



Pressure switch

CAS

Description

The CAS series consists of a series of pressure controlled switches and temperature controlled switches. In this series, special attention has been given to meeting demands for a high level of enclosure, robust and compact construction and resistance to shock and vibration.

The series is suitable for use in alarm and regulation systems in factories, diesel plants, compressors, power stations and on board ships.

Features & benefits

- A high level of enclosure
- Fixed differential
- Robust and compact construction
- Resistance to shock and vibration
- Available with all major marine approvals

Ordering

Product code numbers

Table: Product Name Pressure switch

Type	Product Name	Regulation range [bar] Pe [min]	Regulation range [bar] Pe [max]	Differential [bar] [min]	Differential [bar] [max]	Differential [bar]	Max. Working Pressure [bar]	Max. test pressure [bar] Pe	Burst pressure [bar]	Pressure connection type	Pressure connection size	Code number
CAS133	Pressure switch	0.00	3.50			0.10	10.0	10.0	40.0	G	1/4	060-315066
CAS136	Pressure switch	0.00	10.00			0.20	22.0	22.0	40.0	G	1/4	060-315166
CAS137	Pressure switch	6.00	18.00			0.30	27.0	27.0	72.0	G	1/4	060-315266
CAS139	Pressure switch	10.00	35.00			0.60	53.0	53.0	100.0	G	1/4	060-315366
CAS143	Pressure switch	1.00	10.00	0.20	0.60		120.0	180.0	240.0	G	1/4	060-316066
CAS145	Pressure switch	4.00	40.00	0.80	2.40		120.0	180.0	240.0	G	1/4	060-316166
CAS147	Pressure switch	6.00	60.00	1.00	3.00		120.0	180.0	240.0	G	1/4	060-316266

Table: Product Name Differential pressure switch

Type	Product Name	Diff.press.setting range [bar] [min]	Diff.press.setting range [bar] [max]	Contact differential [bar]	Operat. range LP side [bar] Pe [min]	Operat. range LP side [bar] Pe [max]	Max. Working Pressure [bar]	Burst pressure [bar]	Pressure connection type	Pressure connection size	Code number
CAS155	Differential pressure switch	0.20	2.50	0.10	0	8	22.0	42.0	G	1/4	060-313066

Note:

- Standard pressure switches are CAS133, CAS136 and CAS137.
- Pressure switches for high pressure and strongly pulsating media are CAS143, CAS145 and CAS147.

Enclosure

IP67 acc. to EN 60529. The housing is enameled pressure die cast aluminum (GD-AISI 12). The cover is fastened by four screws which are anchored to prevent loss. The enclosure can be sealed with fuse wire.

Identification

The type designation and code no. of the unit is stamped in the side of the housing.

Accessories code numbers

Table: Type designation

Type designation	Pressure inlet conn. std.	Pressure inlet conn. type	Pressure inlet conn. size [in]	Pressure outlet conn. type	Pressure outlet conn. size[in]	Parts included	Quantity per packing format	Packing format	Code number
Reducing nipple	ISO 228-1	G	3/8	UNF	7/16-20	1x washer Al.	5	Multi pack	017-420566
Welding Nipple	ISO 228-1	G	3/8				5	Multi pack	017-422966
Solder nipple	ISO 228-1	G	3/8	Solder, ODF		1x washer Al., nipple	5	Multi pack	017-436866
Capillary tube	ISO 228-1	G	3/8			2x washer Cu	25	Multi pack	060-104766
Reducing nipple	ISO 228-1	G	1/4	G	3/8		20	Multi pack	060-324066
Reducing nipple	ISO 228-1	G	1/4	G	3/8	1x washer Cu	20	Multi pack	060-333266
Capillary tube armoured	ISO 228-1	G	3/8	G	3/8	2x washer Cu	15	Multi pack	060-333366
Reducing nipple	ISO 228-1	G	3/8	NPT	1/8-27	1x washer Cu	20	Multi pack	060-333466
Reducing nipple	ISO 228-1	G	3/8	NPT	1/4-18	1x washer Cu	20	Multi pack	060-333566
Reducing nipple	ISO 228-1	G	3/8	NPT	1/4-18	1x washer Cu	20	Multi pack	060-333666
Reducing nipple		M		G	1/4	1x washer Cu	20	Multi pack	060-333866

Note: The capillary tube length for **060-104766** is **1500 mm**, while for **060-333366**, it is **1000 mm**.

Product portfolio

[bar]																				Range P _e [bar]	Type
0	10	20	30	40	50	60															
																				0 – 3.5	CAS 133
																				0 – 10	CAS 136
																				6 – 18	CAS 137
																				10 – 35	CAS 139

[bar]																								Range P _e [bar]	Type	
0	10	20	30	40	50	60																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	1 – 10	CAS 143	
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	4 – 40	CAS 145
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	6 – 60	CAS 147

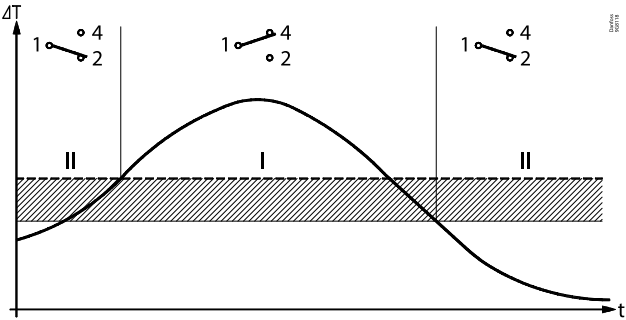
[bar]											Range P _e [bar]	Type
0	10	20	30	40	50	60						
											0.2 – 2.5	CAS 155

Functions

a. CAS 155

Contacts 1-4 make and contacts 1-2 break when the differential pressure rises above the set range value. The contacts changeover to their initial position when the differential pressure again falls to the range value minus the differential (see Figure: CAS 155).

Figure: CAS 155

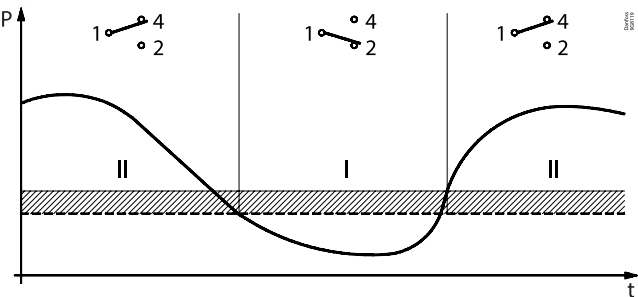


I	Alarm for rising pressure given at the set range value
II	Alarm for falling pressure given at the set range value minus the differential
----	Scale setting
■	Differential

b. All other CAS pressure switches

Contacts 1-2 make and contacts 1-4 break when the pressure falls under the set range value. The contacts changeover to their initial position when the pressure again rises to the set range value plus the differential (see Figure: All other CAS pressure switch).

Figure: All other CAS pressure switch



I	Alarm for falling pressure given at the set range value
II	Alarm for rising pressure given at the set range value plus the differential
....	Scale setting
■	Differential

Example 1:

An alarm must be given when the lubrication oil pressure in a motor fall below 0.8 bar Select CAS 133 (range 0 – 3.5 bar). The minimum permissible lubricating oils pressure of 0.8 bar must be set using the range spindle. The differential is fixed at 0.1 bar, i.e. the alarm will not cut out before the pressure rises to 0.9 bar The switch break function is normally used for alarm purposes, i.e. the alarm must be connected to terminals 1 and 4.

Example 2:

When the differential pressure exceeds 1.3 bar a filter must be cleaned. The maximum static pressure (LP) for the CAS 155 of 8 bar must not be exceeded. The pressure control range spindle must be set at 1.3 bar The alarm must be connected to terminals 1 and 2 (alarm for broken circuit).

Product details

General data

Table: Technical data

Switch	Microswitch with single pole changeover (SPDT)	
Contact load	Alternating current	AC-14 / AC-15: 0.1 A, 220 V
	Direct current	DC-13: 12 W, 125 V
Ambient temperature	CAS 133 – 139	-40 – 70 °C
	CAS 143 – 155	-25 – 70 °C
Temperature of medium ⁽¹⁾	CAS 133 – 139	-40 – 100 °C
	CAS 143 – 155	-25 – 100 °C
Vibration resistance	Vibration-stable in the range 2 – 30 Hz amplitude 1.1 mm and 30 – 100 Hz, 4 g	
Cable entry	Cable diameters from 5 – 14 mm	

⁽¹⁾ For water and seawater, max. 80 °C

Terminology

Range setting

The pressure range within which the unit will give a signal (contact changeover).

Differential

The difference between make pressure and break pressure.

Permissible operating pressure

The highest permanent or recurring pressure the unit can be loaded with.

Max. test pressure

The highest pressure the unit may be subjected to when, for example, testing the system for leakage. Therefore, this pressure must not occur as a recurring system pressure.

Min. burst pressure

The pressure which the pressure-sensitive element will withstand without leaking.

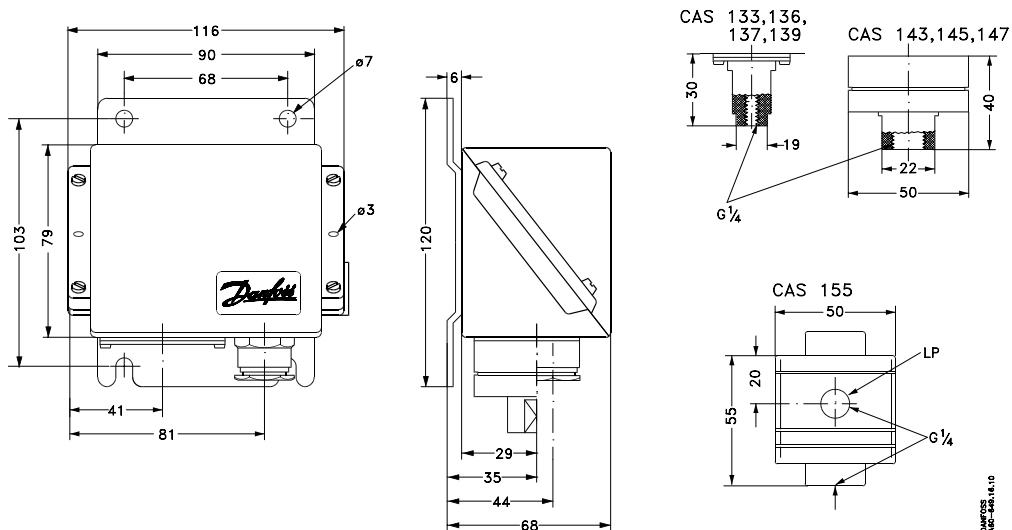
Design

Table: Materials in contact with the medium

Type	Materials	
CAS 133, CAS 136, CAS 137, CAS 139	Bellows	Stainless steel, material no. 1.4306 (DIN 17440)
	Pressure connection	Brass material no. 2.0401 (DIN 17660)
CAS 143, CAS 145, CAS 147, CAS 155	Pressure connection	Nickel plated brass CuZn 40 Ob3 ISO R 426 (DIN 17569)
	Diaphragm	Nitrile-butadien rubber

Dimensions

Figure: Dimensions [mm] and weights [kg]



Net weight: CAS 133-139 approx. 1.0 kg

CAS 143-147 approx. 1.3 kg

CAS 155 approx. 1.5 kg

Installation

Figure: Steam plant

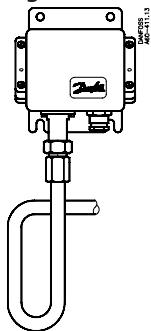


Figure: Electrical connection

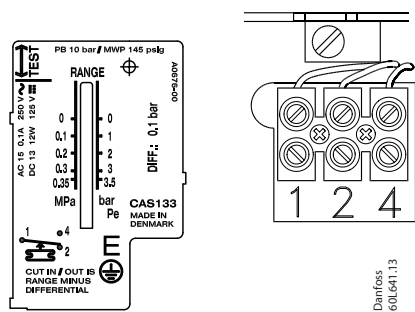
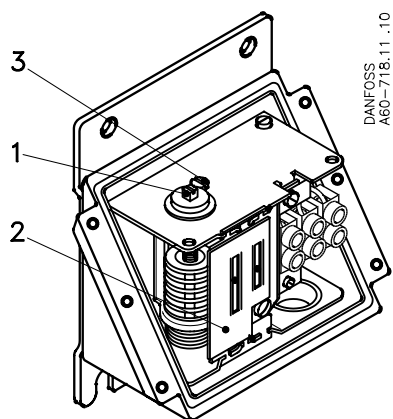


Figure: Setting



1	Range spindle
2	Range scale
3	Locking screw

Installation

CAS pressure switches are fitted with a 3 mm steel mounting plate. The units should not be allowed to hang from the pressure connection.

Pressure connection

When fitting or removing pressure lines, the spanner flats on the pressure connection should be used to apply counter-torque.

Steam plant

To protect the pressure element from excessive heat, the insertion of a water-filled loop is recommended. The loop can, for example, be made of 10 mm copper tube as shown in *Figure: Steam plant*.

Water systems

Water in the pressure element is not harmful, but in case of frost a water-filled pressure element may burst. To prevent this happening, the pressure control can be allowed to operate on an air cushion.

Media Resistance

See *Table: Materials in contact with the medium*. If seawater is involved, types CAS 143, CAS 145, CAS 147, CAS 155 are recommended.

Pulsations

If the pressure medium is superimposed with severe pulsations, which occur in automatic sprinkler systems (fire protection), fuel systems for diesel motors (priming lines), and hydraulic systems (e.g. propeller systems), etc., types of case CAS 143, CAS 145, CAS 147 are recommended. The maximum permissible pulsation level for these types is 120 bar

Setting

When the pressure switches cover is removed, and the locking screw (3) is loosened, the range can be set with the spindle (1) while at the same time the scale (2) is being read (see *Figure: Setting*).

Electrical connection

CAS pressure switches are fitted with a screwed cable entry that is suitable for cable diameters from 5 – 13 mm. Contact function is shown in see *Figure: Electrical connection*.

Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Issuer	Approval topic
Manufacturer's Declaration	Danfoss MD 060-9639.AB	Danfoss	China RoHS
CCC Declaration	Danfoss CCC 2020970305000281	Danfoss	
Marine Certificate	BV 04957-H0 BV	BV - Bureau Veritas	
Electrical Safety Certificate	EAC KZ 7100841.01.01.01391	EAC - Eurasian Customs Union	EMC
UA Declaration	Danfoss UA 2023-01-10 Regulators PL01 PL04	Danfoss	Pressure, PED
Pressure Safety Certificate	LLC CDC EURO-TYSK UA.TR.089.1015.05-22	LLC CDC EURO TYSK - Ukraine	Pressure
Marine Certificate	DNV GL TAA00001VX Rev. 1	DNV	
Marine Certificate	ClassNK certificate TA25225M	ClassNK - The Japanese Marine Association	Marine
CCC Declaration	Danfoss CCC 2024010305641308	CCC - China Compulsory Certification	CCC
Marine Certificate	ABS 25-0290525-PDA	ABS - American Bureau of Shipping	
EU Declaration	Danfoss EU 060-9680.AC	Danfoss	LVD
Export Control Declaration	Pressure switches & Thermostats	Danfoss	
Marine Certificate	LR26118560TA	LR - Lloyd's Register	Marine
EU Declaration	EU DOC PL01 Packaging	Danfoss	Packaging
Marine Certificate	RINA ELE239126XG	RINA - Registro Italiano Navale	Marine

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