

Data sheet

Cartridge pressure control Types ACB and CCB



Types ACB and CCB cartridge pressure controls are both small disc type pressure controls for use in refrigeration and air conditioning systems. As standard, they are equipped with a 6A contact system with automatic or manual reset.

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

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

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

Type CCB is available for extreme high pressure.

All these features reduce installation costs and save space.

Features

- Wide 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 IP65 version,
- Type ACB for use with CFC, HCFC, HFC refrigerants as high and low pressure safety cut in and cut out as well as fan cycling,
- Type CCB available for CO2 refrigerants.

Approvals

CE according to E42263 (type CCB only)
 Technical Inspection Association, TÜV

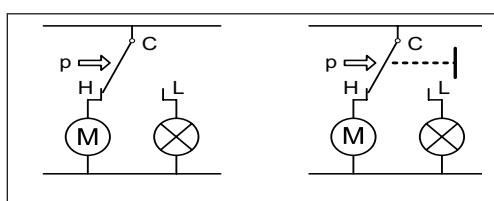
UL listed (type ACB only)

Technical data

Type	ACB		CCB
	Water-proof (W)	Open – spade connector (O)	Water-proof (W)
Media	CFC, HCFC, HFC		CO ₂
Range	-0.5 – 45 bar		100 – 165 bar
Reset	Automatic, Manual	Automatic	
Contact function	SPST-NO, SPST-NC, SPDT		SPST-NC
Electrical connections	AWG18 cables	Spades (size 6.35mm x 0.8 mm)	AWG18 cables
Cable length	150 cm (black)	–	150 cm (black)
Contact load	6A @ 250V AC for SPST		1 - 6A @ 250V AC
	4A @ 250V AC for SPDT		
Pressure connections	1/4 in. ODM solder		6.35 mm solder
	6 mm ODM solder	–	
	1/4 in. SAE female flare		
	with depressor pin		
Maximum working pressure PS	45 bar		165 bar
Burst pressure	140 bar		375 bar
Media temperature	-55 – 135 °C		-30 – 100 °C
Ambient temperature	-30 – 85 °C		
Enclosure	IP65	IP00	IP65
Packing quantity	20 pcs. (industrial pack)	50 pcs. (industrial pack)	100 pcs. (industrial pack)

We have a wide range of customer-specific features available. Please refer to Specification Build-up on page 7.

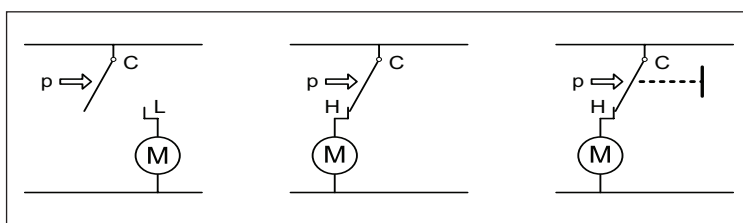
Electrical connections



SPDT

SPDT with manual reset

SPST - Single Pole Single Throw
 SPDT - Single Pole Double Throw
 (NO) - Normally Open
 (NC) - Normally Closed



SPST NO

SPST NC

SPST with manual reset

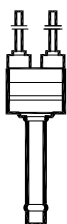
Function

Types ACB and CCB contain 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.

Standard models

Type ACB



Application	Reset	Cut out		Cut in	Contact system / enclosure type W-water-proof types with cable (IP65) O-open (spade connector) types / no cable (IP00)	Connection type		
		[bar]	[psi]			Solder		Flare
		[bar]	[psi]			6 mm	1/4 in.	7/16-20 UNF with depressor pin
High pressure cut out	Auto.	18 ± 0.7 260 ± 10	13 ± 1.2 190 ± 17	SPST-NC / W	061F7504 ACB-2UB504W	061F7505 ACB-2UB505W	061F7506 ACB-2UB506W	
				SPST-NC / O	-	061F8711 ACB-2UB211	061F8709 ACB-2UB209	
				SPDT / W	-	-	061F9057 ACB-2UC59W	
	Auto.	20 ± 1 290 ± 14	16 ± 1.5 230 ± 21	SPST-NC / O	-	061F8710 ACB-2UB210	061F8708 ACB-2UB208	
	Auto.	23 ± 0.7 335 ± 10	19 ± 1.2 275 ± 17	SPST-NC / W	-	-	061F8494 ACB-2UB465W	
				SPST-NC / O	-	061F8707 ACB-2UB207	061F8703 ACB-2UB203	
				SPDT / W	-	-	061F9056 ACB-2UC58W	
	Man.	-	-	-	-	061F9243 ACB-2UC63MW		
	Auto.	-	-	SPST-NC / W	061F7507 ACB-2UB507W	061F7508 ACB-2UB508W	061F7509 ACB-2UB509W	
				SPST-NC / O	-	061F8705 ACB-2UB205	061F8701 ACB-2UB201	
	Man.	26 ± 1 380 ± 15	20 ± 1.5 290 ± 22	SPST-NC / W	061F9703 ACB-2UB803MW	061F9714 ACB-2UB814MW	061F9713 ACB-2UB813MW	
	Auto.	-	-	SPDT / O	-	061F9104 ACB-2UC104	061F9100 ACB-2UC100	
				SPDT / W	-	-	061F9055 ACB-2UC57W	
	Auto.	-	-	SPST-NC / W	061F7510 ACB-2UB510W	061F7513 ACB-2UB513W	061F7514 ACB-2UB514W	
	Man.				-	-	061F9522 ACB-2UB327MW	
	Auto.	28 ± 1 405 ± 14	21 ± 1.5 305 ± 22	SPST-NC / O	-	061F8704 ACB-2UB204	061F8700 ACB-2UB200	
	Auto.			SPDT / W	-	-	061F9054 ACB-2UC56W	
				SPDT / O	-	061F9107 ACB-2UC107	061F9103 ACB-2UC103	
	Man.	-	-	SPDT / W	-	-	061F9242 ACB-2UC62MW	
	Auto.	31 ± 1 405 ± 14	24 ± 1.5 350 ± 22	SPST-NC / W	061F8493 ACB-2UB464W	-	061F8492 ACB-2UB463W	
				SPST-NC / O	-	061F8706 ACB-2UB206	061F8702 ACB-2UB202	
				SPDT / W	-	-	061F9053 ACB-2UC55W	
	Auto.	42 ± 1.2 610 ± 17	33 ± 2 480 ± 29	SPST-NC / W	061F7515 ACB-2UB515W	061F7516 ACB-2UB516W	061F7517 ACB-2UB517W	
	-				-	061F9575 ACB-2UB461MW		
	Auto.			-	-	SPDT / W	-	-

Standard models
(continued)

Application	Reset	Cut out [bar] [psi]	Cut in [bar] [psi]	Contact system / enclosure type W-water-proof types with cable (IP65) O-open (spade connector) types / no cable (IP00)	Connection type		
					Solder		Flare
					6 mm	1/4 in.	7/16-20 UNF with depressor pin
Low pressure control	Auto.	0.5 ± 0.4 7 ± 6	1.5 ± 0.5 22 ± 4	SPST-NO / W	061F7518 ACB-2UA518W	061F7519 ACB-2UA519W	061F7520 ACB-2UA520W
				SPST-NO / O	–	061F7402 ACB-2UA152	061F7400 ACB-2UA150
				SPDT / O	–	061F9106 ACB-2UC106	061F9102 ACB-2UC102
	Auto.	0.7 ± 0.5 10 ± 7	1.7 ± 0.4 25 ± 6	SPST-NO / W	061F7521 ACB-2UA521W	061F7522 ACB-2UA522W	061F7523 ACB-2UA523W
				SPST-NO / O	–	061F7403 ACB-2UA153	061F7401 ACB-2UA151
				SPDT / W	–	–	061F9058 ACB-2UC60W
				SPDT / O	–	061F9105 ACB-2UC105	061F9101 ACB-2UC101
	Auto.	1.7 ± 0.5 25 ± 7	2.7 ± 0.4 39 ± 6	SPST-NO / W	061F7524 ACB-2UA524W	061F7525 ACB-2UA525W	061F7526 ACB-2UA526W
	Auto.	2.2 ± 0.3 32 ± 4.5	3.4 ± 0.3 50 ± 4.5	SPST-NO / W	061F7418 ACB-2UA711W	–	–
	Fan control	Auto.	8.5 ± 1.2 125 ± 17	11 ± 0.8 160 ± 12	SPST-NO / W	061F8491 ACB-2UA393W	–
13 ± 1.5 190 ± 22			16 ± 1 230 ± 14	061F8334 ACB-2UA306W		–	061F8333 ACB-2UA305W

Type CCB



Application	Reset	Cut out [bar] [psi]	Cut in [bar] [psi]	Contact system / enclosure type W-water-proof types with cable (IP65)	Connection type
					Solder 6.35 mm
High pressure control	Auto.	100±10 1450±145	70±20 1015±290	SPST-NC / W	061F9808 CCB-2UB03W
		110±10 1595±145	80±20 1160±290		061F9809 CCB-2UB04W
		120±10 1740±145	90±20 1305±290		061F9810 CCB-2UB05W
		130±10 1885±145	100±20 1450±290		061F9811 CCB-2UB06W
		140±10 2030±145	100±20 1450±290		061F9812 CCB-2UB07W
		150±10 2175±145	100±20 1450±290		061F9813 CCB-2UB08W
		160 ⁺⁵ / ₋₁₅ 2320 ⁺⁷⁵ / ₋₂₁₇	110±20 1595±290		061F9814 CCB-2UB09W

Special accessories

A selection of open type cartridge controls with IP40 enclosures is available from Danfoss Saginomiya. A water-proof rubber plug has been specially designed for these switches.

When the plug is installed on the switch a water-proof seal IP65 is required. The water-proof rubber plug is available with many different cable lengths.



Standard cable length [m]*	Packing quantity	Code no.
1	100	061F1301
2.5	100	061F1302

* other cable lengths available upon request

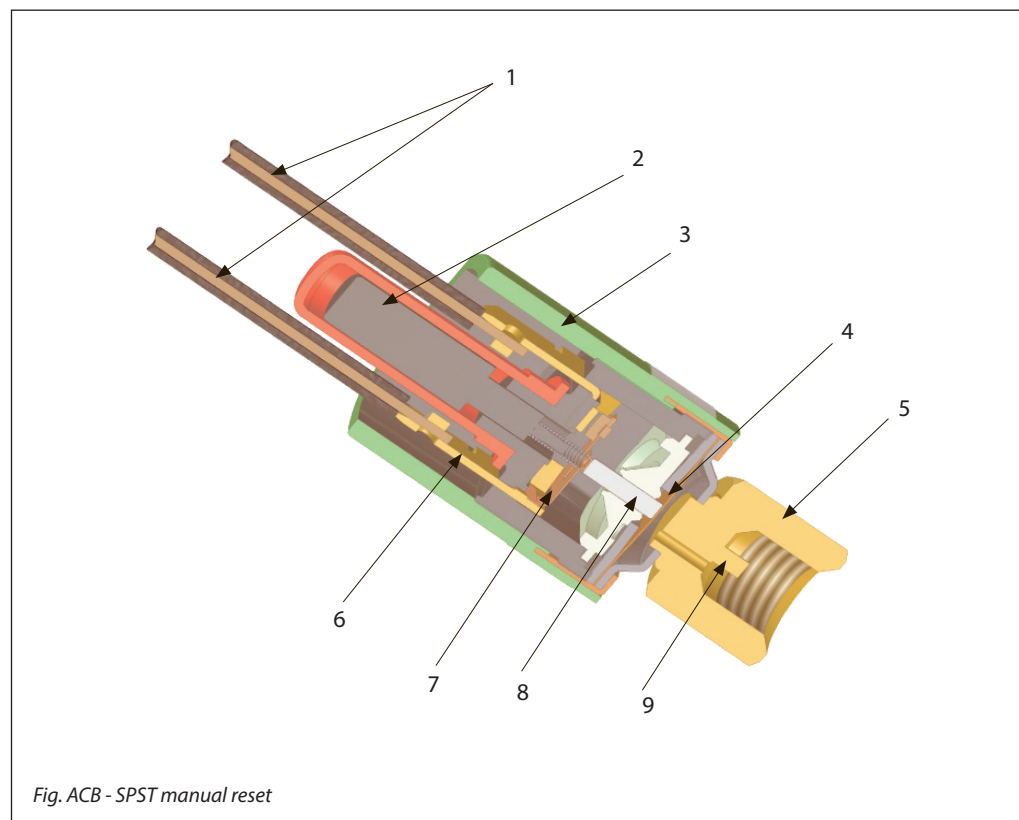
Principles of operation

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

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.

When the operation shaft rises, it pushes the contact plate up, 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).

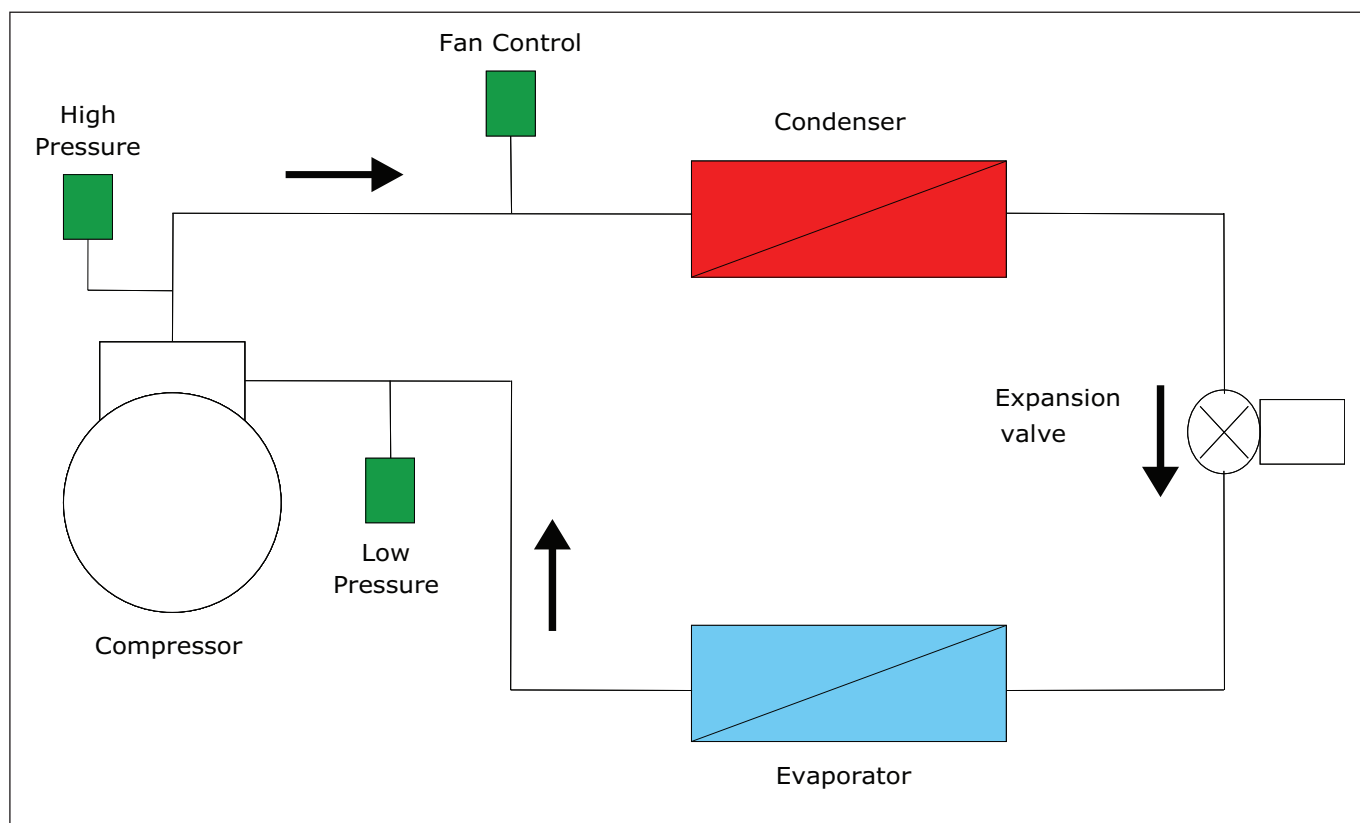
Design / Function



- 1. Wires
- 2. Reset button
- 3. Water-proof casing
- 4. Diaphragm
- 5. Pressure connection (1/4 in. female flare)
- 6. Electrical terminals
- 7. Micro-switch
- 8. Shaft
- 9. Depressor pin

Fig. ACB - SPST manual reset

Application example



Applications

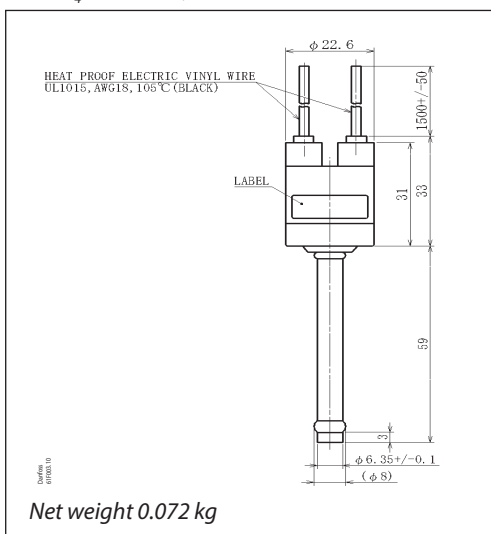
- Condenser fan control
- Compressor stop – start
- Pump-down control
- Low Pressure safety pressure control
- High Pressure safety pressure control

Specification Build-up
Type ACB

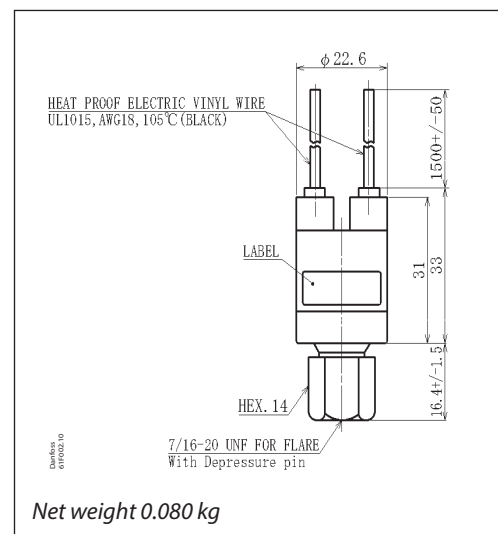
Requested specs:			Product	Electrical rating	Contact	Approvals	Enclosure	Reset	Housing	Port fitting	Upper activation setting [bar gauge]	Tolerance on upper setting [bar]	Lower activation setting [bar gauge]	Tolerance on low setting [bar]	Electrical connection	Cable length in cm	Cable plug	Mark if additional specifications	Details of special features (if any)
Example:			ACB-	2U	B1		WA		RL		20,01	,0	15,01	,5	A1	00	0		
Field	Code	Explanation																	
Product	LCB-	0.5 bar to 7 bar																	
	ACB	-0.5 bar to 45 bar																	
	HCB	15 bar to 45 bar (max pressure 150 bar, automotive version)																	
Electrical rating	1U	1A @ 250V AC																	
	2U	6A @ 250V AC (SPST), 4A @ 250V AC (SPDT)																	
	3U	4A @ 250V AC (do not specify on new types)																	
	4U	0.05A @ 12/24V DC (gold contacts)																	
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 IP00																	
	W	Water-proof IP65 (only with cables)																	
Reset	A	Automatic																	
	MM	anual (not SPST-NO; SPDT only in Panel mount housing)																	
Housing	R	Regular hot-melt																	
	EE	poxy type																	
	VV	acuum type housing																	
	PP	anel 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)																	
	X1	1/4" solder Cu-tube (tip = 7 mm)																	
	S1	1/4" solder Cu-tube (no tip)																	
	L	6 mm solder Cu-tube (tip = 7mm)																	
	E1	1/8-27 NPT male																	
	Z1	1/4-18 NPT male																	
	YR	(PT) 1/8"																	
	O	0.9 metre capillary tube w. 1/4" SAE flare nut																	
	C	0.4 metre capillary tube ø2.4mm																	
	U	0.6 metre capillary tube ø2.4mm																	
	F	0.7 metre capillary tube ø2.4mm																	
	G	1.0 metre capillary tube ø2.4mm																	
	W	0.9 metre 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]																			
Lower activation setting [bar gauge]																			
Tolerance on low setting [bar]																			
Electrical connection																			
	A	AWG18 cables																	
	BA	WG16 cables																	
	CA	WG18 (UL 3173) cables																	
	S	90 deg. spades																	
	DD	ouble insulated AWG18 cables																	
	VD	ouble insulated H05VV5-F 2-in-1 cable (on request only, E housing only, Automatic reset only)																	
	RD	ouble insulated H05RNF 2-in-1 cable (on request only, E housing only, Automatic reset only)																	
	PA	WG18 with PVC tube																	
	HA	WG18 halogen free (RoHS compliant, currently E housing only)																	
Cable length in cm																			
Cable plug																			
		Please use one of standard lengths: 020, 050, 080, 100, 150, 200 & 250 cm																	
		(Leave blank if no cable)																	
	O	Cut ends																	
Faston	A	A1: AMP 170213-2, A2: AMP 170213-2, A3: OBR#250, A4: AMP 735222-2+AMP 735222-2, A5: AMP 170183-2, A6: AMP 170213-2																	
AMP	B	B1: AMP 350777-1, B2: AMP 282080-1, B3: AMP 282104-1, B4: AMP 192167-2, B5: AMP 881772-1, B6: AMP 174354-2																	
Molex	M	M1: 5557-02R																	
Pin connector	P	P1: Phoenix 3200250 P2: AMP 350218-1, P3: AMP 170213-2+AMP 926933-1, P4: AMP 926882-1, P5: AMP 165590-1																	
Packard	Q	Q1: 12010973, Q2: 12015792, Q3: 15300002, Q4: 15300027, Q5: 12020829																	
Stripped end	S	S1: stripped ends 15mm, S2: stripped ends 10mm																	
VHR	V	V1: VHR-2N, V2: VHR-3N																	
WAGO	W	W1: 231-302/026-000, W2: 769-102/021-000																	
Additional features																			
		Leave blank if no additional specifications																	
	XP	lease specify (clear text attachment)																	
Details of special features (if any)																			

Dimensions [mm] and weights [kg]

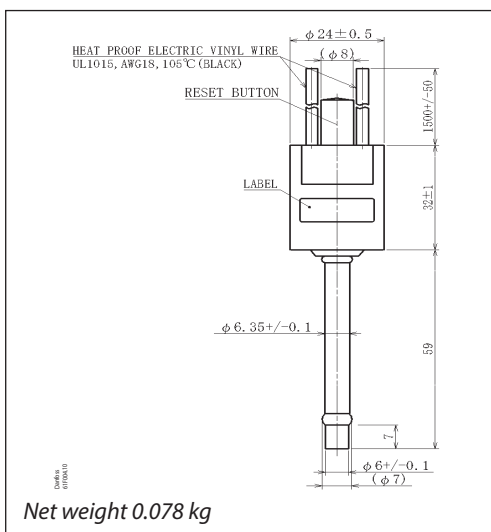
Type ACB – SPST water-proof with automatic reset 1/4 in. solder type



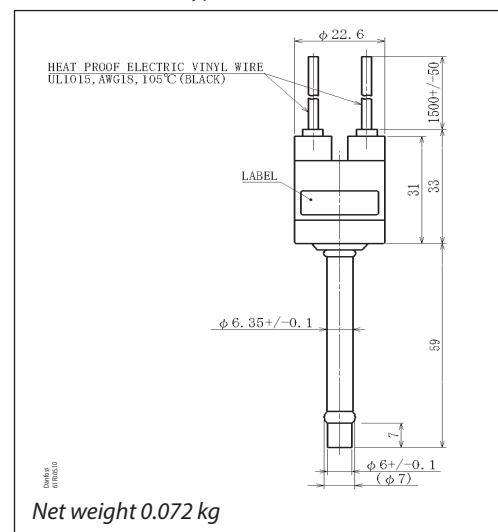
Type ACB – SPST water-proof with automatic reset female flare



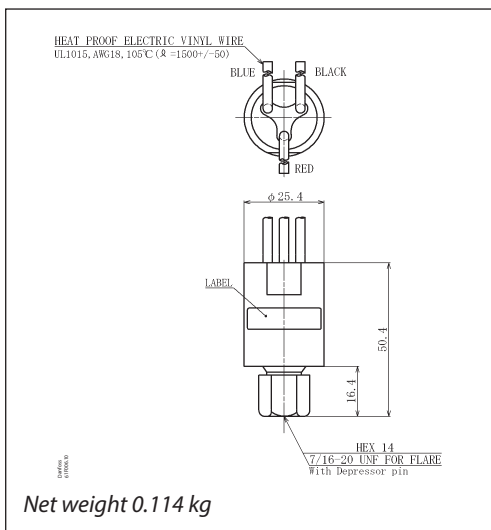
Type ACB – SPST water-proof with manual reset solder type



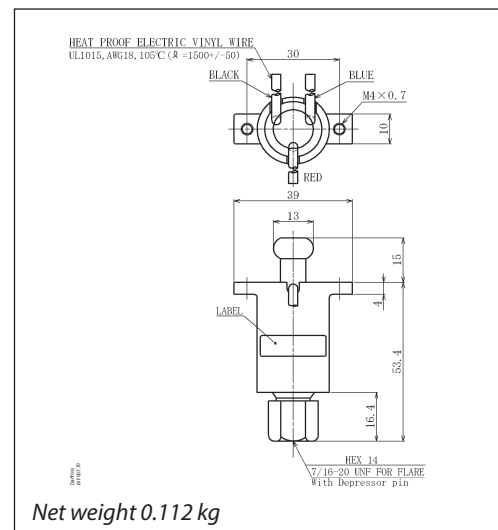
Type ACB – SPST water-proof with automatic reset 6 mm solder type



Type ACB – SPDT with automatic reset

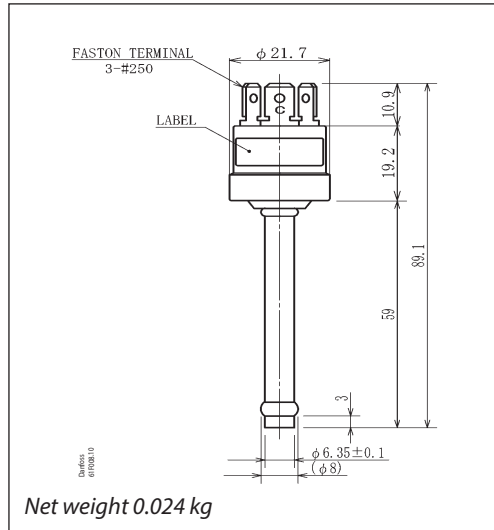


Type ACB – SPDT with manual reset

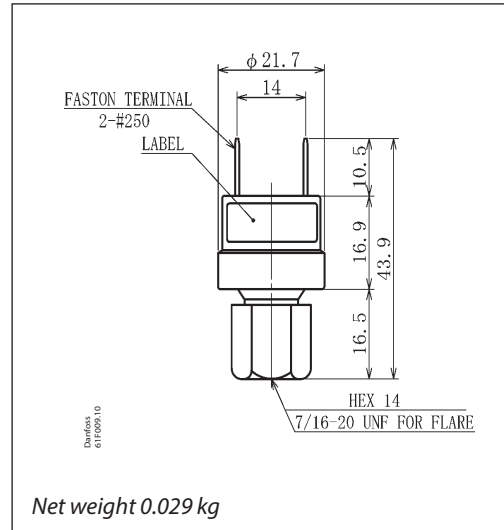


**Dimensions [mm]
and weights [kg]**
(continued)

Type ACB – SPDT open type solder type



Type ACB – SPST open type with female flare



Type CCB - SPST water-proof with automatic
reset 6.35 mm solder type

