

Manifold Pack | Specification Guide



Rinnai

What is a Manifold Pack?



A Rinnai Manifold Pack consists of multiple Heavy Duty Continuous Flow Water Heaters plumbed together to offer higher flow rates than a single unit can provide.

The heaters are mounted on a robust frame and combined using copper piping that is perfectly plumbed and insulated to withstand the test of time. Each water heater has an intelligent PCB Controller to manage the hot water delivery with extreme accuracy, however when connected to our Intelligent Management System each water heater constantly makes precise calculations and communicates in unison to manage the hot water delivery and energy usage. Manifold Packs are designed and made in Australia (HD water heaters manufactured in Japan) and backed by Rinnai's global commitment to quality.

What are the key benefits?

- Accurate and constant outlet temperature, even when the flow varies
- Heavy Duty construction perfect for commercial applications
- No gas consumption when not in use saving you money
- No wasteful pilot lights
- Hot water supply never runs out
- Modular construction for ease of installation and transport
- External or internal units available
- Rinnai's unique Electronic Control System managing performance to prolong the life of your investment

What are suitable applications?

- Shower Blocks
- Sports clubs change rooms
- Cafes
- Restaurants and Pubs
- Caravan Parks
- Wash down and manufacturing process

Flow rate capacity

The maximum flow rate through a Manifold Pack is dependent on the outlet temperature and incoming water temperature. Each of our Heavy Duty Continuous Flow Water Heaters have varying capacities and thermal efficiencies to suit your requirements. Below is a table of capacities at various temperature rises.

Model	Flow @ 20°C rise L/min	Flow @ 25°C rise L/min	Flow @ 35°C rise L/min	Flow @ 45°C rise L/min	Flow @ 50°C rise L/min	Flow @ 60°C rise L/min	Flow @ 75°C rise L/min
HD210e	37.0	32.0	22.8	17.7	16.0	13.3	10.6
HD210i	37.0	32.0	22.8	17.7	16.0	13.3	10.6
HD250e	37.0	32.0	24.3	18.9	17.0	14.2	11.3
HD200e	32.0	26.0	18.7	14.6	13.1	10.9	8.7
HD200i	32.0	26.0	18.5	14.4	12.9	10.8	8.6

Heart of the system

Our Heavy Duty continuous flow range of water heaters are specifically designed for commercial use with inbuilt intelligence and durability to stand the test of time in the harshest of commercial environments. With various efficiency and flow rate options available Rinnai can provide the perfect solution based on your application, whether internally or externally mounted.

Generally, projects with very high energy costs would benefit from the use of our HD210 higher efficiency condensing technology as the increased capital expenditure is absorbed by the annual energy cost savings.

Heavy Duty Non Condensing (82-83% Thermal Efficiency)



HD200E
26 L/Min



HD200i
26 L/Min



HD250E
32 L/Min

Heavy Duty Condensing (97% Thermal Efficiency)



HD210E
32 L/Min



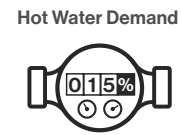
HD210i
32 L/Min

Intelligent Management System

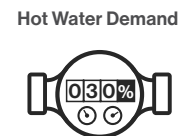
A standard feature on all Rinnai Manifold Packs is a sophisticated Electronic Control System. Its fundamental function is to maintain a steady water temperature while using minimal energy, it does this by ensuring only the required number of heaters operate to match the desired flow rate.

To prolong the life of the system it is packed with other advanced features, such as sequencing the water heaters usage pattern so that one unit is not working constantly, inbuilt fault detection, BMS connectivity and temperature synchronisation to name but a few. Our Intelligent Management System is a totally integrated arrangement unique to Rinnai that performs various safety checks, performance operations, efficiency calculations and commands.

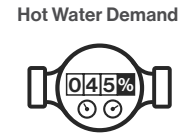
Demand Sequencing



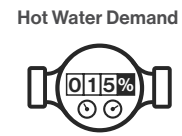
Hot Water Demand MP starts with minimal demand, activates a single heater and assigns a priority sequence.



Hot Water Demand Demand increases and another heater is activated. The priority sequence immediately switches.



Hot Water Demand Demand increases further and another heater is activated. The priority sequence immediately alternates and continues to do so every time the demand changes.



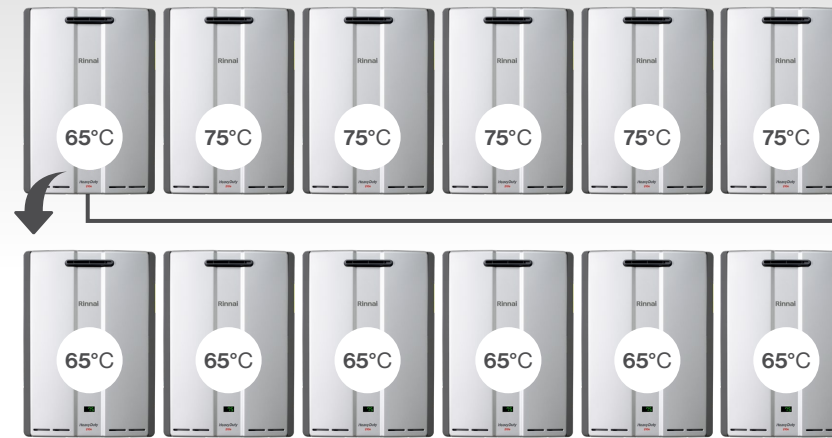
Hot Water Demand As demand decreases the heaters assigned with the lower priority will deactivate and the necessary number of heater(s) will remain active to maintain hot water delivery.

Added Feature



Hot Water Demand Many commercial applications have a reticulation system that operates continuously. To enhance the life span of the water heaters further Rinnai's engineers built in a control feature to alternate the priority every 24 hours.

Temperature Synchronisation



Setting the temperature on each water heater is a thing of the past as you can now set and forget the temperature on one heater and it is simultaneously communicated to all! This is usually done internally on the water heater, however if you wish to go one step further add a Rinnai Water Controller and you can do this at the touch of a button.



Fault and Error Management

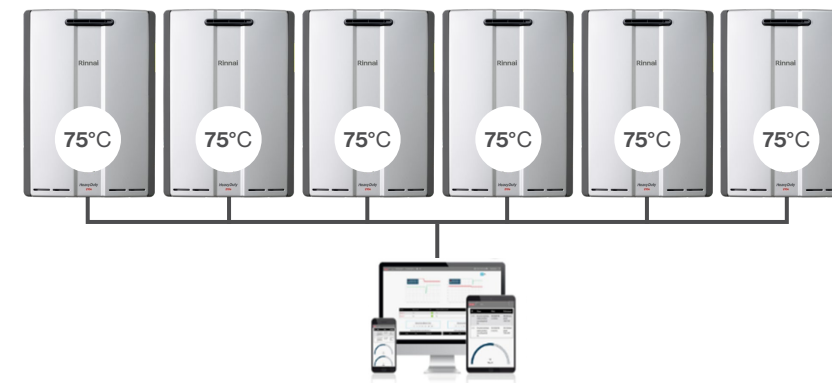


In the unlikely occurrence of an error or fault with one of the water heaters the management system immediately identifies the error and re-prioritises the sequencing. Hot water demand is constantly maintained as another heater immediately energises while the indisposed unit is removed from the sequencing until the error is cleared.



The relevant heater is easily identified as it displays an error code on the status monitor.

Connectivity



Its always good practice to monitor and maintain critical systems within a building's infrastructure and a hot water plant is no exception. With the addition of a simple and cost effective card you can monitor the status of the hot water plant at your convenience.

Simple volt free contacts are used to capture operational status by highlighting errors as they occur. You can choose to connect the complete system to your maintenance screen or the individual heaters for added visibility and control.

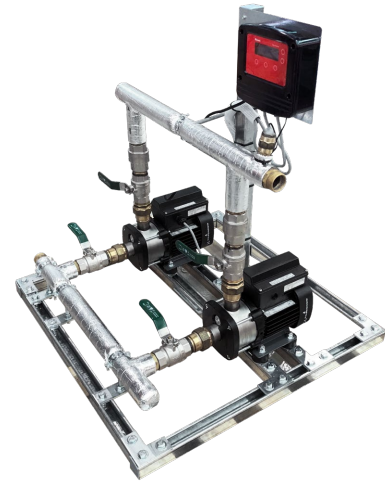
Solutions and Accessories

Rinnai can offer a customised solution with a high focus on your core deliverables.

The aesthetic appearance of developments is paramount. We can tailor solutions to suit your business, bespoke systems can be constructed to suit specific requirements including (but not limited to) lower frame size, precise wall mounting application or different size pipework. Rinnai's Commercial Hot Water Solutions match minimum height requirements, are modular and compact, and can be easily integrated into the building, with easy access for future serviceability. To compliment this, we have an extensive range of accessories.

Accessories

- Single Circulation Pumps for reticulation systems
- Dual Circulation Pumps for reticulation systems with intelligent controller packed with features
- Building Management System (BMS) integration
- Common flueing for internal installations
- Heat Exchange Systems offering flexibility in design of pressure zones or water quality management
- Remote Monitoring Systems to manage your hot water plants from anywhere at anytime
- Non modular packages with engineered frame and lifting points for easy hoisting and placement on site



Large Pumpset



Pump Plate



Heat Exchange Systems



Large MP Lifting engineered frame

► Commonwealth Games Village | QLD

With 6,600 athletes and officials descending on the Gold Coast in 2018 for the commonwealth games accommodation was required. The Queensland government decided to develop 7 hectares of the 29 hectare parklands reserved for the athletes Village into 1170 apartments and 82 townhouses.

Of course 6,600 athletes are going to need a hot shower so this large undertaking required many individual systems tailored to meet the constraints of the various internal plant areas across the entire project.



◀ Bunjil Place – VIC

Architecturally designed arts and entertainment building with outdoor open spaces. Located in Narre Warren in the Southern suburbs of Melbourne the design and architecture has won a series of design awards since its opening to the public. Bunjil Place is the first facility of its kind, bringing together creativity, entertainment and community in a way that is unparalleled in Australia.

Rinnai provided a large Manifold Pack delivering above 14,000 litres of hot water per hour. Customisation was critical to suit the plant requirements and minimise installation time.

► Canon Foods | WA

Canon foods embarked on building a brand new state of the art facility from the ground up in Jandakot, Western Australia. It was developed with a focus on environmentally efficient practices, placing great value on sustainability and reducing their carbon footprint. An integral part of a food processing plant is a reliable supply of hot water to maintain strict cleanliness standards.

Rinnai provided a Manifold Pack using our high efficiency Condensing Water Heaters. An accurate temperature and consistent flow rate are critical for wash down applications for hygiene reasons. High Efficiency Condensing Water Heaters was the natural choice to minimise energy consumption and reduce their carbon footprint.



Selection

What information do I need?

The following information is required to select a Manifold Pack System:

- Temperature required at point of use (eg. 40°C for a shower or 65°C for a kitchen sink)
- Incoming water temperature
- Simultaneous flow rate required (eg. 5 x 3 star (AAA) 9 l/min showers = 45 l/min)
- Internal or external installation (i.e. whether a Flue System is required)
- Available installation space for the system



A Manifold Pack is selected based on the number of fixtures operating at the same time. The flow rate is expressed in litres per minute.

Example:

An ablation block with 10 showers requires hot water at a delivery temperature of 40°C. Each shower delivers 9 l/min.

1. Calculate the required flow rate = 9 l/min x 10 showers = 90 l/min
2. Temperature rise = delivery temperature – incoming temperature = 40°C - 20°C = 20°C
3. Determine which HD heat source you wish to employ and refer to the table on page 2 for its flow rate capacity at a given temperature rise. Using a HD200 external in this example you will see that it delivers 32 l/min at 20°C
4. Now you can calculate the number of heaters:
5. 90 l/min divided by 32 l/min = 2.8
6. Resulting in the selection of MP3 200

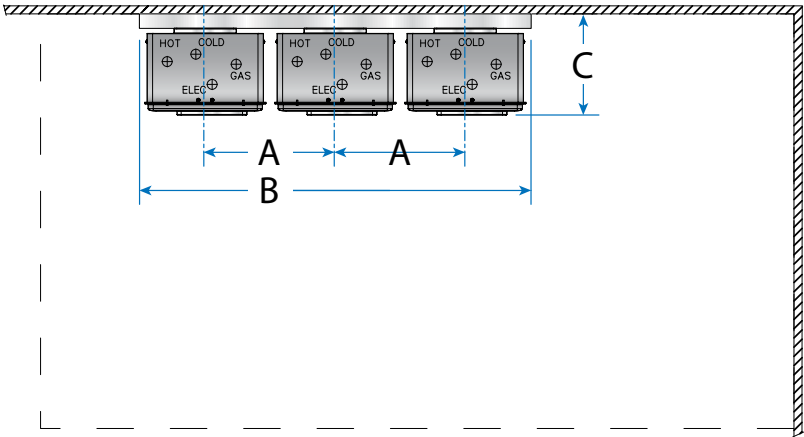
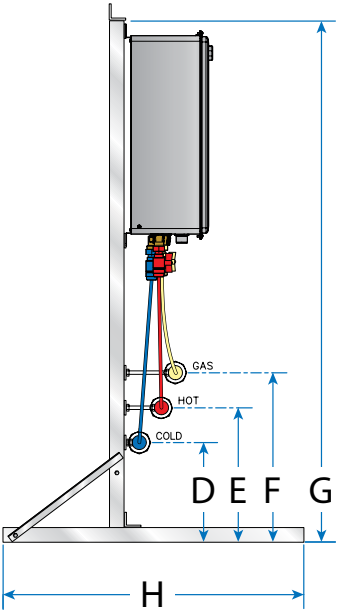
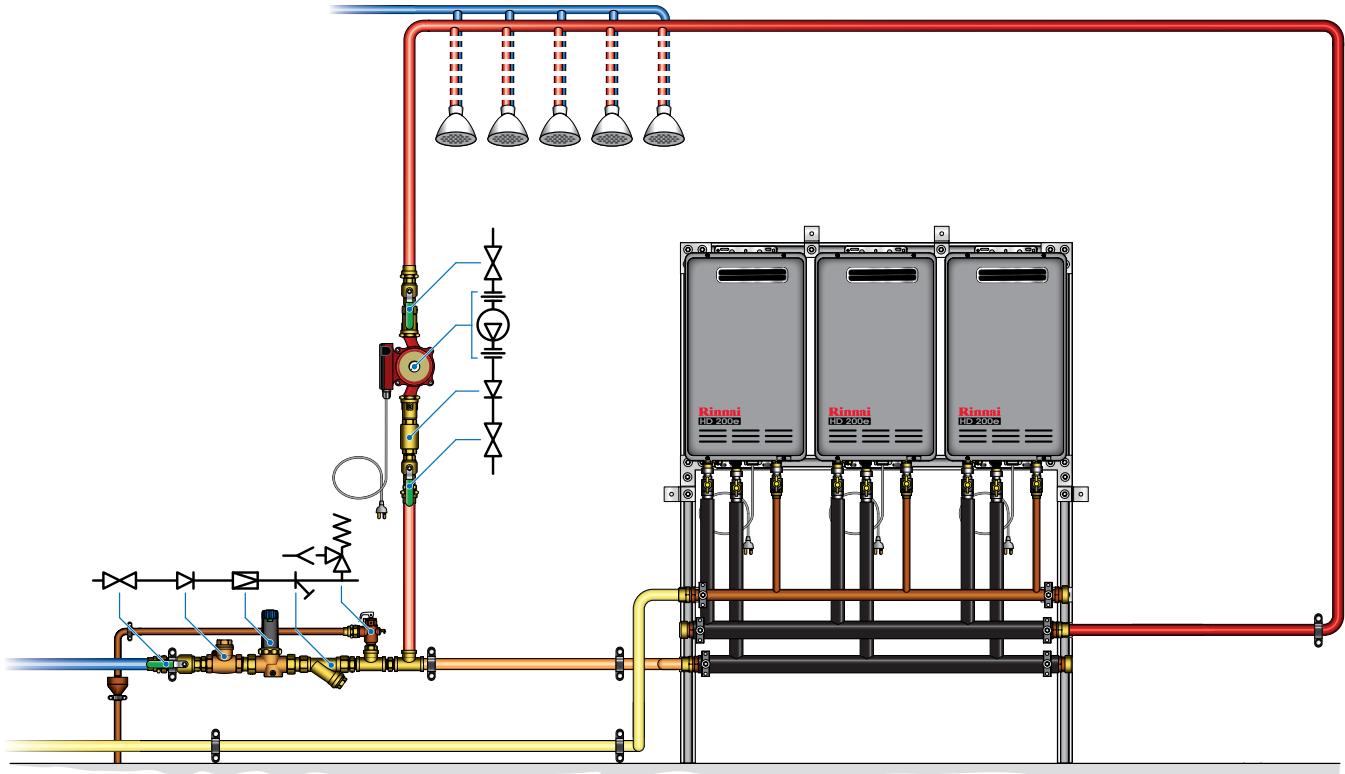
Manifold Pack systems using HD200E/i heaters for external or internal applications									
Tropical		Coastal		Inland		Alpine		Model	Gas Rate MJ / Hour
No. of Showers (9l/min)	Flow @ 20°C rise l/min	No. of Showers (9l/min)	Flow @ 25°C rise l/min	No. of Showers (9l/min)	Flow @ 35°C rise l/min	No. of Showers (9l/min)	Flow @ 45°C rise l/min		
3-4	32	3	26	2	18	1	14	HD200	200
6-7	64	5-6	52	4	36	3	28	MP2 200	400
10	96	8-9	78	6	54	4-5	42	MP3 200	600
13-14	128	11-12	104	8	72	6	56	MP4 200	800
16-17	160	14-15	130	10	90	7-8	70	MP5 200	1000
20	192	17	156	12	108	9-10	84	MP6 200	1200
25	224	20	182	14	126	11	98	MP7 200	1400
28-29	256	23	208	16	144	12-13	112	MP8 200	1600
32	288	26	234	18	162	14	126	MP9 200	1800
35-36	320	29	260	20	180	15-16	140	MP10 200	2000
39	352	31-32	286	22	198	17	154	MP11 200	2200
42-43	384	35-35	312	24	216	19	168	MP12 200	2400

Manifold Pack systems using HD250E heaters for external applications									
Tropical		Coastal		Inland		Alpine		Model	Gas Rate MJ / Hour
No. of Showers (9l/min)	Flow @ 20°C rise l/min	No. of Showers (9l/min)	Flow @ 25°C rise l/min	No. of Showers (9l/min)	Flow @ 35°C rise l/min	No. of Showers (9l/min)	Flow @ 45°C rise l/min		
8	74	7	64	5	48	4	38	MP2 250	500
12	111	10-11	96	8	72	6	57	MP3 250	750
16	148	14	128	10-11	96	8	76	MP4 250	1000
20-21	185	17-18	160	13	120	10	95	MP5 250	1250
24-25	222	21	192	16	144	12-13	114	MP6 250	1500
28-29	259	25	224	18-19	168	14-15	133	MP7 250	1750
32	296	28-29	256	21	192	17	152	MP8 250	2000
37	333	32	288	24	216	19	171	MP9 250	2250
41	370	35-36	320	26-27	240	21	190	MP10 250	2500
45	407	39	352	29	264	23	209	MP11 250	2750
46	414	42-43	384	32	288	25	228	MP12 250	3000

Manifold Pack systems using HD210E/i condensing heaters for external or internal applications									
Tropical		Coastal		Inland		Alpine		Model	Gas Rate MJ / Hour
No. of Showers (9l/min)	Flow @ 20°C rise l/min	No. of Showers (9l/min)	Flow @ 25°C rise l/min	No. of Showers (9l/min)	Flow @ 35°C rise l/min	No. of Showers (9l/min)	Flow @ 45°C rise l/min		
12	111	7	64	4-5	44	3-4	34	MP2 210	420
16	148	10-11	96	7	66	5-6	51	MP3 210	630
20	185	14	128	9-10	88	7	68	MP4 210	840
24-25	222	17-18	160	12	110	9	85	MP5 210	1050
28-29	259	21	192	14-15	132	11	102	MP6 210	1260
33	296	25	224	17	154	13	119	MP7 210	1470
37	333	28-29	256	19-20	176	15	136	MP8 210	1680
37-38	340	32	288	22	198	17	153	MP9 210	1890
42	377	35-36	320	24-25	220	19	170	MP10 210	2100
46	414	39	352	27	242	20-21	187	MP11 210	2310
50	451	42-43	384	29	264	22-23	204	MP12 210	2520

Output calculated on an incoming water temperature of 15°C.

Specifications



HD200 External/Internal Manifold Pack

Model	A	B	C	E	F	G	H	I	J
MP2 200	375	750	280	340	440	540	1500	790	60 Kg
MP3 200	375	1125	280	340	440	540	1500	790	90 Kg
MP4 200	375	1500	280	340	440	540	1500	790	120 Kg
MP5 200	375	1875	280	340	440	540	1500	790	150 Kg
MP6 200	375	2250	280	340	440	540	1500	790	180 Kg
MP7 200	375	2625	280	340	440	540	1500	790	210 Kg
MP8 200	375	3000	280	340	440	540	1500	790	240 Kg
MP9 200	375	3375	280	340	440	540	1500	790	270 Kg
MP10 200	375	3750	280	340	440	540	1500	790	300 Kg
MP11 200	375	4125	280	340	440	540	1500	790	330 Kg
MP12 200	375	4500	280	340	440	540	1500	790	360 Kg

HD250 External Manifold Pack

Model	A	B	C	E	F	G	H	I	J
MP2 250	500	1000	310	340	440	540	1500	790	80 Kg
MP3 250	500	1500	310	340	440	540	1500	790	120 Kg
MP4 250	500	2000	310	340	440	540	1500	790	160 Kg
MP5 250	500	2500	310	340	440	540	1500	790	200 Kg
MP6 250	500	3000	310	340	440	540	1500	790	240 Kg
MP7 250	500	3500	310	340	440	540	1500	790	280 Kg
MP8 250	500	4000	310	340	440	540	1500	790	320 Kg
MP9 250	500	4500	310	340	440	540	1500	790	360 Kg
MP10 250	500	5000	310	340	440	540	1500	790	400 Kg
MP11 250	500	5500	310	340	440	540	1500	790	440 Kg
MP12 250	500	6000	310	340	440	540	1500	790	480 Kg

HD210 External/Internal Manifold Pack

Model	A	B	C	E	F	G	H	I	J
MP2 210	500	1000	310	340	440	540	1500	790	90 Kg
MP3 210	500	1500	310	340	440	540	1500	790	135 Kg
MP4 210	500	2000	310	340	440	540	1500	790	180 Kg
MP5 210	500	2500	310	340	440	540	1500	790	225 Kg
MP6 210	500	3000	310	340	440	540	1500	790	270 Kg
MP7 210	500	3500	310	340	440	540	1500	790	315 Kg
MP8 210	500	4000	310	340	440	540	1500	790	360 Kg
MP9 210	500	4500	310	340	440	540	1500	790	405 Kg
MP10 210	500	5000	310	340	440	540	1500	790	450 Kg
MP11 210	500	5500	310	340	440	540	1500	790	495 Kg
MP12 210	500	6000	310	340	440	540	1500	790	540 Kg

Order Information

Ordering a Manifold Pack could not be any simpler

For example a Manifold Pack with 3 x HD210E Heaters using Natural Gas would be **MP3210ECN**.

Manifold Pack	HD Quantity	Model / Internal / External	Control System	Gas type	Premium Skid
• MP (Manifold Pack)	• HD Quantity	• 200E (HD200 ext.) • 200i (HD200 int.) • 250E (HD250 ext.) • 210E (HD210 ext.) • 210i (HD210 int.)	• M (Mecs) • C (Cascade)	• N (NG) • L (LPG)	• Blank • SS (Premium Skid)

Note: Mecs control system is compatible with the HD200 and HD250 Non Condensing Water Heaters while the Cascade Control System is compatible with the HD210 High Efficiency Condensing Water Heaters.

Warranty info

Warranty	Domestic Use	Commercial Use
Heavy Duty Continuous Flow	12 Years (heat exchanger)	5 Years (heat exchanger)

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rinnai.com.au

TOTAL HOME COMFORT



HOT WATER



HEATING



COOLING

Rinnai