

For application in refrigeration systems and heat pumps.



Safety instructions:

- Read installation instructions thoroughly. Failure to comply can result in device failure, system damage or personal injury.
- It is intended for use by persons having the appropriate knowledge and skill.
- Before opening any system make sure pressure in system is brought to and remains at atmospheric pressure.
- Ensure supply voltage and current of electric device match rating on PS1/PS2 name plate. Disconnect supply voltage from system and PS1/PS2 before installation or service.
- Do not exceed test pressure.
- Keep temperatures within nominal limits.

Function / Type of switch (Fig. 1, 4):

Fig. 1a: automatic reset function:

- PS1/PS2 Pressure switches are equipped with SPDT snap action contacts switching from 1-2 to 1-4 on rising and from 1-4 to 1-2 on falling pressure. Reaching the preset switch point on rising pressure, contact 1-2 opens while contact 1-4 closes and vice versa on falling pressure.

Fig. 1b: manual reset function for low pressure reset / Fig. 1c: manual reset function for high pressure reset:

- PS1/PS2 with manual reset (high pressure/low pressure reset): Reaching the preset switching point contact 1-4 switches to 1-2 (low pressure switch) or from 1-2 to 1-4 (high pressure switch) and locks in this position. After the pressure rises or drops by a fixed differential the switch can be reset by pushing the reset button.

PS1/PS2 with manual reset are "trip-free".

Mounting (Fig. 2):

- PS1/PS2 controls may be installed by using a mounting plate or as a wall-mounted device against a flat surface.
- Use universal thread M4 or UNC8-32 mounting holes for installation via mounting plate.
- Use the standard mounting holes at the backside for wall mounting.
- Use mounting screws supplied with control.
- Mounting screws must not penetrate control backside by more than 8 mm to ensure proper operation.
- Do not use PS1/PS2 in pulsating operating conditions!

In order to achieve protection class IP44, the following instructions must be observed:

- Cover must be closed and cover screw fastened
- Control must be mounted against a flat surface so that all openings on the housing backside are fully covered

Mounting direction:

Any direction except upside down

Pressure connection (Fig. 3):

- Connection of the pressure side depends on the exact model / pressure connector.
- Connectors A, C, F and S: Do not apply torsional load to pressure connector; use second spanner to counter-balance torque when tightening pressure connection.
- Connector A: high pressure versions (pressure range '5') are equipped with a snubber to dampen pulsations.
- When connecting PS1/PS2 to the hot gas line of a refrigeration system, a pipe, capillary or flexible tube of at least 80 mm shall be used to allow sufficient temperature drop between refrigeration line and pressure switch bellows.
- K-type connectors: use copper gasket supplied with control.

Leakage test:

After completion of installation, a test pressure must be carried out as follows:

- According to EN378 for systems which must comply with European pressure equipment directive 97/23/EC
- To maximum working pressure of system for other applications

Warning:

- Failure to do so could result in loss of refrigerant and personal injury.
- The pressure test must be conducted by skilled persons with due respect regarding the danger related to pressure.

Maintenance/Service:

In case of repair work or replacing the control always use new gasket.

Electrical connection (Fig. 4):

- (1) Range spindle (4) Electrical terminals
- (2) Lockplate (5) Check-out lever
- (3) Differential spindle (6) Cable entry grommet

Note: Comply with local electrical regulations when conducting electrical wiring. Wire size must match the electrical load connected to the switch contacts.

- Feed cables through rubber grommet at switch bottom.
- Optionally, the rubber grommet may be replaced by a standard PG 13.5 cable gland.
- Connect wires to terminals by taking into account switch functions as shown in Fig. 1a to 1c.
- Fasten terminal screws with torque 1.2 Nm max.
- For electronic applications with low electrical loads (voltage ≤ 24 V and current < 50 mA) gold plated contacts are recommended.

Setpoint adjustment (Fig. 5):

- (1) Upper setpoint (5) Upper setpoint
- (2) Lower setpoint (6) Lower setpoint
- (3) Differential = constant (7) Differential = variable
- (4) Turning range spindle (8) Turning differential spindle

- PS1/PS2 pressure switches come with individually adjustable range and differential depending on the exact model.
- Manual reset switches always have a fixed differential.
- Use a flat screw driver or a 1/4" refrigeration (square) wrench to adjust setpoints as described below.
- Adjust upper setpoint using the range spindle.
- Adjust lower setpoint by turning the differential spindle.

Upper setpoint – Differential = Lower setpoint

- A separate gauge must be used for exact adjustment of the setpoints. The integrated display scale can only be used for obtaining approximate settings.
- When changing the upper setpoint the lower setpoint must be re-checked.
- Refer to the ALCO catalogue for standard factory settings.

Manual reset / Universal reset (Fig.6):

- (1) Manual reset (external): press the reset button (1) as indicated by Fig. 6a.
- (2) Manual reset (internal): remove the housing cover and press the reset button (2) as indicated by Fig. 6b.
- Note that the reset is 'trip-free', i.e. reset is only possible if the pressure has reached its reset threshold.
- Universal reset: remove the cover and change the universal toggle to the desired position (manual (3) or auto reset (4)).

Check-out lever (5) (Fig. 4)

- Use the check-out lever to manually override the electrical contact position for testing out the system.
- Use the check-out lever on low pressure switches to manually override the electrical contact position for evacuating the refrigeration system.

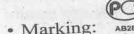
Standards

- EN 12263: specific models
- Pressure Equipment Directive PED 97/23/EC, Category IV, for all devices with TÜV approval under EN12263
- Low Voltage Directive LVD 73/23/EWG; 93/68/EWG; EN 60947-1; EN 60947-5-1
- UL/CSA: all models



0035 marking for devices under PED

marking for devices under LVD



Marking: ABSE

Technical data:

- Protection class: IP44 (IEC 529/EN 60529)
- Ambient temperature (housing): -50°C .. +70°C
- Storage / transportation temperature: -50°C .. +70°C
- Medium/allowable temperature TS: -50°C .. +70°C
- Test pressure PT: see fig. 7
- Max. allowable pressure PS: see fig. 7
- Vibration resistance: 4g (10...1000 Hz)

Electrical rating	24A / 230V AC
Heating load (AC1):	10A / 230V AC
Inductive load (AC15):	0.1A / 230V DC
Inductive load (DC13):	3A / 24V DC
	144A / 230V AC

Start-up (AC3):	24A / 120 / 240V AC
Motor rating (FLA):	144A / 120 / 240V AC
Locked rotor (LRA):	144A / 120 / 240V AC

- Medium compatibility: HFC, HCFC
- not released for inflammable refrigerants

Type code:

PS1 – (1) (2) (3) PS2 – (1) (2) (3) e.g. PS1-A 5 A

(1) Function

- A = Pressure control, automatic
- B = Pressure cut out, external manual reset, TÜV/EN12263 approval,
- C = (PS2) Left: pressure limiter, automatic, TÜV/EN12263. Right: pressure cut out, external manual reset, TÜV/EN12263
- G = (PS2) Left: pressure cut out, external man reset, TÜV/EN12263. Right: safety pressure cut out, internal manual reset, TÜV/EN12263
- L = (PS2) Left: automatic pressure control. Right: pressure control, extern. manual reset
- M = (PS2) Left: automatic pressure control. Right: convertible reset from R to A
- R = Pressure control, external manual reset
- S = Safety pressure cut out, internal manual reset, TÜV/EN12263 approval
- T = (PS2) Left: pressure limiter, automatic, TÜV/EN 12263. Right: safety pressure cut out, internal manual reset, TÜV/EN12263.
- U = Convertible from function 'R' to 'A'
- W = Pressure limiter, automatic, TÜV/EN12263 approval

NOTE: Function types B, R or S in combination with pressure range 1, 2 or 3 have a low pressure manual reset function and latch with falling pressure. Function types B, R, S in combination with Pressure Range 4 or 5 have a high pressure manual reset function and latch with rising pressure

(2) Pressure range (Fig. 7)

(PS: max. allowable pressure / PT: test pressure)

(3) Pressure connection (Fig. 3)

- A = 7/16"-20 UNF, male
- C = R 1/4" male, stainless steel with steel bellows
- K = cap. tube, nut 7/16"-20UNF, schrader valve opener
- R = R 1/4" male, brass
- L = 1/4"-ODM solder with 1 m cap tube
- U = 6 mm ODF solder, 80 mm length
- X = 1/4"-18 NPTF, steel (incl. bellows)