STULZ

CLIMATE. CUSTOMIZED.

CyberAir 3PRO DX ASR

Maximum energy efficiency and optimum air conduction with fans in the raised floor

Services on your doorstep

STULZ is a global company with headquarters in Hamburg, Germany, 19 subsidiaries, 7 production sites and sales and service partners in more than 140 countries.

In 1971 we began specializing in the development and production of precision air conditioning units and chillers for data centers. That's a wealth of experience gathered over 40 years from many thousands of projects that we've implemented worldwide.

Technical development from Germany
We put a great deal of experience and innovative spirit into our air conditioning systems. Engineers, specialist departments and sales employees work closely together and are involved through all stages of development, all the way to the finished product. We brook no compromise where the efficiency of our products is concerned, and cost-effective operation is at the heart of our endeavors.

Test to your specifications
In our state-of-the-art, 700-square-meter Test Center with its various climate chambers, we can perform a variety of tests on precision air conditioning systems and chillers. If you decide to purchase a STULZ solution, you can book a witness test in our Test Center. This allows you to have the desired air conditioning system tested for compliance with your exact specifications, creating transparency and providing you with information about the system's performance and energy consumption.

Maximum cooling capacity, minimal footprint

The CyberAir 3PRO DX ASR is the result of consistent further development of our thoroughly successful CyberAir 3 series. To achieve maximum cooling capacity for a minimal footprint and also bring you the greatest possible potential savings, we have developed a series in which the fans are installed in the raised floor.

Based on their many years of experience with projects around the world, our engineers in Hamburg have developed a product that offers you even greater flexibility and energy efficiency.

Advantages at a glance

- Leads the field for cooling capacity with maximum efficiency
- Maximum potential savings thanks to Indirect Dynamic Free Cooling from STULZ
- Maximum cooling capacity for a minimal footprint
- Top efficiency in air conduction
- Even lower running costs as supply air conditions conform to ASHRAE recommendation
- Cools reliably, precisely, quietly and exceptionally economically
- Designed for continuous, no-downtime operation over many years
- Use of EC technology for maximum efficiency
- Compact design for easier transport and installation
- Opportunity to get your unit tested in our Test Center
- Control based on supply air, return air or room air

High energy savings thanks to fans in the raised floor

The new ASR series comprises a heat exchanger and fan module. Unlike units with fans situated on a raised floor, the ASR series achieves optimum air conduction and therefore high energy savings.

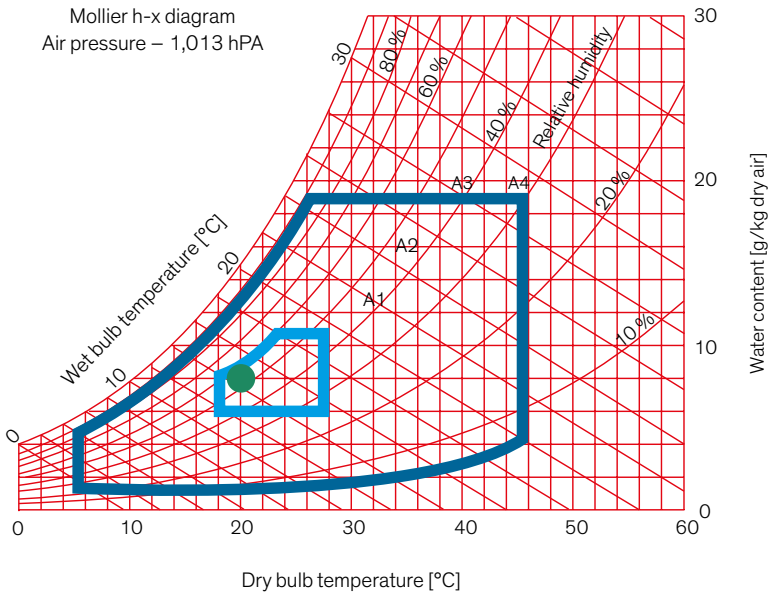
The installation of the fans in the raised floor produces less turbulence and changes in airflow direction, hugely reducing fan power consumption.

Thanks to their design, STULZ precision air conditioning units promise the lowest AER (Airflow Efficiency Ratio) and therefore air conduction with maximum efficiency. The AER equates to fan power per airflow.

Optimum supply air conditions for reliability and maximum efficiency

In order to cool your data center as efficiently as possible without any compromises in reliability, ASHRAE has published a recommendation regarding the air temperature at the server inlet. Not only have we been developing air conditioning units for operation critical applications – where even seemingly minor problems can have serious consequences – for decades now, we have also always kept an eye on energy efficiency, so that the supply air temperature of our units is always within the range recommended by ASHRAE.

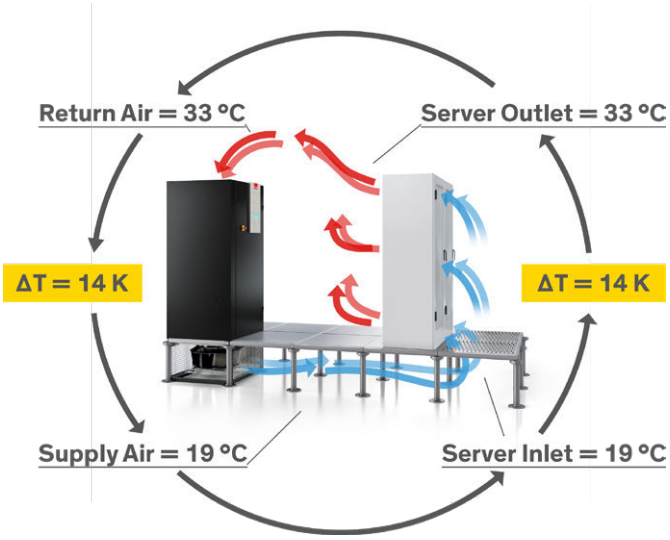
- ASHRAE recommendation: Range within which systems work the most reliably, while also enabling energy-efficient operation
- Supply air temperature of STULZ units
- Allowable range



Precise control

The air-side temperature difference between the air inlet and exit of your server cabinets or air conditioning systems is known as ΔT. To ensure optimum operation and maximum running cost savings, it is vital that the ΔT of the air conditioning units is precisely and efficiently adapted to the ΔT of your server cabinets.

Our dynamic control system enables this adaptation to the changing requirements of your IT, and therefore offers you the most energy-efficient operation possible.



Free Cooling for more potential savings

Indirect Dynamic Free Cooling

STULZ has developed a unique dynamic control system. The control this provides is based on the outside temperature and the current heat load in the data center. This considerably increases the proportion of operating hours with Free Cooling.

Indirect Dynamic Free Cooling combines compressor cooling and Free Cooling. In four stages, the STULZ control system automatically searches for the most economical operating mode.

Operating modes

- FC – Free Cooling energy-saving mode
- EFC – Extended Free Cooling mode
- MIXED – Compressor and Free Cooling
- DX – Compressor cooling

Direct Free Cooling for air cooled units

Direct Free Cooling exploits the potential of low outside temperatures, to cool the data center with outside air. With this type of cooling, filtered outside air is fed directly into the room.
Direct Free Cooling is suitable for applications with wider temperature and humidity tolerances.

The CyberAir 3PRO DX precision air conditioning system with Direct Free Cooling cools data centers up to 90 % more economically than conventional compressor cooling systems.

EC fan with 630 mm diameter

- Speed-controlled fan
- Minimum power consumption
- Minimum noise level
- Nominal airflow rate at a fan speed optimized for partial load
- Increased airflow in each size
- State-of-the-art motors, electronic processor and impellers
- Satisfies Ecodesign Directive ErP 2015
- Aerodynamically optimized blades

EC compressor for high-precision control

- Infinite compressor control for maximum efficiency and precise temperature regulation
- Maximum efficiency especially in partial load and Mixed mode
- Constant supply air temperature
- Integrated compressor soft start to protect the power line
- Fast, precise reaction to variations in heat load
- Long service life thanks to continuous operation without compressor on/off cycles

Characteristics

- Cooling range from 30 kW to 150 kW
- Largest possible heat exchanger and filter surfaces for minimal pressure losses
- Available with refrigerants R410A and R134a
- STULZ C7000 microprocessor controls all functions and components, even when several units are combined in one system
- Filter control management
- All parts requiring maintenance can be accessed from the front
- Filter class M5
- For easier transportation: Fits through standard door sizes
- Flexible installation in the data center
- 6 sizes
- 2 refrigeration systems (air cooled, Indirect Dynamic Free Cooling)

Extensive options

Thanks to the diverse options and equipment versions available, you can perfectly adapt your STULZ units to your requirements.

- Continuous electric heater with several stages
- Refrigerant reheat
- Hot water reheat
- Continuous steam humidification
- Control of ultrasonic humidifiers
- Raised floor stand in various heights
- FreeCool Plenum for Direct Free Cooling
- Discharge and suction plenum
- Pocket filter attachment F7, F9
- Dual power feed with automatic or manual switchover plus option of UPS buffering for the controller
- C7000 Advanced user interface
- Suitable for connection to all common BMS systems, RS485 and RS232 interface for direct connection to a BMS
- Smoke and fire alarms
- Pressure control for raised floors and enclosure
- and a great deal more

CyberAir 3PRO DX (ASR) –

This series is available for A and AS systems.

Air cooled with constant-speed compressor, 1 circuit

ASR xxx A		201	291	351	381	451	561	431	551
Airflow	m3/h	6,200	7,500	8,800	10,000	11,500	12,500	13,000	15,000
Cooling capacity (total = sensible) [1]	kW	30.8	36.2	41.6	48.7	55.0	68.9	56.7	65.8
Cooling capacity (net) [1]	kW	30.2	35.1	39.9	47.4	53.1	66.5	55.3	63.7
Fan power consumption [2]	kW	0.6	1.1	1.7	1.3	1.9	2.4	1.4	2.1
Total power consumption	kW	6.1	7.6	9.3	9.6	11.6	15.2	11.1	13.5
Noise level [3]	dBA	49	52	55	53	55	57	48	52
Supply air temperature	°C	18	19	19	19	19	17	20	20
EER	kW/kW	5.05	4.76	4.47	5.07	4.74	4.53	5.11	4.87
AER (Airflow Efficiency Ratio) [4]	W/(m³/h)	0.097	0.147	0.193	0.130	0.165	0.192	0.108	0.140
Number of refrigerant circuits/ compressors		1/1	1/1	1/1	1/1	1/1	1/2	1/1	1/1
Size		1			2			3	

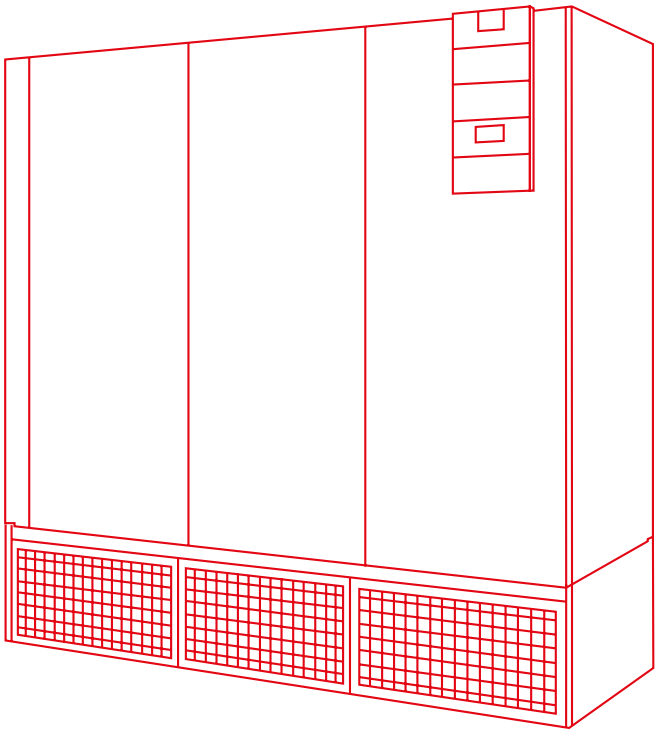
Air cooled with EC variable-speed compressor

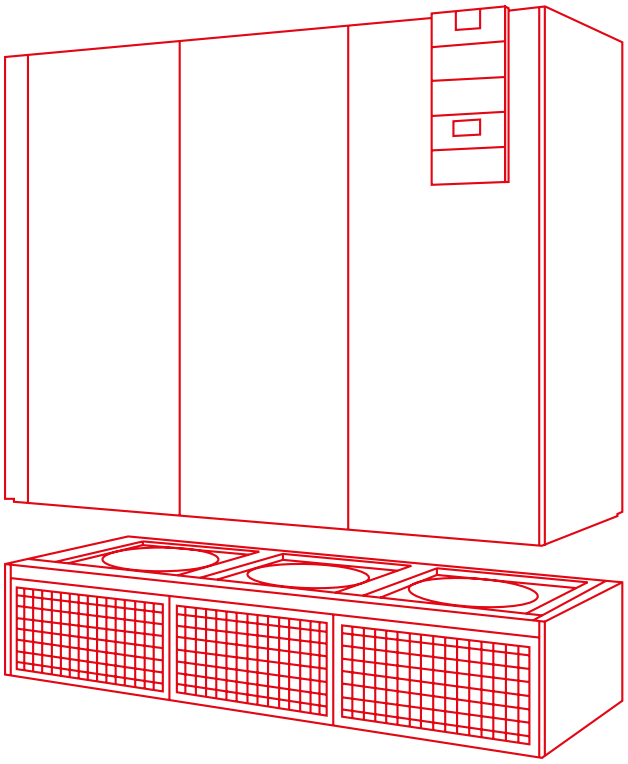
ASR xxx AS		271	401	511	542	742	552	732	832	1092	1302
Airflow	m3/h	7,500	11,500	17.00	17,500	19,000	19,000	21,500	23,000	28,000	32,000
Cooling capacity (total = sensible) [1]	kW	36.2	55.9	69.9	73.2	98.7	90.4	101.4	106.4	131.6	145.0
Cooling capacity (net) [1]	kW	35.1	54.0	67.0	69.7	94.3	87.4	97.2	102.7	125.4	138.9
Fan power consumption [2]	kW	1.1	1.9	2.9	3.5	4.4	3.0	4.2	3.7	6.2	6.1
Total power consumption	kW	8.8	14.4	16.5	16.5	25.3	20.2	25.1	24.6	31.1	32.7
Noise level [3]	dBA	52	55	59	59	60	58	60	58	62	62
Supply air temperature	°C	19	19	21	21	18	19	19	19	19	20
EER	kW/kW	4.11	3.88	4.24	4.44	3.90	4.48	4.04	4.33	4.23	4.43
AER [4]	W/(m³/h)	0.147	0.165	0.171	0.200	0.232	0.158	0.195	0.161	0.221	0.191
Number of refrigerant circuits/ compressors		1/1	1/1	1/1	1/1	2/2	2/2	2/2	2/2	2/2	2/3
Size		1	1	3	3		4		5		7

Technical data

Air cooled with constant-speed compressor, 2 circuits

ASR xxx A	532	602	682	722	802	892	822	1082	1252
Airflow	13,500	16,000	18,000	19,000	20,000	22,000	21,000	27,000	32,000
Cooling capacity (total = sensible) [1]	64.4	75.5	99.6	87.2	94.2	104.9	98.4	128.3	150.4
Cooling capacity (net) [1]	62.7	72.8	95.9	84.2	90.8	100.4	95.5	122.7	144.3
Fan power consumption [2]	1.7	2.7	3.7	3.0	3.4	4.5	2.9	5.6	6.1
Total power consumption	12.7	15.7	22.9	18.2	20.0	23.9	19.5	28.2	32.1
Noise level [3]	50	54	57	55	57	59	54	60	62
Supply air temperature	19	19	17	19	19	19	19	19	19
EER	5.07	4.81	4.35	4.79	4.71	4.39	5.05	4.55	4.69
AER (Airflow Efficiency Ratio) [4]	0.126	0.169	0.206	0.158	0.170	0.205	0.138	0.207	0.191
Number of refrigerant circuits/ compressors	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/4
Size	3			4			5		7





CyberAir 3PRO DX (ALR) –

This series is available for GE and GES systems.

Free Cooling with constant-speed compressor, 1 circuit

ALR xxx GE		201	291	331	381	431	551
Airflow	m3/h	5,000	7,500	9,000	10,000	12,500	14,500
Cooling capacity (total = sensible) [1]	kW	22.1	37.5	39.6	48.5	55.2	66.2
Cooling capacity (net) [1]	kW	21.9	36.8	39.0	47.7	51.2	64.7
Water temperature for 100 % Free Cooling	°C	14.3	11.5	13.6	12.0	14.8	13.3
Fan power consumption [2]	kW	0.2	0.7	0.6	0.8	1.0	1.5
Total power consumption	kW	4.7	7.2	7.1	9.1	9.4	12.9
Noise level [3]	dBA	43	49	41	43	45	49
Supply air temperature	°C	20	18	20	19	21	19
EER	kW/kW	4.70	5.21	5.58	5.33	5.55	5.13
EER (Free Cooling)	kW/kW	110.5	53.6	66.0	60.6	52.2	44.1
AER (Airflow Efficiency Ratio) [4]	W/(m³/h)	0.040	0.093	0.067	0.080	0.080	0.103
Number of refrigerant circuits/ compressors		1/1	1/1	1/1	1/1	1/1	1/1
Size		2		3		4	

Free Cooling with EC variable-speed compressor

ALR xxx GES		271	401	511	432	542	552	732	832	1092	1302
Airflow	m3/h	7,500	10,000	13,000	11,000	14,000	16,000	17,500	20,000	23,000	25,000
Cooling capacity (total = sensible) [1]	kW	35.4	46.8	55.0	50.1	64.5	68.1	85.3	96.3	115.5	136.2
Cooling capacity (net) [1]	kW	34.7	46.0	53.8	49.4	63.1	66.4	83.2	94.2	112.5	132.2
Water temperature for 100 % Free Cooling	°C	12.7	12.8	14.9	14.5	13.4	14.3	12.3	12.8	13.3	10.8
Fan power consumption [2]	kW	0.7	0.8	1.2	0.7	1.4	1.7	2.1	2.1	3.0	4.0
Total power consumption	kW	7.5	10.2	12.2	10.6	13.0	13.0	17.7	19.8	25.3	30.4
Noise level [3]	dBA	49	53	54	52	55	53	54	56	58	60
Supply air temperature	°C	19	19	20	19	19	20	18	19	18	17
EER	kW/kW	4.72	4.59	4.51	4.73	4.96	5.24	4.82	4.86	4.57	4.48
EER (Free Cooling)	kW/kW	50.6	58.5	45.8	71.6	46.1	40.1	40.6	45.9	38.5	34.1
AER (Airflow Efficiency Ratio) [4]	W/(m³/h)	0.093	0.080	0.092	0.064	0.100	0.106	0.120	0.105	0.130	0.157
Number of refrigerant circuits/ compressors		1/1	1/1	1/1	2/2	2/2	1/1	2/2	2/2	2/2	2/3
Size		2	3	4	4		5		7		

Technical data

Free Cooling with constant-speed compressor, 2 circuits

ALR xxx GE	422	532	572	722	822	1082	1252
Airflow	10,000	13,700	15,900	19,300	21,000	23,000	25,000
Cooling capacity (total = sensible) [1]	44.2	64.3	68.2	89.9	99.3	123.3	140.2
Cooling capacity (net) [1]	43.6	63.0	66.5	87.2	96.9	120.3	136.2
Water temperature for 100 % Free Cooling	14.5	13.0	14.1	12.6	12.8	10.7	10.1
Fan power consumption [2]	0.6	1.3	1.7	2.7	2.4	3.0	4.0
Total power consumption	9.6	12.3	12.5	18.1	19.0	25.6	29.6
Noise level [3]	40	47	49	53	57	58	60
Supply air temperature	20	19	20	19	19	17	17
EER	4.60	5.23	5.46	4.97	5.23	4.82	4.74
EER (Free Cooling)	73.7	49.5	40.1	33.3	41.4	41.1	35.1
AER (Airflow Efficiency Ratio) [4]	0.060	0.095	0.107	0.140	0.114	0.130	0.157
Number of refrigerant circuits/ compressors	2/2	2/2	2/2	2/2	2 / 2	2 / 2	2 / 4
Size	4		5		7		

Dimensions/number of fans

Size		1	2	3	4	5	7
Width	mm	950	1,400	1,750	2,200	2,550	3,110
Height	mm	2,495 (1,980 above raised floor + 515 in raised floor)					
Depth	mm	890					980
Number of fans		1	1	2	2	3	4

Comments:

All data apply at 400 V/3 ph/50 Hz with refrigerant R410A in the standard version.
You can find data for R134a at www.stulz.com.
Data for 60 Hz available on request.
For detailed technical data (including data on R134a), please scan the QR code or visit our product page at http://www.stulz.de/en/cyberair-3pro-dx/technical-data/.

[1] Return air conditions: 33 °C, 30 % r.H. ; condensing temperature: 45 °C
[2] ESP = 20 Pa; max. ESP = 300 Pa. The fans' electrical power consumption must be added to the room load.
[3] At a 2 m distance in free-field conditions
[4] AER = Airflow Efficiency Ratio = fan power/airflow

Technical data subject to change without notice.

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Close to you around the world

With specialist, competent partners in ten German branches and in subsidiaries and exclusive sales and service agents around the world.
Our ten production sites are situated in Europe, North America and Asia.

For further information, please visit our website at **www.stulz.com**

You can find out more on our product page.