ENGINEERING
TOMORROW

Danfoss

Food Retail Service Parts Catalog

A collection of the best components and controls for **Supermarkets**

50,000
food retail installations worldwide

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TUA/TUAE—Thermostatic Expansion Valves



Danfoss TUA/TUAE stainless steel thermostatic expansion valves feature solder inlet and outlet connections. By pairing one valve body with one of ten replaceable orifices, a contractor can satisfy applications from –40 °F to + 50 °F and up to 4 ½ tons capacity (see capacity chart for specifics).

Product Selection

1. Select Valve Body

Equalization	R-22	R-407C	R-404A	R-134a
Internal	068U2235		068U2285	068U2205
External	068U2237		068U2287	068U2207

All valves above have 3/8 in. × ½ in. solder ODF connections and are designed for evaporator temperatures –40 °F to +50 °F (N charge). Other variations available, please contact your local Danfoss authorized wholesaler.

2. Select Orifice

TUA/TUAE valve capacities are based on the installed orifice. To select the correct size, use one of the two methods below:

A. System characteristics: Select the orifice using appropriate refrigerant, evaporator temperature, and system capacity.

OR

B. Nominal capacity of the installed valve: Use the nominal capacity of the originally installed valve and match with the nominal capacity in chart (3rd column from left).

Easy to carry kits for truck stock	
All TUA/TUAE valve bodies and orifice featured on the next page and a hex key for superheat adjustment.	068U7000
Both TUA/TUAE valve bodies and orifices and T2/TE2 and orifices plus gaskets for TUA/TUAE and a hex key for superheat adjustment.	068U7001

Kits are plastic cases with foam inserts, all valves and orifices, and instructions for selection and installation of the valves. Empty kits and foam available available upon request.

TUA and TUAE (IF EXACT CAPACITY CANNOT BE FOUND, USE NEXT LARGER ORIFICE)

R-22 / R-407C			Evaporator temperature (°F)									
Orifice size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	–40	–30	–20	–10	0	10	20	30	40	50
			Rated capacity[2] (tons)									
0	068U1030	1/6	1/15	1/15	1/15	1/10	1/8	1/8	1/6	1/6	1/6	1/5
1	068U1031	1/5	1/10	1/8	1/8	1/6	1/6	1/5	1/5	1/5	¼	¼
2	068U1032	¼	1/10	1/8	1/8	1/6	1/5	¼	¼	¼	1/3	1/3
3	068U1033	1/3	1/8	1/6	1/5	¼	¼	1/3	1/3	1/3	1/3	1/3
4	068U1034	½	¼	¼	¼	1/3	1/3	½	½	½	¾	¾
5	068U1035	¾	1/3	1/3	1/3	½	½	¾	¾	¾	1	1
6	068U1036	1 ½	½	½	½	¾	¾	1	1 ¼	1 1/3	1 ½	1 ½
7	068U1037	2	½	¾	¾	1	1	1 1/3	1 ½	1 ¾	2	2
8	068U1038	2 ¾	1	1	1 1/3	1 ½	1 ¾	2	2 1/3	2 ½	3	3
9	068U1039	4	1 1/3	1 ½	1 ¾	2	2 ½	2 ¾	3 ¼	3 ½	4	4 ½

R-404A			Evaporator temperature (°F)									
Orifice size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	–40	–30	–20	–10	0	10	20	30	40	50
			Rated capacity[2] (tons)									
0	068U1030	1/8	½0	½0	1/15	1/15	1/10	1/10	1/8	1/8	1/8	1/8
1	068U1031	1/5	1/15	1/15	1/10	1/8	1/8	1/6	1/6	1/5	1/5	1/5
2	068U1032	¼	1/15	1/15	1/10	1/8	1/6	1/5	1/5	¼	¼	¼
3	068U1033	1/3	1/10	1/8	1/8	1/6	1/5	¼	¼	1/3	1/3	1/3
4	068U1034	½	1/6	1/5	¼	¼	1/3	1/3	½	½	½	½
5	068U1035	¾	1/5	¼	1/3	1/3	½	½	½	¾	¾	¾
6	068U1036	1 ¼	1/3	1/3	½	½	¾	¾	1	1	1	1 1/3
7	068U1037	1 ½	1/3	½	½	¾	1	1	1 1/3	1 ½	1 ½	1 ¾
8	068U1038	2 1/3	½	¾	1	1	1 1/3	1 ½	2	2	2 1/3	2 ½
9	068U1039	3 1/3	¾	1	1 1/3	1 ½	2	2 ¼	2 ½	3	3 ½	3 ¾

R-134a			Evaporator temperature (°F)									
Orifice size	Danfoss Code No.	Nominal capacity of installed valve[1] (tons)	–40	–30	–20	–10	0	10	20	30	40	50
			Rated capacity[2] (tons)									
0	**068U1030**	1/8	1/30	½0	½0	½0	1/15	1/15	1/10	1/10	1/8	1/8
1	**068U1031**	1/6	½0	1/15	1/15	1/10	1/10	1/8	1/8	1/6	1/6	1/5
2	**068U1032**	1/5	1/15	1/15	1/15	1/10	1/8	1/6	1/6	1/5	1/5	1/5
3	**068U1033**	¼	1/15	1/10	1/8	1/8	1/6	1/5	1/5	¼	¼	¼
4	**068U1034**	1/3	1/8	1/6	1/5	1/5	¼	¼	1/3	1/3	1/3	½
5	**068U1035**	½	1/5	1/5	¼	¼	1/3	1/3	½	½	½	½
6	**068U1036**	¾	¼	¼	1/3	1/3	½	½	¾	¾	1	1
7	**068U1037**	1 ¼	1/3	1/3	½	½	¾	¾	1	1	1 ¼	1 ½
8	**068U1038**	1 ¾	½	½	¾	¾	1	1 ¼	1 ½	1 ¾	2	2
9	**068U1039**	2 ½	¾	1	1	1 1/3	1 ½	1 ¾	2	2 1/3	2 ¾	3

All capacity data is in accordance to ARI 750-2007.
[1] Nominal capacity based on condensing temperature of 100 °F, a vapor free liquid temperature of 98 °F ahead of the expansion valve and an evaporator temperature of 40 °F.
[2] Capacity based on condensing temperature of 95 °F and a vapor free liquid temperature of 85 °F ahead of the expansion valve.

TUA/TUAE Spare Parts and Accessories

Description	Notes	Danfoss Code No.
Bulb strap		**068U3507**
Metal gasket (24 pcs.)		**068U0015**
Filter for orifices 0-4 (clear; 24 pcs.)		**068U1706**
Filter for orifices 5-9 (blue; 24 pcs.)		**068U0016**

ETS—Electric Expansion Valves



ETS stepper motor electric expansion valves are designed for precise liquid injection in evaporators for air conditioning and refrigeration applications. The valve piston and linear positioning mechanism is fully balanced, providing bidirectional flow capability and tight solenoid shutoff in both flow directions. ETS valves cannot be used with flammable hydrocarbons.

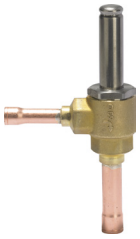
Danfoss Type	R-410A (tons)	R-22 (tons)	R-134a (tons)	R-404A (tons)	Solder ODF Connection		Danfoss Code No.
					Inlet (in.)	Outlet (in.)	
ETS 12.5	20	16	13	12	½	½	**034G4209**
ETS 12.5	20	16	13	12	5/8	5/8	**034G4210**
ETS 12.5	20	16	13	12	7/8	7/8	**034G4211**
ETS 25	41	34	27	25	5/8	5/8	**034G4202**
ETS 25	41	34	27	25	7/8	7/8	**034G4203**
ETS 50	75.7	62	48.9	46.3	1 1/8	1 1/8	**034G1706**
ETS 100	140.9	115.4	91.2	86.6	1 3/8	1 3/8	**034G0508**

The rated capacity is based on an evaporation temprature of 40 °F, liquid temperature of 82 °F, and condensing temperature of 90 °F.

ETS Spare Parts and Accessories

Description	Danfoss Code No.
AST-G Service Driver: used to manually open or close valve	**034G0013**
M12 cable, 26 ft.	**034G2323**
M12 cable, 6 ft.	**034G2330**
Cable filter for long wire runs (in excess of 32 ft.); permits wire runs of up to 328 ft.	**034G2238**

AKV/AKVH—Electric Expansion Valves



AKV and AKVH valves are pulse modulating electric expansion valves. and feature a wide range of replaceable coils for both DC and AC, quiet and energy efficient operation, a long operating life, and the ability to operate as both as expansion and solenoid valves. AKV valves are designed for R-22/R-407C, R-404A/R-507, R-410A, R-134a, R-407A, R-23, and more and should be paired with a Danfoss BJ, BX, BT, or BU coil (page 8). AKVH valves are designed for CO_2 and should be paired with a high MOPD BX or BJ coil (page 8).

AKV Valves for Florinated Refrigerants

Danfoss Type	Rated Capacity (tons)			Solder ODF Connection (in.)		Danfoss Code No.
	R-22	R-134a	R-404A	Inlet (in.)	Outlet (in.)	
AKV 10-1	0.3	0.3	0.23	3/8	½	**068F1210**
AKV 10-2	0.5	0.4	0.37	3/8	½	**068F1213**
AKV 10-3	0.7	0.6	0.57	3/8	½	**068F1216**
AKV 10-4	1.2	1	0.88	3/8	½	**068F1219**
AKV 10-5	1.8	1.5	1.39	3/8	½	**068F1222**
AKV 10-6	2.9	2.4	2.22	3/8	½	**068F1225**
AKV 10-7	4.6	3.8	3.55	½	5/8	**068F1228**
AKV 15-1	7.3	6	5.57	¾	¾	**068F5035**
AKV 15-2	11.6	9.6	8.93	¾	¾	**068F5036**
AKV 15-3	18.3	15.2	14.05	7/8	7/8	**068F5037**
AKV 15-4	29	24.1	22.26	1 1/8	1 1/8	**068F5038**

Rated capacities are based on condensing temperature of 90 °F, liquid temperature of 82 °F, and evaporating temperature of 40 °F.
AKV valves should be paired with standard BJ/BX coils (page 8)

AKVH Valves for CO_2

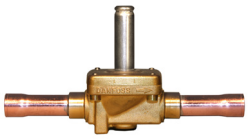
Danfoss Type	Rated Capacity CO_2 (tons)		Solder ODF Connection (in.)		Danfoss Code No.
	Refigeration	Freezing	Inlet (in.)	Outlet (in.)	
AKVH 10-1	0.3	0.6	3/8	½	**068F4079**
AKVH 10-2	0.5	1	3/8	½	**068F4080**
AKVH 10-3	0.7	1.5	3/8	½	**068F4081**
AKVH 10-4	1.2	2.5	3/8	½	**068F4082**
AKVH 10-5	1.9	3.9	3/8	½	**068F4083**
AKVH 10-6	3	6.2	3/8	½	**068F4084**

AKVH valves should be paired with high MOPD BJ/BX coils (page 8).

AKV/AKVH Orifices and Filter/Gasket Kits

Description	Danfoss Code No.
AKV 10 Orifice Kit #0–#3	**068F5283**
AKV 10 Orifice Kit #4–#6	**068F5284**
AKV 10 Orifice Kit #7–#8	**068F5285**
AKV 15 Orifice Kit #1	**068F5265**
AKV 15 Orifice Kit #2	**068F5266**
AKV 15 Orifice Kit #3	**068F5267**
AKV 15 Orifice Kit #4–#6	**068F5268**
AKV 10 Armature Kit	**068F0541**
AKV 15 Armature Kit	**068F5045**
Filter and Gasket Set	**068F0540**

EVR v2—Solenoid Valves



EVR v2 solenoid valves are direct- or servo-operated for liquid, suction, and hot gas lines. Available in both normally closed (NC) and normally open (NO) versions, EVR v2 valves feature interchangeable AC and DC coils. In standard applications, pair EVR valves with a BJ, BX, BT, or BU solenoid coil (page 8).

EVR v2 Solenoid Valves

Danfoss Type	Rated capacity (liquid tons)			Solder ODF connection (in.)	Port size (in.)	Max. working pressure (psig)	Danfoss Code No.[1]	
	R-22 / R-407C	R-134a	R-404A / R-507A				with manual stem NEW	without manual stem NEW
EVR 3	1.66	1.54	1.07	¼	1/8	655		**032F1206**
EVR 3	1.66	1.54	1.07	3/8	1/8	655		**032F1204**
EVR 6	5.47	5.07	3.51	3/8	15/64	655	**032L7116**	**032L7115**
EVR 6	5.47	5.07	3.51	½	15/64	655	**032L7144**	**032L1209**
EVR 8	6.52	6.09	4.18	½	5/16	655	**032l7148**	**032L7121**
EVR 10	11.50	10.64	7.38	5/8	3/8	655	**032L7149**	**032L1214**
EVR 15	17.71	16.39	11.37	5/8	9/16	655		**032L1228**
EVR 18	23.18	21.46	14.88	7/8	19/32	655	**032L1004**	
EVR 20	36.76	34.04	23.60	7/8	7/8	655	**032L1254**	**032L1240**
EVR 22	41.93	38.82	26.92	1 1/8	15/16	655	**032L7137**	**032L7145**
EVR 25	60.19	55.72	38.64	1 3/8	1	655	**032L2207**	**032L2208**
EVR 32	102.85	95.23	66.03	1 5/8	7/8	655	**032L1103**	**032L1104**

[1]Valve body is normally closed (NC) and excludes coil. Additional code nos. available in Coolselector® or contact Danfoss

EVR v2 Spare Parts and Accessories

Description	Version(s) applied to	Applicable Danfoss Types	Danfoss Code No.
Permanent magnet coil for servicing and testing	1, 2	all	**018F0091**
Service kit (NC); O-ring, (4) screws, armature assembly, rubber gasket, compression spring	1, 2	EVR 3	**032F0181**
Seal kit; O-ring for armature tube, rubber gasket, O-ring for steel cover, support ring	1	EVR 6, 8	**032F8165**
Service kit (NC); diaphragm, O-ring for armature tube, (4) screws T20, (4) screws T15, armature assembly, rubber gasket, O-ring for steel cover, support ring, compression spring	1	EVR 6, 8	**032F8166**
Seal kit; O-ring, rubber gasket, support ring	2	EVR 6, 8	**032L0548**
Service kit (NC); diaphragm, O-ring, (4) screws, armature assembly, rubber gasket, support ring, compression ring	2	EVR 6, 8	**032L0550**
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, compression spring	1	EVR 10	**032F0185**
Service kit (NC); diaphragm, O-ring, (4) screws, armature assembly, rubber gasket, support ring, compression ring	2	EVR 10	**032L0552**
Seal kit; O-ring for armature tube, (3) rubber gasket (1 ea. for EVR 10, 15, 20) (4) refrigeration gasket (2 ea. For EVR 15, 20)	1	EVR 10, 15, 20	**032F8196**
Service kit (NC); diaphragm, O-ring, (4) screws, armature assembly, rubber gasket, (2) refrigeration gasket (flange connections), compression ring	2	EVR 15, 18, 20, 22	**032L0554**
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, refrigeration gasket, compression spring	1	EVR 15, 18	**032F0187**
Service kit (NC); diaphragm assembly, O-ring, (4) screws, armature assembly, rubber gasket, refrigeration gasket, compression spring	1	EVR 20, 22	**032F0189**
Manual spindle	1, 2	EVR 20, 22	**032F0193**
Seal kit; (2) Al. gasket, (3) O-rings, rubber gasket	1, 2	EVR 25	**032F2326**
Piston service kit; (2) O-ring, compression spring, piston assembly, insert block, rubber gasket, piston ring	1, 2	EVR 25	**032F3236**
Piston service kit; (4) O-rings, Al. gasket, piston assembly, insert block, gasket, piston ring, compression spring, refrigeration gasket	1, 2	EVR 32	**042H0172**
Pilot service kit; (2) Al. gaskets, O-ring, orifice, armature tube assembly, armature, armature assembly, compression spring	1, 2	EVR 25, 32	**042H0165**
Seal kit; (3) O-rings, (2) Al. gaskets	1, 2	EVR 32	**032F2327**

To determine the version of EVR, read the code number engraved on the armature. Codes beginning with 032F, 032G, and 042 are V1; codes beginning with 032L are V2. Kits for types not included in catalog may be available; contact Danfoss for more information.

BJ/BX/BT/BU—Solenoid Coils



BJ, BX, BT, and BU coils are designed to be used with Danfoss electric expansion and solenoid valves and offer easy mounting and dismounting with high-reliability. EVR solenoid valves and AKV electric expansion valves should be paired with standard BJ, BX, BT, or BU coils while AKVH electronic expansion valves for high pressure refrigerants should be paired with high MOPD BJ or BX coils. While BJ and BX coils have a set voltage and frequency, BU and BT coils can be configured with one of four voltages and frequencies.

Coil type	Voltage (V)	Frequency (Hz)	Power consumption (W)	Danfoss Type (junction box)	Length of wire (in.)	Danfoss Code No.	Danfoss Type (conduit boss)	Length of wire (in.)	Danfoss Code No.
Standard Coil	24	50/60	14	BJ024CS	7	**018F4100**	BX024CS	18	**018F4102**
	110	50/60	16	BJ120CS	7	**018F4110**	BX120CS	18	**018F4112**
	120	60	15						
	208–240	60	14	BJ240CS	7	**018F4120**	BX240CS	18	**018F4122**
	230	50	17						
High MOPD Coil	120	60	16	BJ120BS	7	**018F4130**	BX120BS	98	**018F4131**
	208	60	16	BJ208BS	7	**018F4132**	BX208BS	98	**018F4133**
	240	60	16	BJ240BS	7	**018F4134**	BX240BS	98	**018F4135**

Dual Voltage/Dual Frequency Coils

Coil type	Voltage (V)	Frequency (Hz)	Power consumption (W)	Danfoss Type (junction box)[4]	Length of wire (in.)	Danfoss Code No.	Danfoss Type (conduit boss)[5]	Length of wire (in.)	Danfoss Code No.
EVR	110	50	12	BT240CS	7	**018F4180**	BU240CS	7	**018F4181**
	110–120	60							
	230	50							
	208–240	60							

[4] Enclosure rating for BT coils is NEMA 2 ~ IP 12–32
[5] Enclosure rating for BU coils is NEMA 4 ~ IP 54

SGP—Sight Glasses



Danfoss sight glasses indicate the presence of moisture in refrigeration and air conditioning systems.

Danfoss Type	Version	Connection (in.)	Ambient temp. (°F)	Max. working pressure (psig)	Danfoss Code No.
SGP 6 N	Flare int. x ext.	¼ x ¼	–60 to 175	750	**014L0171**
SGP 10 N		3/8 x 3/8			**014L0172**
SGP 12 N		½ x ½			**014L0173**
SGP 6s N	ODF x ODF solder	¼ x ¼			**014L0181**
SGP 10s N		3/8 x 3/8			**014L0182**
SGP 12s N		½ x ½			**014L0183**
SGP 16s N		5/8 x 5/8			**014L0145**
SGP 22s N		7/8 x 7/8			**014L0186**
SGP 1/2 RN	NPT	½			**014L0006**

GBC/GBC H—Ball Valves



GBC ball valves are manually operated shut-off valves suitable for bi-directional flow and can be used in liquid, suction, and hot gas lines.

Features include: ball status indicator on spindle top, laser-welded construction, burst-proof spindle design, and holes for panel mounting. GBC H ball valves have been designed and tested to meet the high pressure requirements of CO_2 systems.

Standard Ball Valves

Danfoss Type	Solder ODF connection (in.)	CV Value (gal/min)	Working pressure (psig)	Test pressure (psig)	Danfoss Code No.
GBC 6s	¼	2.27	650	940	**009G8050**
GBC 10s	3/8	6.57		940	**009G8051**
GBC 12s	½	12.23		940	**009G8052**
GBC 16s	5/8	16.31		940	**009G8053**
GBC 18s	¾	23.61		940	**009G8054**
GBC 22s	7/8	32.56		940	**009G8065**
GBC 28s	1 1/8	60.05		940	**009G8066**
GBC 35s	1 3/8	93.51		940	**009G8067**
GBC 42s	1 5/8	139.96		940	**009G8068**
GBC 54s	2 1/8	260.05		940	**009G8059**
GBC 67s	2 5/8	358.36		725	**009G8069**

Ball Valves for High Pressure Refrigerants (CO_2)

Danfoss Type	Solder ODF connection (in.)	CV Value (gal/min)	Working pressure (psig)	Danfoss Code No.
GBC 6s H	¼	1.09	1305	**009G7415**
GBC 10s H	3/8	3.52		**009G7416**
GBC 12s H	½	8.05		**009G7417**
GBC 16s H	5/8	11.11		**009G7418**
GBC 18s H	¾	17.88		**009G7419**
GBC 22s H	7/8	24.64		**009G7420**

Ball Valve Spare Parts and Accessories

Danfoss Type	Type(s) applied to	Danfoss Code No.
Ball valve service kit	GBC 6, 10, 12, 16, 18, 22	**009G7012**
Ball valve service kit	GBC 28, 35	**009G7014**
Ball valve service kit	GBC 42, 54, 67	**009G7016**
Ball valve replacement cap	GBC 6, 10, 12, 16, 18, 22	**009G7210**
Ball valve replacement cap	GBC 28, 35	**009G7211**
Ball valve replacement cap	GBC 42, 54, 67	**009G7212**

Codes listed above are for GBC v1; for GBC v2 spare parts and accessories, contact Danfoss.

Filter Driers



Danfoss filter driers function as simple drop-in replacements for most driers sold in the aftermarket or installed on equipment by manufacturers. All Danfoss filter driers are constructed with a solid core design, maximizing moisture removal while minimizing pressure drop. DC cores and DCL filter driers include both moisture and acid adsorption properties, while DM cores and DML filter driers only include moisture adsorption properties. Danfoss recommends DC cores and DCL filter driers for standard liquid line aftermarket applications and DM cores and DML filter driers when acid reduction is not necessary. For acid reduction after a burnout, Danfoss recommends suction line DAS filter driers or DA cores. For CO_2 applications, Danfoss recommends DM cores or DMT filter driers.

DCL/DCB Filter Driers

Danfoss Type	Connection (in.)	Max. working pressure (psig)	Drying capacity (lbs. of refrigerant)								Liquid capacity (tons)				Danfoss Code No.
			R-134a		R-404A		R-22		R-410A		R-134a	R-404A	R-22	R-410A	
			75 °F	125 °F	75 °F	125 °F	75 °F	125 °F	75 °F	125 °F					
DCL 1.52/2.8mms	¼ solder	667	5.10	4.60	5.30	5.10	5.10	4.60	4.60	4.20	0.80	0.50	0.90	0.80	**023Z8255**
DCL 032s	¼ solder	667	8.50	8.00	9.10	8.70	8.60	8.00	7.80	7.20	1.90	1.42	2.12	2.11	**023Z5013**[1]
DCL 032	¼ flare	667	8.50	8.00	9.10	8.70	8.60	8.00	7.80	7.20	1.90	1.42	2.12	2.11	**023Z5000**[1]
DCL 052s	¼ solder	667	13.60	12.80	14.60	13.80	13.80	12.70	12.40	11.40	2.18	1.60	2.40	2.37	**023Z5018**
DCL 052	¼ flare	667	13.60	12.80	14.60	13.80	13.80	12.70	12.40	11.40	2.18	1.60	2.40	2.37	**023Z5002**
DCL 053s	3/8 solder	667	13.60	12.80	14.60	13.80	13.80	12.70	12.40	11.40	3.66	2.79	4.10	4.15	**023Z5019**
DCL 053	3/8 flare	667	13.60	12.80	14.60	13.80	13.80	12.70	12.40	11.40	3.66	2.79	4.10	4.15	**023Z5003**
DCL 082s	¼ solder	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	2.18	1.55	2.37	2.28	**023Z5022**
DCL 082	¼ flare	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	2.18	1.55	2.37	2.28	**023Z5004**
DCL 083s	3/8 solder	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	4.03	3.12	4.56	4.65	**023Z5023**
DCL 084s	½ solder	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	8.14	6.07	9.03	8.99	**023Z5026**
DCL 084	½ flare	667	21.70	20.50	23.30	22.10	22.00	20.30	19.80	18.20	8.14	6.07	9.03	8.99	**023Z5006**
DCL 162	¼ flare	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	2.18	1.54	2.36	2.28	**023Z5007**
DCL 163s	3/8 solder	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	4.64	3.18	4.95	4.67	**023Z5029**
DCL 163	3/8 flare	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	4.64	3.18	4.95	4.67	**023Z5008**
DCL 164s	½ solder	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	9.15	6.69	10.07	9.90	**023Z5032**
DCL 165s	5/8 solder	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	12.69	10.41	14.74	15.59	**023Z5033**
DCL 165	5/8 flare	667	47.70	45.10	51.30	48.60	48.30	44.70	43.50	40.10	12.69	10.41	14.74	15.59	**023Z5010**
DCL 303s	3/8 solder	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	4.46	3.00	4.72	4.40	**023Z0030**
DCL 303	3/8 flare	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	4.46	3.00	4.72	4.40	**023Z0012**
DCL 304s	½ solder	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	9.24	7.11	10.41	10.58	**023Z0031**
DCL 304	½ flare	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	9.24	7.11	10.41	10.58	**023Z0013**
DCL 305s	5/8 solder	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	13.00	10.51	14.99	15.72	**023Z0032**
DCL 305	5/8 flare	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	13.00	10.51	14.99	15.72	**023Z0014**
DCL 307s	7/8 solder	667	100.50	95.00	108.00	102.40	101.80	94.10	91.60	84.40	18.27	15.34	21.44	23.05	**023Z0034**
DCL 415s	5/8 solder	667	139.50	131.90	150.00	142.20	141.30	130.70	127.30	117.30	15.78	11.9	17.61	17.66	**023Z0105**
DCL 417s	7/8 solder	500	139.50	131.90	150.00	142.20	141.30	130.70	127.30	117.30	18.98	16.01	22.32	24.08	**023Z0106**
DCL 607s	7/8 solder	667	200.90	189.90	216.00	204.80	203.50	188.20	183.30	168.90	19.93	19.94	25.16	30.71	**023Z0036**
DCB 083s	3/8 solder	667	15.60	14.70	16.70	15.80	15.60	14.50	14.10	13.00	2.10	1.50	2.30	2.30	**023Z1433**
DCB 163s	3/8 solder	667	29.30	27.70	31.50	29.90	29.70	27.50	26.80	24.60	5.10	3.70	5.70	5.70	**023Z1437**
DCB 164s	½ solder	667	29.30	27.70	31.50	29.90	29.70	27.50	26.80	24.60	8.00	5.70	9.10	9.10	**023Z1436**
DCB 165s	5/8 solder	667	29.30	27.70	31.50	29.90	29.70	27.50	26.80	24.60	10.60	8.30	11.40	11.40	**023Z1435**

[1] Wire mesh in filter drier outlet.

DAS Filter Driers

Danfoss Type	Connection in.	Max. working pressure (psig)	Rated capacity (tons)[2]			Acid capacity (oz.)	Danfoss Code No.
			R-134a	R-404A	R-22 / R-410A		
DAS 164SVV	½ solder	500	1.7	2.4	6.3	0.3	**023Z1009**
DAS 165SVV	5/8 solder		2.7	3.7	4.3	0.3	**023Z1010**
DAS 166SVV	¾ solder		3.4	4.9	5.7	0.3	**023Z1011**
DAS 167SVV	7/8 solder		3.9	5.4	6.3	0.3	**023Z1012**
DAS 306SVV	¾ solder		4	5.4	6.3	0.64	**023Z1014**
DAS 307SVV	7/8 solder		4.6	6.3	7.4	0.64	**023Z1015**
DAS 309SVV	11/8 solder		5.7	7.7	8.9	0.64	**023Z1016**
DAS 419SVV	11/8 solder		6.3	8.6	10	0.86	**023Z1018**

[2] For rated capacities for R-290, R-448A, R-449A, R-452A, and other HFO, HC, HFC, and HCFC refrigerants not listed, see Coolselector®2 or contact Danfoss.

DMT Filter Driers for CO_2

Danfoss Type	Connection in.	Max. working pressure (psig)	Drying capacity						Liquid capacity	Danfoss Code No.
			20 °F			75 °F				
			Water (g)	Ref. (Kg)	Water (drops)	Water (g)	Ref. (Kg)	Water (drops)	Tons	
DMT 083s	3/8 solder	2030	7.2	7.2	143	5.7	5.8	114	3	**023Z8416**

DCR Cores and Gaskets

Danfoss Type	Material	Danfoss Code No.
48-DM	100% molecular sieve	**023U1392**
48-F	strainer	**023U1921**
48-DC	80% molecular sieve/20% activated alumina	**023U4381**
48-DA	solid core	**023U5381**
DCR gasket kit	various	**023U0058**

DCR Drier Housing

Danfoss Type	Connection (in.)	Connection Type	Weight	Max. Pressure (psig)	Temperature Range (°F)	Danfoss Code No.
DCR 0489	1	butt weld/solder, ODF	10 lbs. 6 oz.	667	–40 to +160	**023U7453**
DCR 0969	1	butt weld/solder, ODF	13 lbs. 12 oz.			**023U7459**
DCR 09617	2 1/8	butt weld/solder, ODF	14 lbs. 9 oz.			**023U7464**

NRV—Check Valves



NRV check valves can be used in liquid, suction, and hot gas lines in refrigeration and air conditioning applications, ensuring that refrigerant flows in the correct direction. A built-in dampening piston makes the valve suitable for lines where pulsation can occur, such as in the discharge line from the compressor. The NRV 10s H is specifically designed with a high MWP for CO_2 applications.

Danfoss Type	Design/ conn. type	Conn. size (in.)	Pressure drop across valve (psi)[2]	Cv value (gal/min)[3]	MWP (psi)	Danfoss Code No.
NRV 6s	straight-way/ solder ODF	¼	1.01	0.65	667	**020-1010**
NRV 10s		3/8	1.01	1.39		**020-1011**
NRV 10s[1]		½	1.01	1.39		**020-1058**
NRV 12s		½	0.72	2.37		**020-1012**
NRV 16s		5/8	0.72	4.16		**020-1018**
NRV 19s		¾	0.72	6.36		**020-1019**
NRV 19s[1]		7/8	0.72	6.36		**020-1054**

Danfoss Type	Design/ conn. type	Conn. size (in.)	Cv value (gal/min)	MWP (psi)	Danfoss Code No.
NRV 10s H	straight-way/ solder ODF	3/8	1.04	1305	**020-4000**

[1] Oversize connections
[2] Δp = the minimum pressure at which the valve is completely open
[3] The Cv valve is the flow of water in (gal/min) at a pressure drop across valve of 14.5 psig. ρ = 2205 lbs./G

KVP/KVL/KVR/NRD/KVC/CPCE—Pressure Regulators



Danfoss pressure regulators are available across a wide range, controlling the low and high pressure sides and the efficiencies of refrigeration systems under varying load conditions.

Application	Danfoss Type	Rated capacity (tons)				Solder ODF Connection Inlet (in.)	Setting Range (psig)	Factory setting (psig)	Maximum Working Pressure (psig)	Maximum Test Pressure (psig)	Minimum Temp. of Medium (°F)	Maximum Temp of Medium (°F)	Danfoss Code No.
		R-22	R-134a	R-404A	R-407C								
Evaporating Pressure Regulator	KVP 12	1.30	0.90	1.20	1.20	½	0 to 80	29	260	286	–50	265	**034L0023**
	KVP 15	1.30	0.90	1.20	1.20	5/8	0 to 80	29	260	286	–50	265	**034L0029**
	KVP 22	1.30	0.90	1.20	1.20	7/8	0 to 80	29	260	286	–50	265	**034L0025**
	KVP 28	2.80	1.90	2.40	2.60	1 1/8	0 to 80	29	260	286	–50	265	**034L0026**
	KVP 35	2.80	1.90	2.40	2.60	1 3/8	0 to 80	29	260	286	–50	265	**034L0032**
Crankcase Pressure Regulator	KVL 12	1.20	0.80	1.00	1.10	½	3 to 87	29	260	286	–75	266	**034L0043**
	KVL 15	1.20	0.80	1.00	1.10	5/8	3 to 87	29	260	286	–75	266	**034L0049**
	KVL 22	1.20	0.80	1.00	1.10	7/8	3 to 87	29	260	286	–75	266	**034L0045**
	KVL 28	4.10	2.60	3.40	3.80	1 1/8	3 to 87	29	260	286	–75	266	**034L0046**
	KVL 35	4.10	2.60	3.40	3.80	1 3/8	3 to 87	29	260	286	–75	266	**034L0052**
Condensing Pressure Regulator	KVR 12	Liquid: 12.70 Hot gas: 4.13	Liquid: 11.80 Hot gas: 3.03	Liquid: 8.20 Hot gas: 3.27	Liquid: 13.80 Hot gas: 4.50	½	73 to 254	145	406	450	–50	266	**034L0093**
	KVR 15	Liquid: 12.70 Hot gas: 4.13	Liquid: 11.80 Hot gas: 3.03	Liquid: 8.20 Hot gas: 3.27	Liquid: 13.80 Hot gas: 4.50	5/8	73 to 254	145	406	450	–50	266	**034L0097**
	KVR 22	Liquid: 12.70 Hot gas: 4.13	Liquid: 11.80 Hot gas: 3.03	Liquid: 8.20 Hot gas: 3.27	Liquid: 13.80 Hot gas: 4.50	7/8	73 to 254	145	406	450	–50	266	**034L0094**
	KVR 28	Liquid: 32.60 Hot gas: 10.93	Liquid: 30.20 Hot gas: 8.04	Liquid: 20.90 Hot gas: 8.66	Liquid: 35.50 Hot gas: 11.91	1 1/8	73 to 254	145	406	450	–50	266	**034L0095**
	KVR 35	Liquid: 32.60 Hot gas: 10.93	Liquid: 30.20 Hot gas: 8.04	Liquid: 20.90 Hot gas: 8.66	Liquid: 35.50 Hot gas: 11.91	1 3/8	73 to 254	145	406	450	–50	266	**034L0100**
Differential Pressure Regulator	NRD 12s[1]					½	73 to 254	145	667	870	–50	266	**020-1132**
Hot Gas Bypass	KVC 12	2.14	1.36	2.02	2.31	½	3 to 87	29	406	450	–50	266	**034L0143**
	KVC 15	4.17	2.65	3.93	4.5	5/8	3 to 87	29	406	450	–50	266	**034L0147**
	KVC 22	5.35	3.41	5.04	5.78	7/8	3 to 87	29	406	450	–50	266	**034L0144**
	CPCE 12	6.20	4.30	6.30	6.70	½	0 to 87	5.8	406	450	–58	285	**034N0082**
	CPCE 15	9.20	6.30	9.10	9.90	5/8	0 to 87	5.8	406	450	–58	285	**034N0083**
	CPCE 22	12.20	8.40	12.10	12.20	7/8	0 to 87	5.8	406	450	–58	285	**034N0084**

[1]NRD generally used in conjunction with a KVR to regulate the condensing pressure.

KVP/KVL/KVR/NRD/KVC/CPCE Spare Parts and Accessories

Description	Type(s) applied to	Danfoss Code No.
Schrader valve	all KVP, KVR	**034L0006**

KPU—Temperature Switches



=Designed specifically for the North American aftermarket, KPU temperature switches function as easy and direct replacements for most controls on the market. KPU 60/70 temperature switches feature snap-action switches, highly visible contrast scales, fingertip tests, and are easily adjustable using a standard refrigeration wrench. KPU 19 temperature switches feature easy installation and service with bottom and rear knockouts, differential adjustment dial, a tamper-resistant design, and a robust thermoplastic housing.

KPU 19 Series

KPU series	Bulb type	Range (°F)	Contact/reset	Capillary tube length (in.)	Differential at lowest temp. setting	Max. bulb temperature (°F)	Competitor part no.	Danfoss Code No.
KPU 9	Remote bulb	−30 to 80	SPDT/Auto	120	3.6 to 12.6	140	A19ABC-24C, A19ABC-37C, A19ABC-74C, A19AAC-4C, A19AAF-20C	**060L2150**[1]
KPU 19			SPST/Auto	80			A19AAD-5C, A19ABA-40C, A19AAD-12C	**060L2151**[1]
KPU 19	Room sensor		SPDT/Auto	Room sensor			A19BBC-2C, A19BAB-3C, A19BAC-1C, A198AF-1C	**060L2152**

Contact load	Resistive load		0.5~16A/120V AC, 0.5~8A/240V AC
	Inductive load	Full load	0.5~16A/120V AC, 0.5~8A/240V AC
		Locked load	96A/120V AC, 48A/240V AC
	Pilot duty		125VA/240V DC

KPU 60/70 Series

KPU Type	Bulb type	Range (°F)	Contact/ reset	Capillary tube length (in.)	Low temperature differential	High pressure differential	Max. bulb temperature (°F)	Competitor part no.	Danfoss Code No.
KPU 61	Straight capillary tube[1]	−20 to 60	SPDT/Auto	80	10 to 40	2.5 to 13	250	O10-1416, O10-1010, O16-111, O10-1419	**060L5201**
KPU 61	Remote air coil[1]	−20 to 60	SPDT/Auto	80	8 to 40	2.5 to 13	250	O10-1408, O10-1409, O10-1473, O16-104, O10-1410	**060L5203**
KPU 62	Room sensor[1]	−20 to 60	SPDT/Auto	Room sensor	10 to 40	2.5 to 13	250	O10-1072, O10-1418, O16-594, O60-101	**060L5206**
KPU 68	Room sensor[1]	25 to 95	SPDT/Auto	Room sensor	8 to 45	3 to 13	250	O10-1802, O16-595, O10-301, O16-165	**060L5215**
KPU 73	Remote bulb[2]	−15 to 60	SPDT/Auto	80	6.5 to 32	5 to 50	175	O60-100, O60-120	**060L5208**
KPU 71	Remote bulb[2]	25 to 70	SPDT/Auto	80	5.5 to 18	4 to 16	175		**060L5218**
KPU 77	Remote bulb[2]	60 to 140	SPDT/Auto	80	6 to 18	6.3 to 18	265	O60-200, A19AAF-12C, A19AAB-4C, A19ABB-2C, A19ABB-7C	**060L5223**

[1]Bulb must be installed in colder position than thermostat housing and capillary tube.
[2]Temperature variations in excess of 70 °F between sensing bulb, housing, and capillary tube will influence scale accuracy.

Contact load	Resistive load		24A/120V AC, 24A/240V AC
	Inductive load	Full load	24A/120V AC, 24A/240V AC
		Locked load	144A/120V AC, 144A/240V AC
	Pilot duty		12W/120V DC

KPU—Pressure Switches



Designed with contractors in mind, KPU pressure switches are used in refrigeration and air conditioning systems to protect against excessively low suction or high discharge pressures. Available in single and dual versions, KPU pressure switches cover a comprehensive range of applications, are designed for use with fluorinated and non-aggressive refrigerants, and can also be applied to start-and-stop compressors and the fans of air-cooled condensers.

KPU Pressure Switches

Danfoss Type	Pressure	Reset type	Contract system	Range (in. Hg/psig)	Differential (psig)	Max. working pressure (psig)	Competitor part no.	Danfoss Code No.	
								¼ in. M flare	36 in. capillary tubes with ¼ in. flare nuts
KPU 1	Low	Automatic	SPDT	6 to 108	10.2 to 58	250	O10-1483	**060-5231**	**060-5233**
KPU 2	Low	Automatic	SPST (NO)	6 to 73	6 to 30	250	O10-1402	**060-5237**	**060-5235**
KPU 2	Low	Automatic	SPDT	6 to 73	6 to 30	250		**060-5239**	**060-5240**
KPU 1B	Low	Manual	SPDT	28 to 100	10.2	250	P70AB12, P70AB2	**060-5232**	**060-5234**
KPU 5	Fan cycling	Automatic	SPST (NO)	100 to 465	26.1 to 87	510	O10-2054, P70AA118	**060-5241**	**060-5242**
KPU 6W	High	Automatic	SPDT	100 to 600	58 to 145	675	O16-108	**060-5243**	**060-5245**
KPU 6B	High	Manual	SPDT	100 to 600	60	675		**060-5244**	**060-5246**

KPU Dual Pressure Switches

Danfoss Type	Low pressure side		High pressure side		Rest		Contact system (LP/HP)	Max. working pressure (low/high side) (psig)	Competitor part no.	Danfoss Code No.	
	Range (in. Hg/psig)	Differential (psig)	Range (psig)	Differential (psig)	Low pressure side	High pressure side				¼ in. M flare	36 in. capillary tubes with ¼ in. flare nuts
KPU 15	6 to 108	10 to 60	100 to 465	60	Automatic	Automatic	SPST (NO/NC)	250/510	012-1549	**060-5247**	**060-5248**
KPU 15B	6 to 108	10 to 60	100 to 465		Automatic	Manual	SPST (NO/NC)	250/510	P170LB1, P70LB1, P70MA1	**060-5249**	**060-5250**
KPU 16B	6 to 108	10 to 60	100 to 600		Convertible	Convertible	SPDT/ SPST (NO)	250/675	O12-4834	**060-5253**	**060-5254**

[1]Competitor part no. equipped with capillary tube for all but P170LB1 which has flare connections.
[2]KPU 6 and the high pressure side of KPU 16 are designed with fail-safe double bellows.
[3]Convertible reset controls can be adjusted for either automatic or manual reset.
All controls are supplied with universal mounting bracket and mounting screws.
Ambient temperature: –40 °F to +122 °F (175 °F for maximum 2 hours).
KPU 1, 2, 6, 16 suitable for all HFC refrigerants, including R-410A.

	120/240 VAC
Alternating Current	
Motor Full Load Amps (FLA)	24
Locked Rotor Amps (LRA)	144
Direct Current	240 V DC: 12W pilot duty

KVS—Electronic Evaporator Regulators



KVS electric evaporator pressure regulators modulate refrigerant flow evaporators and must be paired with a current or voltage driver. The balanced design provides bi-flow operation as well as solenoid shut-off function in both flow directions. KVS regulators are compatible with R-410A, R-407C, R-134a, R-507, R-22 refrigerants and more.

KVS Regulators

Danfoss Type	Rated capacity (tons)			Connection (in.)	Max. working pressure (psig)	Danfoss Code No.
	R-22	R-134a	R-404A / R-507A			
KVS 15	1.3	0.9	1	5/8	660	**034G4252**
KVS 42	11.4	8.3	10	1 1/8	493	**034G2850**
KVS 42	11.4	8.3	10	1 3/8	493	**034G2851**
KVS 42	11.4	8.3	10	1 5/8	493	**034G2852**
KVS 42	11.4	8.3	10	7/8	493	**034G2858**

KVS Spare Parts and Accessories

Description	Danfoss Code No.
AST-G Service Driver; used to manually open or close valve	**034G0013**
M12 cable, 26 ft.	**034G2323**
M12 cable, 6 ft.	**034G2330**
Cable filter for long wire runs (in excess of 32 ft.). Permits wire runs of up to 328 ft.	**084B2238**

CCM—Gas Bypass Valves



CCM electric valves are designed for CO_2 systems and are capable of functioning as either expansion valves or as gas bypass valves with back pressure regulation in subcritical applications. Additional features include: precise positioning for optimal control of intermediate pressure in transcritical CO_2 systems or liquid injection in heat exchangers, combined stainless steel butt weld and solder connections for installation in copper piped systems, and a standard M12 connector for simple and flexible connection to the motor driver.

CCM Valves

Danfoss Type	Conn. Standard	Solder conn. size (in.)	Weld conn. size (in.)	Cv valve (gpm)	MWP (psig)	Danfoss Code No.
CCM 10	EN10220	5/8	½	0.81	1305	**027H7188**
CCM 20	EN10220	7/8	¾	2.14		**027H7187**
CCM 30	EN10220	1 1/8	1	3.22		**027H7186**
CCM 40	EN10220	1 1/8	1	5.55		**027H7185**

CCM Spare Parts and Accessories

Description	Danfoss Code No.
Actuator for CCM CO_2 valve	**027H7184**
AST-G Service Driver: used to manually open or close valve	**034G0013**
M12 cable, 26 ft.	**034G2323**
M12 cable, 6 ft.	**034G2330**
Cable filter for long wire runs (in excess of 32 ft.). Permits wire runs of up to 328 ft.	**084B2238**

CCMT—Gas Cooler Expansion Valves



CCMT electronic valves are designed specifically for CO_2 systems and can function as expansion valves, pressure regulators for gas coolers, or as gas bypass valves with back pressure regulation in transcritical applications. Large sizes (16–42) feature integrated serviceable strainer and integrated pressure transducer. Additional features include: compatibility with PAG, POE, and PVE oils; combined butt weld and solder connections; and a light weight and compact design.

CCMT Valves

Danfoss Type	Temp. range (°F)	Conn. Standard	Solder conn. size (in.)	Weld conn. size (in.)	Cv valve (gpm)	Dff. Range (psi)	Max. working pressure (psig)	Danfoss Code No.
CCMT 2	−40 to 40	EN10220	5/8	½	0.19	1305	2030	**027H7200**
CCMT 4			5/8	½	0.52			**027H7201**
CCMT 8			5/8	½	0.92			**027H7202**
CCMT 16			1 1/8	1	1.85			**027H7231**
CCMT 24			1 1/8	1	2.77			**027H7232**
CCMT 30			1 1/8	1	3.70			**027H7233**
CCMT 42			1 1/8	1	5.32			**027H7234**

CCMT Spare Parts and Accessories

Description	Danfoss Code No.
AST-G Service Driver; used to manually open or close valve	**034G0013**
M12 cable, 26 ft.	**034G2323**
MBS 8250 pressure transducer	**064G4032**
Cable filter for long wire runs (in excess of 32 ft.). Permits wire runs of up to 328 ft.	**084B2238**
EKD 316—valve driver or superheat controller	**084B8040**
EKA 164A—display and control buttons for EKD 316	**084B8563**

ICMTS—Large Capacity Gas Cooler Expansion Valves



ICMTS motorized valves regulate the flow of transcritical gas or subcritical liquid from gas coolers in transcritical CO_2 systems. ICMTS valves are driven by ICAD 600A-TS actuators and may be manually operated using the multi-function tool.

ICMTS Valves

Danfoss Type	Conn. Standard	Inlet type	Inlet size (in.)	Outlet type	Outlet size (in.)	Cv valve (gpm)	Diff. range (psi)	Max. working pressure (psig)	Danfoss Code No.
ICMTS 20-A33	EN10220	butt weld	1	butt weld	1	0.23	1305	2030	**027H1084**
ICMTS 20-A						0.69			**027H1085**
ICMTS 20-B						2.78			**027H1086**
ICMTS 20-C						5.32			**027H1087**

ICAD 600TS Actuator

Danfoss Type	Cable length	Supply voltage DC (V)	Supply voltage load (A)	Analog input voltage options (V) DC	Analog input current options (mA)	Analog output options (mA)	Dig. Output/ext. supply voltage DC (V)	Danfoss Code No.
ICD 600A-TS	4 ft. 11 in.	24	1.2	0–10/ 2–10	0–20/ 4–20	0–20/ 4–20	5–24	**027H9078**
ICD 600A-TS	—							**027H9123**

ICMTS Spare Parts and Accessories

Description	Danfoss Code No.
Mutli-function tool for manual operation	**027H0181**
ICMT/S 20-A33 top part w/cone & orifice	**027H1088**
ICMT/S 20-A top part w/cone & orifice	**027H1080**
ICMT/S 20-B66 top part w/cone & orifice	**027H1094**
ICMT/S 20-B top part w/cone & orifice	**027H1081**
ICMT/S 20-C top part w/cone & orifice	**027H1082**

ADAP KOOL (AK) Electronic Controllers and Accessories



The AK family of supermarket and commercial refrigerator controllers and system managers are ideal for both new installations and as replacement controllers. Danfoss electronic controls use the latest technology to provide the maximum benefit to end users, in terms of energy savings, control options, and full web user access.

AK-SM System Manager



The key component of an ADAP-KOOL© refrigeration system controller is the system manager. This unit coordinates data communication to and from individual refrigeration controllers, acquires temperature data for logging, and registers and forwards alarms to defined recipients. The web-enabled AK-SM 800 series is Danfoss' newest system manager and features "case to cloud" connectivity for enterprise level data sharing. Danfoss systems manager can be controlled remotely through a web browser, Danfoss software, or smartphone app. The AK-SM 800 series replaces legacy controllers such as Com-Trol, ECI, and other previously released Danfoss system controllers.

AK-SM Controllers

Danfoss Type	License	Frequency (Hz)	Communication types	Danfoss Code No.
AK-SM 850	refrigeration	50/60	LON RS485, Modbus	**080Z4001**
AK-SM 820	refrigeration & HVAC (convenience store version)		LON RS485, Modbus	**080Z4004**
AK-SM 880	refrigeration & HVAC		LON RS485, Modbus	**080Z4008**
AK-SM 880	refrigeration & HVAC		LON TP78, Modbus	**080Z4009**
AK-AL 800	alarm logger; touchscreen		N/A	**080Z4014**

AK2 SC-255 Spare Parts and Accessories

Description	Notes	Danfoss Code No.
Modem power adapter	Includes modem power adapter, cables	**080Z2100**
COMM255 modern kit	Includes modem, modem power adapter, modem power supply, cables	**080Z2102**
PC direct connect cable	Can be used to connect PC to SC 255 using AKA 65 software and PC to AK-PC 700 series and AK-CC 700 series controller	**080Z0262**
Serial USB adapter kit for PC direct connect cable	Approved USB 2.0 to DB 9 pin M connector	**080Z0267**

MCX—Programmable Controller



Easy to program using the C programming language, MCX controllers provide unique versatility and freedom compared to proprietary systems. All units are delivered with a low level operating system, including hardware drivers, services, and a virtual machine. Connections to peripheral equipment take place via open standard protocols that enable easy integration with electromechanical components and building management systems. Open programming standards allow full control of applications such as chillers, rooftop units, air-handling units, close control, shelter units, and heat pumps.

Danfoss Type	Communication type	Supply voltage (AC)	Danfoss Code No.
MCX08M	CANBUS, MODBUS, RS485	110 to 230 V	**080G0029**
MCX152V	CANBUS, ETHERNET, MODBUS, RS485	110 to 230 V	**080G0285**

Input/Output Communication and Extension Modules

Input/Output (I/O) expansion modules are used in applications requiring more connections than featured on a given control: up to nine extension modules may communicate through each communication module. I/O modules require a communication module to communicate with frontend system managers.



AK-CM Communication Modules

Danfoss Type	Description	Danfoss Code No.
AK-CM 101A	Communication Module (LON TP-78)	**080Z0061**
AK-CM 101C	Communication Module (LON RS485)	**080Z0063**



AK-XM Extension Modules

Danfoss Type	Analog inputs	On/off outputs		On/off supply voltage (DI signal)		Analog outputs	Stepper outputs	Module with switches	Uses	Danfoss Code No.
	For sensors, pressure transmitters, etc.	Relay (SPDT)	Solid state	Low voltage (80 V max.)	High voltage (260 V max.)	0-10 V DC	For valves with step control	For overriding relay outputs		With screw terminals
AK-XM 101A	8								Sensors, pressure transmitters, contact signals	**080Z0007**
AK-XM 102A				8					On/off voltage signals, low voltage (24 V)	**080Z0008**
AK-XM 102B					8				On/off voltage signals, high voltage (230 V)	**080Z0013**
AK-XM 103A	4					4			Sensors, pressure transmitters, contact signal, analog outputs (0-10 V DC)	**080Z0032**
AK-XM 107A pulse module									Pulse measuring	**080Z0020**
AK-XM 204A		8							On/off relay ouputs	**080Z0011**
AK-XM 204B		8							On/off relay outputs with overriding function	**080Z0018**
AK-XM 205A	8	8							Sensors, pressure transmitters, and on/off outputs	**080Z0010**
AK-XM 205B	8	8		x					Sensors, pressure transmitters, and on/off output with overriding function	**080Z0017**
AK-XM 208B							4		Stepper output	**080Z0022**

I/O Spare Parts and Accessories

Description	Notes	Danfoss Code No.
DIN Rail for AK2 module mounting	1 meter	**080Z0290**
AK2 light ballast dimmer driver board	Boosts signal from a variable output (such as AK-XM 103A) board to drive multiple ballasts	**080Z0270**
RTC to AK2 board conversion kit	Converts obsolete RTC board to AK2 IO modules; includes documentation, power supply, and wire	**080Z2117**
CO_2 indoor sensor	For measuring indoor CO_2 levels	**LDC02**
Air flow switch	For proofing RTU airflow	**CAFS-1**

Input/Output Communication and Extension Modules *(continued)*

Power Supplies for AK series controls

Danfoss Type	Input Voltage	Output		Mount	Note	Danfoss Code No.
		Voltage	Capacity			
IOPS	115/230	12/24V AC	56 VA	Chassis	Use for 12VAC or special application only; replaced by 080Z0055 for AK2 applications	**080Z0052**
AK-PS 250	100–240	24V AC	60 VA	Din Rail	Replaces 080Z0052	**080Z0055**
AK-PS 75	100–240	24V AC	18 VA	Din Rail	Can power one com module and combo board	**080Z0053**

Repeaters, Bridges, and Gateways

Gateways permit communication from one piece of equipment to another. Repeaters boosts signals to overcome issues resulting from excess wire length and poor installation. Bridges convert communication signals from one protocol to another.

Danfoss Type	Description	Applicable protocols	Notes	Danfoss Code No.
TP78-01	Repeater	LON TP 78	Requires 12V AC, old part no. TP78-01	**084B2251**
TP78-02	Bridge	LON TP 78 to LON FTT-10	Requires 12V AC, old part no. TP78-02	**084B2252**
TP78-04	Bridge	LON TP 78 to LON RS485	Old part no. TP78-04	**084B2254**
AKA 222	Repeater	Modbus		**084B2240**
AKA 223	Repeater	LON RS485		**084B2241**
TP78-05	Bridge	LON FTT-10 to LON RS485	Old part no. TP78-05	**084B2255**

I/O Enclosures

Enclosures for input/output boards

Description	Notes	Danfoss Code No.
AK2 enclosure for 1 row of 4 full-sized modules	Includes power supply and 1 AK2 comm. module (080Z0061) 13 × 30 × 5	**AK2IO8**
AK2 enclosure for 2 row of 4 full-sized modules	Includes power supply and 1 AK2 comm. module (080Z0061) 25 × 30 × 5	**AK2IO16**
AK2 comm. mod. + AK2 XM 205B in RTC box filtered; power input	24V AC only; no power supply included 12 in. × 12 in.	**AK2RTCB**
AK2 comm. mod. RTC filtered power V.2	Contains 080Z0061, 080Z0017, 080Z0053	**AK2RTCB-2**
Lighting control panel/8 relay output		**080Z2164**
AK2 enclosure for 1 row of 4 full-sized modules	Includes power supply and 1 AK2 comm. module (080Z0063) 13 × 30 × 5	**080Z2118**
AK2 enclosure for 2 row of 4 full-sized modules	Includes power supply and 2 AK2 comm. module (080Z0063) 25 × 30 × 5	**080Z2119**
AK2 comm. mod. + AK2 XM 205B in RTC box filtered; power input	24V AC only; no power supply included 12 in. × 12 in.	**080Z2184**
12 in. × 24 in. enclosure	080Z0055, with comm. module (080Z0063), and combo board	**080Z2188**
12 in. × 24 in. enclosure	080Z0055, with comm. module (080Z0061), combo board	**080Z2165**

AKS—Pressure Transmitters



AKS 32 and AKS 33 pressure transmitters measure and convert pressures to a standard signal (1 to 5 V DC for AKS 32 and 4 to 20 mA for AKS 33). AKS 32R and AKS 2050 ratiometric pressure transmitters measure and convert pressure to a linear output signal (the minimum value of the output signal is 10% of the actual supply voltage and the maximum value is 90% of the actual supply voltage). AKS 2050 pressure transmitters are designed specifically for CO_2 pressure ranges.

Danfoss Type	Pressure range (psig)	Electrical connection	System connection (in.)	Notes	Danfoss Code No.
AKS 32	0 to 200	26 ft. cable	1/8 NPT	For Danfoss rack controllers	**060G3990**
AKS 32	0 to 500	26 ft. cable	1/8 NPT	For Danfoss rack controllers	**060G3991**
AKS 32	0 to 100	26 ft. cable	1/8 NPT	For ECI rack controllers	**060G1889**
AKS 32	0 to 500	26 ft. cable	1/8 NPT	For ECI rack controllers	**060G1890**
AKS 33	–14.5 to 174	DIN plug	¼ NPT	Use with EKC 316	**060G2101**
AKS 32R	–14.5 to 174	DIN plug	¼ NPT	Use with AK CC controllers	**060G1037**
AKS 2050	–14.5 to 855	DIN plug	¼ NPT	Designed for CO_2	**060G6342**
AKS 2050	–14.5 to 2306	DIN plug	¼ NPT	Designed for CO_2	**060G6344**
MBS 8250	14.5 to 2320	Packard 3 pin male	7/16 UNF 20	Used as integrated pressure transducer in CCMT valves	**064G4032**

AKS Spare Parts and Accessories

Description	Notes	Danfoss Code No.
DIN plug for AKS transducer	Fits AKS 32, 32R, 33, and 2050	**060G000812**
Cable with end plug for AKS transducer	16 ft., fits AKS 32, 32R, 33, and 2050	**060G1034**

Temperature Sensors

Danfoss Type	Sensor type	Sensor temp. range (°F)	Wire length (ft.)	Description	Danfoss Code No.
AKS 21W	PT1000	–94 to 356	1	Boiler temp. probe, fits well with ½ NPT	**084N2032**
AKS 11	PT1000	–60 to 212	11.5	Single packed 084N0027	**084N0003**
AKS 11	PT1000	–60 to 212	18	Single packed 084N0028	**084N0005**
AKS 11	PT1000	–60 to 212	27.5	Single packed 084N0029	**084N0008**
AKS 12	PT1000	–40 to 176	5	Single packed 084N0035	**084N0036**
AKS 12	PT1000	–40 to 176	18		**084N0038**
AKS 21	PT1000	–94 to 356	8	Used for high temp. pipe applications	**084N2003**
AKS 21	PT1000	–94 to 356	16	Used for high temp. pipe applications	**084N2008**
MBT 153	NTC	–40 to 158	18	General purpose sensor—replace Com-Trol and ECI TP 2L	**084Z3016**
Air supply/duct probe		–94 to 356	8	Old part no. ASTP2	**080Z2186**
Box temp. probe assembly		–13 to 221		Probe length 18 in.	**080Z2185**
Product temp. sensor		–22 to 122	18	PT1000; calibration certificate included	**084N1007**
Zone temp. sensor		–40 to 122		PT1000; temp. sensor on cover plate for HVAC room temp.; old part no. ZTP2	**080N2187**
Condenser air probe		–40 to 122		PT1000; temp. sensor for measuring air temp. under condenser	**AKOTC**
AKS blue wire	PT1000			S1; coil in	**097U0063**
AKS red wire	PT1000			S2; coil out	**097U0064**
AKS purple wire	PT1000		27.8	S3; return air	**097U0065**
AKS green wire	PT1000			S4; discharge air	**097U0066**
AKS orange wire	PT1000			S5; defrost termination	**097U0067**

AKS 11 Temperature Sensors with Case Locations Specific Colors

Insulation color	Purpose	Wire length (ft.)	Danfoss Code No.
Blue	S1 coil in		**097U0063**
Red	S2 coil out		**097U0064**
Purple	S3 return air	27.8	**097U0065**
Green	S4 discharge air		**097U0066**
Orange	S5 defrost termination		**067U0067**

Temperature Sensor Resistors (Permit use of non-Danfoss sensors on AK2 input boards)

Description	Notes	Danfoss Code No.
Com-Trol, CPC, and Altech Temp. Sensor Resistor Kit	Kit contains 2 resistors	**CTPKIT**
AK-2 Pullup kit for ECI TP-1 Probe	Kit contains 4 resistors	**TP1KIT**

Humidity Sensors and Light Level Sensors

Description	Notes	Danfoss Code No.
Outdoor Photo Cell/Humidity Sensor/Temp Sensor	Mounts on ½ in. conduit knockout; box not included	**AKCOTHP**
Outdoor humidity sensor	Mounts in ½ in. conduit knock out; replaces EMHS-4	**080Z2167**
Humidity sensor w/indoor temp. sensor	Old part no. EMHS3-1	**080Z2171**
Outdoor photo cell with temp. sensor	Old part no. PHOTO-OD-1	**080Z2172**
Skylight Photocell 0-5000 FC with resistor	Old part no. PHOTO-MAS	**080Z2169**

Door Monitors, Current Transducer

Description	Notes	Danfoss Code No.
Magnetic Door Monitor Assembly	Door contacts; typically used for walk in coolers and freezers	**DRMON-1**
Current transducer 0-5/100/200 A	Connects to inboards for current monitoring. Frequently used for compressor, fan motor or other loads requiring current monitoring.	**080Z2251**
Current sensing relay	Provides contact closure when current is detected.	**49-100**

Miscellaneous Relays and Transformers

Description	Notes	Danfoss Code No.
Relay	24V coil 2 pole Form C relay	**41-062**
Transformer	24V 150 VA wall mount control transformer	**55-168**
Power supply	5Vdc Din rail mounted power supply	**68-102**

Alarm Devices

Description	Notes	Danfoss Code No.
24V horn/strobe; red	For indoor use	**AKAHS01**
24V horn/strobe; blue	For outdoor use	**AKAHS02**
Strobe alarm light; amber		**99-242**
Strobe alarm light; blue		**99-272**
Office alarm box PC board w/audio, LED signal & reset	Requires 12V AC	**OAB-1**

AK-CC—Case Controllers



All of the controls below control anti-sweat heaters, fan operation, lighting door alarms, case cleaning, dual temperature control, and provide alarm notification.

Danfoss Type	AK-CC 210	AK-CC 550A	AK-CC 750
Overview	Single evaportator on/off (typically solenoid valve) control. May be used on self-contained cases or rack systems. May be stand alone or tied into front end controller.	550A Single evaporator control which controls Danfoss AKV based on superheat. May be stand alone or tied into front end controller.	750 Multi-evaporator control (up to 4) which controls Danfoss AKV based on superheat or temperature.
No. of evaporators	Single	Single	Multiple
Valve Control	On/off—Typically solenoid valve with TXV	EEV	AKV or Solenoid
Mounting	Panel mount	DIN rail or wall	DIN rail or wall
Display	On front	On front	Connection for 1–4 displays
Temp. control	Yes	Yes	Yes
Defrost	Yes with connections	Yes, adaptive with skip and coordination	Yes, adaptive with skip and coordination
No. of compressors	1 or 2	1 or 2	1
No. of outputs	4	5 × AKV	8, max. 4 AKV
No. sensors	3	6	11
No. DI	2	3	11
Communication	Opt. LON RS 485 or MODBUS	MODBUS + opt. LON RS 485	LON RS 485 or LON TP 78

Danfoss Type	Supply Voltage (V)	Notes	Danfoss Code No.
AK-CC 210	115		**084B8534**
AK-CC 210	220		**084B8520**
AK-CC 550A	115		**084B8036**
AK-CC 550A	230		**084B8030**
AK-CC 750	24 AC/DC	LON TP78	**080Z0130**
AK-CC 750	24 AC/DC	LON RS485	**080Z0139**

Displays and Display Accessories for AK2 Sis

Danfoss Type	Description	Notes	Danfoss Code No.
EKA 163A	Display unit	Screw terminals	**084B8562**
EKA 163B		With plug connector	**084B8574**
EKA 164A	Display unit withoperation buttons	Screw terminals	**084B8563**
EKA 164B		With plug connector	**084B8575**
EKC 202D2	Walmart temperature Display	EKA Remote Display (Green Display)	**084B8670**
EKC 202D2	Walmart temperature controller	Stand Alone Display Unit 110V (Green Display) & LON 485 communication card	**084B8693**
	Cable with plugs for display unit	6.5 ft.	**084B7298**
	Cable with plugs for display unit	19.5 ft.	**084B7299**

Other Accessories for AK2 Case/Rack Controllers

Danfoss Type	Description	Applicable Product	Danfoss Code No.
EKA 173	LON FTT10 card	EKC 316	**084B7092**
EKA 175	LON RS485 card	Top of form EKC 3XX, AK-CC 450/550/550A	**084B8579**
EKA 178	AK-CC 210 MODBUS card	Top of form EKC 202/210 Bottom of form	**084B8564**
EKA 179	AK-CC 210 LON RS485 card	Top of form EKC 202/210 Bottom of form	**084B8565**
EKA 183A	Progamming Key	EKC 102, 202, 204, 3XX (excl. EKC 301), 4XX and 5XX, AK-CC 210 and 550, AK-CT, ERC 211, 213, and 214	**084B8582**
	EKA mounting flange kit	EKA 163, 164	**084B8584**
	Metal EKC Bracket	Any standard 71mm × 29mm panel mount display or controller	**60-274**

AK-PC—Pack Controllers



The AK-PC 700 controller series offers rack-level control for a variety of designs, including standard HFC systems, transcritical CO_2 systems, and cascade systems.

Danfoss Type	Function	Supply Voltage (V)	Communication Types	No. of compressors (max.)	Danfoss Code No.
AK-PC 781	medium-large transcritical (single suction)	24	LON RS485	8	**080Z0186**
AK-PC 781A	medium-large transcritical (single suction)			10	**080Z0191**
AK-PC 782A	medium-large transcritical (triple suction)			8	**080Z0192**
AK-PC 783	cascade system (dual suction)			4 × 4	**080Z0196**
AK-PC 772	small transcritical			3 × 2	**080Z0200**

When installing or modifying Danfoss AK-SM/CC/CM/PC or other controllers, it is critical to follow the wiring specifications as outlined in the installation guide; failure to do so may result in communication errors or failures

EKC/EKD—Industrial Superheat Controllers



Evaporator controllers control superheat in specialized applications.

Danfoss type	Controller type	Danfoss Code No.
EKC 316A	Controller 24V AC (requires 2 AKS 11 sensors & 1 AKS 33 pressure transducer)	**084B7088**
EKD 316A	Superheat controller/valve driver, no display; typically controls a KVS valve	**084B8040**
EKC 326A	CO_2 gas cooler controller	**084B7252**

KW Transducers and CTS for energy metering

Description	Danfoss Code No.
Split Core Buss Bar Style CT W3.5 × L3.5 600A Wattnode CT	**CTB0600**
Split Core Buss Bar Style CT W3.5 × L3.5 800A Wattnode CT	**CTB0800**
Split Core Buss Bar Style CT W3.5 × L3.5 1200A Wattnode CT	**CTB1200**
Split Core Buss Bar Style CT W3.5 × L3.5 2000A Wattnode CT	**CTB2000**
WATTNODE PLUS 120/208–240V kWh, kW, PF, V, A, KVA meter—requires 3 wattnode CTs (LON communication)	**WATTNODEP1**
WATTNODE PLUS 480V kWh, kW, PF, V, A, KVA meter—requires 3 wattnode CTs (LON communication)	**WATTNODEP3**
Wattnode Modbus meter 208V. Requires 3 wattnode CTs	**080Z2144**
Wattnode Modbus meter 400V. Requires 3 wattnode CTs	**080Z2146**
Veris kWh Power Transducer 100 amp 3 amp Phase incl. 3 CTs w/embedded transducer(requires pulse module)	**C20106600**
Veris kWh Power Transducer 300 amp 3 amp Phase incl. 3 CTs w/embedded transducer (requires pulse module); for balanced loads	**080Z2142**

DGS—Refrigerant Leak Detectors



Using either semi-conductor (SC) or infrared (IR) technology, DGS leak detectors provide a rapid response when detecting a wide range of different refrigerants, including CO_2. DGS detectors can be used in standalone or integrated systems where continuous, real-time, automatic monitoring is required. DGS detectors comply with environmental regulations and health and safety requirements for new or existing systems.

DGS Sensors

Product description	Danfoss Code No.
DGS-SC HFC gr. 1[1]	**080Z2803**
DGS-SC HFC gr. 2[2]	**080Z2804**
DGS-SC HFC gr. 3[3]	**080Z2805**
DGS-PE Propane	**080Z2806**
DGS-IR-CO2	**080Z2800**
DGS-IR-CO2 5 m	**080Z2801**
DGS-IR 2 * CO2 - 5 m	**080Z2802**
DGS-SC HFC gr.1* + B&L	**080Z2809**
DGS-SC HFC gr.2* + B&L	**080Z2810**
DGS-SC HFC gr.3* + B&L	**080Z2811**
DGS-PE Propane + B&L	**080Z2812**
DGS-IR CO2 + B&L	**080Z2807**
DGS-IR-CO2 5 m + B&L	**080Z2808**
HGM-MZ	**080Z2151**
HGM-MZ	**080Z2153**

DGS Spare Parts and Accessories

Product description	Notes	Danfoss Code No.
Spare sensor HFC gr.1[1]	Spare	**080Z2815**
Spare sensor HFC gr.2[2]	Spare	**080Z2816**
Spare sensor HFC gr.3[3]	Spare	**080Z2817**
Spare sensor Propane	Spare	**080Z2818**
Spare sensor CO2	Spare	**080Z2813**
Spare sensor CO2 - 5 m	Spare	**080Z2814**
Handheld service tool	Accessory	**080Z2820**
Strobe & Horn	Accessory	**080Z2819**
Splash guard	Accessory	**148H6226**
Duct guard	Accessory	**148H6236**
Calibration adaptor for SC2	Accessory	**148H6232**
Remote kit	Accessory	**148H6238**
Power supply AK-PS075	Accessory	**080Z0053**
HGM-MZ air sample line coupler	For joining 2 sample tubes	**080Z2195**
HGM-MZ 2-way splitter kit-model	Permits sensing of 2 zones from 1 tube	**080Z2196**
HGM-MZ connection kit for SM controllers and HGM-MZ	Permits communication between Danfoss AKS/SM controllers and HGM-MZ	**080Z2154**

[1]R-1234ze, R-454c, **R-1234yf**, R-454a, R-452A, R-454b, R-513a
[2]R-407F, R-416a, R-417a, R-407A, R-422a, R-427a, R-449A, R-437a, **R-134a**, R-438a, R-422D
[3]R-448A, R-125, R-404A, R-32, R-507A, R-434a, R-410A, R-452b, **R-407C**, R-143b
Bold = calibration gas; changing refrigerants requires Danfoss handheld service tool (080Z2820)

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ENGINEERING
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