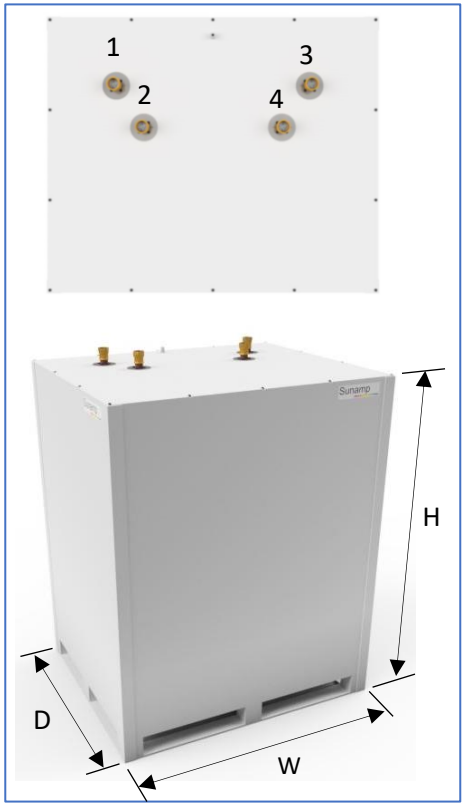
1. Introduction

Sunamp *UniQ Heat 80* 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 80* has two independents '*high power (HPC)*' and '*low power (LPC)*' hydronic circuits which can be configured to suit the application (Section 3).



The *UniQ Heat* 80 range is designed for storing heat and for decoupling the heat source from heating demands and is supplied with PCM to suit the operating temperatures of the heat source and heat emitters/absorbers. Typical applications of UniQ Heat 80 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 leading to 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* 80 has low water (or other heat transfer fluid) content because over 95% of the heat is stored in the PCM, therefore adding the *UniQ Heat 80* 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 80* stores are supplied fully insulated and with and optional plug-in controller and temperature sensors for managing the heat store.
- 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 1470mm
Connection	1. Top Manifold (HPC) 2. Top Manifold (LPC) 3. Bottom Manifold (HPC) 4. Bottom Manifold (LPC)	1-1/4" BSP Parallel Female 1-1/4" BSP Parallel Female 1-1/4" BSP Parallel Female 1-1/4" BSP Parallel Female
Pressure loss characteristics (See table 3)	Low power circuit (LPC) High power circuit (HPC) Low & High-power circuits connected in parallel	K_V - LPC = 8.0 K_V - HPC = 13.0 K_V – (Combined) = 21
Notes:		

Table 2: Technical specification		UniQ Heat 80 – SU34 Special order	UniQ Heat 80 – SU58 Standard	UniQ Heat 80 – SU88 Special order	UniQ Heat 80 – SU118 Special order
Weight – Unit Weight – Installed [1]	kg kg	2,000 2,070	1,500 1,570	2,100 2,170	1,510 1,580
Heat source temperature ▪ Maximum flow temperature, T1 ▪ Minimum flow temperature for charging, T1 ▪ Minimum return temperature for charging, T2	°C	 85 40 45	 80 65 65	 110 95 90	 140 125 125
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 – 115 100
Minimum flow rates for efficient charging & discharging – Depends upon application ▪ Low power circuit (LPC) ▪ High power circuit (HPC)	L/s [m^3/h]	 0.25 [0.9] 0.35 [1.25]	 0.25 [0.9] 0.35 [1.25]	 0.25 [0.9] 0.35 [1.25]	 0.25 [0.9] 0.35 [1.25]
Nominal storage capacity [2]	kWh	70	90	80	105
Heat loss rate [3]	W kWh/24h		127 3.0		
Maximum working pressure ▪ Low and high power circuits (LPC & HPC)	MPa [bar]	 1.6 [16]	 1.6 [16]	 1.6 [16]	 1.6 [16]

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

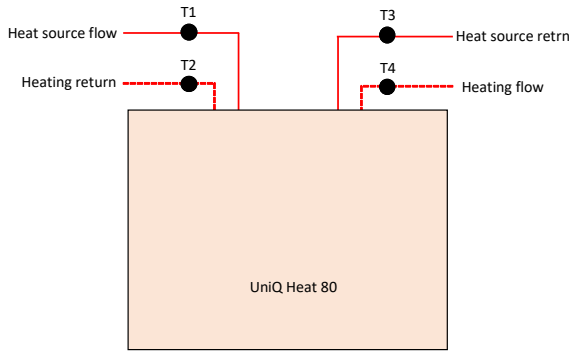


Table 3: Pressure loss characteristics

Flow rate		Pressure loss			
		HP Circuit		LP Circuit	
[L/s]	[m^3/h]	[kPa]	[bar]	[kPa]	[bar]
0.20	0.72	0.31	0.003	0.81	0.008
0.40	1.44	1.23	0.012	3.24	0.032
0.60	2.16	2.76	0.028	7.29	0.073
0.80	2.88	4.91	0.049	12.96	0.130
1.00	3.60	7.67	0.077	20.25	0.203
1.20	4.32	11.04	0.110	29.16	0.292
1.40	5.04	15.03	0.150	39.69	0.397
1.60	5.76	19.63	0.196	51.84	0.518
1.80	6.48	24.85	0.248	65.61	0.656
2.00	7.20	30.67	0.307	81.00	0.810
2.20	7.92	37.12	0.371	98.01	0.980
2.40	8.64	44.17	0.442	116.64	1.166
2.60	9.36	51.84	0.518	136.89	1.369
2.80	10.08	60.12	0.601	158.76	1.588
3.00	10.80	69.02	0.690	182.25	1.823

3. Example Applications

The heating system design and the applications of the *UniQ Heat 80* 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, both the LPC and HPC can be connected in parallel as shown in figure 2a.

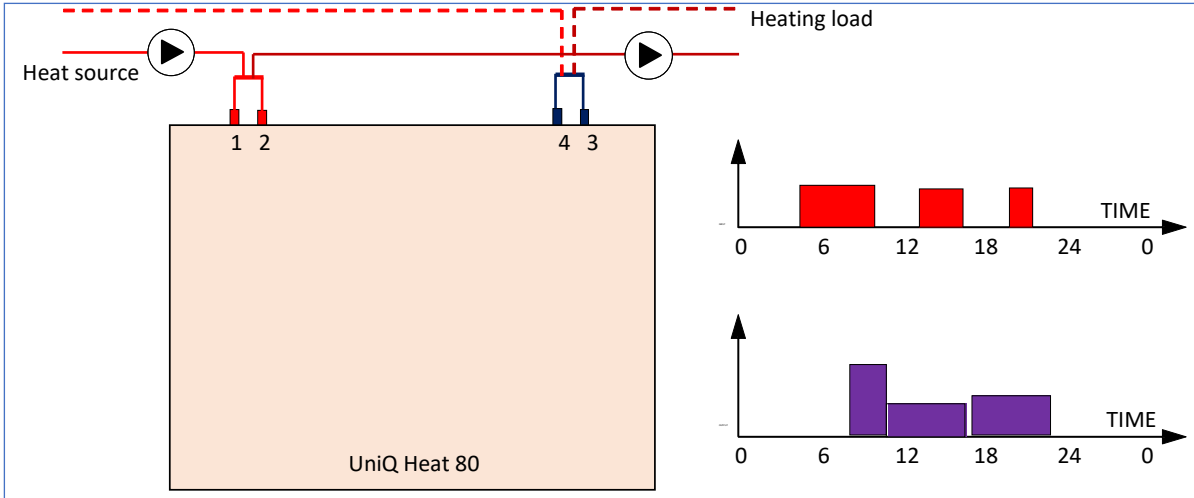


Figure 2a: UniQ Heat 80 configured as heat buffer without hydraulic separation

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, the heat source should be connected to HPC and vice versa.

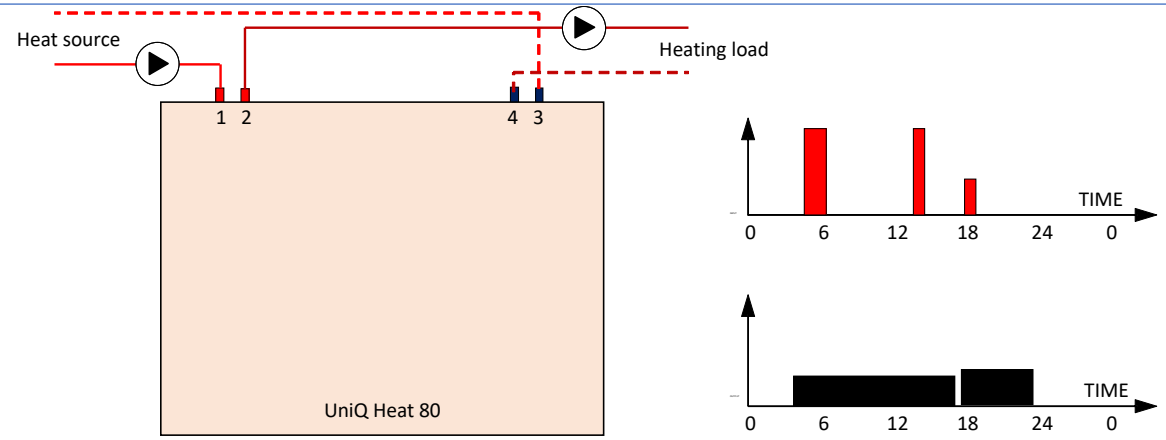
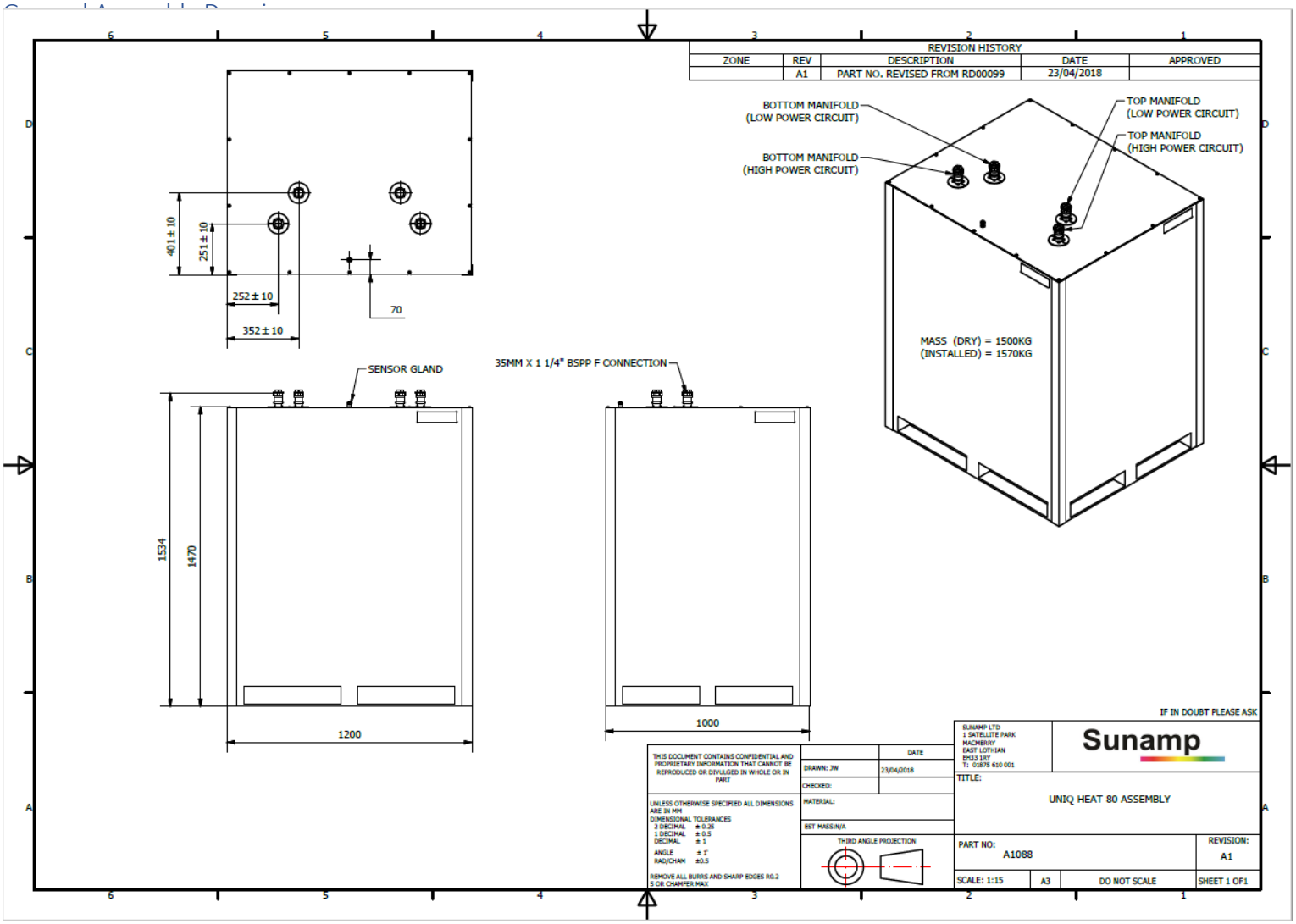


Figure 2b: UniQ Heat 80 configured as heat buffer with hydraulic separation

A.


REVISION HISTORY
ZONE | REV | DESCRIPTION | DATE | APPROVED
A1 | PART NO. REVISED FROM RD00099 | 23/04/2018
BOTTOM MANIFOLD (LOW POWER CIRCUIT)
BOTTOM MANIFOLD (HIGH POWER CIRCUIT)
TOP MANIFOLD (LOW POWER CIRCUIT)
TOP MANIFOLD (HIGH POWER CIRCUIT)
401 ± 10
251 ± 10
252 ± 10
352 ± 10
70
SENSOR GLAND
35MM X 1 1/4" BSPP F CONNECTION
1534
1470
1200
1000
MASS (DRY) = 1500KG
(INSTALLED) = 1570KG
IF IN DOUBT PLEASE ASK
SUNAMP LTD
1 SATELLITE PARK
MACMERRY
EAST LOTHIAN
EH33 1RY
T: 01875 610 001
Sunamp
TITLE:
UNIQ HEAT 80 ASSEMBLY
PART NO: A1088
REVISION: A1
SCALE: 1:15
A3
DO NOT SCALE
SHEET 1 OF1
DRAWN: JW
DATE 23/04/2018
CHECKED:
MATERIAL:
EST MASS:N/A
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1 DECIMAL ± 0.5
DECIMAL ± 1
ANGLE ± 1°
RAD/CHAM ±0.5
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