

ENGINEERING
TOMORROW



VZH, 2nd generation of inverter scroll compressors

Advanced efficiency, precision cooling

Design an HVAC system like no other

Stand out in the commercial HVAC and process cooling marketplace by boosting your unit performance and shortening development time with the Danfoss pre-qualified and manifoldable 4-26TR inverter packages.



Scanning this code will take you to inverter.scroll.danfoss.com

Over
30%

energy savings with VZH
inverter scrolls. Take the
lead in your market!

<http://inverter.scroll.danfoss.com>

Applying inverter scroll technology keeps getting easier

Now you can build the system you want to build — the way you want to build it. That’s because VZH inverter scroll compressors from Danfoss give you more efficiency, precision, capacity and simplicity.

Choose VZH inverter scrolls when you want the best for commercial air conditioning and industrial cooling. They enable you to create the best systems for a wide range of applications in data centers, IT cooling, telecom facilities, offices, industrial and residential buildings.



Advanced efficiency:

As a leader in HVAC technology, Danfoss has developed the VZH inverter scroll compressor in response to environmental and energy challenges. It uses a brushless Interior Permanent Magnet (IPM) design to give you higher efficiency. It is optimized for different pressure ratios to deliver a high level of efficiency across a wide range of applications.

A cooling solution optimized for low energy consumption and for power grid requirements.

Intermediate Discharge Valves in VZH 4-10TR models increase efficiency at low-pressure ratios, further increasing the part-load efficiency of both the compressors and the units.

Extended capacity:

With cooling capacities from 4-26TR with a single compressor, the VZH range offers the biggest capacity on the market. Thanks to a 4:1 modulation ratio in VZH 13-26TR and a 7:1 in VZH 4-10TR, the VZH inverter scroll can operate from 25 to 100 RPS, 15 to 100 RPS or 17 to 110 RPS depending on the model to provide greater savings.

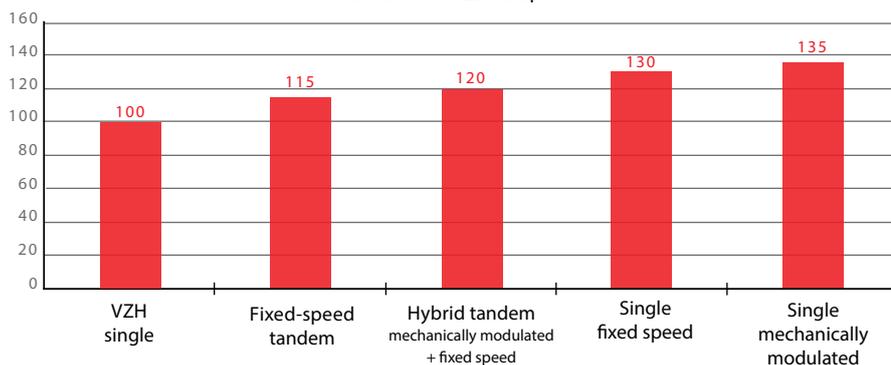
Furthermore, pre-qualified tandem capability extends the cooling capacity to 52TR and a 10:1 stepless modulation.

The pre-qualified compressor and drive package is fully integrated to get your product to market faster. Pick the capacity range you need for either chiller or rooftop applications.

Precise cooling:

An exact match to your cooling requirements exactly to control temperature and humidity is critical for the best comfort and process, data availability as well as product quality. This enhances the energy savings, providing a shorter payback time to the end user – in most cases, less than 3 years.

Energy consumption by compressor type
index 100 = VZH compressor



Average consumption index based on simulations for 10-30TR compressors used in applications with low pressure ratio (rooftop). Index 100 = VZH energy consumption. Unmatched performance makes the difference.

4 to 52TR* fully modulated solutions for:

- **Superior seasonal efficiency:** up to 30% versus fixed-speed systems
- **Precise load matching:** down to +/- 0.3°C
- **Faster time to market:** up to 6 months faster, thanks to the pre-qualified compressor and drive packages and Danfoss's dedicated and experienced support team
- **Extended modulation:** 4:1 or 7:1 turn down ratio depending on model
- **Pre-qualified tandems:** Pre-qualified, patented hybrid manifold configurations with fixed-speed compressors optimize performance and costs

*4-52 TR (15-183kW) @60Hz
4-47 TR (13-167kW) @50Hz

Reduce your time to market while increasing reliability

Danfoss offers a dedicated drive for Danfoss Inverter Scrolls for the Light Commercial and Commercial markets.

The perfect match of compressor and drive deliver a package from a single supplier that greatly reduces the qualification effort of the OEM, reducing the OEM's time to market. The end user can expect maximum product satisfaction because an expert team of Danfoss engineers, with years of variable speed compressor experience, developed the entire system.

Low in-rush current

Inverter logic ensures a soft start that reduces in-rush current, decreasing the impact on the power grid – and the electricity bill.

EMC compliance and small footprint

The frequency converter is designed with built-in harmonic filters, making it easy to install in the electrical panel while complying with industry standards.

Versatility

With a drive operating in up to 50°C of ambient temperature with no performance compromise, a conformal coating to protect the circuit boards and a large compressor operating envelope, this package can easily cover several applications in different parts of the world – even under extreme climate conditions.

User-friendliness

The drive's parameter interface is the same for both the small and large inverter series. This minimizes the servicing and implementation efforts. Besides, the user interface is available in 7 languages for increased user-friendliness.

More options:

- The frequency converter can operate as a master PID stand alone or as the slave of the unit controller.
- Optional graphic display and keypad - with on-board memory - can be used to make parameter changes easily.
- Comprehensive input/output provide RS-485, analog, digital and USB interfaces*, supporting diagnostics, load monitoring and communication.
- Embedded modbus protocol.
- Danfoss MCT10 software allows integration and programming of inverter parameters from a Windows PC.

** USB interfaces for CDS 303 drive only.*

The VZH range is extended with 2 new models ranging from 8 to 10TR



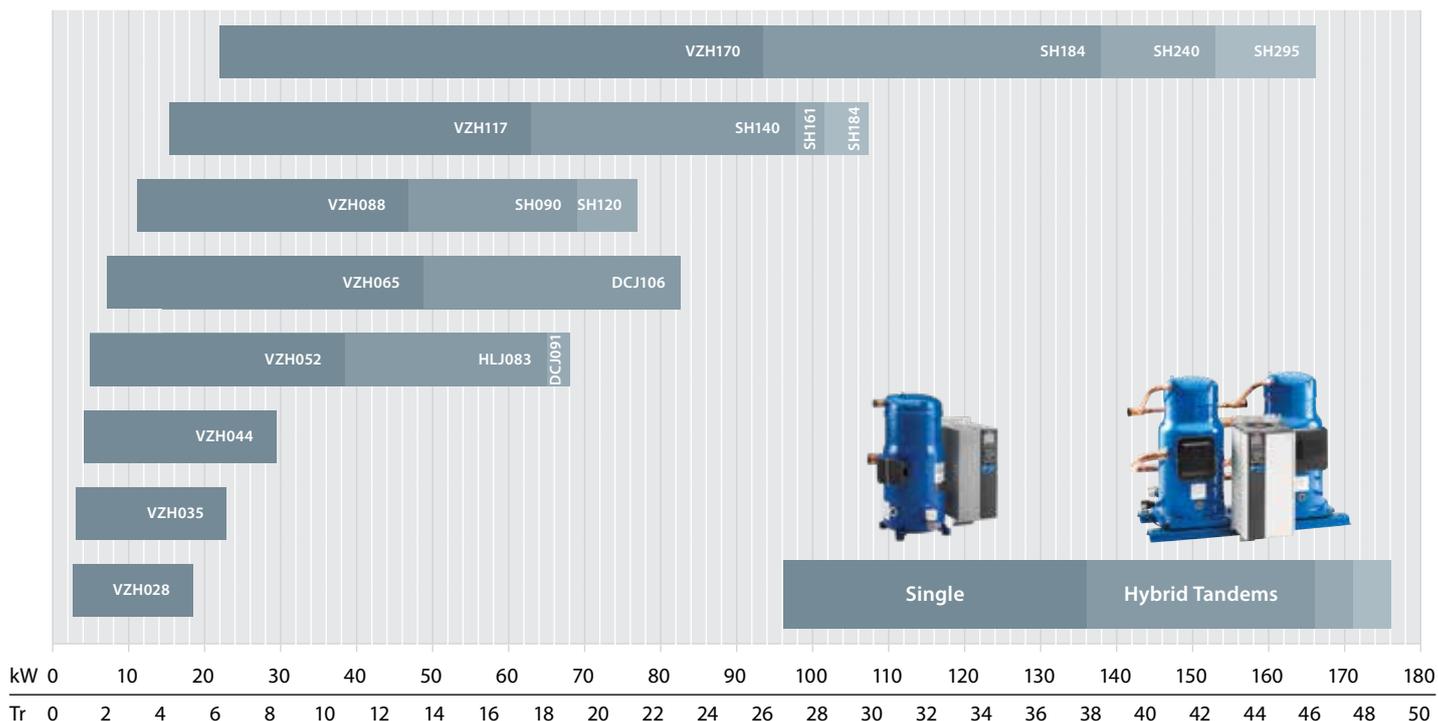
Do you want more information about the VZH inverter?

1. Sign up for your free e-lesson at www.inverterscroll.danfoss.com
2. Contact your local Danfoss office or mail askcc@danfoss.com
3. Scan the QR-code for more technical information and case studies



Technical data

VZH line up by configuration and modulation range

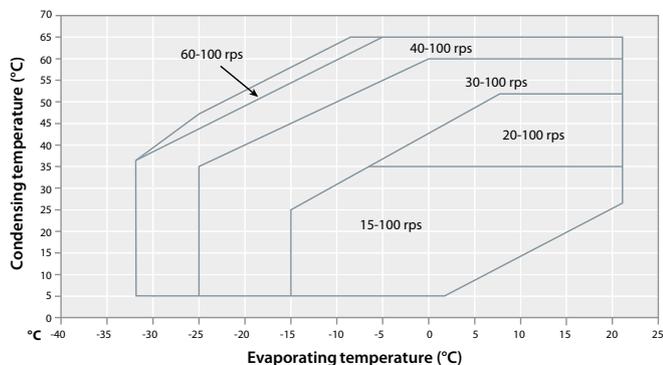


Rating conditions @50Hz:

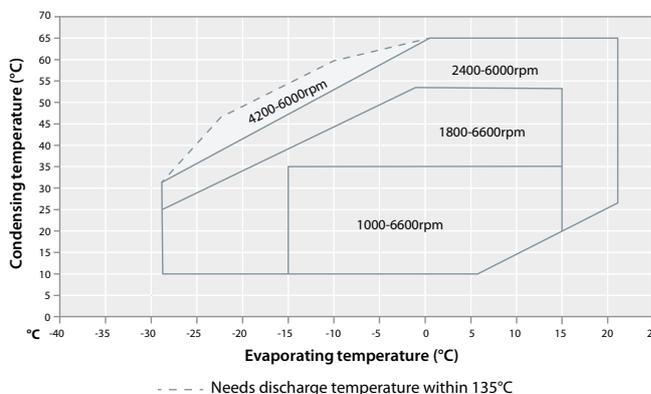
Maximum capacity: 100RPS ARI
 Minimum capacity: 15RPS (VZH 028-044), 17RPS (VZH 052-065) & 25RPS (VZH 088-170) 7,2°C / 35°C / 11,1K / 8,3K (Part load)

Operating envelopes (R410A-SH 6K)

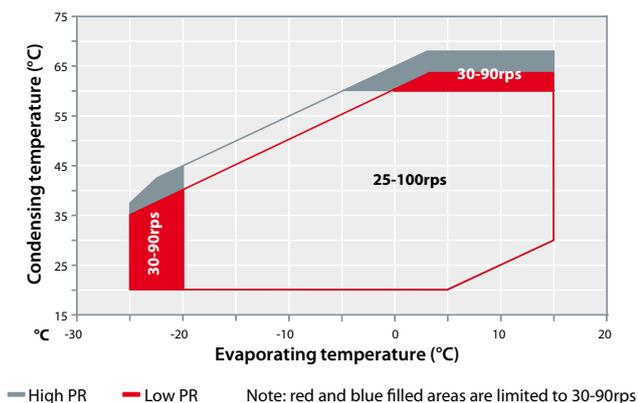
VZH 4-7TR (028-044)



VZH 8-10TR (052-065)



VZH 13-26TR (088-170)



VZH 4-10TR have built-in Intermediate Discharge Valves (IDVs). IDVs adapt the effort of the motor and its energy consumption to the varying load thus improving the seasonal efficiency of air conditioning systems.

For more information see the video:



VZH 13-26TR models are optimized for two pressure ratios to deliver enhanced efficiency in diverse applications.

Technical data

VZH 4-7TR

Models	Speed	Conditions	Cooling				Heating (4)			
			Capacity		Efficiency		Capacity		Efficiency	
			TR	kW	EER [Btu/Wh]	COP [W/W]	TR	kW	EER [Btu/Wh]	COP [W/W]
VZH028	15 RPS	Part load (1)	0.71	2.5	20.34	5.96	30 RPS	3.74	9.78	2.87
	Full speed 100 RPS	ARI (2)	4.15	14.6	9.59	2.81	Full speed 100 RPS	12.91	9.84	2.88
		EN12900 (3)	3.67	12.9	9.18	2.69				
VZH035	15 RPS	Part load (1)	0.91	3.2	21.97	6.44	30 RPS	4.68	10.02	2.94
	Full speed 100 RPS	ARI (2)	5.26	18.5	10.17	2.98	Full speed 100 RPS	16.03	10.22	2.99
		EN12900 (3)	4.66	16.4	9.72	2.85				
VZH044	15 RPS	Part load (1)	1.17	4.1	20.68	6.06	30 RPS	5.96	10.21	2.99
	Full speed 100 RPS	ARI (2)	6.77	23.8	10.44	3.06	Full speed 100 RPS	20.42	10.41	3.05
		EN12900 (3)	5.97	21.00	10.00	2.93				

VZH 8-10TR

Preliminary data

Models	Speed	Conditions	Cooling				Heating					
			Capacity		Efficiency		Capacity		Efficiency			
			TR	kW	EER [BTU/Wh]	COP [W/W]	TR	kW	EER [BTU/Wh]	COP [W/W]		
VZH052	17 rps	Part load (1)	1.64	5.77	19.99	5.86	40 rps	Heating Mode (4)	2.50	8.80	8.86	2.60
	100 rps	ARI (2)	7.92	27.84	10.38	3.04	100 rps	Heating Mode (4)	6.97	24.51	10.12	2.97
	Full speed 110 rps	EN12900 (3)	7.71	27.13	9.98	2.92						
VZH065	16.7 rps	Part load (1)	2.01	7.06	20.02	5.87	40 rps	Heating Mode (4)	3.04	10.69	9.18	2.69
	100 rps	ARI (2)	9.96	35.03	10.59	3.10	100 rps	Heating Mode (4)	8.71	30.64	10.10	2.96
	Full speed 110 rps	EN12900 (3)	9.82	34.55	10.23	3.00						

VZH 13-26TR

Models	Speed	Conditions	Cooling						Heating (4)		
			Capacity		Efficiency				Capacity	Efficiency	
					High pressure ratio		Low pressure ratio			High pressure ratio	
			TR	kW	EER [Btu/Wh]	COP [W/W]	EER [Btu/Wh]	COP [W/W]	EER [Btu/Wh]	COP [W/W]	kW
VZH088	25 RPS	Part load (1)	4.09	14.4	20.88	6.12	22.11	6.48	10.10	9.86	2.89
	Full speed 100 RPS	ARI (2)	13.34	46.9	10.61	3.11	10.24	3.00	40.92	10.30	3.02
		EN12900 (3)	11.83	41.6	10.17	2.98	9.89	2.9			
VZH117	25 RPS	Part load (1)	5.49	19.3	21.36	6.26	22.59	6.62	13.46	10.00	2.93
	Full speed 100 RPS	ARI (2)	17.88	62.9	10.85	3.18	10.47	3.07	54.54	10.47	3.07
		EN12900 (3)	15.87	55.8	10.41	3.05	10.1	2.96			
VZH170	25 RPS	Part load (1)	8.1	28.5	22.08	6.47	23.2	6.8	19.15	10.19	2.99
	Full speed 100 RPS	ARI (2)	26.61	93.6	11.05	3.24	10.82	3.17	80.32	10.66	3.13
		EN12900 (3)	23.51	82.7	10.61	3.11	10.44	3.06			

RATING CONDITIONS:

(1) **Part load:** Evaporating Temp 7.2°C; Condensing Temp 35°C; Superheat 11.1K; Subcooling 8.3K

(2) **ARI:** Evaporating Temp 7.2°C; Condensing Temp 54.4°C; Superheat 11.1K; Subcooling 8.3K

(3) **EN12900:** Evaporating Temp 5°C; Condensing Temp 50°C; Superheat 10K; Subcooling 0K

(4) **Heating mode:** Evaporating Temp -7°C; Condensing Temp 50°C; Superheat 5K; Subcooling 5K, heating performance is only preliminary data.

All data include drive losses.

NOTES:

All data are for 380-480V
Also available for 200-240V

Contact your local Danfoss sales office today to find out what your business can gain from working with the leader in variable speed technology.

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