



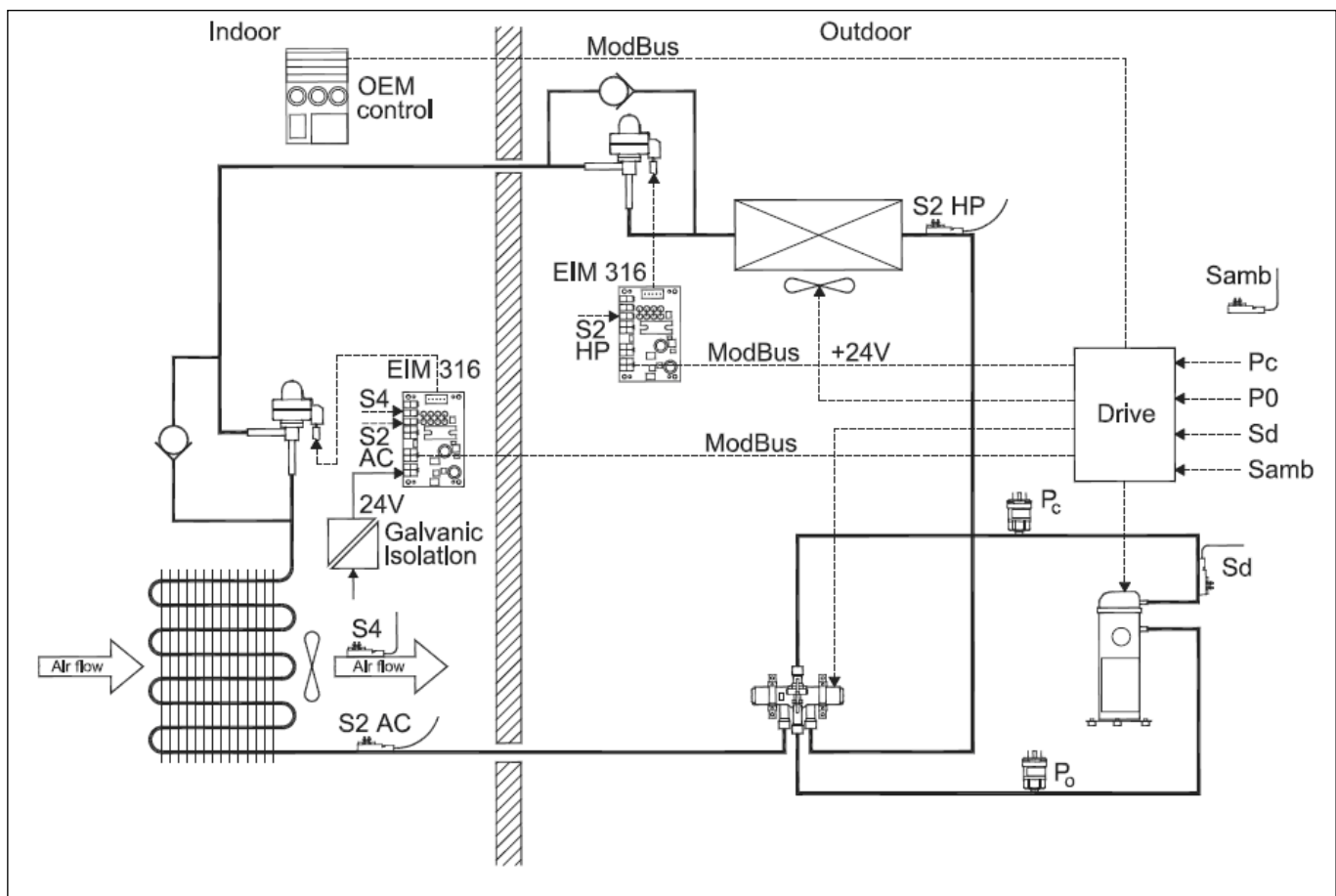
Performer® VSD

For Residential Applications - R410A

Performer VSD for residential applications developed by Danfoss is a complete package consisting of a dedicated variable speed compressor, variable speed drive, application controller, Electronic Expansion Valve (EEV), EEV controller and sensors.

Three nominal system sizes are available (3, 4 and 5 tons), based on three compressor models. Components are set to be able to communicate using the Modbus RTU protocol. Communication details are available in the Modbus RTU communication setup manual.

This quick reference document provides an overview, and the related code numbers for ordering, of different Danfoss components available to build a variable speed unit.



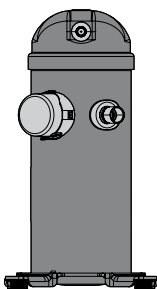
QUICK REFERENCE
COMPRESSOR CAPACITIES

Conditions	Compressor model	Nominal Tons	Compressor speed		Compressor capacity		Compressor isentropic efficiency
			rpm	Hz	Btu/hr	Ton	
High SEER conditions (H)	VRJ028	3 Tons	3600	60	36700	3.06	66.2
			4200	70	42700	3.56	64.9
	VRJ035	4 Tons	3600	60	46400	3.87	67.6
			4200	70	53400	4.45	65.1
	VRJ044	5 Tons	3600	60	57800	4.82	68.3
			4200	70	68100	5.68	67.0
CHEER conditions	VRJ028	3 Tons	3600	60	36500	3.04	65.9
			4200	70	42300	3.53	64.3
	VRJ035	4 Tons	3600	60	46200	3.85	67.3
			4200	70	53000	4.42	64.6
	VRJ044	5 Tons	3600	60	57900	4.83	68.8
			4200	70	68300	5.69	67.5
Heat Pump conditions	VRJ028	3 Tons	3600	60	25100	2.09	59.7
			4200	70	29300	2.44	58.8
	VRJ035	4 Tons	3600	60	31800	2.65	61.0
			4200	70	36700	3.06	59.0
	VRJ044	5 Tons	3600	60	40200	3.35	62.2
			4200	70	47300	3.94	61.2
SEER conditions (I)	VRJ028	3 Tons	1800	30	21000	1.75	68.5
	VRJ035	4 Tons	1800	30	26800	2.23	69.7
	VRJ044	5 Tons	1800	30	34500	2.88	70.9

Conditions	Evaporating Temperature (°F)	Condensing Temperature (°F)	Superheat (°F)	Subcooling (°F)
High SEER conditions (H)	50	115	20	15
CHEER conditions	45	100	20	15
Heat Pump conditions	30	110	20	15
SEER conditions (I)	55	100	20	15

		Compressor		Variable speed drive	EEV controller	EEV valve	EEV coil	Suction pressure transmitter	Discharge pressure transmitter	Temperature sensor	
		Mounting hardware included	No mounting hardware							3.5 m cable length, no plug	1.5 m cable length, no plug
3 Ton	Single pack	121U7003 1 pcs	-	176L7000 1 pcs	080G1000 1 pcs	-	-	060G5706 1 pcs	060G5707 1 pcs	084N0003 1 pcs	-
	Industrial/Multiple pack	121U7000 12 pcs	-	176L7004 80 pcs	080G1200 30 pcs	061L4202 100 pcs	061L4142 100 pcs	060G4526 14 pcs	060G4527 14 pcs	084N0027 110 pcs	080N0026 85 pcs
	Returnable pallet	-	120U7002 16 pcs	-	-	-	-	-	-	-	-
4 Ton	Single pack	121U7007 1 pcs	-	176L7001 1 pcs	080G1000 1 pcs	-	-	060G5706 1 pcs	060G5707 1 pcs	084N0003 1 pcs	-
	Industrial/Multiple pack	121U7004 12 pcs	-	176L7005 80 pcs	080G1200 30 pcs	061L4203 100 pcs	061L4142 100 pcs	060G4526 14 pcs	060G4527 14 pcs	084N0027 110 pcs	080N0026 85 pcs
	Returnable pallet	-	120U7006 16 pcs	-	-	-	-	-	-	-	-
5 Ton	Single pack	121U7011 1 pcs	-	176L7002 1 pcs	080G1000 1 pcs	-	-	060G5706 1 pcs	060G5707 1 pcs	084N0003 1 pcs	-
	Industrial/Multiple pack	121U7008 12 pcs	-	176L7006 80 pcs	080G1200 30 pcs	061L4203 100 pcs	061L4142 100 pcs	060G4526 14 pcs	060G4527 14 pcs	084N0027 110 pcs	080N0026 85 pcs
	Returnable pallet	-	120U7010 16 pcs	-	-	-	-	-	-	-	-

Compressor



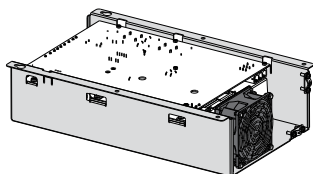
Nominal system capacity	Compressor model	Code number		
		Single pack 1 pcs	Industrial pack 12 pcs	Returnable pallet 16 pcs
		Mounting hardware included	Mounting hardware included	Mounting hardware not included
3 Tons	VRJ028	121U7003	121U7000	120U7002
4 Tons	VRJ035	121U7007	121U7004	120U7006
5 Tons	VRJ044	121U7011	121U7008	120U7010

Single pack: The compressor is packed individually in a cardboard box. As far possible, Danfoss will ship the boxes on full pallets of 6 compressors. Mounting hardware for single pack are made of 4 rubber grommets + 4 assemblies of self tapping US thread bolts, washers and sleeves.

Industrial pack: Compressors are not packed individually, but are shipped all together on one pallet. They can only be ordered by multiples of 12 compressors. Mounting hardware for industrial pack are made of 48 rubber grommets and 48 sleeves.

Returnable pallet: Compressors are not packed individually, but are shipped all together on one pallet. They can only be ordered by multiples of 16 compressors. The empty pallet must be returned to the compressor factory. No rubber grommet, no sleeve delivered.

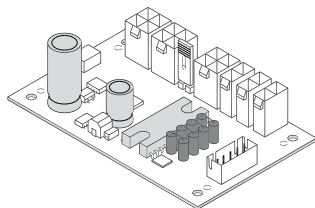
Variable speed drive



Nominal system capacity	Rated power output	Code Number	
		Single pack 1 pcs	Multiple pack 80 pcs
3 Tons	3.8 kW	176L7000	176L7004
4 Tons	5.3 kW	176L7001	176L7005
5 Tons	6.7kW	176L7002	176L7006

Supply voltage 208-230V
Mains frequency 60Hz, single phase

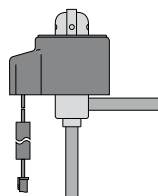
EEV controller board



Nominal system capacity	Type	Code number	
		Single pack 1 pcs	Industrial pack 30 pcs
3 Tons	EIM316*	080G1000	080G1200
4 Tons	EIM316*	080G1000	080G1200
5 Tons	EIM316*	080G1000	080G1200

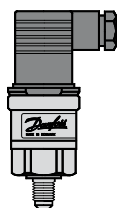
* : PCBA (printed on the board) code number : 080G1500
Power supply 24VAC/VDC (+/-15%)

EEV valves and coils



Nominal system capacity	Code number			
	EEV valve		EEV coil	
	Type	Industrial pack 100 pcs	Type	Industrial pack 100 pcs
3 Tons	UKV18D147	061L4202	UKVA044	061L4142
4 Tons	UKV25D146	061L4203	UKVA044	061L4142
5 Tons	UKV25D146	061L4203	UKVA044	061L4142

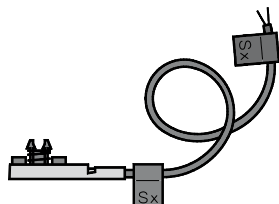
Pressure transmitters



	Type	Pressure range (bar)	Code Number	
			Single pack 1 pcs	Industrial pack 14 pcs
Suction pressure transmitter (P0)	AKS32R	0 – 16	060G5706	060G4526
Discharge pressure transmitter (Pc)	AKS32R	0 – 50	060G5707	060G4527

Pressure connection: 7/16-20UNF (1/4-inch flare)
 Electrical connection: plug Pg9 EN 175301-803

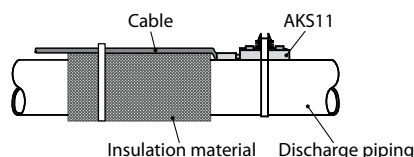
Temperature sensors



	Type	Code number			
		Single pack 1 pcs	Industrial pack 110 pcs	Industrial pack 85 pcs	Single pack 1 pcs
		3.5 m cable length	3.5 m cable length	1.5 m cable length	2.5 m cable length
Evaporator outlet temperature sensor (S2)	AKS11	084N0003	084N0027	084N0026	-
Discharge temperature sensor (Sd)*	AKS11	084N0003	084N0027	084N0026	-
Ambient temperature sensor (S Amb.)	AKS11	084N0003	084N0027	084N0026	-
Discharge temperature sensor (Sd)*	AKS21	-	-	-	084N2007

For details and other code numbers available, refer to technical brochures.

* : If an AKS11 is installed on discharge piping, contact between the PVC cable and the piping must be avoided (see picture). An AKS21 sensor may be preferred. Its silicon rubber cable can be mounted directly to the discharge piping.



**Example for
Air conditioning unit**

For a 4 Tons A/C system, only one EEV and one EEV controller are necessary. The component selection would be as following:

Component		Code number	Quantity
Compressor	VRJ035	121U7007	1
Variable Speed Drive	5.3 kW	176L7001	1
EEV controller		080G1000	1
EEV valve		061L4203	1
EEV coil		061L4142	1
Suction pressure transmitter	(P0)	060G5706	1
Discharge pressure transmitter	(Pc)	060G5707	1
Evaporator outlet temperature sensor	(S2)	084N0003	1
Discharge temperature sensor	(Sd)	084N0003	1
Ambient temperature sensor	(S Amb.)	084N0003	1

**Example for
Heat pump unit
(reversible system)**

For a 4 Tons reversible system, two EEV's and two EEV controllers are necessary. The component selection would be as following:

Component		Code number	Quantity
Compressor	VRJ035	121U7007	1
Variable Speed Drive	5.3 kW	176L7001	1
EEV controller		080G1000	2
EEV valve		061L4203	2
EEV coil		061L4142	2
Suction pressure transmitter	(P0)	060G5706	1
Discharge pressure transmitter	(Pc)	060G5707	1
Evaporator outlet temperature sensor	(S2)	084N0003	1
Discharge temperature sensor	(Sd)	084N0003	1
Ambient temperature sensor	(S Amb.)	084N0003	1

Literature overview

Refer to following documents for detailed technical information, instructions and functionalities of the described components.

Component	Document type	Document reference
Compressor	Selection & Application guideline	FRCC.PC.019
Compressor	Instructions	FRCC.PI.012
Variable speed drive	Installation and Operation Instruction	MG10V102
Variable speed drive	MODBUS RTU Communication Setup Manual	MG10U102
EEV controller	Engineering sheet	EIM316
EEV valve & coil	Technical leaflet	PLRCA.PB.V1.A1.02
Temperature sensors and pressure transmitters	Manual	FRCC.ES.003
EEV controller	Manual	FRCC.ES.002
Trouble shooting	Manual	FRCC.ES.005
Field return procedure	Manual	FRCC.ES.004



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