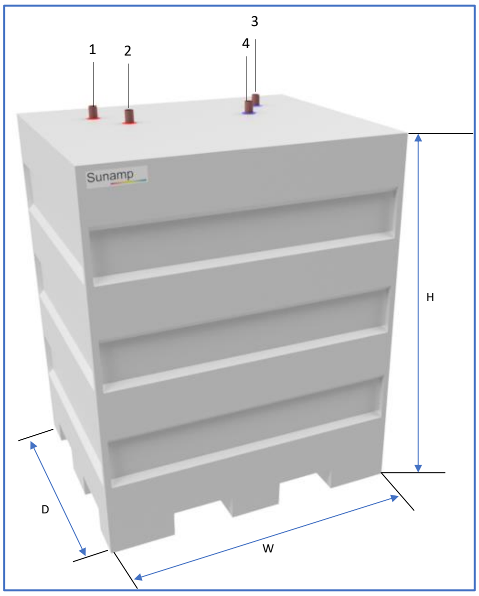
1. Introduction

Sunamp *UniQ Heat 60* advanced and compact heat store is based on Phase Change Materials. Therefore, the heat is stored in the PCM and the heat is exchanged between the PCM and the hydronic circuits when they are active by means of integrated heat exchangers. The *UniQ Heat 60* has two independent 'high' and 'low' power hydronic circuits which can be configured to suit the application (Section 3).



The *UniQ Heat* 60 range is designed for storing heat and for decoupling the heat source from heating demands in the building and can be supplied with PCM to suit the application and the operating temperatures of the heat source. Typical applications of UniQ Heat 60 are:

- Replacement hot water thermal stores and buffer vessels used in buildings for buffering heat and/or for decoupling heat sources from the heating demands (e.g. Heat pump & CHP based heating systems).
- Shifting the heating loads in a building to cheaper off-peak tariffs (e.g. for Heat pump-based heating systems) and for demand side management.
- Reducing pre-heat time required in building i.e. rapid warming of heat emitters i.e. higher customer satisfaction
- Integration of multiple heat sources operating at different times and/or at different temperatures and for integrating solar thermal and solar PV systems with existing heating plant.

The main benefits of integrating the *UniQ Heat* in heating systems are:

- The *UniQ Heat* 60 have low water content because over 90% of the heat is stored in the PCM therefore adding the *UniQ Heat 60* Stores to the heating system does not significantly increase the water content of the heating system. Therefore, in most installations, there is no need to increase either the size of expansion vessel or the volume of water treatment chemicals.
- Quicker and less costly installation because the *UniQ Heat 60* stores are supplied fully insulated and with plug-in controller.
- No mandatory annual maintenance or inspection is required and therefore lower running costs.
- Operational needs e.g. smaller space, typically 2 – 3 times smaller than the equivalent hot water based thermal stores and clean installation.

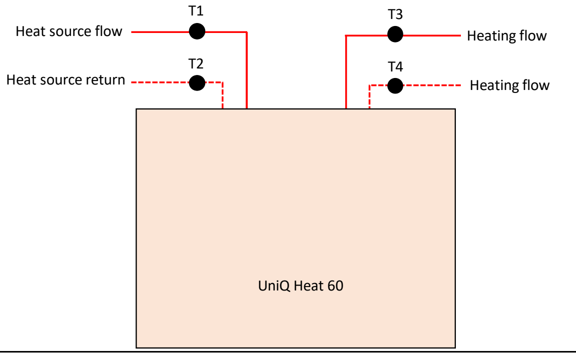
2. Technical specification (Tables 1 & 2)

Table 1: Technical specification – All models		
Overall dimensions (mm)	Width (W) x Depth (D) x Height (H)	1200 x 1000 x 1465mm
Connection	1. Top Manifold (HPC) 2. Top Manifold (LPC) 3. Bottom Manifold (HPC) 4. Bottom Manifold (LPC)	35mm OD copper pipe 35mm OD copper pipe 35mm OD copper pipe 35mm OD copper pipe
Pressure loss characteristics (See figure 1)	Low power circuit (LPC) High power circuit (HPC) Low & High-power circuits connected in parallel	K_V - LPC = K_V - HPC = K_V – (Combined) =
Notes:		

Table 2: Technical specification

		UniQ Heat 60 – PCM34	UniQ Heat 60 – PCM58	UniQ Heat 60 – PCM88	UniQ Heat 60 – PCM121
Weight – Unit Weight – Installed [1]	[kg] [kg]	1,890 1,960	1,290 1,360	2,030 2,100	1,305 1,375
Heat source temperature ▪ Maximum flow temperature, T1 ▪ Minimum flow temperature for charging, T1 ▪ Minimum return temperature for charging, T2	[°C]	 85 45 45	 85 65 65	 110 95 90	 150 130 125
Heating load temperature ▪ Maximum flow temperature – Transient, T3 ▪ Design flow temperature, T3 ▪ Maximum return temperature for discharging, T4	[°C]	 = T1 30 - 32 28	 = T1 53 – 55 50	 = T1 80 – 82 80	 = T1 110 – 115 110
Minimum flow rates for efficient charging & discharging ▪ Low power circuit (LPC) ▪ High power circuit (HPC) ▪ Low & High power circuits in parallel	[L/min/m³/h]				
Nominal storage capacity [2]	[kWh]	56	65	64	86
Heat loss rate [3]	[W] [kWh/24h]				
Maximum working pressure ▪ Low power circuit (LPC) ▪ High power circuit (HPC)	[bar/MPa]	 18/1.8 18/1.8	 18/1.8 18/1.8	 18/1.8 18/1.8	 18/1.8 18/1.8

1) Includes weight of water in the heat store
2) Reference conditions
3) Reference conditions



3. Example applications

The heating system design and the applications of the *UniQ Heat 60* are described in the product manuals. Typical applications are illustrated in figures 2a and 2b. (***Note:*** *Not all the equipment is shown in these figures.*)

When the power ratings of the heat source and the heating loads are similar, and the hydraulic separation is not required, the, the both LPC and HPC can be connected in parallel as shown in figure 2a.

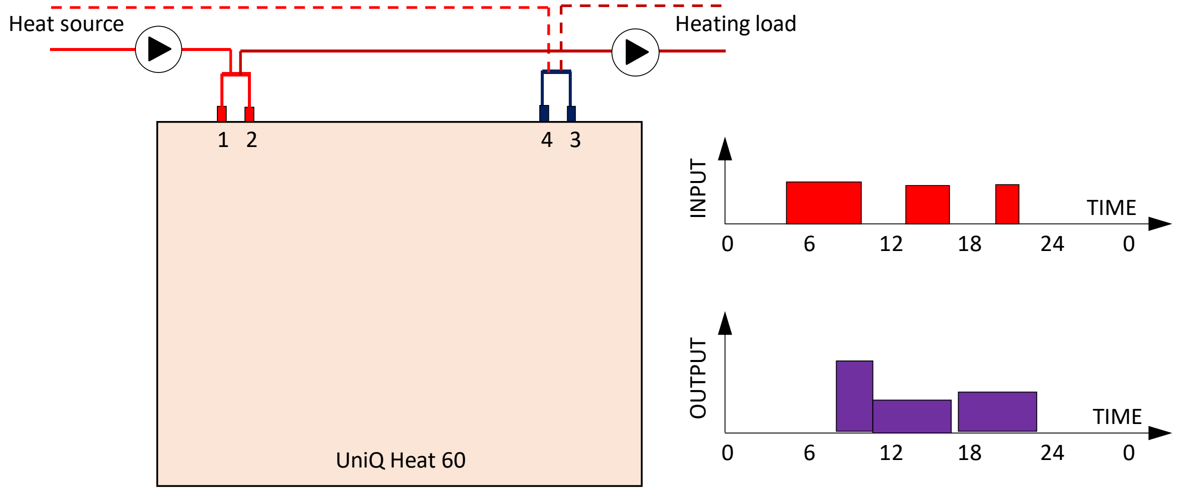


Figure 2a: UniQ Heat 60 configured as heat buffer without hydraulic separation

When hydraulic separation between heat source and the heat load is required and when there is significant difference between the power rating of the heat source and the heat load, then, the system can be configured as shown in figure 2b. For example; If the power rating of the heat source is significantly greater than the power rating of the heat load, then, the heat source should be connected to HPC and vice versa.

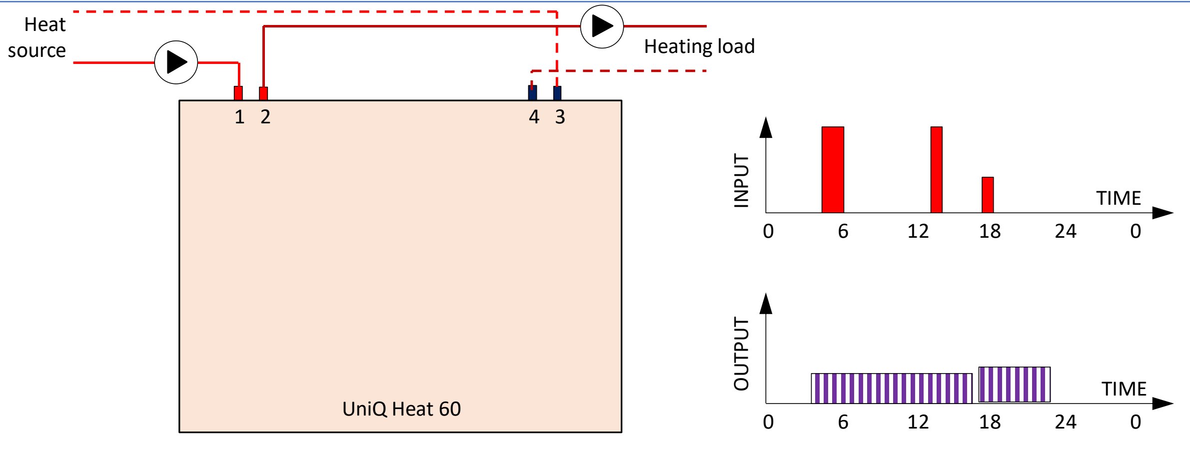


Figure 2b: UniQ Heat 60 configured as heat buffer with hydraulic separation