SE-AH MONOBLOCK SERIES

SE-AH-4M

Residential monoblock with the water circulation pump built in — pipe it and plug it in. Hot water to 60 °C, R410A rotary circuit, single-phase, rated from −7 °C ambient. Reversible: hot water in winter, chilled water in summer.

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HEATING CAPACITY
3.5 kW
At T1 · Rated duty

PEAK COP
4.12
At T1 · Rated duty

MAX WATER TEMP
60 °C
Rated outlet 55 °C

HOT WATER OUTPUT
105 LPH
At T1 · Rated duty

COOLING CAPACITY
2.5 kW
In cooling mode · not at the same time as hot water

COOLING COP
2.9
At the rated cooling duty

Performance

Rated output at each test condition

T1 Rated duty

Heating capacity	**3.5 kW**
Power input	**0.85 kW**
COP	**4.12**
Hot water output	**105 LPH**

Technical specifications

SE-AH-4M

ELECTRICAL SUPPLY		
Power supply	—	**220 V-240 V / 50 Hz / 1 Ph**
Rated input power	kW	**0.85**
Rated current	A	**4.07**
Required MCB	—	**16 A × 2 pole**
Required cable	—	**3 core × 2.5 sq.mm copper cable + earthing**
REFRIGERATION CIRCUIT		
Compressor	—	**Rotary / GMCC**
Number of compressors	Nos	**1**
Refrigerant	—	**R410A**
Heat exchanger (condenser)	—	**Tube in shell**
Throttling device	—	**Electronic expansion valve**
Fan quantity	Nos	**1**
Fan input	W	**25**
Operating ambient range	°C	**−7 to 43**

WATER CIRCUIT		
Rated water temperature	°C	**55**
Maximum water temperature	°C	**60 / *min 7***
Water flow	—	**Built-in pump**
Water pipe size	inch	**Rc3/4**
UNIT & ACOUSTICS		
Dimensions (L × W × H)	mm	**930 × 350 × 550**
Net weight	kg	**48**
Noise at 1 metre	dB(A)	**≤ 54**

TEST CONDITIONS

Rated duty — Ambient 30/25 °C (DB/WB)

Heating mode — water in / out 25 / 55 °C

Cooling mode — water in / out 25 / 10 °C

INSTALLATION REQUIREMENT

Dedicated **16 A × 2 pole** MCB required at the unit.

Supply cable **3 core × 2.5 sq.mm** copper, with separate earthing.

Do not fit a primary circulation pump — it is inside the unit (Sunniva/Shimge). Pipe flow and return straight to the cylinder and fit a Y-strainer on the return.

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Manufacturer & exporter of heat pumps since 2012

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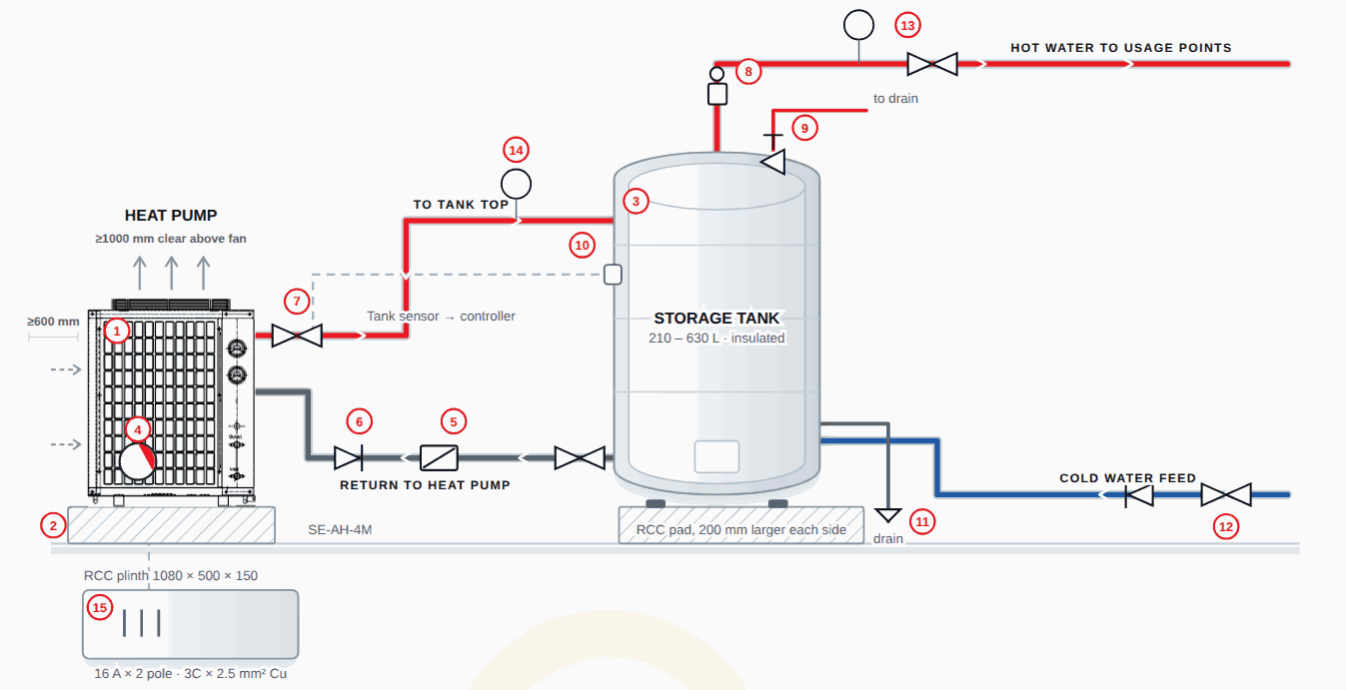
Site installation schematic

How the unit connects to the tank, pumps and piping on site



Indicative hookup only. Static head, draw pattern and local code may call for additional components — confirm the final scheme with Sunniva before ordering.

Selection & site preparation

Recommended sizing derived from this model's rated data

SYSTEM SIZING	
Storage tank volume	**210 – 630 L**
Tank sizing rule	**Hot water output × 2 to 6** LPH measured at 30 °C ambient, 55 °C water. Indicative range — stay inside it so the tank is neither undersized nor oversized.
Circulation pump	**Built into the unit — Sunniva/Shimge.** Do not fit a second primary pump: pipe the flow and return straight to the cylinder.
Primary pipe size	**25 mm (Rc3/4) to 10 m run; 32 mm beyond**
Line insulation	**25 mm closed-cell, every line above 45 °C**

CIVIL & ELECTRICAL	
Unit footprint & dry weight	**930 × 350 mm · 48 kg**
Heat pump plinth	**1080 × 500 × 150 mm RCC, M20**
Plinth level	**100 mm above finished floor, ± 3 mm/m**
Tank pad (210 L)	**150 mm RCC, 200 mm larger each side** ≈ 241 kg filled
Clearances	**600 mm air-on · 1000 mm above fan · 800 mm service side**
Electrical	**16 A × 2 pole MCB · 3 core × 2.5 sq.mm copper cable + earthing**

Installation steps

Follow in order; commission before start-up

1. Cast the RCC plinth **1080 × 500 × 150 mm** in M20 concrete, 100 mm above finished floor. Let it cure and check it is level within 3 mm per metre.
2. Set the unit down on anti-vibration pads. Keep **600 mm clear** at the finned coil faces and **1000 mm above the fan** — the unit must breathe or capacity drops.
3. Place the tank on its own level pad, as close to the heat pump as the site allows. Short pipes lose less heat.
4. Pipe **tank bottom → isolation valve → Y-strainer → primary pump → heat pump inlet**, in that order. Fit the non-return valve after the pump.
5. Pipe the **heat pump outlet → tank top inlet**. Fit an isolation valve at each end so the unit can be serviced without draining the tank.
6. Fit the **automatic air vent** and the **safety valve** on the tank top. Pipe the safety valve discharge to an open drain — never cap it.
7. Bring the **cold water feed** into the tank bottom through an isolation valve and a non-return valve.
8. Fit the tank sensor into the tank pocket and run its cable back to the heat pump controller. Do not run it alongside the power cable.
9. Insulate every hot line with **25 mm closed-cell** insulation, pump body included.
10. Power the unit from a dedicated **16 A × 2 pole** MCB using 3 core × 2.5 sq.mm copper cable + earthing.
11. Fill and vent the system fully. Confirm the flow switch stops the unit when the pump is off, then start.

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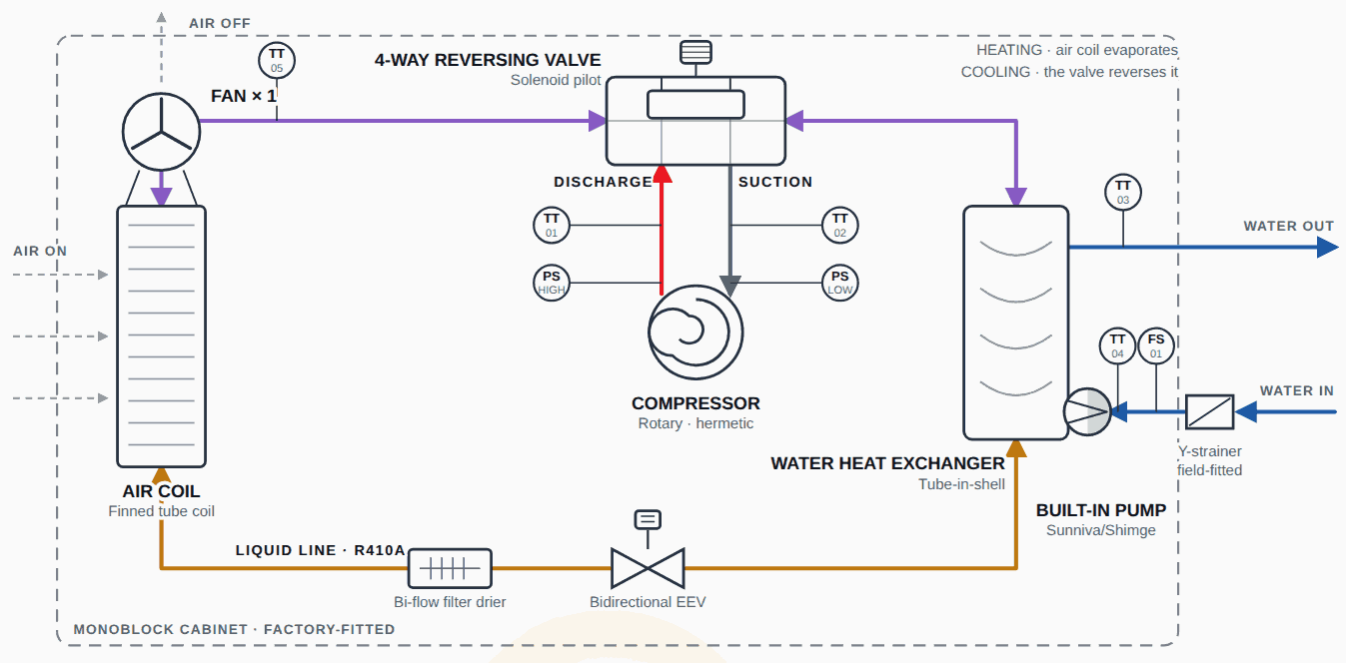
Process & instrumentation diagram

Refrigeration circuit, instrumentation and water connections



Schematic representation of the standard circuit — not to scale. Component arrangement may vary with build option.

Instrument schedule

Tags as marked on the diagram above

TAG	DEVICE	FUNCTION
TT 01	**Compressor discharge temperature**	Discharge superheat & high-temperature cut-out
TT 02	**Compressor suction temperature**	Suction superheat monitoring
TT 03	**Water outlet temperature**	Set-point control
TT 04	**Water inlet temperature**	Return water sensing, ΔT calculation

TAG	DEVICE	FUNCTION
TT 05	**Air coil temperature**	Defrost initiation and termination — the coil frosts below roughly 5 °C ambient
PS HIGH	**High-pressure switch**	Discharge over-pressure cut-out
PS LOW	**Low-pressure switch**	Loss-of-charge / low-suction cut-out
FS 01	**Water flow switch**	Interlock — no-flow lockout

Cabinet reference drawing

Typical general arrangement — this model's own dimensions alongside

DIMENSIONS (L × W × H)	NET WEIGHT
930 × 350 × 550 mm	**48 kg**

The general-arrangement drawing for the monoblock cabinet is not published yet. The dimensions and net weight above are this model's own, off its data sheet; ask Sunniva for a dimensioned drawing before cutting an opening or fabricating a bracket.

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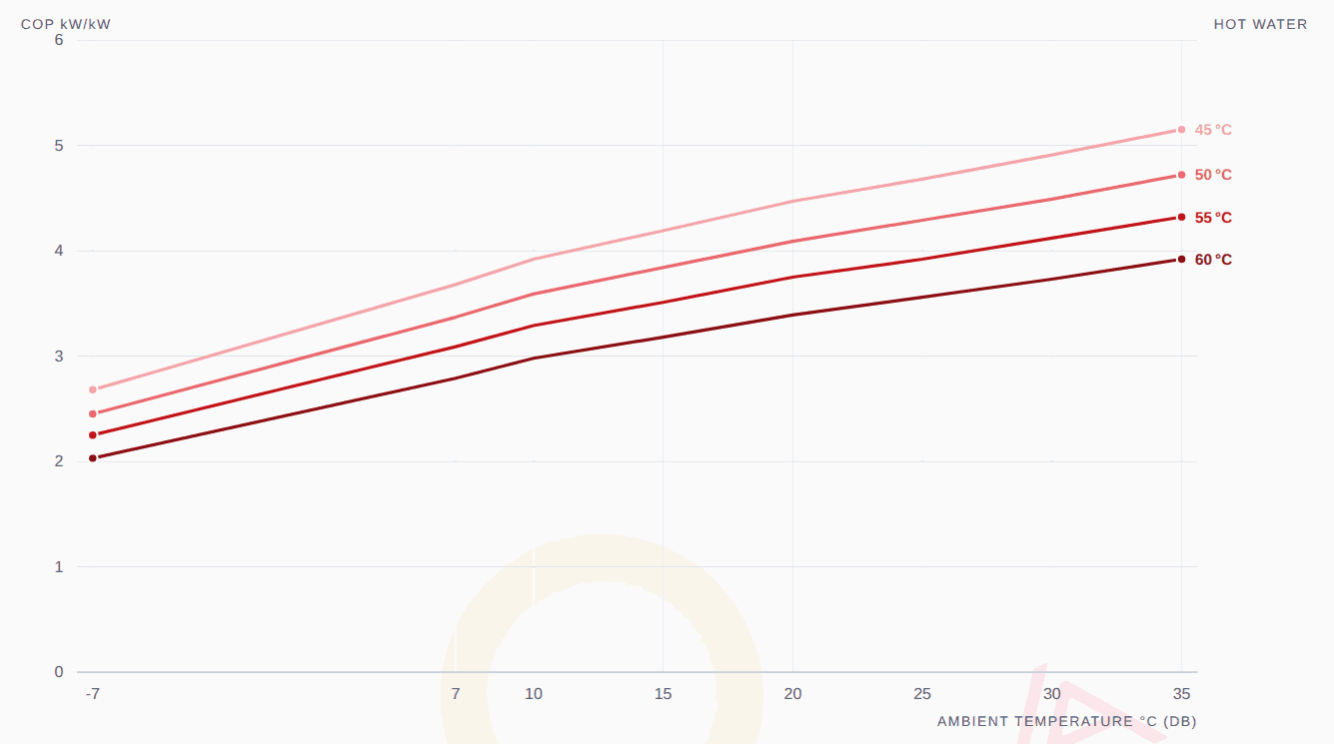
COP characteristic

Full performance map across the operating envelope

COP · heating duty

COP against ambient temperature, one curve per hot-water outlet temperature



COP · HOT WATER ↓ / AMBIENT °C →	-7	7	10	15	20	25	30	35
45 °C	2.68	3.68	3.92	4.19	4.47	4.68	4.91	5.15
50 °C	2.45	3.37	3.59	3.84	4.09	4.29	4.49	4.72
55 °C	2.25	3.09	3.29	3.51	3.75	3.92	4.12	4.32
60 °C	2.03	2.79	2.98	3.18	3.39	3.56	3.73	3.92

HOW TO READ THIS

Shape from the R410A air-to-water map; level set to this model's own rated COP of 4.12 at 30 °C ambient and 55 °C water, and cut off at the −7 °C ambient this range is rated to. The figure on page 1 is the measured one; this map is how the circuit behaves around it, not a second measurement.

Where a figure on this map differs from the rated point on page 1, **the map governs** — it is measured across the full operating envelope, while the rated point is a single certified test condition.

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