



EMERSON Pressure Controls Series CS1 Instruction Manual

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**EMERSON Pressure Controls Series CS1
Instruction Manual**



General information:

For application in refrigeration systems in compliance with standard EN 378.
A professional and appropriate storage and allocation of the devices is mandatory.

Safety instructions:

- Read operating instructions thoroughly. Failure to comply can result in device failure, system damage or personal injury.
- According to EN 13313 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.
- Before installation or service disconnect all voltages from system and device.
- Do not exceed the specified maximum ratings for pressure, temperature, voltage and current.

Function:

- CS1 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.

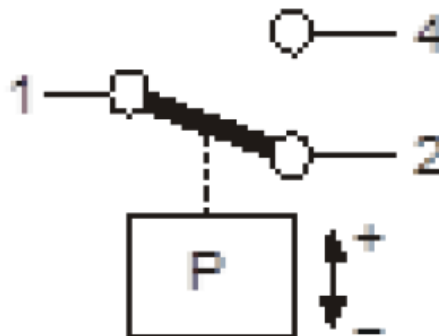


Fig.1

Mounting direction:

- Any direction except upside down.

Installation (Fig.2&4):

Fig.2

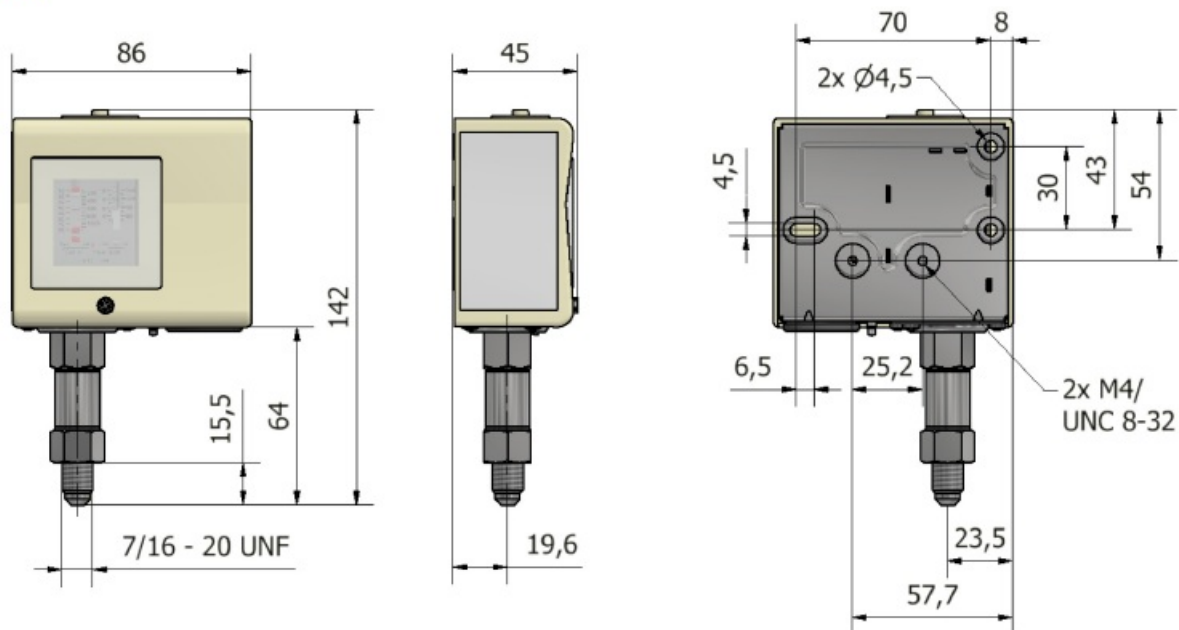
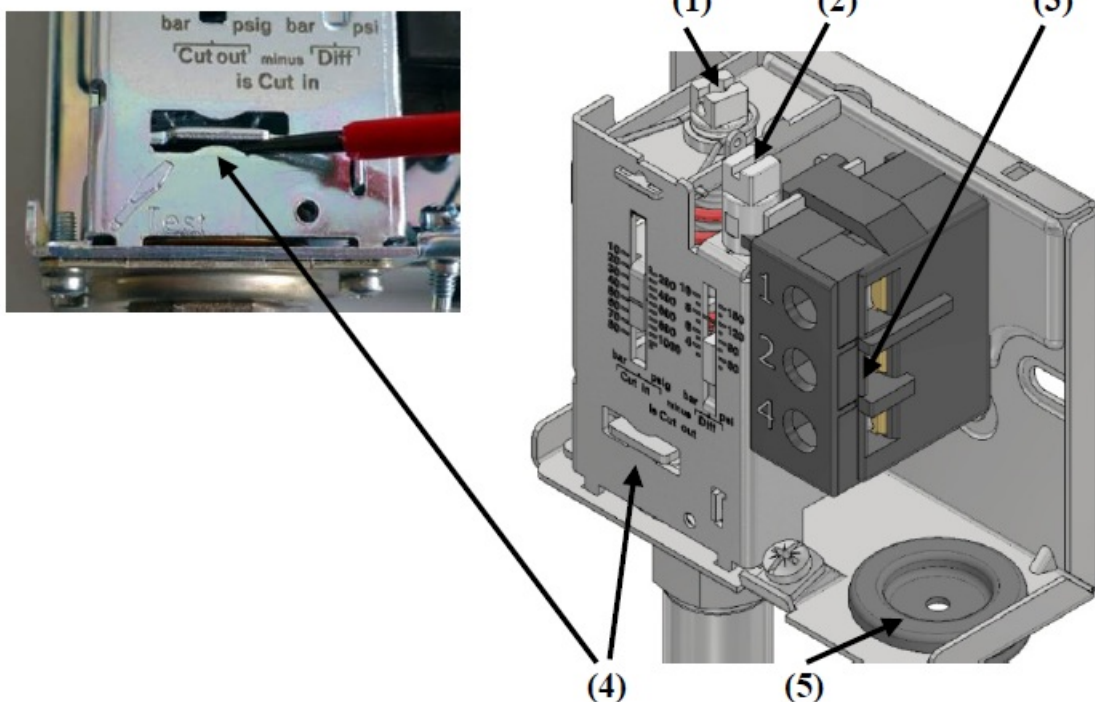


Fig.4



- CS1 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 CS1 in pulsating operating conditions! Minimize vibrations in the piping lines by appropriate

solutions.

- In order to achieve protection class IP33, the following instructions must be observed:
 1. Cover must be closed and cover screw fastened.
 2. Control must be mounted against a flat surface so that all openings on the housing backside are fully covered.
 3. Cable grommet (Fig.4, No.5) is sealing the cable entry to the housing

Pressure connection (Fig.3):

Fig. 3



- Do not apply torsional load to pressure connector; use second spanner to counter-balance torque when tightening pressure connection. High pressure versions are equipped with a snubber to dampen pulsations.
- When connecting CS1 to the hot gas line of a refrigeration system, a pipe or high-pressure hose of at least 80 mm shall be used to allow sufficient temperature drop between refrigeration line and pressure switch bellows.

Pressure 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 2014/68/EU
- to maximum working pressure of system for regions out of Europe

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.

Tightness test:

Conduct a tightness test according to EN 378-2 with appropriate equipment and method to identify leakages of external joints. The allowable leakage rate must be according system manufacturer's specification.

Electrical connection:

- Entire electrical connections have to comply with local regulations.

- Wire size must match the electrical load connected to the switch contacts.
- Feed cables through rubber grommet at switch bottom (Fig.4, No.5).
- Optionally, the rubber grommet may be replaced by a standard PG 13.5 cable gland.
- Connect wires to terminals (Fig.4, No.3) by taking into account switch functions as shown in Fig.1
- Fasten terminal screws with torque 1.2 Nm max.
- **Warning:** CS1 might not be suitable for connection to electronic controllers with low electrical loads (voltage <24 V and current <50 mA).

Setpoint adjustment (Fig.4&5):

Fig.4

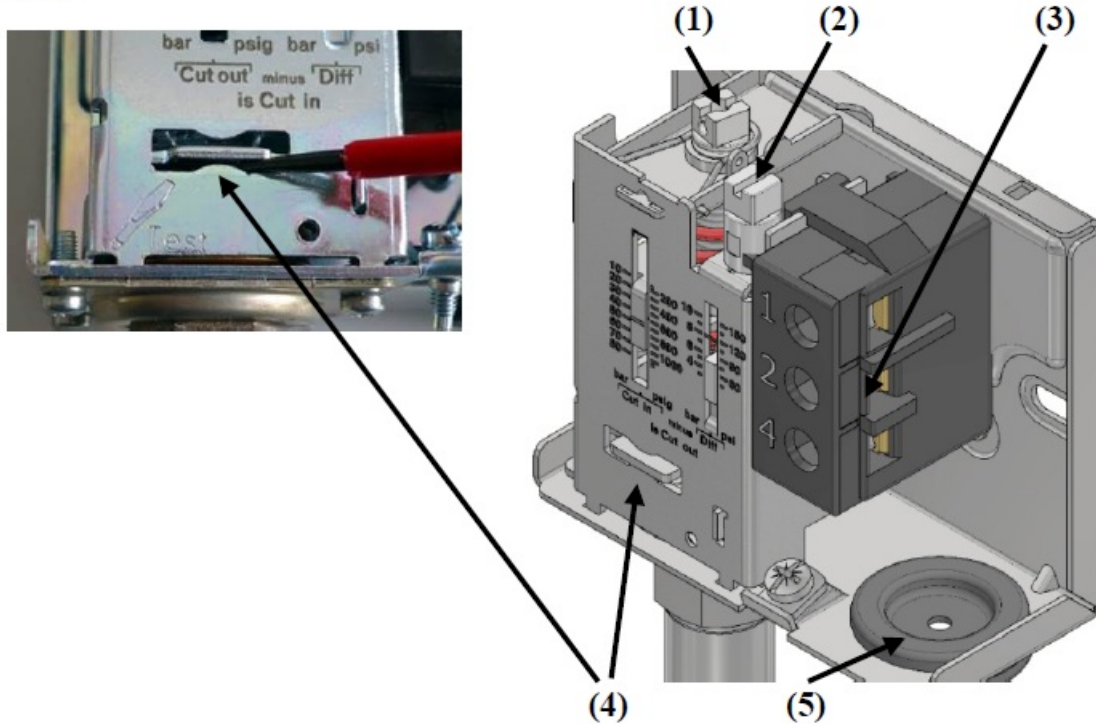


Fig.5a

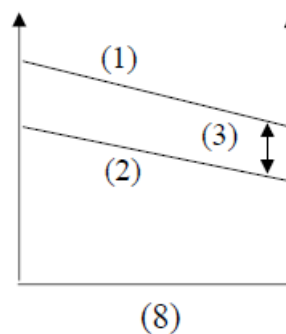
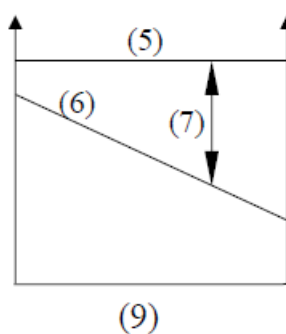
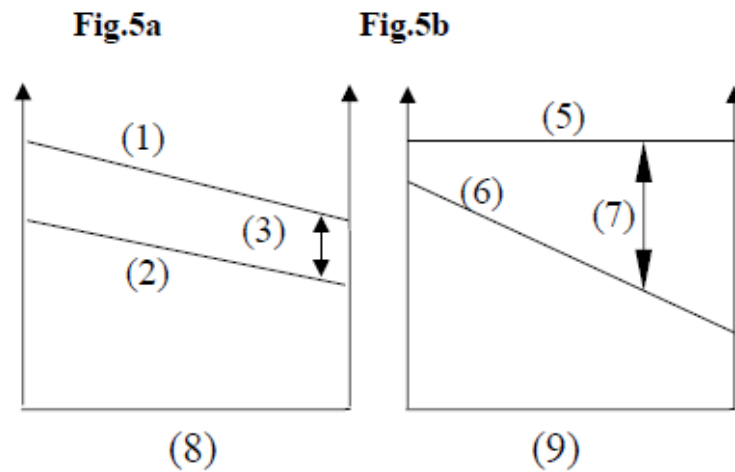


Fig.5b



- CS1 pressure switches come with individually adjustable range and differential depending on the exact model.
- 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 (Fig.4, No.1).
- Adjust lower setpoint by turning the differential spindle (Fig.4, No.2).

Upper setpoint – Differential = Lower setpoint Fig.5a/5b

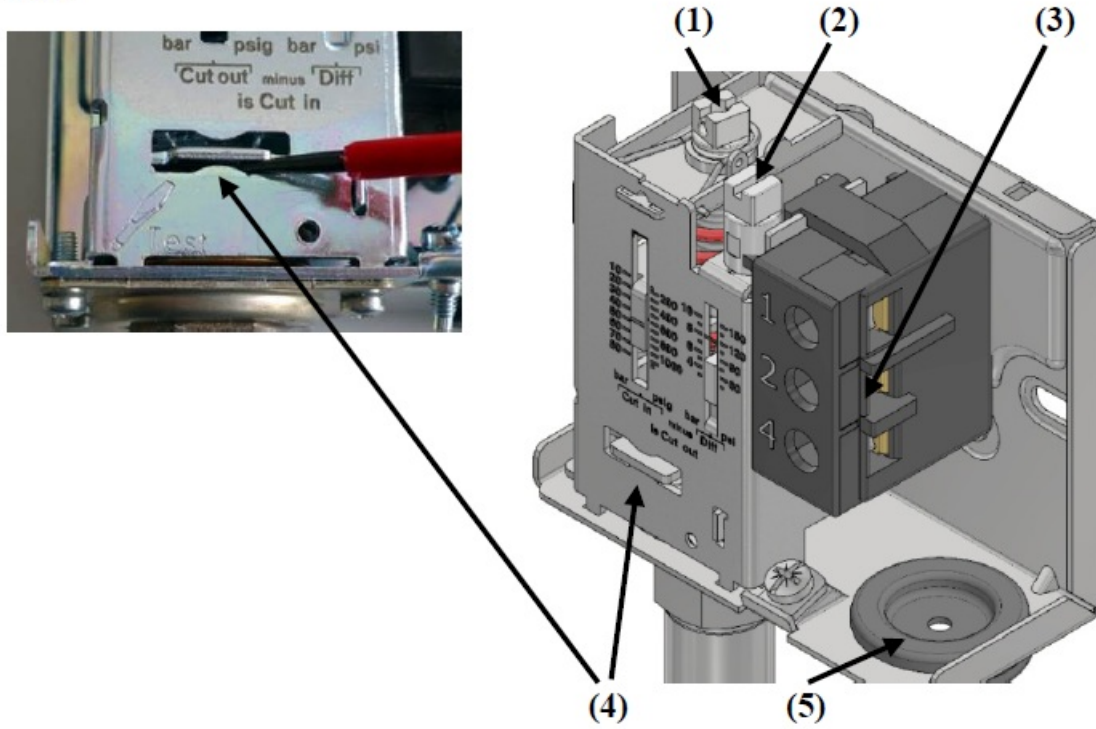


- (1) Upper setpoint
- (5) Upper setpoint
- (2) Lower setpoint
- (6) Lower setpoint
- (3) Differential
- (7) Differential = variable
- (8) Turning range spindle
- (9) Turning differential spindle

- A separate accurate gauge must be used for exact adjustment of the setpoints. The integrated display scale can only be used for obtaining approximate settings. Maximum cut-out level must be as follows:
 1. System with single protection device: At PS of system minus tolerances.
 2. System with two individual protection devices: At $0.9 \cdot PS$ of system.
- When changing the upper setpoint the lower setpoint must be re-checked.
- Refer to the Technical Bulletin for standard factory settings.



Check-out lever (Fig.4, No.4):

Fig.4



- Use the check-out lever to manually override the electrical contact position for testing out the system.
- Service / Maintenance:
- Defective CS1 must be replaced, they cannot be repaired.

Technical data:

Protection class (IEC 529/EN 60529)	IP33
Ambient temperature (housing)	-25°C...+70°C
Max. relative humidity	95% non-condensing
Storage / transportation temperature	-50°C...+70°C
Medium temperature TS	-25°C...+150°C
Vibration resistance (acc. EN12263)	1g (10...150 Hz)
Electrical rating Resistive load (AC1) Inductive load (AC15) Inductive load (DC13)	24A / 230V AC 10A / 230V AC 0.1A / 230V DC 144A / 120 / 240 VAC 24A / 120 / 240 VAC
Use proper fuse for short circuit case by considering above voltages/currents	
Medium compatibility	R744, R410A
Standards: <ul style="list-style-type: none"> • EN 12263 • PED 2014/68/EU, Category IV for all devices with TÜV approval under EN12263 • LVD 2014/35/EU, EN 60947-1, EN 60947-5-1 	
Marking: <ul style="list-style-type: none"> •  0035 marking for devices under PED •  marking for devices under LVD 	

Type code:

CS1- ① ② ③

e.g. CS1- W 6 A

① Function

W = High Pressure limiter, automatic,
TÜV/ EN12263 approval (PSH)

② Pressure range

Pressure setting range	Max. allowable Pressure (PS)	Test Pressure (PT)
6 = 10...45 bar	70 bar	77 bar
7 = 15...65 bar	70 bar	77 bar

Pressures are relative (gauge pressure).

③ Pressure connection (Fig. 3)

A=7/16"-20 UNF male

Fig. 3




Emerson Climate Technologies GmbH

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Documents / Resources

	EMERSON Pressure Controls Series CS1 [pdf] Instruction Manual Pressure Controls Series CS1
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References

- [HVACR Technology and Infrastructure Solutions | Emerson GB](#)