

# COMMERCIAL HEAT PUMPS AIR to WATER 10-200kW



## About Us

Thermal IQ Solutions is Australia's largest manufacturer of small capacity specialised commercial HVAC equipment. The technical team at Thermal IQ have a combined 50 years in the Australian HVAC industry – no other company can offer this level of engineering support for our customers critical applications.

Rather than offer imported chillers Thermal IQ has dedicated itself to providing locally specified and manufactured heat pumps which are supplied with components sourced from the industry's leading suppliers. With specifying heat pumps, experience counts, and no other company has the experience to offer the advice and solutions the market requires.

As the Australian market grows and diversifies, Thermal IQ can offer expert advice on chillers, heat pumps, variable speed high efficiency scroll chillers, air handling and more.

Thermal IQ is back by a nationwide team of service technicians who are trained in the operation and maintenance of Thermal IQ heat pumps.

## Heat Pump Applications

Heat pumps are designed to circulate water and produce hot water for a variety of applications – capturing heat from the air they are an extremely efficient method of pricing hot water via a water pump.



Hotels



Food preparation



Medical Apps



Swimming pools

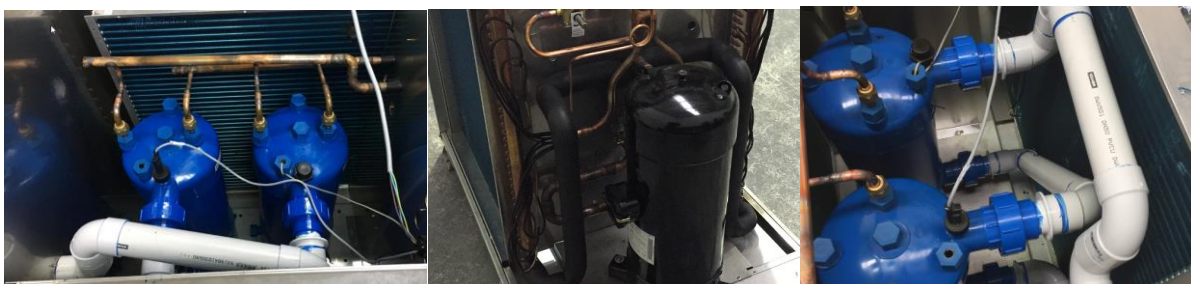


Process heating

## Features

### The chillers are supplied with – as standard

- Suitable for indoor or outdoor installation
- Rugged stainless-steel construction
- Components sourced from the industry's leading suppliers
- R134a refrigerant for high ambient temperature operation and the lowest GWP of all contemporary refrigerants
- Integrated circulation pump
- Comprehensive 12 months warranty on all parts and labour
- Highly accurate electronic controller
- 316SS plate heat exchanger evaporator
- Comprehensive factory testing before dispatch
- Evaporator protection on all models
- Gold fin protection on the evaporator



Thermal IQ's range of heat pumps are designed and manufactured in Australia for both local and international markets. Thermal IQ's manufacturing resources have over 5 decades of experience in manufacturing heat pumps and refrigeration products.

All Thermal IQ's heat pumps are manufactured from the highest quality components supplied from the industry's leading suppliers and are designed for high efficiency and low maintenance.

### Evaporator Coating

All Thermal IQ's evaporators are coated in ***Blygold PoluAl XT-MB*** which is a special corrosion protection coating for cooling coils and evaporators. The coating shields vulnerable metals from aggressive environments. The aluminum content in the coating provides the necessary heat conductivity to ensure the that coated heat exchangers have optimum heat transfer capacity.

Special additives ensure the applied coating film is bacterial and fungi resistant. After treating evaporators or cooling coils these articles should be considered "treated articles" and be marked as such.

- ✓ Corrosion resistant
- ✓ Microorganism resistant
- ✓ Heat conductive
- ✓ 11000 hours salt spray test
- ✓ Nano free
- ✓ Treated article

The coating is compliant to

- ✓ ASTM B117 – 11000 hours salt spray test
- ✓ ASTM G85 A1 – 4000+ hours acid salt spray test



## Options

- Double wall condenser
- Coaxial condenser
- Shell and tube condenser
- Low noise fans
- Modbus high level interface connectivity
- PLC controller with HMI
- Side air exhaust
- Variable speed compressor with inverter

Below is the general technical data on the units to 100kW.

Thermal IQ I able to manufacture units to 300kW of heating.

When a unit is quoted, the quote will be supplied with a technical data sheet based on the customer requirements.

GENERAL TECHNICAL DATA – HEAT PUMP – R134a Refrigerant				
<b>System type</b>	HEAT PUMP	Heat rejection		Water
Model		<b>TH20A3</b>	<b>TH30A3</b>	<b>TH40A3</b>
<b>Capacity – kW 12 SST/ 50 SCT</b>	TR	5.6	8.2	10.8
	Recovery – 50C Rise	414 l/hr	606 l/hr	801 l/hr
	kW – Ambient 30	24.2	35.2	46.5
Total power input	kW	4.6	7.0	9.8
Total running current	Amps	9.5	14.0	21.9
Unit COP	kW/kW	5.2	5.0	4.8
<b>Capacity - kW</b>	kW – Ambient 20	20.1	30.9	40.4
	kW – Ambient 10	17.7	27.0	34.9
<b>COMPRESSOR</b>	Scroll Hermetic			
Motor size	HP	8	12	15
QTY		1	1	1
<b>CONDENSER</b>	Plate heat exchanger - single wall			
Material	316 Stainless steel			
Inlet / outlet HW Temperature	°C	45/50		
Pressure drop	kPa	50	50	50
Hot water flow rate	l/s	1.0	1.5	2.0
Water connections	mm	1" FBSP	1 1/2" FBSP	1 1/2" FBSP
Condenser protection		Flow switch		
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles			
Fan speed	Rpm	900		
Fan diameter	mm	450	450	500
No fans		1	2	2
Total air flow	M <sup>3</sup> / hr	3500	7000	10800
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI			
De-ice control		Hot gas injection		
<b>CONTROLLER</b>	Standard electronic Carel controller – 0.1C accuracy			
<b>Shipping weight - dry</b>	Kg	110	140	165
<b>Breaker size</b>	Amps	20	40	50
No. refrigeration circuits		1	1	1
<b>BMS protocols</b>	-	Compressor start		DOL
Capacity control	%	0-100%		
Power requirements	V/Hz/Ph	380-415/50/3		
Working temperature range	C	40-65		
<b>Rating conditions</b>		12 SST – 50C SCT		

GENERAL TECHNICAL DATA – HEAT PUMP – R134a Refrigerant			
<b>System type</b>	HEAT PUMP	Heat rejection	Water
Model		<b>TH50A</b>	<b>TH60A</b>
<b>Capacity - kW</b>	TR		
	Recovery – 50C Rise	861 l/hr	1326 l/hr
	kW – Ambient 30	61.8	77.0
Total power input	kW	12.4	14.8
Total running current	Amps	23.2	36.0
Unit COP	kW/kW	5.0	5.2
<b>Capacity – kW</b>	Ambient 20 C	53.1	65.9
	Ambient 10 C	45.0	56.3
<b>COMPRESSOR</b>		Scroll Hermetic	
Motor size	HP	20	26
QTY		1	1
<b>CONDENSER</b>	Plate heat exchanger - single wall		
Material	316 Stainless steel		
Inlet / outlet HW Temperature	°C	45/50	
Pressure drop	kPa	50	50
Hot water flow rate	l/s	3.0	3.5
Water connections	mm	1 1/2" FBSP	1 1/2" FBSP
Condenser protection		Flow switch	
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles		
Fan speed	Rpm	900	
Fan diameter	mm	500	500
No fans		2	2
Total air flow	M <sup>3</sup> / hr	10800	10800
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI		
De-ice control		Hot gas injection	
<b>CONTROLLER</b>	Standard electronic Carel controller – 0.1C accuracy		
<b>Shipping weight - dry</b>	Kg	300	350
<b>Breaker size</b>	Amps	50	50
No. refrigeration circuits		1	1
<b>BMS protocols</b>	-	Compressor start	DOL
Capacity control	%	0-100%	
Power requirements	V/Hz/Ph	380-415/50/3	
Working temperature range	C	40-65	
<b>Rating conditions</b>		12 SST – 50C SCT	

GENERAL DATA – HEAT PUMP – R134a Refrigerant			
<b>System type</b>	HEAT PUMP	Heat rejection	Water
Model		<b>TH80A</b>	<b>TH100A</b>
<b>Capacity - kW</b>	TR	21.6	
	Recovery – 50C Rise	1601 l/s	2160 l/hr
	kW – Ambient 30	93.0	123.6
Total power input	kW	19.6	24.8
Total running current	Amps	44.8	46.4
Unit COP	kW/kW	4.7	4.9
<b>Capacity</b>	kW – Ambient 20	40.4	106.2
	kW – Ambient 10	34.9	90.0
<b>COMPRESSOR</b>		Scroll Hermetic	
Motor size	HP	15	20
RPM	per/min	2900	
QTY		2	2
<b>CONDENSER</b>	Plate heat exchanger - single wall		
Material	316 Stainless steel		
Inlet / outlet HW Temperature	°C	45/50	
Pressure drop	kPa	50	50
Hot water flow rate	l/s	3.8	4.5
Water connections	mm	2" FBSP	2" FBSP
Condenser protection		Flow switch	
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles		
Fan speed	Rpm	900	
Fan diameter	mm	630	500
No fans		2	4
Total air flow	M <sup>3</sup> / hr	14400	21600
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI		
De-ice control		Hot gas injection	
<b>CONTROLLER</b>	PLC		
<b>HP Safety</b>	2850kPa	LP Safety	375kPa
<b>Shipping weight - dry</b>	Kg	450	550
<b>Breaker size</b>	Amps	80	80
No. refrigeration circuits		2	2
<b>BMS protocols</b>	Modbus	Compressor start	DOL
Capacity control	%	0-50%-100%	
Power requirements	V/Hz/Ph	380-415/50/3	
Working temperature range	C	40-65	
<b>Rating conditions</b>		12 SST – 50C SCT	

GENERAL DATA – HEAT PUMP – R407c Refrigerant				
System type	HEAT PUMP	Heat rejection		Water
Model		TH20A3	TH30A3	TH40A3
<b>Capacity – kW 12 SST/ 50 SCT</b>	TR	5.6	8.2	10.8
	Recovery – 50C Rise	434 l/hr	682 l/hr	797 l/s
	kW – Ambient 30	25.2	39.6	46.3
Total power input	kW	4.9	7.5	9.2
Total running current	Amps	8.7	13.5	16.7
Unit COP	kW/kW	5.1	5.2	5.0
<b>Capacity - kW</b>	kW – Ambient 20	21.7	34.0	39.9
	kW – Ambient 10	19.9	29.2	34.1
<b>COMPRESSOR</b>	Scroll Hermetic			
Motor size	HP	5.5	8	10
RPM	per/min	2900		
QTY		1	1	1
<b>CONDENSER</b>	Plate heat exchanger - single wall			
Material	316 Stainless steel			
Inlet / outlet HW Temperature	°C	45/50		
Pressure drop	kPa	50	50	50
Hot water flow rate	l/s	1.0	1.5	2.0
Water connections	mm	1" FBSP	1 1/2" FBSP	1 1/2" FBSP
Condenser protection		Flow switch		
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles			
Fan speed	Rpm	900		
Fan diameter	mm	450	450	500
No fans		1	2	2
Total air flow	M <sup>3</sup> / hr	3500	7000	10800
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI			
De-ice control		Hot gas injection		
<b>CONTROLLER</b>	Standard electronic Carel controller – 0.1C accuracy			
<b>HP Safety</b>	2850kPa	LP Safety		375kPa
<b>Shipping weight - dry</b>	Kg	110	140	165
<b>Breaker size</b>	Amps	20	40	
No. refrigeration circuits		1	1	1
<b>BMS protocols</b>	-	Compressor start		DOL
Capacity control	%	0-100%		
Power requirements	V/Hz/Ph	380-415/50/3		
Working temperature range	C	40-61		
<b>Rating conditions</b>		12 SST – 50C SCT		



GENERAL DATA – HEAT PUMP – R407c Refrigerant			
<b>System type</b>	HEAT PUMP	Heat rejection	Water
Model		<b>TH50A</b>	<b>TH60A</b>
<b>Capacity - kW</b>	TR		
	Recovery – 50C Rise	1016 l/hr	1179 l/hr
	kW – Ambient 30	59.0	68.5
Total power input	kW	11.5	13.6
Total running current	Amps	20.8	26.8
Unit COP	kW/kW	5.1	5.0
<b>Capacity – kW</b>	Ambient 20 C	50.1	58.8
	Ambient 10 C	42.2	50.3
<b>COMPRESSOR</b>		Scroll Hermetic	
Motor size	HP	13	15
QTY		1	1
<b>CONDENSER</b>	Plate heat exchanger - single wall		
Material	316 Stainless steel		
Inlet / outlet HW Temperature	°C	45/50	
Pressure drop	kPa	50	50
Hot water flow rate	l/s	3.0	3.5
Water connections	mm	1 1/2" FBSP	1 1/2" FBSP
Condenser protection		Flow switch	
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles		
Fan speed	Rpm	900	
Fan diameter	mm	500	500
No fans		2	2
Total air flow	M <sup>3</sup> / hr	10800	10800
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI		
De-ice control		Hot gas injection	
<b>CONTROLLER</b>	Standard electronic Carel controller – 0.1C accuracy		
<b>HP Safety</b>	2850kPa	LP Safety	375kPa
<b>Shipping weight - dry</b>	Kg	300	350
<b>Breaker size</b>	Amps	50	50
No. refrigeration circuits		1	1
<b>BMS protocols</b>	-	Compressor start	DOL
Capacity control	%	0-100%	
Power requirements	V/Hz/Ph	380-415/50/3	
Working temperature range	C	40-65	
<b>Rating conditions</b>		12 SST – 50C SCT	

GENERAL DATA – HEAT PUMP – R407c Refrigerant			
<b>System type</b>	HEAT PUMP	Heat rejection	Water
Model		<b>TH80A</b>	<b>TH100A</b>
<b>Capacity - kW</b>	TR		
	Recovery – 50C Rise		2060 l/hr
	kW – Ambient 30	92.6	118.0
Total power input	kW	20	23.0
Total running current	Amps	34.4	41.6
Unit COP	kW/kW	4.8	5.1
<b>Capacity</b>	kW – Ambient 20	79.8	100.2
	kW – Ambient 10	64.2	84.4
<b>COMPRESSOR</b>		Scroll Hermetic	
Motor size	HP	10	13
QTY		2	2
<b>CONDENSER</b>	Plate heat exchanger - single wall		
Material	316 Stainless steel		
Inlet / outlet HW Temperature	°C	45/50	
Pressure drop	kPa	50	50
Hot water flow rate	l/s		
Water connections	mm	2" FBSP	2" FBSP
Condenser protection		Flow switch	
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles		
Fan speed	Rpm	900	
Fan diameter	mm	630	500
No fans		2	4
Total air flow	M <sup>3</sup> / hr	14400	21600
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI		
De-ice control		Hot gas injection	
<b>CONTROLLER</b>	PLC		
<b>HP Safety</b>	2850kPa	LP Safety	375kPa
<b>Shipping weight - dry</b>	Kg	450	550
<b>Breaker size</b>	Amps	80	80
No. refrigeration circuits		2	2
<b>BMS protocols</b>	Modbus	Compressor start	DOL
Capacity control	%	0-50%-100%	
Power requirements	V/Hz/Ph	380-415/50/3	
Working temperature range	C	40-65	
<b>Rating conditions</b>		12 SST – 50C SCT	

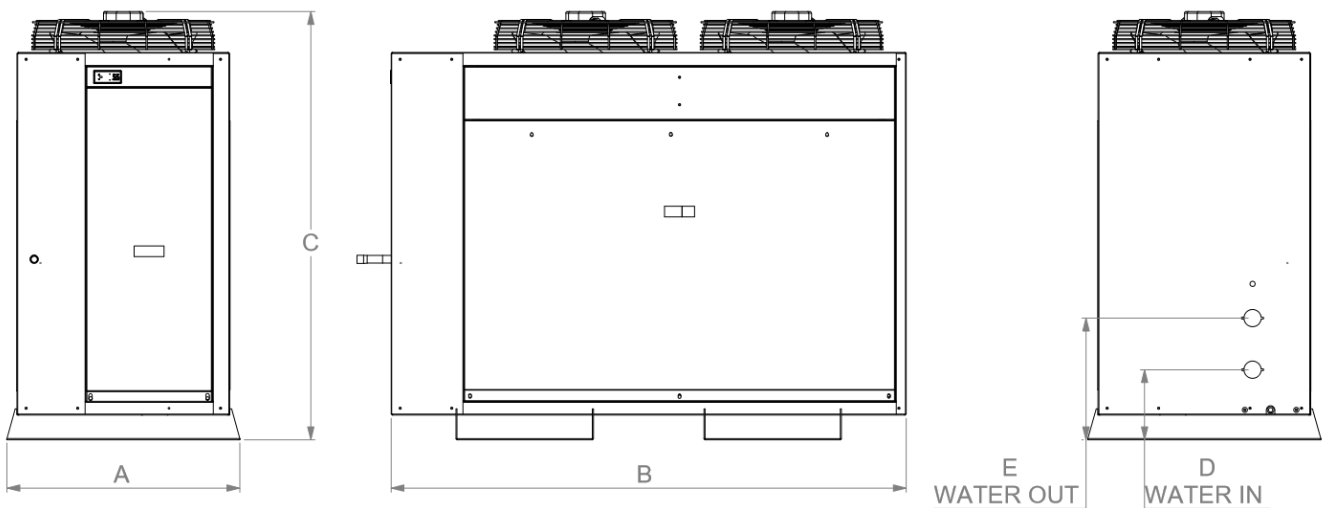
GENERAL DATA – HEAT PUMP – R410a Refrigerant					
System type	HEAT PUMP		Heat rejection		Water
Model		TH20A3	TH30A3	TH40A3	
<b>Capacity – kW</b> 12 SST/ 50 SCT	TR	5.6	8.2	10.8	
	Recovery – 50C Rise	458 l/hr	667 l/hr	779 l/s	
	kW – Ambient 30	26.6	38.7	45.2	
Total power input	kW	5.4	8.1	9.3	
Total running current	Amps	9.5	14.1	17.1	
Unit COP	kW/kW	4.9	4.8	4.9	
<b>Capacity - kW</b>	kW – Ambient 20	23.3	33.7	39.4	
	kW – Ambient 10	20.3	29.4	34.2	
<b>COMPRESSOR</b>	Scroll Hermetic				
Motor size	HP	6.0	8.5	10.0	
RPM	per/min	2900			
QTY		1	1	1	
Max power input	kW	7.3	10.2	11.8	
Max running current	Amps	12.3	17.5	20.5	
MCC	Amps	17.5	26.0	28.0	
Rated load current	Amps	11.2	16.7	17.9	
Locked rotor amps	Amps	75.0	111.0	118.0	
Oil charge / comp	L				
<b>Oil type</b>	POE				
<b>CONDENSER</b>	Plate heat exchanger - single wall				
Material	316 Stainless steel				
Inlet / outlet HW Temperature	°C	45/50			
Pressure drop	kPa	50	50	50	
Hot water flow rate	l/s	1.0	1.5	2.0	
Water connections	mm	1" FBSP	1 1/2" FBSP	1 1/2" FBSP	
Condenser protection		Flow switch			
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles				
Fan speed	Rpm	900			
Fan diameter	mm	450	450	500	
No fans		1	2	2	
Total power input	kW	0.3	0.6	1.1	
Total running current	Amps	0.5	1.2	1.8	
Total air flow	M <sup>3</sup> / hr	3500	7000	10800	
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI				
De-ice control		Hot gas injection			
<b>CONTROLLER</b>	Standard electronic Carel controller – 0.1C accuracy				
<b>HP Safety</b>	2850kPa	<b>LP Safety</b>		375kPa	
<b>Shipping weight - dry</b>	Kg	110	140	165	
<b>Breaker size</b>	Amps	20	40		
No. refrigeration circuits		1	1	1	
<b>BMS protocols</b>	-	<b>Compressor start</b>		DOL	
Capacity control	%	0-100%			
Power requirements	V/Hz/Ph	380-415/50/3			
Working temperature range	C	40-61			
<b>Rating conditions</b>		12 SST – 50C SCT			

<b>GENERAL DATA – HEAT PUMP – R410a Refrigerant</b>			
<b>System type</b>	HEAT PUMP	Heat rejection	Water
Model		<b>TH50A</b>	<b>TH60A</b>
<b>Capacity - kW</b>	TR		
	Recovery – 50C Rise	982 l/hr	1160 l/hr
	kW – Ambient 30	57.0	67.4
Total power input	kW	12.4	13.8
Total running current	Amps	22.1	26.9
Unit COP	kW/kW	4.9	4.9
<b>Capacity – kW</b>	Ambient 20 C	50.0	58.8
	Ambient 10 C	43.4	51.2
<b>COMPRESSOR</b>		Scroll Hermetic	
Motor size	HP	13	15
RPM	per/min	2900	
QTY		1	1
Max power input	kW	10.6	12.4
Max Running current	Amps	19.3	24.1
MCC	Amps	35.0	39.0
Rated load current	Amps	22.4	25.6
Locked rotor amps	Amps	140.0	173
Oil charge / comp	L		
<b>Oil type</b>	POE		
<b>CONDENSER</b>	Plate heat exchanger - single wall		
Material	316 Stainless steel		
Inlet / outlet HW Temperature	°C	45/50	
Pressure drop	kPa	50	50
Hot water flow rate	l/s	3.0	3.5
Water connections	mm	1 1/2" FBSP	1 1/2" FBSP
Condenser protection		Flow switch	
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles		
Fan speed	Rpm	900	
Fan diameter	mm	500	500
No fans		2	2
Total power input	kW	1.4	1.4
Total running current	Amps	2.8	2.8
Total air flow	M <sup>3</sup> / hr	14200	14200
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI		
De-ice control		Hot gas injection	
<b>CONTROLLER</b>	Standard electronic Carel controller – 0.1C accuracy		
<b>HP Safety</b>	2850kPa	LP Safety	375kPa
<b>Shipping weight - dry</b>	Kg	350	400
<b>Breaker size</b>	Amps	50	50
No. refrigeration circuits		1	1
<b>BMS protocols</b>	-	Compressor start	DOL
Capacity control	%	0-100%	
Power requirements	V/Hz/Ph	380-415/50/3	
Working temperature range	C	40-65	
<b>Rating conditions</b>		12 SST – 50C SCT	

<b>GENERAL DATA – HEAT PUMP – R410a Refrigerant</b>			
<b>System type</b>	HEAT PUMP	Heat rejection	Water
Model		<b>TH80A</b>	<b>TH100A</b>
<b>Capacity - kW</b>	TR		
	Recovery – 50C Rise		2060 l/hr
	kW – Ambient 30	92.6	118.0
Total power input	kW	20	23.0
Total running current	Amps	34.4	41.6
Unit COP	kW/kW	4.8	5.1
<b>Capacity</b>	kW – Ambient 20	79.8	100.2
	kW – Ambient 10	64.2	84.4
<b>COMPRESSOR</b>		Scroll Hermetic	
Motor size	HP	10	13
RPM	per/min	2900	
QTY		2	2
Max power input	kW	11.5 each	16.4 each
Running current	Amps	24.4 each	26.1 each
MCC	Amps	42.0 each	47.0 each
Rated load current	Amps	26.9 each	30.1 each
Locked rotor amps	Amps	118 each	140 each
Oil charge / comp	L	1.6	2.1
<b>Oil type</b>	POE		
<b>CONDENSER</b>	Plate heat exchanger - single wall		
Material	316 Stainless steel		
Inlet / outlet HW Temperature	°C	45/50	
Pressure drop	kPa	50	50
Hot water flow rate	l/s		
Water connections	mm	2" FBSP	2" FBSP
Condenser protection		Flow switch	
<b>EVAPORATOR FANS</b>	External, axial fans, 4 poles		
Fan speed	Rpm	900	
Fan diameter	mm	630	500
No fans		2	4
Total power input	kW	1.5	2.2
Total running current	Amps	2.8	3.6
Total air flow	M <sup>3</sup> / hr	14400	21600
<b>EVAPORATOR</b>	7mm tube and aluminum fin – 16 FPI		
De-ice control		Hot gas injection	
<b>CONTROLLER</b>	Standard electronic Carel controller – 0.1C accuracy		
<b>HP Safety</b>	2850kPa	LP Safety	375kPa
<b>Shipping weight - dry</b>	Kg	450	550
<b>Breaker size</b>	Amps	80	80
No. refrigeration circuits		2	2
<b>BMS protocols</b>	-	Compressor start	DOL
Capacity control	%	0-50%-100%	
Power requirements	V/Hz/Ph	380-415/50/3	
Working temperature range	C	40-65	
<b>Rating conditions</b>		12 SST – 50C SCT	



## Dimensions



Model	A	B	C	D	E	Shipping weight	No. per container
TH20A	580	1060	1140	150	300	160	20
TH30A	680	1500	1250	204	354	240	8
TH40A	680	1500	1250	204	354	250	8
TH50A	810	1900	1400	225	375	450	7
TH60A	810	1900	1400	225	375	500	7
TH80A	1100	2100	1800	225	375	650	7
TH100A	1200	2600	1900	225	375	800	3

All operational heating capacity, power consumption and current draw data shown above is based on the heat pump operating at the limit of its design and is intended to be an indication only.

Each unit will be individually designed to customer requirements and a detailed product specification will be supplied at time of order including installation instructions and dimensions. The power consumed by the unit and the current it will draw vary depending on how the unit is constructed. The unit's performance may also vary slightly from the figures above again based on customer requirements.

Thermal IQ's product range is subject to change without notice.

excellence in heat transfer