PRODUCT SHEET

Munters SyCool® Split - 500 kW

Indirect Economizer Thermosyphon Split-System

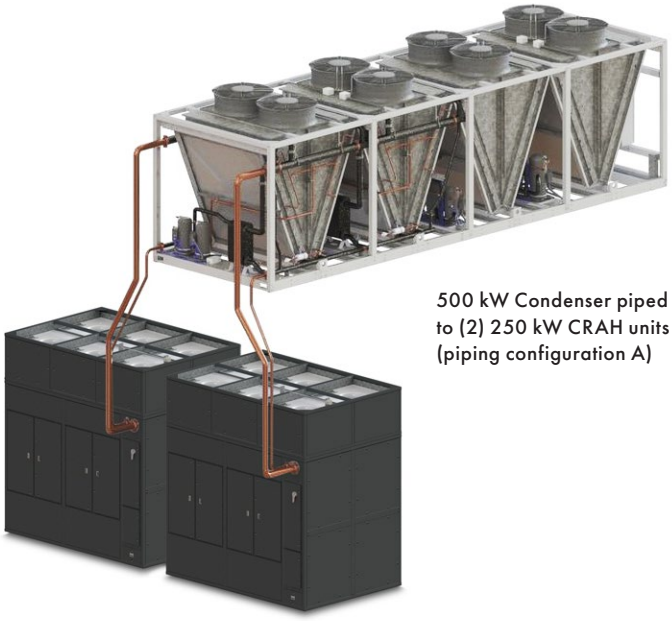
Munters SyCool Split provides an efficient cooling solution for new and retrofit installations where access to a suitable water supply may be limited, expensive or unreliable.

Advantages

- Split system eliminates duct penetrations
- No water consumption
- High-efficiency economization
- Factory-optimized controls

The system nominal cooling capacity is 500 kW. Thermosyphon heat exchangers move heat from the data center to ambient through the evaporation of liquid refrigerant in the SyCool evaporator, and condensing of the same refrigerant in the SyCool condenser. The evaporator is connected to the condenser with refrigerant piping allowing up to 500' of separation (see installation manual for specific fitting losses). As long as the condenser receives air cooler than the evaporator, heat is exchanged passively for "free cooling" of the data center. A simplified version of the system is schematically shown in Figure 1, right.

The SyCool 500 thermal effectiveness is nominally 65%, which greatly exceeds that of competing refrigerant based economizer systems. For example, with air delivered to servers at 75°F and a 20°F delta T across the servers, SyCool achieves 100% free cooling when the ambient dry bulb temperature is 62°F or lower (operating at 75% load). As ambient temperature rises, SyCool transitions from passive to active by staging/modulating compressors located in the condenser section. Data center heat is rejected by the thermosyphon, passively or actively without the need for diverting valves, allowing seamless transition from economizer to active cooling. As the ambient temperature approaches the temperature from the servers, SyCool finally loses free cooling capacity. The high heat exchange effectiveness coupled with the ability to economize simultaneously with active refrigeration, yields best-in-industry economizer capture efficiency.



500 kW Condenser piped to (2) 250 kW CRAH units (piping configuration A)

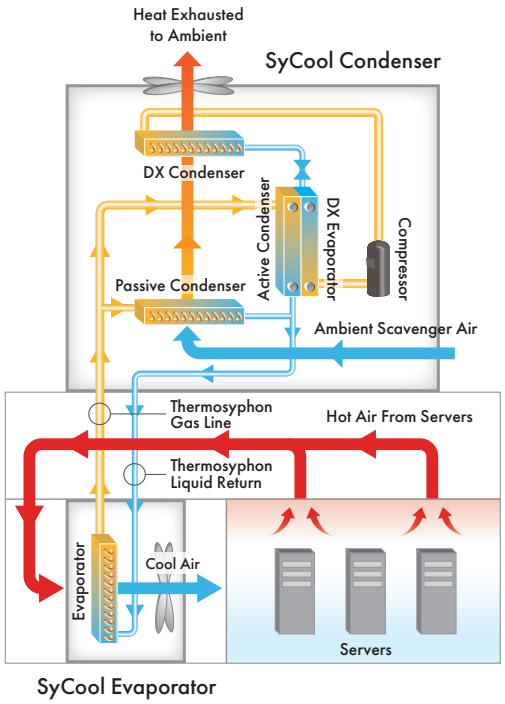


Figure 1

Note: 500 kW system consists of two circuits. Only one circuit shown in above schematic for simplicity.

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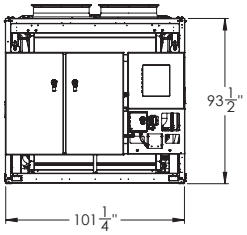
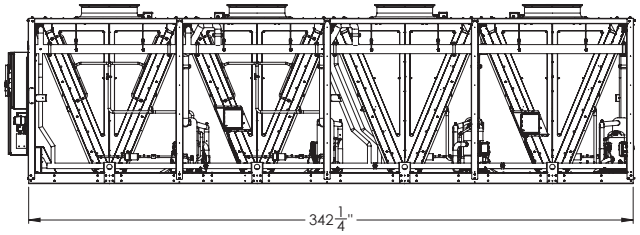
SyCool 500 kW condenser - piping configuration A

- Connects to two 250 kW Down Flow Evaporators
- Configures as one 500 kW system or two 250 kW systems with dedicated electrical and controls
- Options for single or dual electrical feed(s) located at the condenser or evaporator
- approximate weight: 13,000 lbs



Elevation view

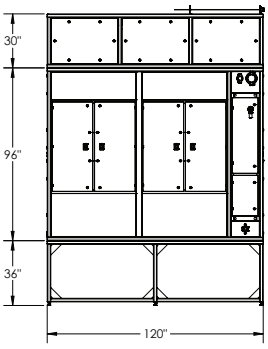


Elevation view - side

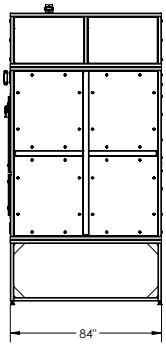
SyCool 250 kW down flow evaporator

- Underfloor or flooded room configurations
- Blow through or draw through fan arrangements
- Optional floor stand (36" shown)
- approximate weight, excluding floor stand: 4,400 lbs

Bottom supply configuration



Elevation view - face



Elevation view - side

Horizontal supply configuration

System notes:

- Up to 500' separation
- Low pressure thermosyphon piping
- Refrigerant line sizes (per condenser):
  - Two (2) 3" or 4" vapor lines*
  - Two (2) 1.625" or 2" liquid lines*

*depending on interconnecting piping vertical and horizontal separation, plus # elbows

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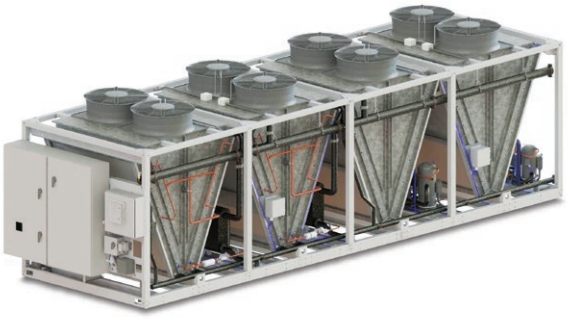
SyCool 500 kW condenser - piping configuration B

- Connects to one 500 kW evaporator
- Options for single or dual electrical feed(s) located at the condenser



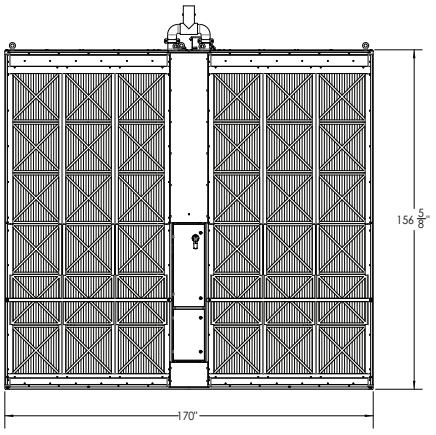
SyCool 500 kW fan array evaporator

- Standard height and lower height evaporator options
- Low outlet velocity
- Side-by-side installation with no required space between units, ideal for high density applications

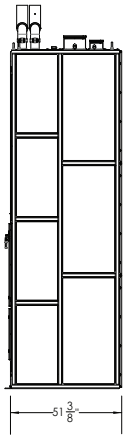
System notes:

- Up to 500' separation
- Low pressure thermosyphon piping
- Refrigerant line sizes (per condenser):
  - Two (2) 3" or 4" vapor lines*
  - Two (2) 1.625" or 2" liquid lines*

*depending on interconnecting piping vertical and horizontal separation, plus # elbows

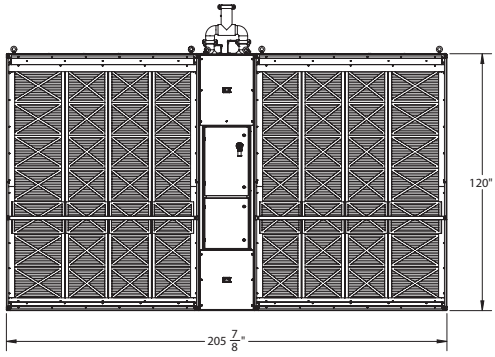


Filter side view



End view

Standard height evaporator



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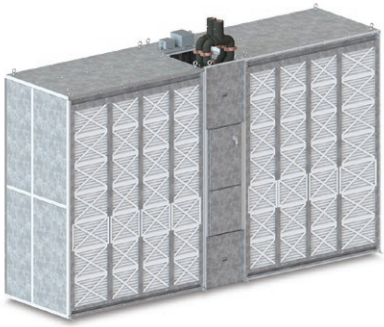
End view



Low height evaporator

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SyCool piping configuration A performance (2 x 250 kW down flow evaporator)

	Delta T (Data Center Temperature Rise)					
	19	20	21	22	23	24
Ambient (F)	kW Capacity	kW Capacity	kW Capacity	kW Capacity	kW Capacity	kW Capacity
119.7	475	480	480	480	480	480
115	495	500	500	505	510	510
112.3	510	515	520	520	520	525
110	515	520	520	520	525	525
105	530	530	530	530	530	530
103.8	530	530	530	530	530	530

Notes:
500' elevation, 0.2" W.C. external static and clean filters, 75°F supply air
kW Capacity shown is net room load rejected

SyCool piping configuration B performance (1 x 500 kW fan array; low height evaporator)

	Delta T (Data Center Temperature Rise)					
	19	20	21	22	23	24
Ambient (F)	kW Capacity	kW Capacity	kW Capacity	kW Capacity	kW Capacity	kW Capacity
119.7	433	455	479	480	480	480
115	433	455	479	500	500	500
112.3	433	455	479	500	500	500
110	433	455	479	500	500	500
105	433	455	479	500	500	500
103.8	433	455	479	500	505	505

Notes:
500' elevation, 0.2" W.C. external static and clean filters, 75°F supply air
kW Capacity shown is net room load rejected

Contact factory for project specific performance

Find your nearest Munters office at **www.munters.com**

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