 to 7.5)	(8 to 10.5)	(11 to 14)
Thermino 150 xPlus	o	o	o	Δ
Thermino 210 xPlus	!	o	o	Δ
Thermino 300 xPlus	!	!	o	o
<p>! - Caution: Special consideration must be given to heat up and reheat times when combining low powered heat pumps with high capacity heat batteries.</p> <p>o - fully compatible sizing.</p> <p>Δ - compatible with the use of an Autobypass valve to ensure the flow rate of the heat pump is within the recommended flow rate for the Heat Battery sizing.</p>				

**Table 1: Heat Battery size and Heat Pump capacity compatibility**

The Autobypass valve is always recommended in installations with Thermino xPlus Heat Batteries as it also assists in the Heat Pump's defrost condition requirements.

## 4.0 KENSA SHOEBOX HEAT PUMP WIRING INSTRUCTIONS



### WARNING

All Electrical wiring must be carried out by a competent person and be in accordance with the latest local wiring codes and regulations.

Risk of electric shock – potential dual-supply. Always isolate the power supply/ies to the Heat Battery, Heat Pump, Hot Water Thermostats & Solar Diverter controller (if used) before working on the appliances.

When installing the Thermino xPlus with the heat pump, the steps below should be followed.

These settings are applicable to the following products:

- Thermino xPlus with the “VF01” Optimino key (D0084 – Section 6.4.2 for wiring instructions & Figure 1 below)
- Heat Pumps from the Kensa Shoebox & Shoebox NX Heat Pump ranges

### 4.1 WIRING

Using a 2-core shielded cable 0.75mm<sup>2</sup>, the cable will act as a hot water demand signal from the Sunamp Optimino Board (OPTB) – terminal J3 to the DHW Terminal connected to the DHW heating timing clock of the HP (240V AC, 1A maximum – please refer to HP installation manual). Please run the wire into the heat battery appliance via the appliance case cabling grommets and then into the control box housing through the hole available. Secure the



cables in terminals J3 on the Optimino Board; please see Figure 1 below for reference.

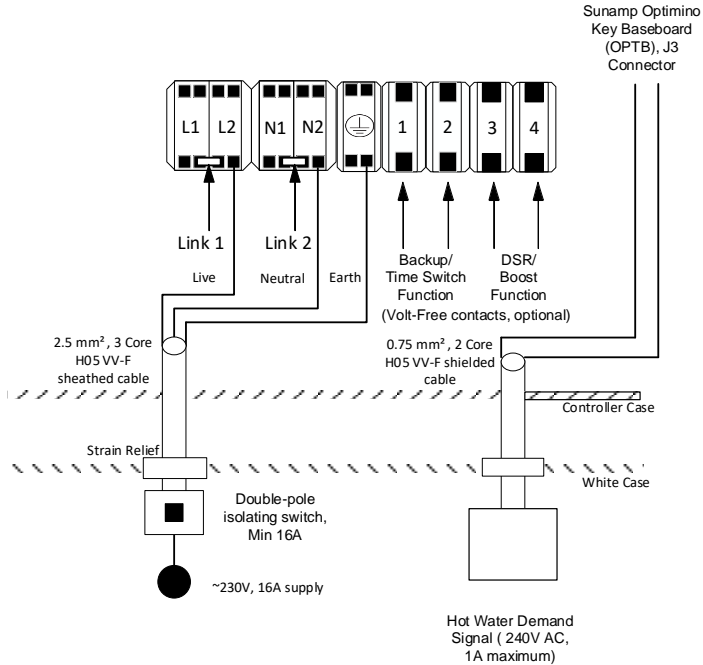


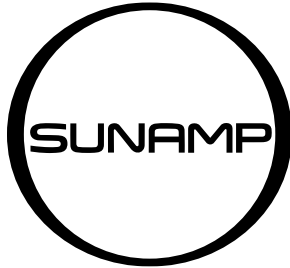
Figure 1 - Thermino xPlus with VF01 Optimino key



**NOTICE**

For other hydraulic connections and wiring instructions, please follow the Instructions of the Sunamp Thermino xPlus Installation Manual D0084:

<https://www.sunamp.com/downloads>



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