

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 specialised 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.

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.



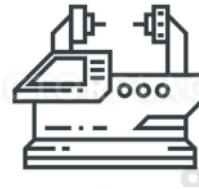
Laboratories



Food preparation



Medical Apps



Process cooling



Distilling

Features

The chillers are supplied with – as standard

- An internal 80L 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
- Comprehensive 12 months warranty on all parts and labour
- HP/LP and flow switch safeties as standard
- Highly accurate electronic controller
- 316SS plate heat exchanger condenser
- Comprehensive factory testing before dispatch
- Evaporator protection on all models



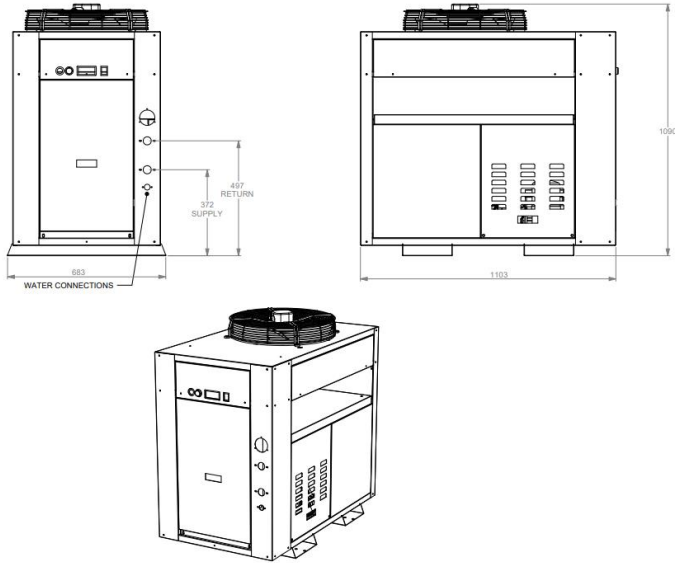
Technical data

Model		TC03	TC04	TC05	TC06	TC07	TC08
System type	Chiller	Heat rejection		Air			
Capacity	TR	1.0	1.2	1.4	1.7	2.0	2.3
ASHRAE COND	kW	3.4	4.2	4.9	6.0	7.0	7.6
Total power input	kW	2.2	2.45	3.1	3.2	3.4	3.5
Power requirements	V/Hz/Ph	380-415/50/3 – Available in single phase					
COMPRESSOR	Scroll Hermetic	Start method		DOL			
Motor size	HP	1.5	1.8	1.9	2.3	2.6	3.0
FLA	Amps	15.0	5.5	6.0	6.8	8.0	9.0
CONDENSER	Air cooled – heavy duty – high ambient design						
Material	Aluminum, blue fin on copper tube						
CONDENSER FANS	External, axial fans, 4 pole – speed controlled						
Fan diameter	mm	500					
No fans		1					
EVAPORATOR	Plate heat exchanger						
No. refrigeration circuits		1					
Chilled water flow rate	l/min	8.0	11	14	17	20	22
Pressure drop	kPa	50					
Inlet / outlet CHW Temperature	C	Customer specific					
Working temp range	C	05/25 – Standard unit					
Water connections	mm	1" FBSP					
Evaporator protection		Flow switch					
CONTROLLER	Standard electronic – Dixell						
Shipping weight - dry	Kg	165	170	175	180	180	185
Buffer Tank	Litres	75					
BMS protocols	Modbus available	Buffer tank construction			Stainless steel		

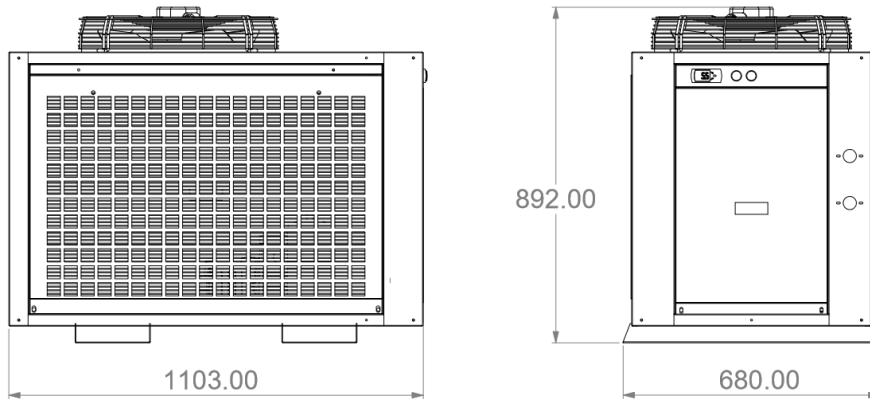
Technical data

Model		TC10	TC12
System type	Chiller	Heat rejection	Air
Capacity	TR	2.9	3.5
ASHRAE COND	kW	10	12
Total power input	kW	4.95	5.4
Power requirements	V/Hz/Ph	380-415/50/3	
COMPRESSOR	Scroll Hermetic	Start method	DOL
Motor size	HP	4.5	6.0
FLA	Amps	11	12
CONDENSER	Air cooled – heavy duty – high ambient design		
Material	Aluminum, blue fin on copper tube		
CONDENSER FANS	External, axial fans, 4 pole – speed controlled		
Fan diameter	mm	450	
No fans		2	
EVAPORATOR	Plate heat exchanger		
No. refrigeration circuits		1	
Chilled water flow rate	l/s	0.5	0.6
Pressure drop	kPa	50	
Inlet / outlet CHW Temperature	C	Project specific	
Working temp range	C	05/25 – Standard unit	
Water connections	mm	1" FBSP	
Evaporator protection		Flow switch	
CONTROLLER	Standard electronic – Dixell		
Shipping weight - dry	Kg	195	200
Buffer Tank	Litres	80	
BMS protocols	Modbus available	Buffer tank construction	Stainless steel

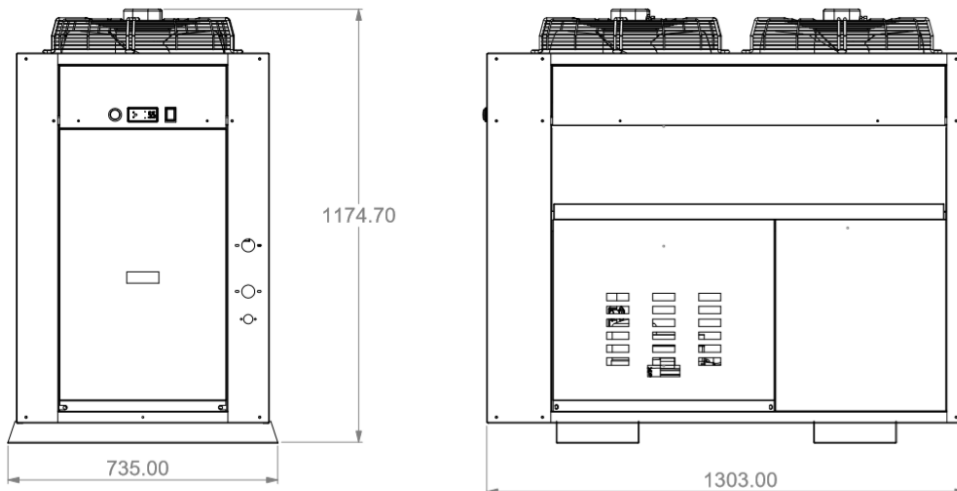
Dimensions TC03 to TC08 Unit



TC03 to TC08 Closed loop chiller

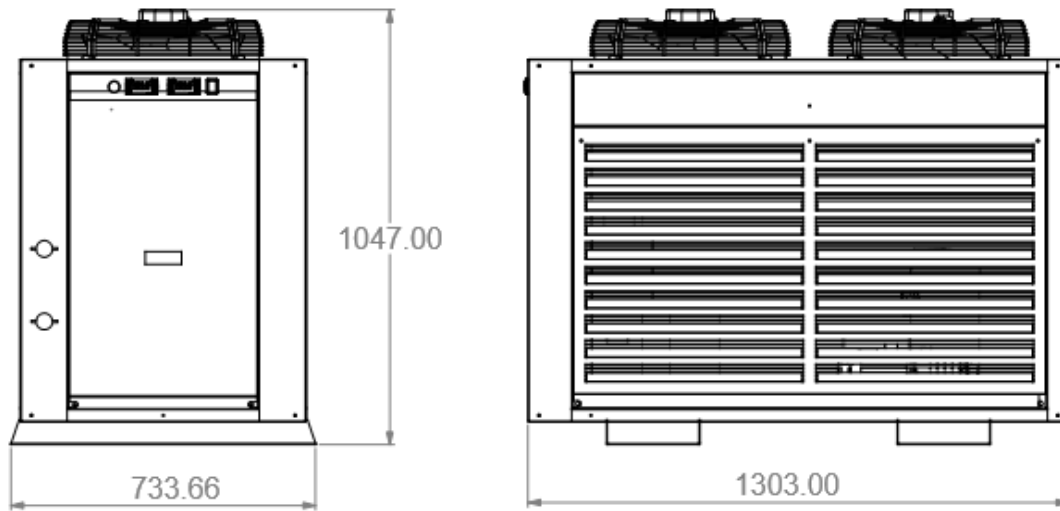


TC10 and TC12



Dimensions

TC10 and TC12 Closed Loop



Selecting the chiller

TC 15 A/W T/C

T - Buffer tank
 C - Closed loop

A - Air cooled
 W - Water cooled

Nominal cooling capacity

Standard chiller

Pump performance

The unit will usually be supplied with a primary circulating pump as standard

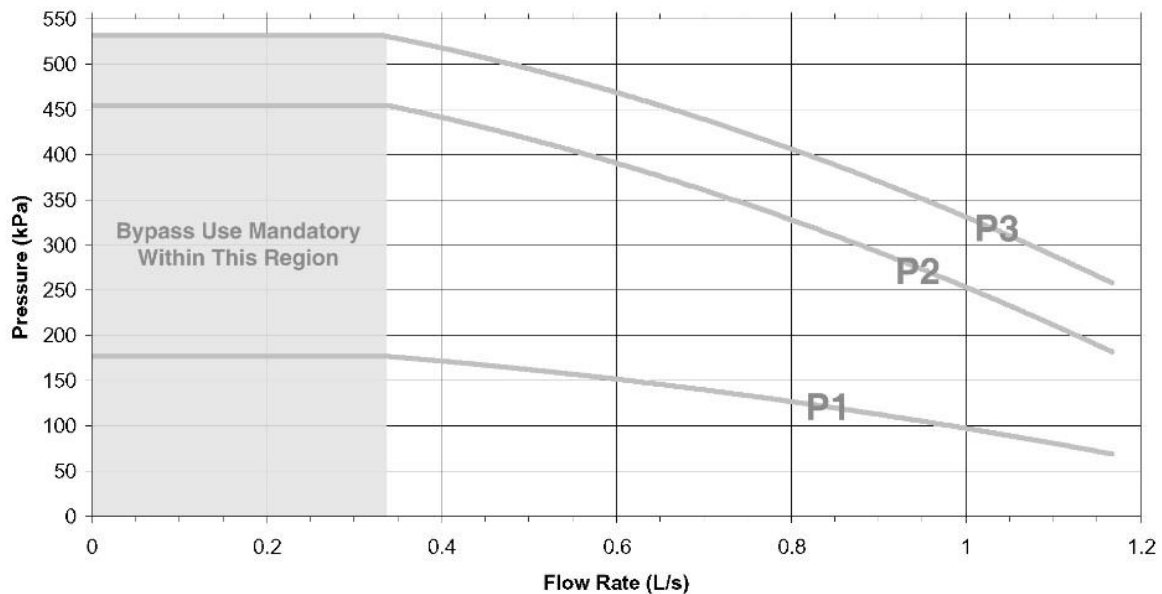
THERMAL IQ can customize the pump for particular applications, and these should be specified at the time of order.

The unit has an internal water bypass designed to protect the heat exchanger – it should not be closed under any circumstances

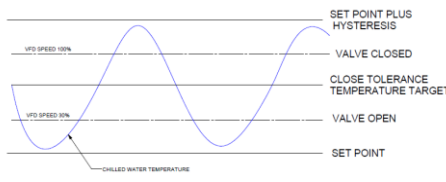
The flow/ pressure charts for the pumps offered are shown below

Pump Data - Models TC03 to TC12

- RPM 2900
- Approvals - CE,WRAS,ACS,TR,EAC
- Housing – cast iron
- Impeller – Stainless steel 304
- Rated power 0.67 to 1.1 kW
- Rated Hz – 50/60
- Rated voltage 220/ 240
- Rated amps 3.1 to 5.2 amps
- Weight 16kg



Options

<p>Close tolerance (CT)</p>	<p>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 $\pm 0.5C$ depending on load conditions</p> <p>The valve acts as to unload the refrigeration effect to the evaporator as the chilled water temperature approached set point.</p> <p>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.</p> 
<p>BMS Connectivity</p>	<p>The chiller can be connected to the high or low level BMS</p> <p>Low level connectivity will be dry contact for</p> <ul style="list-style-type: none"> - Master run - Master fault <p>High level connectivity is Modbus, SNMP and Bacnet over Ethernet without the need for a gate way</p>
<p>Tandem/ N+1 (T)</p>	<p>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</p>
<p>Potable water supply (I)</p>	<p>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.</p> <p>The chiller will have a heat exchanger installed which will cool the mains water to the supply temperature in a single pass</p> <p>If the process does not require water the chillers operation is unaffected</p> <p>This method of construction also allows the chiller to be used to cool water temperatures above 20C</p>
<p>Remote Condensers (R)</p>	<p>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.</p> <p>Typically, the maximum distance between the 2 halves of the chiller is 20 meters – for longer runs contact Thermex’s engineering staff</p>

Options

<p>High corrosive environments</p>	<p>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</p> <p>These environments can be</p> <ul style="list-style-type: none"> - Coastal which high levels of salt spray present - Mining with Sulphur present <p>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</p> <p>The units can be constructed with stainless steel cabinets</p> <p>The electrical enclosures are weather-proof but if an enclosure is required with a high IP rating this can be offered</p> <p>In the case where flammable gas is present an Ex or ATEX rated unit maybe required</p>
<p>Soft starters</p>	<p>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.</p>
<p>Redundant pumps</p>	<p>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</p>
<p>Pump UPS (U)</p>	<p>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</p>
<p>Castors</p>	<p>The chiller can be supplied on wheels for ease of re-location</p>
<p>High Ambient</p>	<p>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</p>
<p>V</p>	<p>Inverter scroll technology – THERMAL IQhas 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</p>



Contact details

THERMAL IQ
2/8 GUNYA STREET
REGENTS PARK, NSW, 2162
AUSTRALIA
www.thermalIQ.com.au

Phone – (02) 8710 8106

