

Installation, Operation & Maintenance Instructions



CS Series

Models CS2, CS4 (Pressure Switches)

General

The unit is manufactured, checked and supplied in accordance with our published specification, and when installed and used in normal or prescribed applications, with the lid in place and within the parameters set for mechanical and electrical performance, will not cause danger or hazard to life or limb.



THE USERS ATTENTION IS DRAWN TO THE FACT THAT, WHEN THE UNIT IS 'LIVE' WITH RESPECT TO ELECTRICAL OR PRESSURE SUPPLIES, A HAZARD MAY EXIST IF THE UNIT IS OPENED OR DISMANTLED.



UNITS MUST BE SELECTED AND INSTALLED BY SUITABLY TRAINED AND QUALIFIED PERSONNEL IN ACCORDANCE WITH APPROPRIATE CODES OF PRACTICE SO THAT THE POSSIBILITY OF FAILURE RESULTING IN INJURY OR DAMAGE CAUSED BY MISUSE OR MISAPPLICATION IS AVOIDED.



THE MICROSWITCH ASSEMBLY WITH FACTORY SEALED LEADS HAS BEEN CAREFULLY POSITIONED AT THE FACTORY. ANY DISTURBANCE MAY RENDER THIS UNIT INOPERATIVE.



USER SHOULD ENSURE THE EQUIPMENT IS SUITABLE FOR USE IN THE APPLICATION WITH AGGRESSIVE SUBSTANCE

Operating principles



Pressure Switch models CS2 & CS4 are diaphragm operated switches.

These diaphragms generate a force proportional to the applied pressure and are balanced by a user adjustable control spring. When the force exceeds that created by the control spring, the diaphragm moves causing a push rod to actuate a snap-acting micro-switch.

CERTIFICATIONS

Intrinsically Safe Models

Intrinsically safe models carry the following label markings:



 Ex ia IIC T6 Ga Tamb (-40°C TO +60°C) Ui = 30V
 T4 Ga Tamb (-40°C TO +85°C) li = 300mA
 Ci = 1 nF
 Li = 6.3 µH
 0598
 ATEX CERTIFICATE #: SGS19ATEX0113X
 IECEx CERTIFICATE #: IECExBAS19.0098X

This equipment may be used in zones 0, 1 & 2 with flammable gases and vapours with apparatus groups IIA, IIB & IIC and with temperature classes T4, & T6.

This equipment is certified for use in ambient temperatures in the range -40°C to +60°C for T6 and -40 to +85°C for T4.

The certificate number has an 'X' suffix which indicates that special conditions of installation and use apply. Those installing or inspecting this equipment must have access to the contents of the certificate or these instructions. The conditions listed in the certificate are reproduced below:





ATEX

THE APPARATUS IS NOT CAPABLE OF WITHSTANDING THE 500 V RMS INSULATION TEST REQUIRED BY CLAUSE 6.3.13 OF EN 60079-11. THIS MUST BE TAKEN INTO ACCOUNT WHEN INSTALLING THE EQUIPMENT.

Flameproof Models

Flameproof models carry the following label markings:



 Ex db IIC T6 Gb (Tamb -40 to +45°C) Ex db IIC T6 Gb (Tamb -40 to +45°C)
 T4 Gb (Tamb -40 to +85°C) T4 Gb (Tamb -40 to +85°C)
 T6 Gb (Tamb -40 to +60°C) for microswitch upto 5A T6 Gb (Tamb -40 to +60°C) for microswitch upto 5A
 Ex tb IIC T85°C/T195 Db Ex tb IIC T85°C/T195 Db
 0598
 ATEX CERTIFICATE #: SGS19ATEX0113 IECEx CERTIFICATE #: IECExBAS19.0098X
 DELTA MOBREY LTD, DOGFLUD WAY, FARNHAM, GU9 7SS, UK

This equipment may be used in zones 1 & 2 with gases groups IIA, IIB & IIC and dusts groups IIIA, IIIB & IIIC for temperatures classes T4, & T6.

This equipment is certified for use in ambient temperatures in the range -40°C to +45°C for T6, -40 to +60°C for T6 with microswitch up to 5A and -40 to +85°C for T4.

The certificate number has an 'X' suffix which indicates that special conditions of installation and use apply. Those installing or inspecting this equipment must have access to the contents of the certificate or these instructions. The conditions listed in the certificate are reproduced below:



ATEX

THE EQUIPMENT WIRE SHOULD BE PROTECTED FROM MECHANICAL DAMAGE BY THE USE OF METAL CONDUIT OR AN EQUIVALENT METHOD, TO PREVENT THE WIRING FROM BEING SUBJECTED TO TENSION OR TORQUE. IF IT IS TO BE TERMINATED WITHIN A POTENTIALLY EXPLOSIVE ATMOSPHERE, A SUITABLY CERTIFIED TERMINATION FACILITY MUST BE USED, E.G. WITHIN AN EX d IIC Gb CERTIFIED ENCLOSURE.



ATEX

CS SERIES PRESSURE SWITCH IS TO BE INSTALLED IN EQUIPMENT WHICH IS SUITABLY EARTHED

INSTALLATION

Mounting (All models)

The instruments are designed to be mounted vertically with the process connection underneath. However, mounting up to 45° from the vertical in any plane is acceptable, although a small calibration shift may occur. They can be mounted direct to process. Select the mounting point so as to avoid stresses, excessive shock, vibration or temperature fluctuation being imparted to the switch during operation. Instruments should be mounted to avoid excessive heat transfer from the process lines or adjacent plant. To avoid undue stresses being imparted to the instrument when wall/panel mounted, it is recommended that a short length of flexible line be installed between the instrument and process line. If sudden changes of pressure (pulsations) are likely then we recommend that



snubbers are fitted between the process line and instrument.

ALWAYS HOLD A WRENCH ON THE PRESSURE ENTRY HEX WHEN MAKING PRESSURE CONNECTION TO THE SWITCH. DO NOT TIGHTEN BY TURNING THE ELECTRICAL ENTRY.



CHECK THE CONNECTION THREAD SIZE AND SPECIFICATION ON THE UNIT TO AVOID MIS-MATCHING WITH THE PROCESS CONNECTION ADAPTOR. SEE DIGIT 11 OF PRODUCT CODE.

Wiring



THE LEADS ARE FACTORY SEALED SO IT IS UNNECESSARY TO SEAL THE CONDUIT TO THE CONDUIT NIPPLE. HOWEVER, THE LEADS MUST BE SUITABLY PROTECTED AGAINST MECHANICAL DAMAGE AND TERMINATED IN A SUITABLE JUNCTION BOX OR TERMINAL FACILITY IN ACCORDANCE WITH LOCAL AND NATIONAL CODES. REFER TO THE WIRING DIAGRAM (FIGURE 1).



IF THE EQUIPMENT IS LIKELY TO COME INTO CONTACT WITH AGGRESSIVE SUBSTANCES, E.G. ACIDIC LIQUIDS OR GASES THAT MAY ATTACK METALS OR SOLVENTS THAT MAY AFFECT POLYMERIC MATERIALS, THEN IT IS THE RESPONSIBILITY OF THE USER TO TAKE SUITABLE PRECAUTIONS THAT PREVENT IT FROM BEING ADVERSELY AFFECTED THUS ENSURING THAT THE TYPE OF PROTECTION IS NOT COMPROMISED.

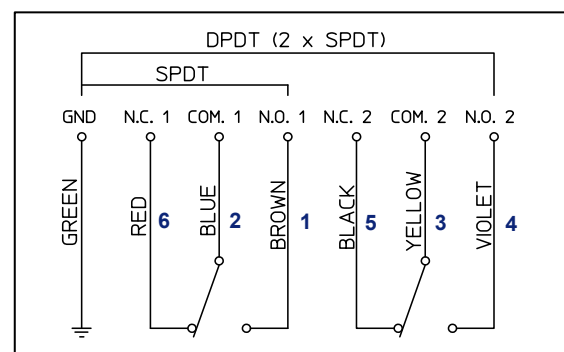


Fig 1

*Individual cores of cable can be coloured or numbered as show above.

OPERATION

Adjustments

Pressure Switches are supplied calibrated at the midpoint of their range and to a falling pressure unless otherwise specified.

Set point adjustments (All Models): (See Fig. 2)

1. Isolate the instrument from process and power (Adjustment may be carried out with the unit live)
2. Slide the cover upwards
3. Using a screwdriver, rotate the range adjuster to obtain the desire setting. Turn right to left to increase the setting.

As a guide, one complete revolution of the adjuster will alter the set point by approximately 15% of the range.

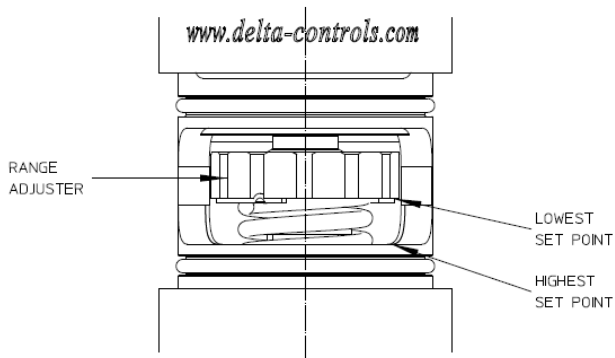


Fig 2

Note: For accurate setting of Pressure and models, a suitable pressure gauge must be used in conjunction with the above procedure. Do not attempt to set the switch outside the scale limits. Though the unit may be set anywhere within its range, for optimum performance, it is good practice to have a set point value between 25% and 75% of span.

MAINTENANCE

Inspections should be carried out at quarterly to yearly intervals depending upon operating conditions. Periodically grease the O-rings for CS cover using Molykote 33M grease for smooth opening and closing of the cover. With regard to explosion safety, it is not necessary to check for correct operation.

It is recommended that instruments used to provide an alarm are operated periodically to ensure they are functioning correctly.

If further maintenance is required, seek advice from DELTA MOBREY before attempting repair or replacement of parts.

Should the diaphragm fail the process will vent to atmosphere via a control orifice without pressurising the switch enclosure. Periodically ensure the vent area does not become blocked and vent plug has not degraded. Ensure that the vent area is not obstructed.

Replacement parts

Use only factory authorised parts and the fitting instructions that are supplied.

Warranty

See Standard Conditions of Sale.



THE EQUIPMENT CONTAINS NO USER-REPLACEABLE PARTS AND IS NOT INTENDED TO BE REPAIRED BY THE USER. REPAIR OF THE EQUIPMENT IS TO BE CARRIED OUT BY THE MANUFACTURER, OR THEIR APPROVED AGENTS, IN ACCORDANCE WITH THE APPLICABLE CODE OF PRACTICE.



ELECTRICAL ISOLATION - THESE PRODUCTS ARE NOT SUITABLE FOR ELECTRICAL ISOLATION. ALWAYS ISOLATE CIRCUIT TO CARRY OUT ANY ELECTRICAL WORK

DIMENSIONS

Enclosures Styles

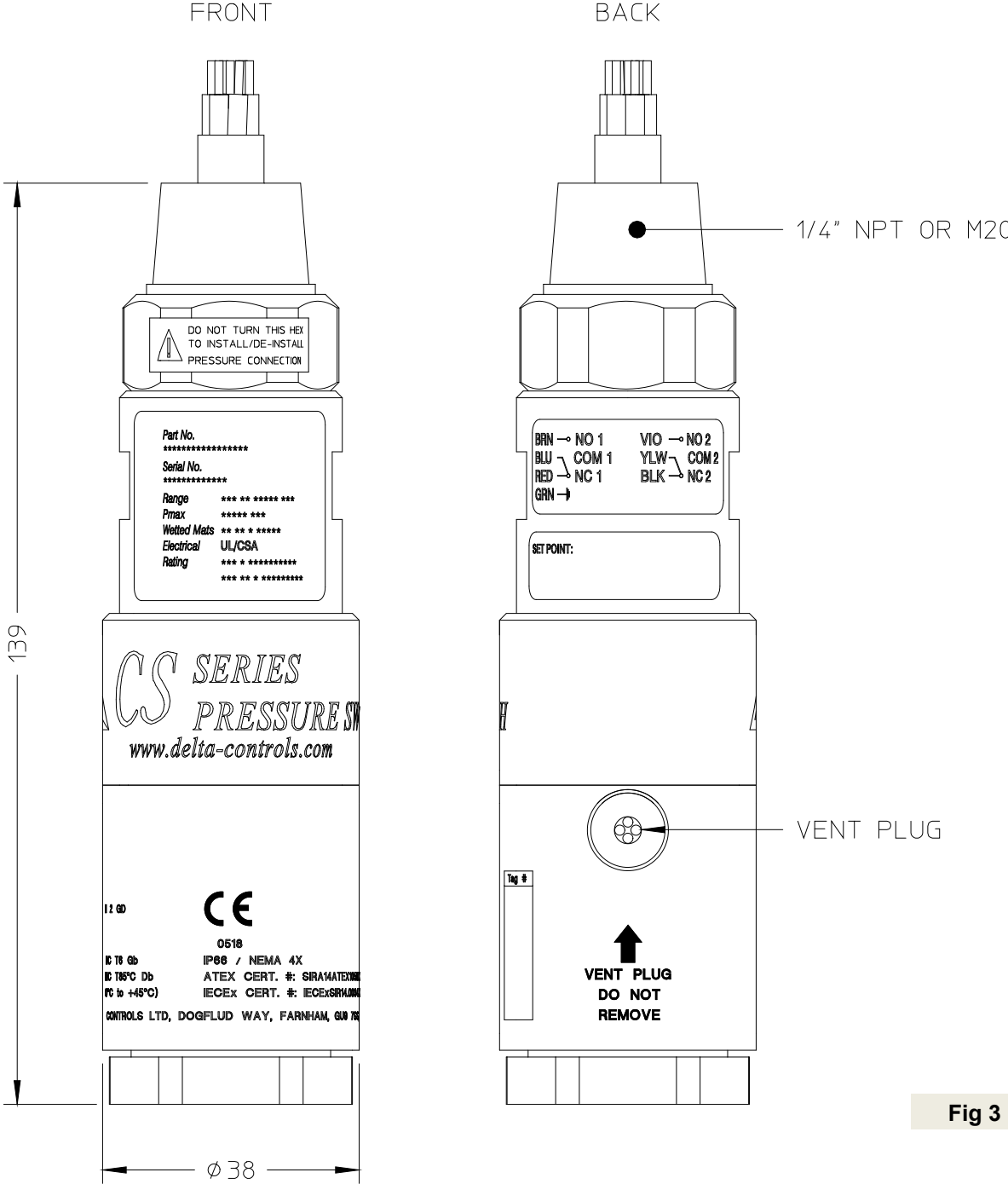


Fig 3