



**THERMAL  
PRODUCTS** INC.

Engineered Solutions To  
Industrial Applications

# Titan<sup>®</sup> Central Chillers



Proudly Made In The USA

**ADVANTAGE**<sup>®</sup>  
MAKING WATER WORK  
since 1977





# A Complete Central Chiller System



- Complete Central Chiller system with Integrated Reservoir and Pumps all mounted on a single frame
- Air-Cooled or Water-Cooled models
- 20-180 ton models
- 20°-80° F fluid temperature range

Advantage's Titan Central Chillers range from 20 to 180 tons of cooling capacity providing a coolant temperature range between 20°F and 80°F when using R410A refrigerant.

The standard Advantage Titan Central Chiller is configured with reservoir and pumps housed in a single frame – making it a complete self-contained package which reduces installation costs compared to other systems.

The Titan systems can be air-cooled or water-cooled. Air-cooled models require an outdoor remote condenser. Water-cooled models require an external water supply source such as cooling tower, city or well water to reject the heat removed from the refrigeration circuit.

Both air-cooled and water-cooled Titan Chillers can be configured for future expansion to meet your growing cooling needs with the addition of APT or WPT chiller modules.

The Multizone control instrument used on Titan chillers can control up to 6 independent refrigeration circuits enabling easy and cost effective system expansion.

Its dual pump system features one pump dedicated to distributing coolant through the plant and a second internal re-circulation pump accommodating ever changing process flow demand.

The standard tank is a patented, one-piece, seamless, non-rusting rotationally molded reservoir made of a linear low density polyethylene and insulated with dense foam to minimize sweating and maximize system efficiency.

These Titan Chillers use a non-ozone depleting refrigerant and are equipped with hermetic scroll compressors or tandem scroll compressors that utilize rotary technology for smooth, efficient operation.

All Advantage Titan Chillers are precisely engineered and manufactured using only the finest components the industry has to offer.

Contact Advantage and let us help you find the best central chiller package to fit your specific needs!

## MODEL DESIGNATOR FOR TITAN SERIES

T I P – 1 0 0 A

Titan® Series

Polyethylene Tank

Condenser

A: Remote Air-Cooled

W: Water-Cooled

Nominal Tons of Capacity



Proudly Made In The USA

[www.AdvantageEngineering.com](http://www.AdvantageEngineering.com)

# Control Instrumentation To Fit Your Needs

## MZC III INSTRUMENT

The **MULTIZONE INSTRUMENT (MZCIII)** is the standard control instrument on all Titan Central Chillers.

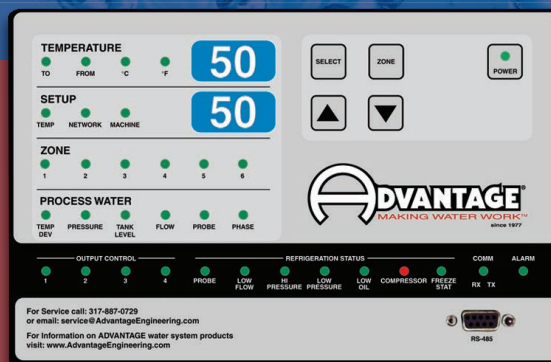
### MZCIII INSTRUMENT FEATURES:

- Tailor made for Advantage chillers used in critical industrial cooling applications
- Monitors the complete system operation and provides precise control of process fluid temperature
- **INDUSTRY 4.0 READY** – Can communicate via Modbus RTU or SPI protocol
- Unique design distributes risk of system downtime due to control instrument problem

### DESIGN ELEMENTS CONSIST OF:

#### » Operator interface **DISPLAY BOARD**

- \* Intuitive design using discrete push buttons to index through circuit information and status
- \* Dual display windows continuously show “to process” and setpoint temperatures
- \* Green LED lights provide at a glance confirmation of proper system operation
- \* Lights change to flashing red to indicate the system is out of proper operating parameters
- \* Can control up to 6 refrigeration circuits

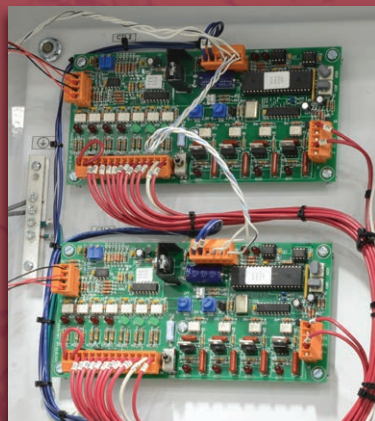


#### » Individual refrigeration circuit **ZONE BOARDS**<sup>†</sup>

- \* Communicate information about refrigeration circuits to Display Board
- \* During the unlikely event of a display or zone board failure, the unaffected zone boards continue to run their refrigeration circuits
- \* Highly configurable for controlling central chillers with any combination of reciprocating, screw or scroll compressor

#### » Independent panel mounted **PUMP CONTROLS**

- \* Control and operate pumps independently of chiller control system
- \* Include pump on/off selectors and indicating lights
- \* Functions are not tied to a single PLC or discrete control system



### <sup>†</sup>INTELLIGENT ZONE BOARDS

One intelligent zone board is provided for each refrigeration circuit. The display board communicates with the zone boards to stage each refrigeration zone independently. The control instrument brings the process temperature in line with the set point quickly and accurately. Zone boards will also assume control of their respective refrigeration circuits in the unlikely

event of an instrument failure and the chiller system will continue to operate.

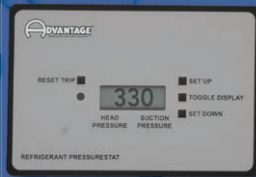
The instrument provides control of up to 6 refrigeration circuits. Future expansion of cooling capacity can be accomplished by adding an APT or WPT Chiller Module with Intelligent Zone Boards that will connect to the primary chiller display board for a seamless integration.



# Durably Constructed With Quality Components

## RUGGED REFRIGERATION CIRCUIT(S)

- Titan Chillers utilize R410A non-ozone depleting refrigerant. Water-cooled models are delivered fully charged, air-cooled models are field charged
- Heavy-Duty Compressor
  - » Hermetic scroll, digital scroll or tandem scroll compressors using rotary technology for smooth and efficient performance
- Brazed Plate Evaporators
  - » Constructed of corrosion resistant stainless steel plates brazed together with copper brazing material
  - » The compact plate spacing and alternating refrigerant and water flow through the plates makes them highly efficient
- Complete system with liquid line solenoid valve, thermostatic expansion valve, capacity control system, sight glass and moisture indicator as well as a filter drier
- TIP-A models include a refrigerant receiver and oil separator
- Digital high & low refrigerant pressure limits and indicators



## CONDENSER TYPES

### Water-Cooled Condenser (TIP-W models)

- High efficiency cleanable condenser(s)
- Water regulating valve to maintain proper refrigerant pressure
- Single point condenser water connection with isolation valves

### Air-Cooled Remote Condenser (TIP-A models)

- Air-cooled condensers are industrial grade using copper tubing with aluminum fins with direct drive fan motors housed in a sheet metal enclosure
- The standard condenser uses high efficiency EC variable speed drive motors on the header end with pressure staged fans on all other fans providing low refrigerant pressure control when ambient conditions are as low as negative 20°F
- Full rated capacity is achieved at ambient temperatures up to 95°F



Typical remote condenser for air-cooled models. Remote Condenser configuration is determined by the Titan Chiller model.

## ELECTRICAL

- Electrical components are UL Listed and housed in a UL508A enclosed electrical panel designed for industrial environments
- All electrical panels include branch circuit protection of components
- Electrical circuit has a standard SSCR rating of 5 kA
- Audible & visual alarm beacon

## COOLANT CIRCUIT

- All standard Titan models include an integrated process fluid reservoir and pumping system
- These central chillers feature an industrial rotationally molded, non-rusting polyethylene reservoir
- Titan Chillers include a dedicated process pump with a nominal rating of 2.4 gallons per minute per ton.
- All Titan models include a dedicated chiller recirculation pump that provides excellent system control and performance when process flow varies
- Pumps include suction and discharge valves along with a process pressure display
- Pump motor starters are mounted and wired in the chiller electrical panel
- Basket strainers are provided to protect the evaporators from debris

## WARRANTY

1st Year: Covering parts and labor

2nd Year: FREE preventative maintenance visit

(Please visit the Advantage web site and reference our Product Warranty forms W-700 & W-700E for details)

## Chiller Options

- Oversized condensers for higher efficiency and full rated performance in higher ambient conditions and high altitude installations (TIP-A models)
- Condensers utilizing all EC motors for higher energy efficiency (TIP-A models)
- Flooded head pressure control for operation in extremely low ambient temperatures (TIP-A models)
- Remote control instrument display
- Modbus TCP Communication capability
- A main power disconnect
- Higher flow or pressure process pumps
- Dual or discrete standby pump(s) - lessening the chance for downtime should a primary process or recirculating pump fail
- Variable speed process pump drive
  - » Nema I rated drive in lieu of motor starter
  - » Constant pressure system includes pressure transducer
  - » Ramping start avoids water hammer and current inrush
  - » Demand reduction saves energy
    - › 5% demand reduction can result in 14% energy savings,
    - › 10% demand reduction can result in 27% energy savings,
    - › 20% demand reduction can result in 49% energy saving
- External filters
- 4 year extended compressor warranty

[www.AdvantageEngineering.com](http://www.AdvantageEngineering.com)

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# Titan<sup>®</sup> Specifications

Unit	Model	TIP-20	TIP-30	TIP-40	TIP-50	TIP-60	TIP-80	TIP-100	TIP-120D	TIP-90T	TIP-120T	TIP-150T	TIP-180T
Cooling Capacity <sup>1</sup>	Tons	20	30	40	50	60	80	100	120	90	120	150	180
	KW	68.3	102.4	136.5	170.7	204.8	273.0	341.3	409.6	307.2	409.6	512.0	614.3
Circuits	Number of	2	2	2	2	2	2	2	2	3	3	3	3
Compressor <sup>2</sup>	Type	DSC	DSC	SC	SC	SC	TSC	TSC	TSC	SC	TSC	TSC	TSC
Unit Dimensions	Height	82	82	82	82	82	112	112	114	114	114	114	114
	Width	87	87	92	92	87	136	136	147	147	147	147	147
	Length	96	96	96	96	96	128	128	147	147	147	147	147
Tank <sup>6</sup>	Capacity (gal.)	400	400	400	400	400	1500	1500	1500	1500	1500	1500	1500
Make-Up Connection	Number of	1	1	1	1	1	1	1	1	1	1	1	1
Overflow Connection	Number of	4	4	4	4	4	4	4	4	4	4	4	4
Drain Connection	Size (inches)	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Process Pump	Horsepower	5	5	7.5	7.5	10	15	15	20	15	20	20	25
	Factory ID	#50	#50	#52	#52	#52	#55	#55	#55	#55	#55	#55	#56
Process Flow	Rate (gpm)	48	72	96	120	144	192	240	288	216	288	360	432
Process Pressure	psi	62	57	65	63	70	55	53	68	55	68	65	63
Evaporator Pump	Horsepower	1.5	3	3	3	3	7.5	7.5	7.5	5	7.5	10	15
Process Connection	Number of	2	3	3	4	4	4	4	4	4	4	6	6
Condenser Water <sup>7</sup> (TIP-W models only)	Tower (gpm)	60	90	120	150	180	240	300	360	270	360	450	540
	Connections	2	3	3	3	3	4	4	4	4	4	6	6
Full Load Amperage <sup>3, 5</sup>	230/3/60	109.2	160.8	195.6	235.6	299.2	392.0	472.0	599.2	449.6	568.0	694.0	894.8
	460/3/60	54.6	80.4	97.8	117.8	149.6	196.0	236.0	299.6	224.8	284.0	347.0	447.4
	575/3/60	41.0	60.3	73.4	88.4	112.2	147.0	177.0	224.7	168.6	213.0	260.3	335.6
Unit Weight (pounds)	Shipping <sup>4</sup>	3550	4170	4350	4990	5155	6300	6505	6705	6505	8600	9600	10500
	Operating <sup>5</sup>	7925	8530	8710	9650	9515	17500	17705	17905	17705	22820	23820	24720
Remote Condenser <sup>8</sup> (TIP-A models only)													
Condenser <sup>9</sup>	Quantity	2	1	1	1	1	1	1	1	3	3	3	3
Condenser Air Flow	Fan Quantity	1	4	4	4	6	6	8	10	3	3	4	5
Condenser Refrigerant Connections	Gas	1½/8	2½/8	2½/8	2½/8	2½/8	2½/8	2½/8	3½/8	2½/8	2½/8	2½/8	2½/8
	Liquid	1½/8	1¾/8	1½/8	1½/8	1½/8	1½/8	1½/8	2½/8	2½/8	2½/8	2½/8	2½/8
Condenser Dimensions	Height	54	54	54	54	54	54	54	54	54	54	54	54
	Width	45	87	87	87	87	87	87	87	45	45	45	45
	Length	58	113	113	113	168	223	223	278	168	168	223	278
Condenser Full Load Amperage <sup>3, 5</sup>	230/3/60	4.6	21.6	21.6	21.6	34	46.4	46.4	58.8	17	17	23.2	29.4
	460/3/60	2.3	10.8	10.8	10.8	17	23.2	23.2	29.4	8.5	8.5	11.6	14.7
Condenser Weight (pounds)	Shipping <sup>4</sup>	380	1275	1400	1525	2100	2725	3025	3700	1150	1200	1600	1950
Condenser Factory ID	Code	KCL-17	KCL-47	KCL-63	KCL-63	KCL-96	KCL-128	KCL-157	KCL-190	KCL-50	KCL-56	KCL-63	KCL-95

1. Tons or kilowatts capacity at 12,000 BTU/hr/ton @ 50°F LWVT, 95°F ambient and 115°F condensing for air cooled models; 85°F condensing water and 105°F condensing for water cooled models. Minimum recommended operating temperature when no glycol is used is 48°F.

2. SC = hermetic scroll. DSC = Copeland Digital Scroll™. TSC = Tandem Scroll.

3. Full load amps are higher than run load amps and must be used for sizing disconnects and supply wiring. Amps shown are approximate for standard units. Custom configurations or options may change power requirement. Consult factory before installing.

4. Approximate unit dimensions and weight crated for shipment. Not for construction purposes.

5. Selection of certain options may change dimensions, weight and amps required. Confirm with factory before starting construction.

6. Tank Material is non-rusting polyethylene

7. Tower water requirements gallons per minute (GPM) based on 85°F water supply at 20 PSI differential with a clean condenser.

8. Air-cooled (TIP-A) models use a remote condenser(s) and use a model number like TIP-20A. Water-cooled (TIP-W) models use a water cooled condenser and use a model number like TIP-20W.

9. Specifications shown below are per condenser.

*Since product innovation and improvement is our constant goal, all features and specifications are subject to change without notice or liability.*





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