



TYPE APPROVAL CERTIFICATE

This is to certify that the mechanical endurance of the

VPX Series Valve Position Indicator – Electromechanical Snap Action Switches

manufactured by

Honeywell Sensing and Control (China) Co., Ltd.

1668 Tianyin Road, Nanjing Science Park
Jianning District, Nanjing,
Jiangsu,
211100,
China

has been assessed by CSA Group UK.

The reliability data herein is certified subject to the
stated conditions and scope in this certificate.

Certification Manager:

A handwritten signature in blue ink, appearing to read "W Thomas".

W Thomas

Date of Original Certification: 15/11/2016

This certificate may only be reproduced in its entirety without any change.

Product description and scope of certification

The VPX Series Valve Position Indicator is designed specifically for use in most hazardous locations where explosive gases or dusts may be present. To comply with explosion proof requirements, the VPX has flame paths within the housing, which cool any explosion below the ignition temperature before it reach explosive gases or dusts in the surrounding atmosphere. Flame paths on the VPX are 1) an extended shaft between the switch cavity and head and 2) the cover-housing flange joint. The VPX Valve Position Indicator is often ideal for outdoor use or in adverse environments. The enclosure is sealed for protection against corrosion, water, dust and oil as defined in UL 50E to enclosure types 4, 4X, 6 and 13 as well as to IP66 and IP67 as defined in IEC 60529. The Electromechanical Snap Action Switches (EM switch) is designed to be used in an explosion proof application and uses four electro-mechanical switches in a redundant configuration, two monitoring the open position and two monitoring the closed position.

The scope of certification is for the mechanical endurance against the tests specified below.

Safety function(s)

'To provide indication of a monitored valve position upon rotation of the shaft via switches or proximity sensors and a visual indicator.'

Identification of certified equipment

This certificate applies to the VPX Series valve position indicator – Electromechanical Snap Action Switches as defined in the manufacturer’s assembly drawing VPX series chart 1, revF, 02/11/2016.

Mechanical endurance reliability data

The following reliability data has been established by test.

Mechanical Endurance Test	
Mean Cycles To Failure ^[1]	>500,000 cycles with single sided confidence limit of 100%
B _{10d}	1 x 10 ⁶ cycles

^[1] 'Failure' is defined as a failure to meet either the acceptance criteria in the test plan.

^[2] Tests were run until the required amount of samples were completed, this is 2x the specified cycles.

Notes: the data in the table above indicates a statistical probability of failure based on endurance testing a number of samples under specified conditions (see below). The figure therefore cannot be used to guarantee the lifetime of a particular device.

Mechanical endurance test plan

The devices were installed in accordance with the manufacturer's user instructions and tested in accordance with the following test plan.

Mechanical endurance test plan	
No. of test samples:	20 (samples 5-24)
No. of test cycles per switch:	1,000,000
Rate of test cycles:	60 cycles per minute
Acceptance Criteria:	1. Any FTB / FTM will be considered as a Failure.

Conditions of Certification

The manufacturer of the certified equipment shall observe the following conditions of certification:

1. This Type Approval Certificate is valid only for products which are identical with the products assessed in Sira report number R70080763A and R70080763C and conform to the assembly drawings referred to in this certificate. The manufacturer is responsible for ensuring that on-going production provides identical products.

General Notes

1. This certificate is based upon an assessment of the certified equipment described in Sira Test & Certification confidential assessment report number R70080763A and R70080763C.
2. This Certificate and the Sira Certification Mark are subject to the 'Regulations Applicable to the Holders of Sira Certificates'.
3. This document remains the property of Sira and shall be returned when requested by the company.