

OMICRON SKY S4 NA

4-PIPE MULTIFUNCTION AIR-TO-WATER HEAT PUMP

Continuous Simultaneous Heating & Cooling with
Heat Recovery for Advanced Hydronic Plants



Swegon 

OMICRON SKY S4 NA

OMICRON SKY S4 NA is a factory-assembled, dual-circuit multifunction air-to-water heat pump engineered for North American central plant electrification.

Factory-packaged monobloc design keeps all refrigerant outdoors, simplifying installation and removing refrigerant from the occupied building space.



Packaged monobloc units from 30–140 tons

OMICRON SKY S4 NA

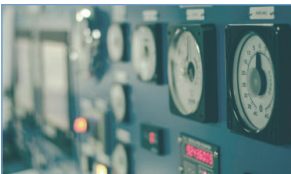
Type	4-Pipe Multifunction Air-to-Water Heat Pump
Capacity Range	30–140 tons
Operation	Continuous Simultaneous Heating & Cooling with Integrated Heat Recovery
Heating	Up to 140° F (60° C) leaving water temperature Operation down to - 4° F (-20° C) ambient temperature
Refrigerant	R-454B (Low GWP, A2L)
Power	460V/3Ph/60Hz & 600V/3Ph/60Hz
Plant Integration	SMART Link+, MULTILOGIC, HYZER, SWEGON INSIDE



How Multifunction Operation Works

- Heating and cooling are produced concurrently
- Energy is internally transferred between chilled water and hot water circuits
- Outdoor air is used only when additional heat rejection or absorption is required even when buildings loads are not balanced.

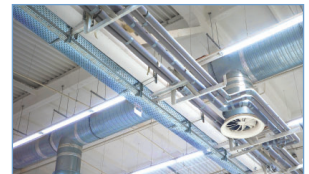
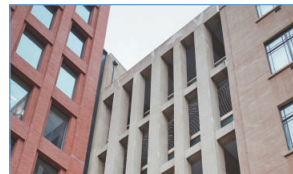
Unlike reversible systems, OMICRON does not alternate between heating and cooling, both are continuously available as required by building loads.



Energy Efficiency & Electrification

By maximizing recovered heat utilization and limiting supplemental heating, OMICRON supports:

- Reduced overall plant energy consumption
- Lower operational emissions
- Alignment with decarbonization objectives
- High-performance electrified hydronic plant design
- Much Higher Unit Efficiency in recovery mode. Total Efficiency Ratio (TER) as high as 8 W/W (27.3 BTU/hW)



Designed for 4-Pipe Hydronic Systems

- Heating is not dependent on minimum cooling demand
- Recovered heat is treated as a primary energy source
- Operation does not rely on seasonal or frequent mode switching
- Continuous heat recovery between circuits
- Stable supply water temperatures
- Reduced operational complexity compared to field-engineered heat recovery systems

The result is predictable, stable, and controllable system behavior, particularly important in complex hydronic plants.

Performance & Operating Envelope

- Simultaneous chilled and hot water production
- Cooling Operation down to -4° F (-20° C) up to 122° F (50° C) ambient
- Heating Operation down to -4° F (-20° C) up to 188° F (48° C) ambient
- Liquid injection compressors for low ambient reliability

Ideal for:

- Hospitals and healthcare facilities
- K-12 Schools, Universities and Campuses
- Mixed-Use Developments and Multi-Use Residential Buildings
- Laboratories and Research Facilities
- Buildings with year-round internal load diversity

Engineering Features



Dual-Circuit Reliability

- Two independent refrigerant circuits
- Tandem scroll compressors per circuit
- Coordinated defrost logic
- Independent circuit control

Hydronic-Centric Design

- Two dedicated brazed plate heat exchangers (separate hot & chilled water circuits)
- ASME-certified brazed plate heat exchangers available CRN standard for Canadian Market
- Field-configurable piping connections (Back, Left or Right sided Connections)
- Standard antifreeze protection
- Glycol compatibility up to 50% P.G. or E.G.

Cold Climate Optimization

- Liquid injection compressor technology
- Hydrophilic coil coating for longer operation between subsequent defrost operation
- Oversized heated drain pans
- Condensate discharge pipes
- Independent defrost between circuits within a machine means only one circuit defrosts at any given time, maintaining higher temperature stability in the system

Installation Simplicity

- Factory-packaged monobloc construction
- Single-point electrical connection
- Twin configuration available up to 280 tons
- Reduces field piping complexity compared to modular multifunction systems

Environmental & Code Compliance

- R-454B refrigerant (GWP 466)
- UL/CSA 60335-2-40 certified for A2L refrigerants
- Optimized low refrigerant charge
- 60 Hz, 3-Phase Power
- Performance Certified to AHRI 550/590 & 551/591

Integrated Plant Controls



HYZER

Unified central plant optimization platform providing predictive staging, pump management, variable flow efficiency, and simplified commissioning.

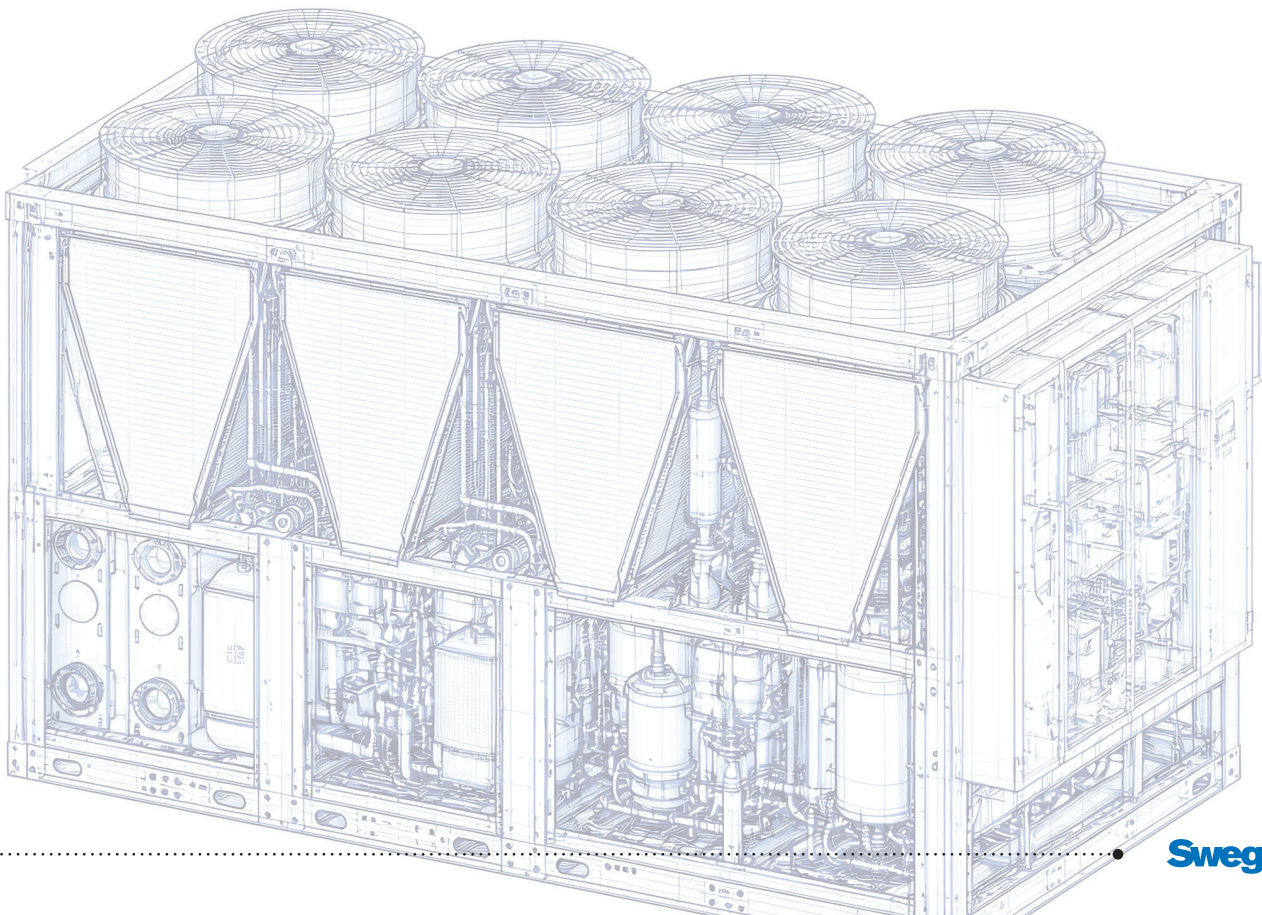
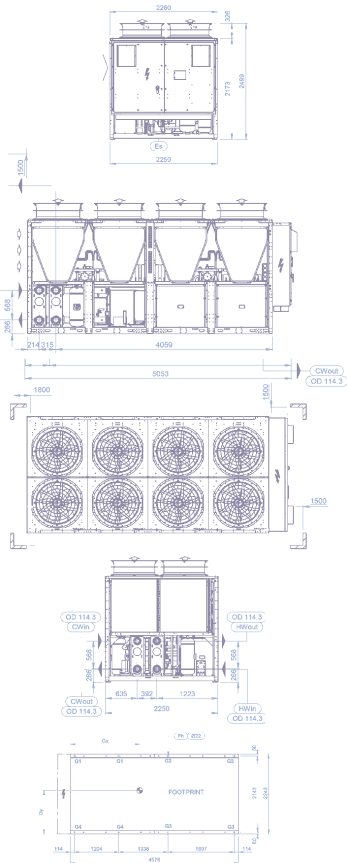


MULTILOGIC

Centralized multi-unit staging, intelligent compressor sequencing, coordinated defrost, and built-in redundancy.

SWEGON INSIDE

A cloud-based digital platform for connecting and monitoring Swegon HVAC systems enabling remote supervision, diagnostics, and performance analysis of installed equipment.



 MULTILOGIC

Core Functions

- Control solution without the need for additional controllers or panels, MULTILOGIC software runs on a designated Client unit and controls all units in the central plant and supports integration of up to 32 units
- Simplifies thermodynamic staging controls in applications with a circulator pump for each unit in the central plant, or with a control valve on each unit with central primary pumps (pumps controlled by BMS)
- Combine different types of units in a single plant: seamlessly integrate Chillers, Reversible Heat Pumps and 4-Pipe Multifunction units according to the plant design.
- Maintains plant supply temperature setpoint via measurement of global supply temperature
- Stages compressors and circuits based on real-time demand while balancing operating hours across compressors and circuits according to the unit staging control method.
- Coordinates defrost cycles across the central plant on all active circuits, preventing multiple circuits from defrosting at the same time
- Integrates auxiliary boiler control
- Provides redundancy and failover logic

Result:

Turnkey thermodynamic control solution, stable temperature control, optimized efficiency, and reliable multi-unit operation.

MULTILOGIC

Centralized Unit Staging & Plant Coordination

Modern hydronic plants often combine multiple heat pumps, chillers, or 4-pipe multifunction units. MULTILOGIC™ is the thermodynamic control layer within the HYZER system, providing centralized capacity management across the entire plant.

While HYZER manages hydraulic performance and variable flow, MULTILOGIC manages thermal capacity. Together, they maintain thermal equilibrium and stable plant operation. For plants with primary pump controls by BMS, MULTILOGIC is available as a standalone solution.

There are no additional controllers or panels required to take advantage of MULTILOGIC. The software is built into the controllers, and only requires a set of global temperature sensors for the main supply/return headers and ethernet connections between units to have multiple units run as a single entity.

Operating Logic

MULTILOGIC offers three selectable capacity distribution strategies:



Optimized Logic

- A hybrid strategy balancing thermodynamic efficiency and pump energy impact.
- Units operate as a combination of Balanced and Saturated modes to achieve optimal overall system efficiency.



Balanced Logic

- Units operate in parallel with equal priority.
- Maximizes part-load efficiency and improves overall plant COP.



Saturated Logic

- The units are operated sequentially, once a unit is at 100% capacity, the next unit is staged on ensuring flow is only delivered to units that require it.

Defrost Coordination

MULTILOGIC coordinates defrost cycles across the entire plant to:

- Prevent simultaneous defrost events across multiple circuits in the central plant.
- Improve water temperature stability
- Reduce required buffer tank volume (~ 20–40%)
- Redistribute thermal demand during defrost to standby units/circuits

Redundancy & Failover

MULTILOGIC enhances plant reliability through:

- Automatic redistribution of capacity upon unit failure
- Compressor and circuit fault detection
- Client (master) failover protection
- Pump and communication monitoring
- Runtime equalization across compressors
- Units available with separate power feed for controller and heat tracing, to allow for the client unit's controller to continue to operate when power is disconnected for maintenance

Swegon INSIDE

A Connected HVAC Ecosystem

- Secure connection via Ethernet or INSIDE Connect router (GSM modem – no internet connection to building system required)
- Remote monitoring of unit operation and alarms
- Real-time performance data from connected equipment
- Enables remote diagnostics and predictive maintenance

Why INSIDE?

For Service Teams

- Faster diagnostics
- Remote troubleshooting
- Reduced site visits

For Customers

- Lower service costs
- Reduced downtime
- Improved reliability

For Building Owners

- Better energy performance
- Greater operational visibility



Swegon INSIDE

Connected HVAC. Smarter Service.

INSIDE transforms Swegon units into connected, data-driven systems, enabling smarter service, optimized performance, and predictive maintenance. By linking equipment to the INSIDE Cloud, the platform provides continuous visibility of system operation, helping service teams and facility managers maintain optimal performance and reliability. All managed securely through the INSIDE platform.

The INSIDE Platform

INSIDE Portal

Central hub for managing connected buildings and equipment.

- Configure buildings and units
- Manage users and access rights
- Monitor key operating parameters
- Receive alarm notifications

INSIDE Manager

Advanced diagnostic and service platform accessible from desktops or mobile devices.

- Visualize system performance
- Access full operating data
- Analyze historical trends
- Create dashboards and reports

INSIDE Connect

Secure remote access to unit controllers.

- Read and modify operating parameters
- Check alarms and system status
- Upload software updates and download logs

BlueBox Digital Services

INSIDE enables advanced digital services designed to improve system performance, simplify maintenance and reduce operational costs.

Unit Analyzer (Performance Monitoring)

The Unit Analyzer provides intuitive dashboards to evaluate system performance and efficiency.

- Energy consumption and capacity produced
- System operating modes
- Compressor and pump runtime
- Alarm history and trends

This allows faster troubleshooting and better performance optimization.

Predictive Maintenance (Detect problems)

Using machine learning algorithms and digital twin models, INSIDE continuously monitors unit performance and detects anomalies before failures occur.

- Pressures and temperatures
- Compressor performance
- Fan and inverter speed
- Water flow and heat exchanger efficiency

Early detection enables proactive service planning and reduces unexpected downtime

OMICRON SKY NA 460V/3ph/60Hz – Technical Data

	Unit	30.4	45.4	55.4	75.4	100.4	125.4	135.4
COOLING¹								
Refrigeration Capacity	RT	27	43	52	70	95	123	137
EER	BTU/W	9.58	10.63	9.8	9.99	10.03	9.79	9.35
IPLV	BTU/W	15.8	17.2	16.1	16.9	17	16.5	15.8
HEATING²								
Heating Capacity	MBH	333.2	517.3	644.1	864.5	1181.2	1530.7	1721.3
COP	W/W	3.29	3.26	3.27	3.25	3.3	3.24	3.29
COOLING + HEATING³								
Cooling Capacity	RT	26	41	52	69	95	123	141
Heating Capacity	MBH	422.8	647.7	828.2	1091.8	1495.2	1946.6	2227.9
Total Efficiency Ratio (TER)	W/W	6.43	6.97	6.99	6.89	7.19	7.03	7.14
COMPRESSORS								
Compressors/Circuits	n°/n°	4/2	4/2	4/2	4/2	4/2	4/2	4/2
FANS								
Quantity	n°	2	4	4	6	8	10	10
NOISE LEVELS								
Sound power level cooling ⁴	dB(A)	86	88	89	92	94	95	96
Sound pressure level cooling ⁵	dB(A)	54	56	57	60	62	62	63
DIMENSIONS & WEIGHTS								
Length	inch	109	109	109	201	201	291	291
Depth	inch	89	89	89	89	89	89	89
Height	inch	98	98	98	98	98	98	98
Operating weight	lb	5512	5732	5952	8598	9039	11905	12125

(1) External air temperature 95° F; cold user side outlet water temperature 44.6° F. Values compliant with standard AHRI 550/590.

(2) External air temperature 46.4° F DB, 42.8° F WB, condenser outlet water temperature 104° F. Values compliant with standard AHRI 550/590.

(3) Outlet water temperature user side cold heat exchanger 44.6° F, Outlet water temperature user side hot heat exchanger 104° F.

(4) Unit operating at rated capacity, with no accessories of any kind - external air temperature 35° C and water input/output temperature from/to heat exchanger and user equal to 12/7° C. Values taken by measurements made in accordance with standard ISO 3744.

(5) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2.

Non-binding values

OMICRON SKY NA 575V/3ph/60Hz – Technical Data

	Unit	30.4	45.4	55.4	75.4	100.4	125.4	135.4
COOLING¹								
Refrigeration Capacity	RT	27	43	52	70	95	123	137
EER	BTU/W	9.55	10.66	9.78	9.98	10.04	9.8	9.36
IPLV	BTU/W	15.8	17.2	16.1	16.9	17	16.5	15.8
HEATING²								
Heating Capacity	MBH	333.2	517.3	644.1	864.5	1181.2	1530.7	1721.3
COP	W/W	3.3	3.25	3.26	3.25	3.3	3.25	3.3
COOLING + HEATING³								
Cooling Capacity	RT	26	41	52	69	95	123	141
Heating Capacity	MBH	422.8	647.7	828.2	1091.8	1495.2	1946.6	2227.9
Total Efficiency Ratio (TER)	W/W	6.44	6.95	7.01	6.9	7.2	7.03	7.13
COMPRESSORS								
Compressors/Circuits	n°/n°	4/2	4/2	4/2	4/2	4/2	4/2	4/2
FANS								
Quantity	n°	2	4	4	6	8	10	10
NOISE LEVELS								
Sound power level cooling ⁴	dB(A)	86	88	89	92	94	95	96
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Non-binding values

Feel good **inside**

