INDUSTRIAL CHILLERS
15 to 27kW of Cooling

Technical data

THERMAL IQ chillers are designed supply chilled water to heat developing processes. The units are manufactured in Australia to suit local condition and give our customer the solutions they need.

They can be installed indoors or outdoors and can be configured to supply chilled water for

- Potable water applications
- Process cooling from an internal buffer tank.
- Process cooling to an external buffer tank.

About Us

THERMAL IQ is Australia's largest manufacturer of small capacity specialsied industrial water chillers. The technical team at THERMAL IQ have a combined 50 years in the Australian chiller industry – our history goes directly back to the pioneers of chiller manufacturing in Australia – Blackmore and Singleman. No other company can offer this level of engineering experience and support for our customers critical applications.

Rather than offer imported chillers THERMAL IQ has dedicated itself to providing locally specified and manufactured chillers which are supplied with components sourced from the industry's tier one suppliers. With specifying chillers 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, large scale condensing units, air handling and more.

THERMAL IQ is backed by a nationwide team of service technicians who are trained in the operation and maintenance of THERMAL IQ chillers.

THERMEX SOLUTIONS P/L
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Chiller Applications

Industrial process chillers are designed to circulate water to a heat producing process via a water pump. The water brings the heat back to the chiller where the compression cycle cools the water before it is returned to the heat process.


Laboratories


Food preparation


Medical Apps


Process cooling


Distilling

Features

The chillers are supplied with – as standard

- An internal 180L buffer tank to protect the compressor from excessive start, close temperature tolerance, reduces thermal spikes and allows for vented design with no need for hydronics kit
- Suitable for indoor or outdoor installation
- Rugged galvanized 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



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Model		TC13	TC16	TC18	TC20	TC25	TC27
System type	Chiller	Heat rejection		Air			
Capacity	TR	4.4	4.7	5.3	6.4	7.3	8.6
ASHRAE CONDITIONS	kW	13.5	16.8	18.5	22.3	24.9	29.2
Capacity control	%	0-100%					
Refrigerant	Type	Project specific					
Total power input	kW	6.1	7.4	8.5	9.5	10.2	10.9
Total running current	Amps	17.0	18.5	20.0	21.8	22.8	25.0
Power requirements	V/Hz/Ph	380-415/50/3					
COMPRESSOR	Scroll Hermetic	Start method		DOL			
Motor size	HP	5.4	6.3	7.4	8.0	10	12
RPM	1/min	2900					
QTY		1					
Maximum Power input	kW	4.4	5.3	5.9	6.9	7.6	8.94
Total running current	Amps/ph.	7.9	9.4	10.9	12.8	13.8	16.0
FLA	Amps	7.5	8.5	12	17.0	18.2	19.2
Locked rotor amps	Amps	64	74	101	95	111	118
Oil charge / comp	L	0.7	0.7	1.0	1.2	1.2	1.5
Oil type	POE						
CONDENSER	Air cooled – heavy duty – high ambient design						
Material	Aluminum, blue fin on copper tube						
Tube diameter	Inch	3/8”					
Fin spacing	mm	12FPI					
CONDENSER FANS	External, axial fans, 4 pole – speed controlled						
Fan speed	Rpm	900					
Fan diameter	mm	450					
No fans		2					
Total power input	kW	0.7				0.92/ phase	
Total running current	Amps	3.1				2.3/ phase	
Total air flow	M3/ hr	7800					
EVAPORATOR	Plate heat exchanger						
No. refrigeration circuits		1					
Chilled water flow rate	l/s	0.6	0.7	1.1	0.8	1.0	1.2
Pressure drop	kPa	50					
Inlet / outlet CHW Temperature	C	Project specific					
Working temp range	C	05/20					
Water connections	mm	1” FBSP					
Evaporator protection		Flow switch					
Expansion		TX valve					
CONTROLLER	Standard electronic – Dixell						
HP Safety	2850kPa	LP Safety		375kPA			
Shipping weight - dry	Kg	225	235	260	280	310	330
Buffer Tank	Litres	175					
BMS protocols	Modbus available	Buffer tank construction		Stainless steel			

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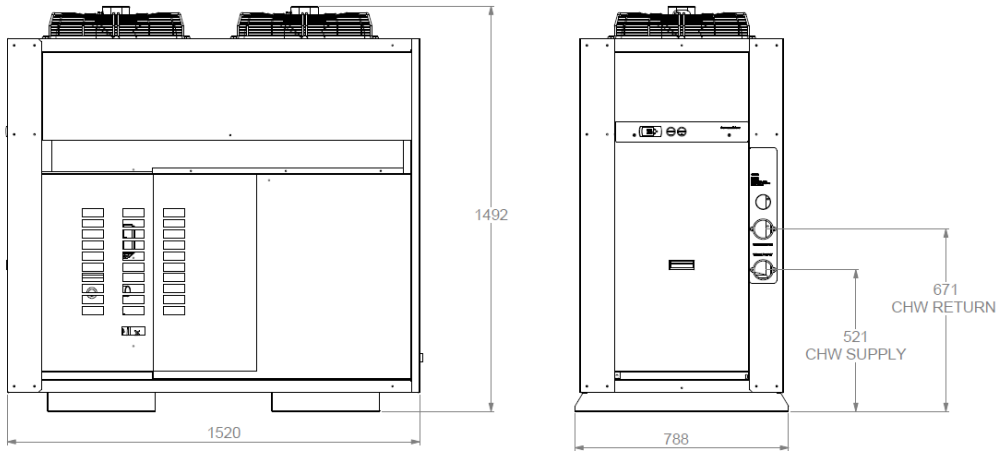
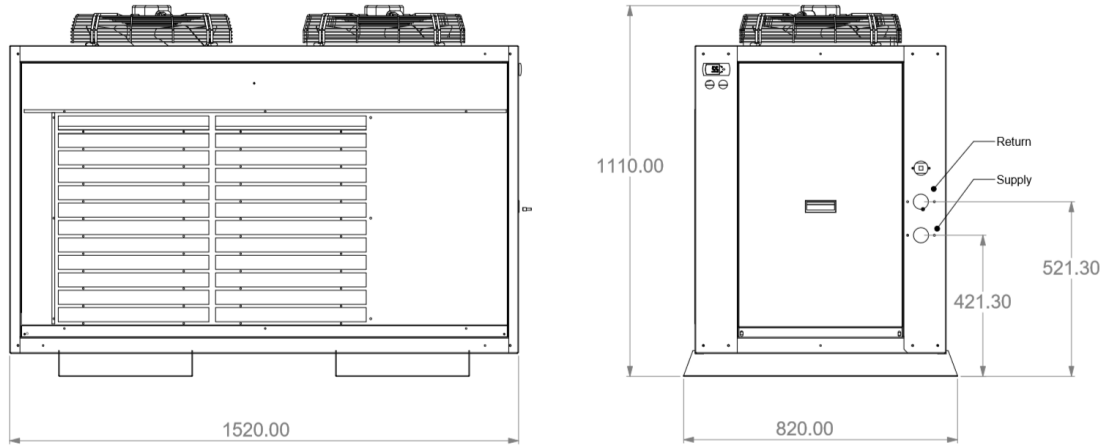
Dimensions

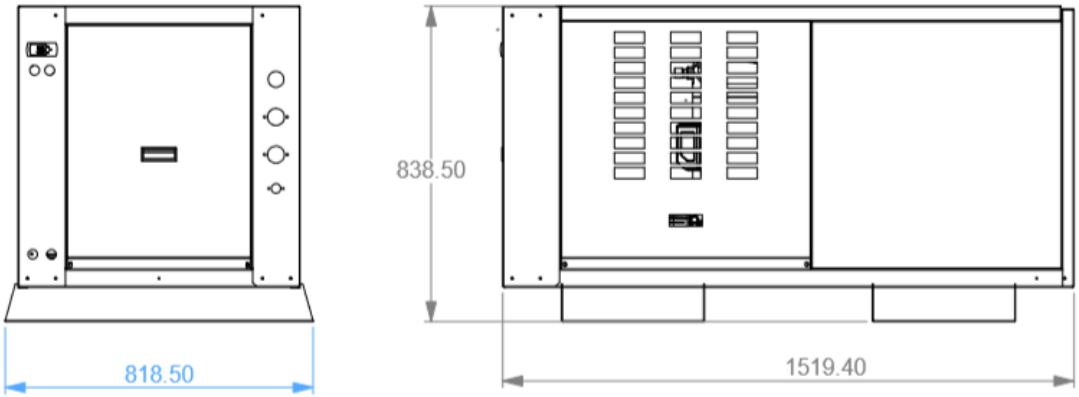
TC15 to TC27 Unit



TC15 to TC27 Closed Loop Unit



TC15 to TC27 Split System



Evaporator unit

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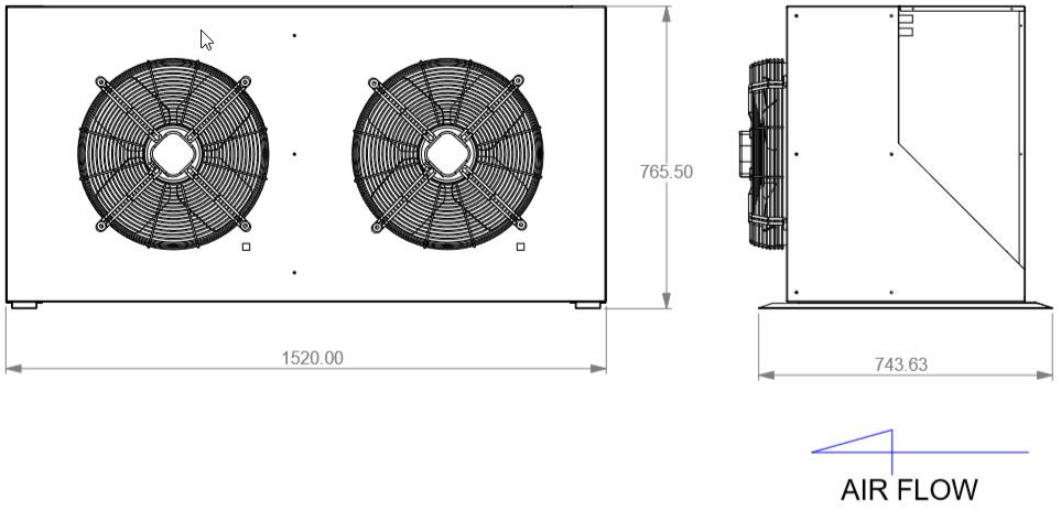
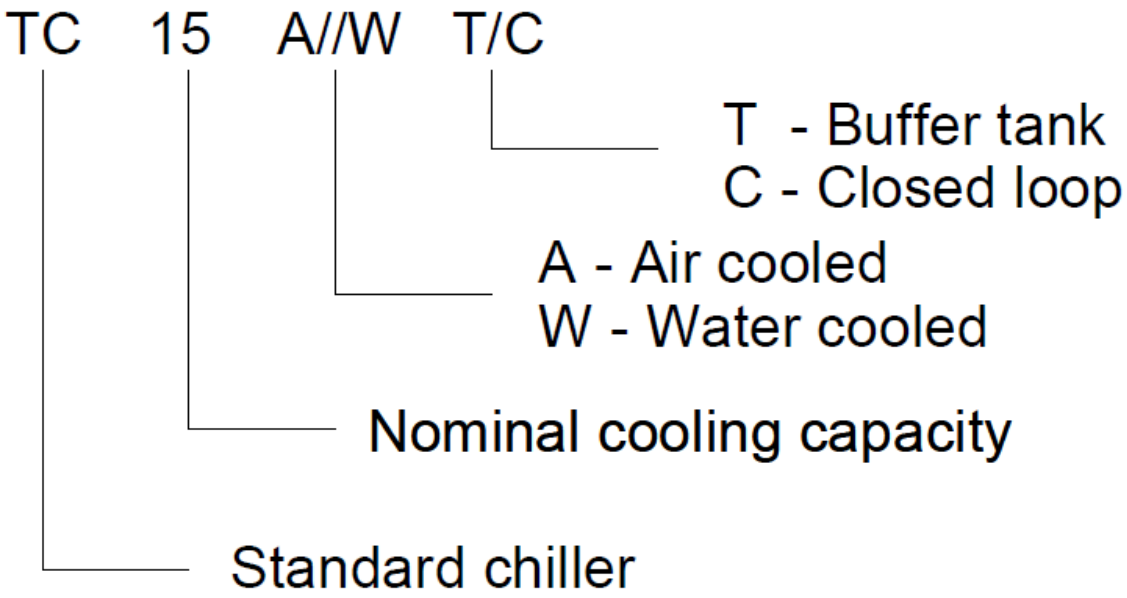
Dimensions



Chiller nomenclature



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Pump data

Pump model	**Current draw – 1 phase**	**Current draw – 3 Ph**	**Motor rating – kW**
P4	4.0	2.3	0.85
P5		3.0	1.2
P6		3.0	1.2
RPM	2900		
Approvals	CE, WRAS, ACS, TR, EAC		
Housing	Cast iron		
Impeller	Stainless steel 316		

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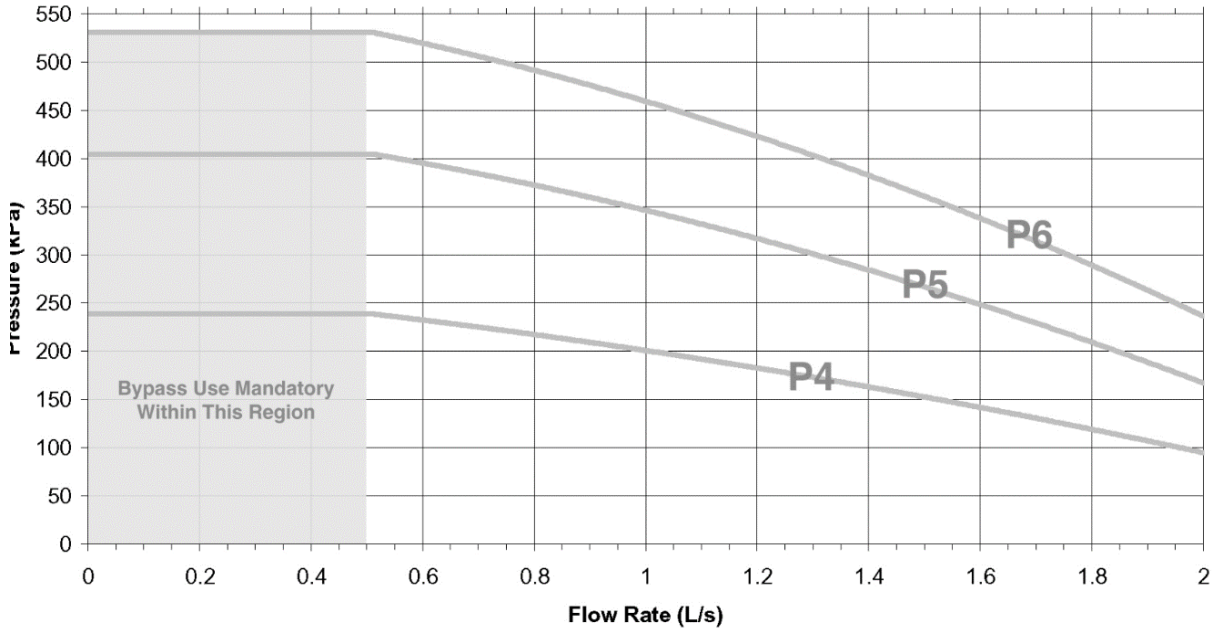
Pump Curves



Options

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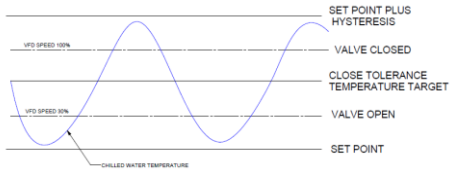
Close tolerance (CT)	The chiller can be manufactured with either a hot gas bypass valve or a VFD on the compressor for close temperature tolerance. Standard tolerance achievable is ±0.5C depending on load conditions The valve acts as to unload the refrigeration effect to the evaporator as the chilled water temperature approached set point. If the compressor is fitted with a VFD this will slow the compressor down as water temperature approaches set point and speed it up as it approached set point plus hysteresis. The software has a PID loop to ensure maximum efficiency and maintain temperature control. 
BMS Connectivity	The chiller can be connected to the high or low level BMS Low level connectivity will be dry contact for - Master run - Master fault High level connectivity is Modbus, SNMP and Bacnet over Ethernet without the need for a gate way
Tandem/ N+1 (T)	The chiller can be wired if they are to be installed in a N+1 arrangement so the lead chiller manages the duty cycling of the chillers and controls the chillers if a fault should develop in one of the chillers
Potable water supply (I)	The chiller can be manufactured to deliver water for potable water application. A typical installation requires the chiller to be connected to the main water and the pressure from the main is used to supply the process. The chiller will have a heat exchanger installed which will cool the mains water to the supply temperature in a single pass If the process does not require water the chillers operation is unaffected This method of construction also allows the chiller to be used to cool water temperatures above 20C
Remote Condensers (R)	The chiller can be manufactured as a split system. The evaporator can be installed indoors in a plant room for example and the condenser installed outdoors. Typically, the maximum distance between the 2 halves of the chiller is 20 meters – for longer runs contact Thermex's engineering staff

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High corrosive environments	If the chiller is to be installed in an environment with corrosive elements present the chiller can be manufactured in such a way to extend the life of the unit These environments can be - Coastal which high levels of salt spray present - Mining with Sulphur present The coils on the units can be coated to extend their life – the coil will lose efficiency if the bond between the copper and the aluminum starts to break down The units can be constructed with stainless steel cabinets The electrical enclosures are weather proof but if an enclosure is required with a high IP rating this can be offered In the case where flammable gas is present an Ex or ATEX rated unit maybe required
Soft starters	In installations where the power supply is not robust soft starters can be supplied on the compressors to limit the in-rush current on compressor start up.
Redundant pumps	The units can be supplied with 2 pumps that duty cycle to share the wear and tear. The software can also start the pump sitting in redundancy if the duty pump develops a fault
Pump UPS (U)	The electrical box can be supplied with a separate set of terminals to allow an uninterruptable power supply to be wired so the pump will run continuously – this allows the chiller to keep pumping cold water to the process in the event the 3 phase supply develops and issue and allows the process to shut down in a managed way
Castors	The chiller can be supplied on wheels for ease of re-location
High Ambient	For installations such as mine sites, especially in remote areas where the temperatures are extreme the chiller can be constructed to be able to handle these extreme temperatures
V	Inverter scroll technology – Thermex has exclusive access to Varium inverter scroll technology. The compressor is a permanent magnet, DC scroll that adjusts it speed between 20-100% to match the loads exactly. Under part load conditions, COP's can be >7.0

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