

New perspectives with Danfoss Saginomiya Cartridge Controls



Reliable and consistent



ACB Cartridge Controls

- Wide range
 - -1.5 in Hg to 650 psig pressure range
 - Normally Closed, Normally Open or SPDT contact system
 - automatic or manual reset
 - various port fittings for soldering or direct mounting
 - spades or cables
 - stripped ends or customer specific electrical plug
- Open or water-proof IP 65 version
- UL, C-UL, CE, TUV, and VDE approvals



ACB manual reset type

ACB is a small disc type pressure control for use in refrigeration and air conditioning systems. As standard, it is equipped with a 8A contact system having automatic or manual reset.

The control is robust and reliable in operation in many types of units.

The small size, lightness and high degree of protection means that it can be mounted directly on the refrigeration systems where pressure regulation is required.

The control is available with different pressure settings and pressure connections to suit customer requirements.

All these features reduce installation costs and save space.

APPLICATION

ACB cartridge controls are used in refrigeration and air conditioning systems with CFC, HCFC, HFC as high and low pressure safety cut in and cut out as well as fan cycling.

FUNCTION

ACB contains one or more stainless steel discs. Each disc reverses its curvature when pressurized to a customer specified value.

When the disc “snaps”, electrical contacts open (or close) by means of a push shaft. The pressure control resets automatically when pressure drops below (or rises above) a preset value.

TYPICAL TECHNICAL DATA

Media	CFC, HCFC, HFC
Range	-1.5 inHg to 650 psi
Reset	Automatic, Manual
Contact function	SPST-NO, SPST-NC, SPDT
Electrical connections	AWG18 cables
Cable length	59" +/- 2 standard
Contact load	8A @ 250V AC for Auto Reset 6A @ 250V AC for Manual Reset
Pressure connections	1/4" ODM solder 1/4" SAE female flare with depressor pin
Max. working pressure MWP	650 psi
Burst pressure	4350 psi
Media temperature	-65 to 275°F
Ambient temperature	-22 to 212°F
Enclosure	Cable version: IP65, Spade terminal version IP40
Approvals	UL & C-UL CE TUV, VDE

Customer specific features are available in a wide selection. Please refer to Specification Build-up on page 6.

STANDARD FEATURES

- Electrical rating: 8A (Auto), 6A (Manual)
- Electrical connection: 59" (1,5 m) cable AWG18
- Cable color: black
- Packing quantity: 20 pcs (industry pack)
- Weights: automatic approx. 0.16 lb(0,073 kg/pc), manual approx. 0.18 lb(0,082 kg/pc)
- Excellent set point repeatability and stability
- Tamper-proof, factory preset setpoint
- Hermetically sealed: IP65
- Corrosion resistant housing
- Small size and light weight suitable for direct mounting
- UL, C-UL, CE (category IV), TUV, & VDE approvals

Application	Reset	Cut out psi	Cut in psi	Contact system	Solder 1/4"	7/16-20 UNF for flare with depressure pin	Danfoss Code No.	Saginomiya Model No.	Description
				SPST / SPDT					
High pressure cut out	automatic	260 +/- 10	190 +/- 17	SPST-NC	x		061F7505	ACB-2UB505W	ACB HP auto SPST 1/4" solder
	automatic	260 +/- 10	190 +/- 17	SPST-NC		x	061F7506	ACB-2UB506W	ACB HP auto SPST 1/4" F flare
	automatic	260 +/- 10	190 +/- 17	SPDT		x	061F9057	ACB-2UC59W	ACB HP auto SPDT 1/4" F flare
	automatic	335 +/- 10	275 +/- 17	SPST-NC		x	061F8494	ACB-2UB465W	ACB HP auto SPST 1/4" F flare
	automatic	335 +/- 10	275 +/- 17	SPDT		x	061F9056	ACB-2UC58W	ACB HP auto SPDT 1/4" F flare
	automatic	380 +/- 14	290 +/- 22	SPST-NC	x		061F7508	ACB-2UB508W	ACB HP auto SPST 1/4" solder
	automatic	380 +/- 14	290 +/- 22	SPST-NC		x	061F7509	ACB-2UB509W	ACB HP auto SPST 1/4" F flare
	manual	380 +/- 14	290 +/- 30	SPST-NC	x		061F9714	ACB-2UB814MW	ACB HP man SPST 1/4" solder
	manual	380 +/- 14	290 +/- 30	SPST-NC		x	061F9713	ACB-2UB813MW	ACB HP man SPST 1/4" F flare
	automatic	380 +/- 14	290 +/- 22	SPDT		x	061F9055	ACB-2UC57W	ACB HP auto SPDT 1/4" F flare
	automatic	405 +/- 14	305 +/- 22	SPST-NC	x		061F7513	ACB-2UB513W	ACB HP auto SPST 1/4" solder
	automatic	405 +/- 14	305 +/- 22	SPST-NC		x	061F7514	ACB-2UB514W	ACB HP auto SPST 1/4" F flare
	manual	405 +/- 14	305 +/- 22	SPST-NC		x	061F9522	ACB-2UB327MW	ACB HP man SPST 1/4" F flare
	automatic	405 +/- 14	305 +/- 22	SPDT		x	061F9054	ACB-2UC56W	ACB HP auto SPDT 1/4" F flare
	automatic	450 +/- 14	350 +/- 22	SPST-NC		x	061F8492	ACB-2UB463W	ACB HP auto SPST 1/4" F flare
	automatic	450 +/- 14	350 +/- 22	SPDT		x	061F9053	ACB-2UC55W	ACB HP auto SPDT 1/4" F flare
	automatic	610 +/- 17	480 +/- 29	SPST-NC	x		061F7516	ACB-2UB516W	ACB HP auto SPST 1/4" solder
	automatic	610 +/- 17	480 +/- 29	SPST-NC		x	061F7517	ACB-2UB517W	ACB HP auto SPST 1/4" F flare
	manual	610 +/- 17	480 +/- 29	SPST-NC		x	061F9575	ACB-2UB461MW	ACB HP man SPST 1/4" F flare
	automatic	610 +/- 17	480 +/- 29	SPDT		x	061F9052	ACB-2UC54W	ACB HP auto SPDT 1/4" F flare
Low pressure cut-out	automatic	7 +/- 6	22 +/- 4	SPST-NO	x		061F7519	ACB-2UA519W	ACB LP auto SPST 1/4" solder
	automatic	7 +/- 6	22 +/- 4	SPST-NO		x	061F7520	ACB-2UA520W	ACB LP auto SPST 1/4" F flare
	automatic	10 +/- 7	25 +/- 6	SPST-NO	x		061F7522	ACB-2UA522W	ACB LP auto SPST 1/4" solder
	automatic	10 +/- 7	25 +/- 6	SPST-NO		x	061F7523	ACB-2UA523W	ACB LP auto SPST 1/4" F flare
	automatic	10 +/- 7	25 +/- 6	SPDT		x	061F9058	ACB-2UC60W	ACB LP auto SPDT 1/4" F flare
	automatic	25 +/- 7	39 +/- 6	SPST-NO	x		061F7525	ACB-2UA525W	ACB LP auto SPST 1/4" solder
	automatic	25 +/- 7	39 +/- 6	SPST-NO		x	061F7526	ACB-2UA526W	ACB LP auto SPST 1/4" F flare
Fan Control	automatic	125 +/- 17	160 +/- 12	SPST-NO		x	061F8490	ACB-2UA392W	ACB fan auto SPST 1/4" F flare
	automatic	190 +/- 22	230 +/- 14	SPST-NO		x	061F8333	ACB-2UA305W	ACB fan auto SPST 1/4" F flare



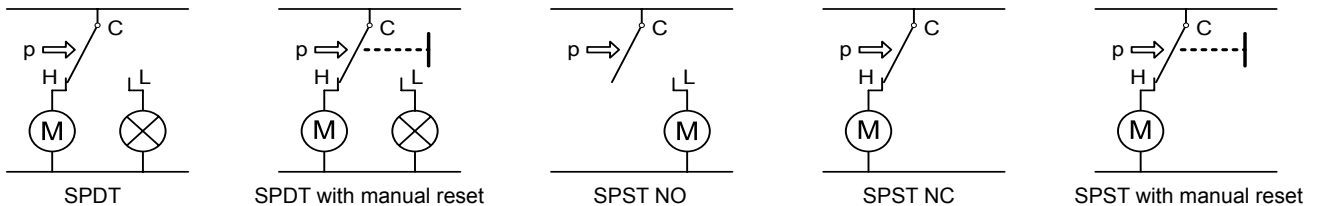
PRINCIPLES OF OPERATION

As pressure is applied through the connection on to the diaphragm, the diaphragm is pushed up against the operation shaft.

When the operation shaft rises, it pushes up the contact plate, so that H contact and C contact become disconnected (in Normally Closed switches) or H contact and L contact become connected (in Normally Open switches).

As the pressure in the connection decreases, the diaphragm returns to its original state, and the operation shaft lowers, causing the contact plate to return to its original position.

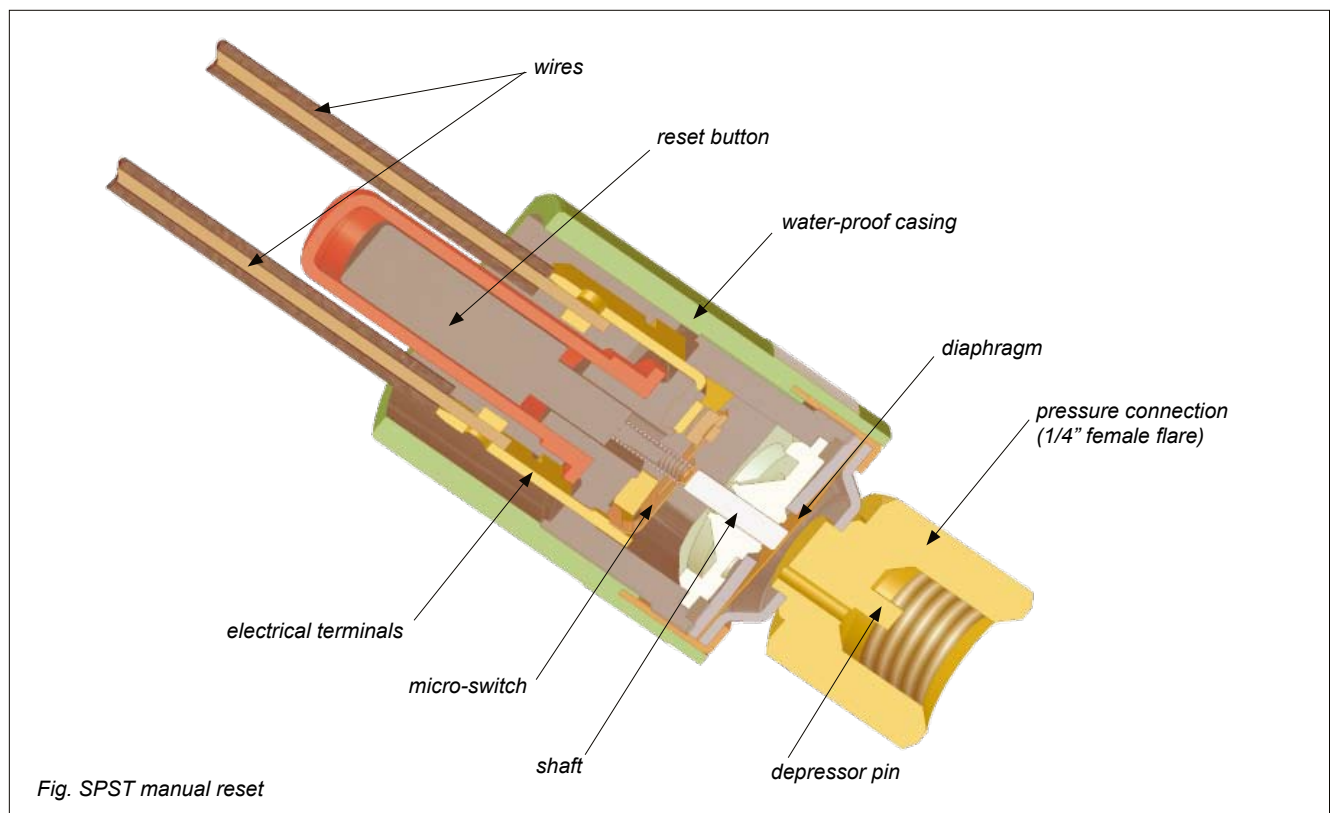
ELECTRICAL CONNECTIONS



SPST = Single Pole Single Trough
SPDT = Single Pole Double Trough

(NO) = Normally Open
(NC) = Normally Closed

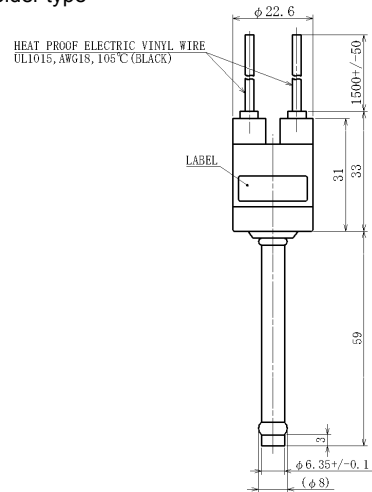
CONSTRUCTION



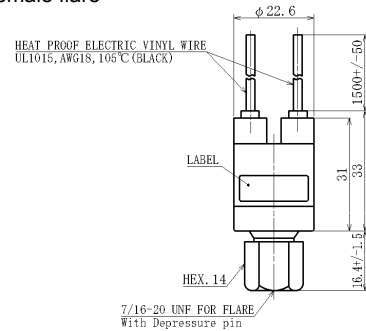
CARTRIDGE CONTROLS DIMENSIONS

DIMENSIONS OF STANDARD CARTRIDGE CONTROLS (mm)

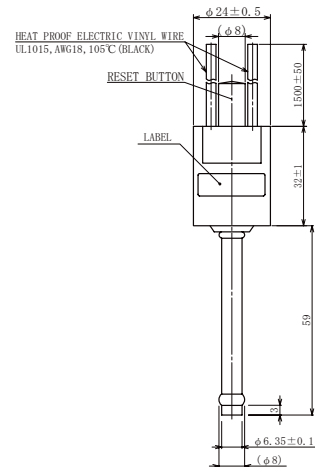
SPST water-proof with automatic reset 1/4" solder type



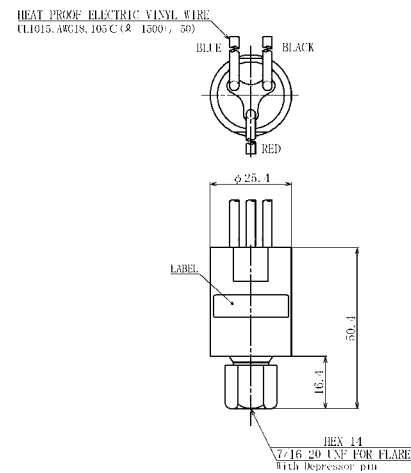
SPST water-proof with automatic reset female flare



SPST water-proof with manual reset solder type



SPDT with automatic reset



SPECIFICATION BUILD-UP

Field	Code	Explanation	Product	Electrical rating	Contact	Approvals	Enclosure	Reset	Housing	Port fitting	Upper activation setting [psi gauge]	Tolerance on upper setting [psi]	Lower activation setting [psi gauge]	Tolerance on low setting [psi]	Electrical connection	Cable length in inches	Cable plug	Mark if additional specifications	Details of special features (if any)
Requested specs:			-																
<i>Example:</i>			ACB	- 2U	B	1	W	A	R	L	380	14	290	21	A	39	0		
Product																			
	ACB	-1.5in Hg to 650 psi																	
Electrical rating																			
	1U	1A @ 250V AC																	
	2U	8A @ 250V AC (Auto), 6A @ 250V AC (Manual)																	
	4U	0.05A @ 12/24V DC																	
Contact																			
	A	SPST-NO																	
	B	SPST-NC																	
	C	SPDT																	
Approvals																			
	0	CE [category II] approval																	
	1	CE [category II + IV], TÜV, VDE, UL & C-UL approvals (only with ACB)																	
	2	UL & C-UL approvals (only with ACB)																	
	3	CE [category II + IV] approval (only with ACB)																	
Enclosure																			
	O	Open IP40																	
	W	Waterproof IP65 (only with cables)																	
Reset																			
	A	Automatic																	
	M	Manual (not SPST-NO; SPDT only in Panel mount housing)																	
Housing																			
	R	Regular hot-melt																	
	E	Epoxy type																	
	V	Vacuum type housing																	
	P	Panel mount (mandatory for SPDT Manual reset versions)																	
Port fitting																			
	M	1/4" SAE female flare w. deflator																	
	V	1/4" SAE female flare w. 1mm deflator																	
	H	1/4" SAE male flare																	
	P	1/4" solder Cu-tube (tip = 3 mm)																	
	X	1/4" solder Cu-tube (tip = 7 mm)																	
	S	1/4" solder Cu-tube (no tip)																	
	L	6 mm solder Cu-tube (tip = 7mm)																	
	E	1/8-27 NPT male																	
	Z	1/4-18 NPT male																	
	Y	R (PT) 1/8"																	
	O	0,9 meter capillary tube w. 1/4" SAE flare nut																	
	C	0,4 meter capillary tube ø2,4mm																	
	U	0,6 meter capillary tube ø2,4mm																	
	F	0,7 meter capillary tube ø2,4mm																	
	G	1,0 meter capillary tube ø2,4mm																	
	W	0,9 meter capillary tube w. 1/4" solder Cu-tube																	
	N	3/8"-24UNF w. O-ring																	
	R	10mm x 1,25 w. O-ring																	
Upper activation setting [bar gauge]																			
	-,-																		
Tolerance on upper setting [bar]																			
	-,-	+/- indicated value																	
Lower activation setting [bar gauge]																			
	-,-																		
Tolerance on low setting [bar]																			
	-,-	+/- indicated value																	
Electrical connection																			
	A	AWG18 cables																	
	B	AWG16 cables																	
	C	AWG18 (UL 3173) cables																	
	S	90 deg. spades																	
	D	Double insulated AWG18 cables																	
	V	Double insulated H05VV5-F 2-in-1 cable (on request only, E housing only, Automatic reset only)																	
	R	Double insulated H05RNF 2-in-1 cable (on request only, E housing only, Automatic reset only)																	
	P	AWG18 with PVC tube																	
	H	AWG18 halogen free (RoHS compliant, currently E housing only)																	
Cable length in inch																			
	---	Please use one of standard lengths: 8, 20, 31, 39, 59, 79 & 98																	
Cable plug																			
		(Leave blank if no cable)																	
	0	Cut ends																	
	A	AMP #187																	
	B	AMP #250																	
	C	VHR 3N																	
	D	VHR 2N																	
	E	Molex 5557-02R																	
	F	AMP 350777-1																	
	G	JST FVDG M1,25-5																	
	H	Stripped ends l = 15mm																	
	I	Pin connector AMP 3200250 (A1-10)																	
	J	AMP #282080																	
	W	Wago connector																	
Additional features																			
		Leave blank if no additional specifications																	
	X	Please specify (clear text attachment)																	
Details of special features (if any)																			



Instruction ACB Cartridge Controls

060R9765

060R9765

Media: HFC and HCFC refrigerants, oil, air, water

Medium: Kältemittel HFCKW und HFKW, Öl, Luft, Wasser

Médias: HFC et HCFC, huile, air, eau

Aplicaciones: Refrigerantes fluorinados HFC/HCFC, aceite, aire, agua

Mezzo: HFC e HCFC refrigeranti, olio, aria, acqua

Type	Contact system	Ohmic	Inductive FLA	Starting LRA	Voltage
ACB-1UA		1 A	1 A	6 A	120/240 AC
ACB-1UB					250 AC
ACB-2UA		8 A	8 A	48 A	120/240 AC
ACB-2UB					250 AC
ACB-4UA		0.075 A	0.075 A	0.075 A	120/240 AC and 30 DC
ACB-4UB					250 AC and 30 DC
ACB-2UC		8 A	8 A	48 A	120/240 AC
					250 AC

Min/Max Temperature

Min/Max Temperatur
Min/Max Température
Min/Max Temperatura
Min/Max Temperatura

Ambient:

Umgebung:

Ambiente:

Ambiente:

-30 → +85 °C

-22 → +212 °F

Torque:
Moment:
Couple de serrage:
Par de apriete:
Coppia de serraggio:

13 - 15 Nm

Media:

Medium:

Médias:

Aplicaciones:

Mezzo:

-55 → +135 °C

-65 → +275 °F

Soldering

Löten
Soudage
Saldatura
Soldadura

Max. 45 sec.



> 45 sec.



Max. 100 °C

212 °F

Max. 100 °C

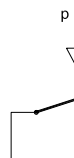
212 °F

Silfoss 15
(15% Ag)

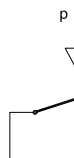
Silfoss 15
(15% Ag)

Contact system

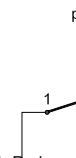
Kontaktsystem
Système de contacts
Contactos eléctricos
Tipo di contatti



SPST-NO



SPST-NC



SPDT

1: Red
1: Rot
1: Rouge
1: Rojo
1: Rosso
4: Blue
4: Blau
4: Bleu
4: Azul
4: Blue
2: Black
2: Schwarz
2: Noir
2: Negro
2: Nero

The Danfoss Saginomiya product offering covers a wide range of automatic controls for Refrigeration and Air-Conditioning.

4 - WAY REVERSING VALVES (CHV/STF/VHV)

- wide application range
- one valve for all refrigerants
- instantaneous changeover at minimum pressure differential
- high reliability



FAN SPEED CONTROLLERS (RGE)

- “All in one” pressure sensor and fan speed control
- single and three phase versions
- reliable sensing mechanism
- simple to install and easy setting



PRESSURE SENSORS (NSK/XSK)

- compact, light-weight and highly accurate
- versatile application potential
- water-proof (IP66)
- different connection styles available



SMALL SOLENOID VALVES (NEV/VPV)

- compact and light-weight design
- available for all refrigerants
- different pipe configurations
- space saving



HIGH PRECISION PRESSURE SWITCHES (TB SERIES)

- high precision pressure control
- adjustable setting point
- high electrical rating
- ambient insensitive settings



STEPPER MOTOR EXPANSION VALVES (KV SERIES)

- high precision expansion control
- high reliability
- compact and durable design



FLOW SWITCHES (FQS)

- reliable flow control
- can be used for different pipe diameters



PRESSURE ACTUATED WATER REGULATING VALVES (AWR/CWR)

- robust control for water-cooled condensers
- compact

