

Containerized Outdoor Air Condensed Chiller System Module

Unit is a self contained 20 foot ISO Shipping Container with Steel Floor, containing a cooling unit and all required piping and electrical equipment and connections as described below. Unit is painted to SUN standards, with secure louvered inlet/outlet for cooling air, process water inlet and outlet, electrical connections, feed water connection. In UL or CE standard. 460/3/60 Hz or 380/400/415/3/50 Hz. Make-up water based on performance area using glycol.

Cooling unit Features:

- ❑ Two independent air-cooled refrigeration circuits
 - R407C Refrigerant (Acceptable in EU)
 - Nominal capacity cooling water from 60°F to 50°F and 95°F ambient
 - 460/3/60 Package: 56-Ton capacity at approximately 134 GPM
 - 380/400/415/3/50 Package: 47-Ton capacity at approximately 113 GPM
 - Copeland tandem scroll compressors per circuit
 - Crankcase heaters
 - Suction & discharge pressure gauges
 - Discharge check valve
 - Brazed plate evaporator with basket strainer & isolation valves, per circuit
 - Single dual circuit air cooled condenser
 - Mounted on top of chiller
 - Refrigerant piped and charged at factory
 - Designed with ambient fan controls to -20°F
- ❑ Integral 350 gallon insulated stainless steel reservoir (wetted surfaces)
 - Non-ferrous divided reservoir with sight glass
 - Drain valve
 - Tank service cover
- ❑ Cast iron centrifugal process pump
 - 460/3/60 Package: 7½ HP, 3500 RPM, 134 GPM @ 60 PSI
 - 380/400/415/3/50 Package: 5 HP, 2900 RPM, 110 GPM @ 40 PSI
 - TEFC motor with pre-wired motor starter
 - Suction & discharge valves
 - Discharge pressure gauge
- ❑ Cast iron centrifugal evaporator pump
 - 460/3/60 Package: 5 HP, 3500 RPM, 127 GPM @ 30 PSI
 - 380/400/415/3/50 Package: 3 HP, 2900 RPM, 113 GPM @ 20 PSI
 - TEFC motor with pre-wired motor starter
 - Suction & discharge valves
- ❑ NEMA 4 Central control cabinets
 - MZCIII Multi-zone instrument (capable of controlling six individual zones)
 - Refrigerant zone lead-lag
 - Circuit breaker branch protection
 - Pump lights & operators
 - High temperature, low fluid level & low pump discharge pressure visual alarm
 - Disconnect switch
 - UL Labeled electrical sub panel / CE Marked (refer to notation on page 2)
- ❑ System designed for outdoor installation
 - Fluid circuit requires water/propylene glycol mixture when operating LWT below 48°F or ambient air below 40°F

- ❑ 3" NPT process connections
- ❑ 161.4 Full load amps
- ❑ Approximate dimensions: 96"H x 88"W x 192"L

Dual Circuit Options:

1. Dual standby pump & 3-pump manifold
2. 50-Foot remote display (for indoor monitoring)
3. High fluid temperature pump shut down
4. Line voltage & phase monitor
5. 3" Overhead piping kit
6. 4 year extended compressor warranty for parts only

- **Complete Central Chiller & Pump Tank Package**
- **Capacity: 5 to 130 Tons**
- **Fluid Temperature: 20°F to 70°F**

OACS Series chillers are designed for outdoor installation in many climates. The fully charged air-cooled refrigerant chiller, and pump tank station are packaged in a single frame that minimizes costly field installation.

PROCESS TEMPERATURES:
20°F to 70°F

AMBIENT TEMPERATURE RANGE: -20°F to 95°F (standard)

PROCESS PUMP HP:
starting from 2HP, 12 GPM

The refrigerant circuits include scroll or rotary screw compressors, shell & tube or brazed plate evaporators, capacity control system, and integral air-cooled condensers. The integral pump tank station includes a high flow process pump. Select models also include a dedicated evaporator pump.

CUSTOM DESIGNS... if one of our standard models does not fit your application, then we can design a custom unit that will.



OACS-600-MZC-3P shown with optional tank heater.

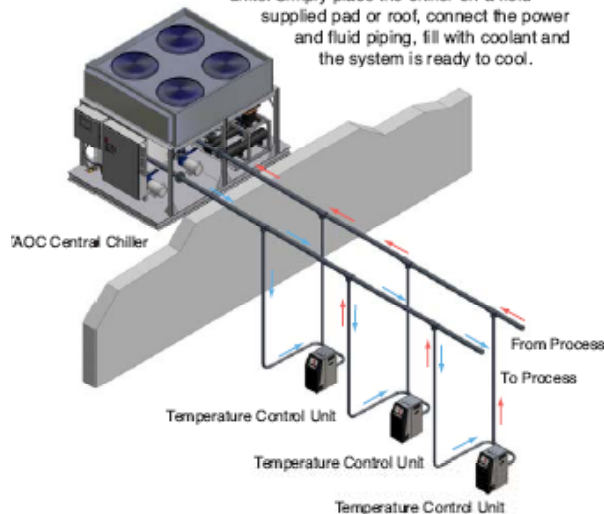
YOUR PROCESS DEMANDS THE MOST DEPENDABLE CENTRAL CHILLER AVAILABLE.

OUTDOOR DESIGN

The OACS central chiller was designed from the ground up to endure harsh outdoor environments in nearly any climate. ADVANTAGE Engineers have selected only the highest quality components that are manufactured for outdoor installation.

The electrical cabinet is NEMA 4 rated which means it is designed for outdoor use to provide protection against windblown dust and rain, splashing water, hose-directed water and damage from external ice formation. A UL labeled sub-panel is standard. The chiller control instrument is housed in a separate NEMA 4 rated enclosure with a window so that the chiller status can be easily monitored and adjustments can be made without accessing the high voltage cabinet.

A rugged frame supports the components. Shipment is made via a flat bed trailer for large capacity units or enclosed trailer for small capacity units. Simply place the chiller on a field supplied pad or roof, connect the power and fluid piping, fill with coolant and the system is ready to cool.



CAPACITY & REFRIGERANT ZONES

OACS central chillers are available with cooling capacities from 5 - 130 tons (17 - 456 KW) and with single or dual refrigeration zones. Single zone models are best when the cooling load will be steady and when few use points will be serviced.

Models with dual refrigeration zones are for applications where the cooling load may fluctuate and where multiple fluid use points are being serviced. Dual zone units provide superior capacity control by staging refrigeration zones to match the chiller capacity to the process demand. Dual zone units also provide built in redundancy. If one refrigeration zone requires service, the second can operate providing 50% of the chiller capacity.

COMPONENTS

COMPRESSOR..

Hermetic scroll or rotary screw compressors are standard on all models. Selected for their reliability, the compressors have few moving parts; offer low torque variation and high tolerance to liquid slugging.



COOLANT CIRCUIT

OACS central chillers include an integral reservoir and fluid pumping system. The reservoir is constructed of non-ferrous wetted surfaces, either rotationally molded polyethylene or stainless steel. The non-rusting reservoir is generously sized to support the process needs. Units with stainless steel tanks can be equipped with a sump heater. A water glycol mixture is required when operating at setpoints below 48°F and when ambient temperatures are expected to fall below 38°F and for some high flow applications.



Coupled to the reservoir are centrifugal pumps to provide process flow. Single refrigeration circuit chillers use a single pump system that delivers the cooling fluid to process then returns it through the chiller's evaporator and into the reservoir.

Dual refrigeration circuit chillers use a two-pump system where independent pumps are included: one for process flow and a second for flow through the chiller's evaporator. A two-pump system allows for high process flows, constant flow through the chiller when the process flow varies and provides superior temperature control.

All pumps include TEFC motors designed for outdoor operation along with suction and discharge valves. Connection sizes are selected based on application specific flow and pressure requirements.

Most OACS chillers can be equipped with a dedicated installed standby pump and manifold.



OACS-40D-MZC-2P shown

Phone: 317-887-0729 Web: www.AdvantageEngineering.com

CONDENSER..

Constructed of a heat transfer coil that has copper tubes and aluminum fins for full rated performance at 95°F ambient. The coil is housed in a sheet metal enclosure with fans that provide a vertical air discharge. Ambient operation to -20°F is standard. No field installation is necessary and is delivered fully charged.

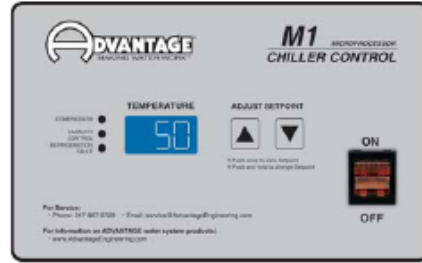


Typical air-cooled condenser

CHILLER CONTROLS



MULTIZONE CONTROLLER (MZC) is used on dual zone units and has the experience of over 8 years of field service. The control instrument consists of the cabinet door mounted operator interface display, control instrument and internal cabinet mounted intelligent zone boards. Soft key controls are provided for display selection and setpoint. Display windows continuously show various temperatures (*F or °C) and set up parameters. Status lights are provided for seven system components: *probe, low flow, high pressure, low pressure, low oil, compressor* and *freezestat*. Alarm status light is provided. Optional audible and visual alarm beacon is available. A selectable refrigeration zone lead/lag mode is a standard feature. SPI or Modbus RTU communication is provided via the DB-9 interface. One intelligent zone board is provided for each refrigeration zone to stage each refrigeration zone independently. In the event of a communication failure, the zone boards assume the control of their respective refrigeration zones and will continue to operate.



M1 CONTROLLER is used on single zone units. A blue light LED temperature display is readable at distance and displayed Setpoint and To Process temperatures (*F or °C). Soft key controls are provided for setpoint temperature and operating parameter selection. Status lights are provided for *Compressor on* and *Capacity Control*. Basic chiller diagnostics is indicated by the *Refrigeration Fault* light. The illuminated On/Off switch control unit operating and indicates the coolant circuit is on.



LE CONTROLLERS offers enhanced temperature monitoring plus machine status and diagnostic lights. This is an option to the M1 controller.

STANDARD FEATURES & OPTIONS

REFRIGERANT CIRCUITS:

- Hermetic scroll compressors on 5-50 ton single zone units and dual zone units through 100 ton
- Rotary screw compressors standard on 100 & 130 ton single zone units & 120 ton dual zone units
- Compressor suction valve
- Compressor discharge valve
- Liquid line solenoid valve
- Refrigerant sight glass with moisture indicator
- Thermostatic expansion valve
- Brazed plate or shell & tube evaporators
- Hot gas by-pass capacity control (scroll compressor only)
- Air-cooled condenser

PRESSURE GAUGES:

- Refrigerant low pressure (per zone)
- Refrigerant high pressure (per zone)
- Coolant pressure

COOLANT CIRCUIT:

- Large capacity process pump:
- Evaporator pump (when included)
- Reservoir
 - Stainless steel wetted surface, epoxy coated mild steel or polyethylene
 - Full insulation
 - Tank lid

ELECTRICAL:

- Outdoor rated electrical cabinet
- Branch circuit fusing
- UL labeled sub panel

WARRANTY:

- 1 year on parts and labor

CHILLER CONTROLS:

- M1 (single zone)
- Multizone (dual zone)

OPTIONS

- **REFRIGERANT CIRCUIT:**
 - Compressor CCPR valve for water temperatures above 70°F

- Suction line accumulator(s)
- Oil separator (scroll compressor only)

COOLANT CIRCUIT:

- Larger process pumps
- Standby pumps and manifolding
- Reservoir heater (mild or stainless steel tanks only)
- No pumps or reservoir
- Basket strainer (standard on 1" models)
- Overhead piping kit
- Low level switch (standard on 1" models)

ELECTRICAL:

- Main power disconnect
- Line voltage & phase monitor

OTHER CONTROLS:

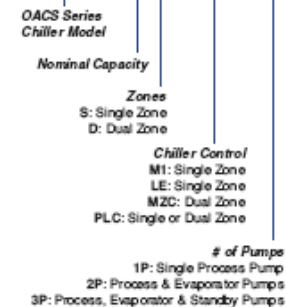
- Allen Bradley or GE PLC
- Maximum LE (M1 only)

WARRANTIES:

- Extended compressor warranty

MODEL DESIGNATOR

OACS - 10S - M1 - 1P



EVAPORATOR...

Brazed plate and shell & tube evaporators are used for high heat transfer rates. Each refrigerant zone is equipped with its own evaporator.



Shell & Tube



Brazed plate

SPECIFICATIONS

	Model	SINGLE CIRCUIT UNITS						
		55-M1-1P	7.5-M1-1P	10S-M1-1P	15S-M1-1P	20S-M1-1P	25S-M1-1P	30S-M1-1P
Compressor	Type	Single Scroll	Single Scroll	Single Scroll	Single Scroll	Tandem Scroll	Tandem Scroll	Tandem Scroll
Compressor Capacity ¹	Tons	5.0	7.8	10.3	13.8	20.2	24.8	30.5
	kW	17.4	27.2	36.3	48.5	70.8	87.1	107.0
Condenser	# of Fans	1	1	1	2	2	2	3
Evaporator	Type	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate
Process Pump	HP	2	2	2	3	3	5	5
	GPM	12	18	24	36	48	60	72
	PSI (water)	52	50	48	54	48	60	57
Evaporator Pump	HP	Optional	Optional	Optional	Optional	Optional	Optional	Optional
	GPM	--	--	--	--	--	--	--
	PSI	--	--	--	--	--	--	--
Standby Pump ²		n/a	n/a	n/a	A	A	A	A
Tank	Gallons	25	25	25	65	65	65	130
	Construction ³	PE	PE	PE	PE	PE	PE	PE
Process Connections	NPT	1-1/4	1-1/4	1-1/4	2	2	2	2
	Flanged	--	--	--	--	--	--	--
Dimensions	Height	81	81	81	81	81	81	81
	Width	54	54	60	54	54	54	54
	Length	68	68	71	122	122	122	144
System Amperage ⁴	FLA (460v)	15.6	22.9	25.7	38.2	48.8	63.8	59.7
	RLA (460v)	13.5	18.3	21.4	31.6	41.3	48.7	50.7

	Model	SINGLE CIRCUIT UNITS					
		40S-M1-1P	50S-M1-1P	60S-MZC-2P	80S-MZC-2P	100S-MZC-2P	130S-MZC-2P
Compressor	Type	Tandem Scroll	Tandem Scroll	Rotary Screw	Rotary Screw	Rotary Screw	Rotary Screw
Compressor Capacity ¹	Tons	38.5	45.8	59.8	80.9	95.8	132.5
	kW	135.1	164.3	209.6	283.9	346.8	464.9
Condenser	# of Fans	3	4	6	6	8	8
Evaporator	Type	Brazed Plate	Brazed Plate	Brazed Plate	Shell & Tube	Shell & Tube	Shell & Tube
Process Pump	HP	7.5	7.5	7.5	10	15	20
	GPM	96	120	144	192	240	312
	PSI (water)	65	63	60	60	70	65
Evaporator Pump	HP	Optional	Optional	5	5	7.5	7.5
	GPM	--	--	144	192	240	312
	PSI	--	--	30	25	30	23
Standby Pump ²	Available	A	A	A	A	A	A
Tank	Gallons	130	130	350	350	350	350
	Construction ³	PE	PE	SS	SS	SS	SS
Process Connections	NPT	2	--	--	--	--	--
	Flanged	--	3	3	4	4	4
Dimensions	Height	81	85	99	99	99	99
	Width	54	90	90	90	90	90
	Length	186	165	186	203	259	259
System Amperage ⁴	FLA (460v)	87.5	109.2	157.2	186.2	234.8	286.8
	RLA (460v)	75.6	90.2	125.1	152.6	192.9	243.9

	Model	DUAL CIRCUIT UNITS									
		20D-MZC-2P	30D-MZC-2P	40D-MZC-2P	50D-MZC-2P	60D-MZC-2P	80D-MZC-2P	100D-MZC-2P	120D-MZC-2P		
Compressor	Type	Tandem Scroll	Tandem Scroll	Tandem Scroll	Tandem Scroll	Tandem Scroll	Tandem Scroll	Tandem Scroll	Tandem Scroll	Rotary Screw	
Compressor Capacity ¹	Tons	19.3	28.3	40.3	49.7	61.0	77.0	93.7	119.5		
	kW	67.8	99.4	141.5	174.3	214.0	270.2	328.7	419.3		
Condenser	# of Fans	2	4	4	4	6	6	8	8		
Evaporator	Type	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate	Brazed Plate		
Process Pump	HP	3	5	7.5	7.5	7.5	10	15	20		
	GPM	48	72	96	120	144	192	240	288		
	PSI (water)	48	57	65	63	60	60	70	69		
Evaporator Pump	HP	2	2	3	3	5	5	7.5	7.5		
	GPM	48	72	96	120	144	192	240	312		
	PSI	30	25	30	25	30	25	30	23		
Standby Pump ²		A	A	A	A	A	A	A	A		
Tank	Gallons	130	130	130	130	350	350	350	350		
	Construction ³	PE	PE	PE	PE	SS	SS	SS	SS		
Process Connections	NPT	2	2	2	3	3	--	--	--		
	Flanged	--	--	--	--	--	4	4	4		
Dimensions	Height	81	81	81	81	81	81	89	99		
	Width	90	90	90	90	90	90	90	90		
	Length	72	122	122	165	186	203	259	259		
System Amperage ⁴	FLA (460v)	57.0	93.0	116.2	140.6	161.4	193.2	253.2	327.6		
	RLA (460v)	47.2	82.6	101.2	110.4	143.4	169.4	215.2	263.4		

Notes:

- Tons of capacity at 12,000 BTU/hr @ 50°F LWT @ 115 condensing temperature. +/- 5% as reserved by the compressor manufacturer.
- A = standby pump is available for this model. n/a = standby pump is not available for this unit.
- PE = polyethylene reservoirs. SS = stainless steel reservoir.
- FLA: full load amps with standard pumps and condenser.
RLA: run load amps with standard pumps and condenser.
Selection of optional standby pumps, larger pumps or an alternate condensers may change this rating. Do not use for construction.