

# CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**

2. **Certificate No:** FM16US0468X

3. **Equipment:** Axiom AN Series Valve Position Monitors  
(Type Reference and Name)

4. **Name of Listing Company:** Neles USA Inc. dba StoneL

5. **Address of Listing Company:** 26271 US Hwy 59  
Fergus Falls MN 56537  
United States

6. The examination and test results are recorded in confidential report number:

3058456 dated 2<sup>nd</sup> March 2017

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2018, FM Class 3610:2018, FM Class 3611:2016, FM Class 3810:2018  
ANSI/ISA 60079-0:2019, ANSI/UL 60079-11:2014, UL 50:2015, UL 50E:2015, ANSI/IEC 60529:2004

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

**AN45S Valve Position Monitor**

Nonincendive for Class I, II, III, Division 2, Groups ABCDFG T5, -40°C ≤ Ta ≤ 80°C Hazardous(Classified) Locations; Indoors/outdoors Type 4, 4X, 6 and IP66/67

**Certificate issued by:**

J.E. Marquedant  
VP, Manager - Electrical Systems

18 April 2021

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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# SCHEDULE



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Intrinsically Safe for Class I, II, III, 1, Groups A, B, C, D, E, F, G T5  $40^{\circ}\text{C} \leq \text{Ta} \leq 80^{\circ}\text{C}$  Hazardous (Classified) Locations; Indoors/outdoors Type 4, 4X, 6 and IP66/67

Class I, Zone 2, Group IIC T5  $-40^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$  Hazardous(Classified) Locations; Indoors/outdoors Type 4, 4X, 6 and IP66/67

Intrinsically Safe for Class I, Zone 0, AEx ia IIC T5 Ga  $-40^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$  Hazardous(Classified) Locations; Indoors/outdoors Type 4, 4X, 6 and IP66/67

## **AN35S, AN35W, AN92S, AN92W, AN96S, AN97S or AN97W Valve Monitors**

Nonincendive for Class I, II, III, Division 2, Groups ABCDFG T5,  $-40^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$  Hazardous(Classified) Locations; Indoors/outdoors Type 4, 4X, 6 and IP66/67

Class I, Zone 2, Group IIC T5  $-40^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$  Hazardous(Classified) Locations; Indoors/outdoors Type 4, 4X, 6 and IP66/67

### 11. The marking of the equipment shall include:

#### **AN45S Valve Position Monitor**

Class I, II, III, Division 1, Groups A, B, C, D, E, F & G; T5  $\text{Ta} = -40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ ; Type 4, 4X, 6, IP66, IP67

Class I, II, III, Division 2, Groups A, B, C, D, F & G; T5  $\text{Ta} = -40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ ; Type 4, 4X, 6, IP66, IP67

Class I, Zone 2, IIC  $\text{Ta} = -40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ , Type 4, 4X, 6, IP66, IP67

Class I, Zone 0, AEx ia IIC T5 Ga  $40^{\circ}\text{C} \leq \text{Ta} \leq 80^{\circ}\text{C}$ ; Type 4, 4X, 6, IP66, IP67

#### **AN35S, AN35W, AN92S, AN92W, AN96S, AN97S or AN97W Valve Monitors**

Class I, II, III, Division 2, Groups A, B, C, D, F & G; T5  $\text{Ta} = -40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ ; Type 4, 4X, 6, IP66, IP67

Class I, Zone 2, IIC; T5  $\text{Ta} = -40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ , Type 4, 4X,6, IP66, IP67

### 12. Description of Equipment:

**General** - The Axiom AN Series Valve Position Monitor is designed to be attached directly to various valve/actuator assemblies and to communicate and control its position. The apparatus consists of an enclosure with internally mounted sensing and communication modules, internally mounted pilot valves for pneumatic control, connection options to plant electrical, pneumatic and communication systems with external visual indication to the media being processed. Electronic components inside the apparatus are encapsulated and enclosed within an aluminium housing and polycarbonate or aluminum cover.

**Construction** - The enclosure is provided with two (2)  $\frac{1}{2}$ " NPT,  $\frac{3}{4}$ " NPT, M20, or M25 openings which may be fitted for a conduit connection or fitted with an optional circular pin type connectors.

**Ratings** - The Axiom AN Series Valve Position Monitors are available with various sensor modules. The Axiom AN 45 option is intended for use with intrinsic safety barriers, while the Axiom AN 35, 92, 96 and 97

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options operate from 8 to 250 V depending on the model. The monitors are rated for use in an ambient temperature range of -40°C to +80°C. The process temperature range is also -40°C to +80°C.

Intrinsically Safe Entity parameters: (Models AN45S)

Entity Parameters when b = 9

Sensor:  $U_i = 22 \text{ Vdc}$ ,  $I_i = 120 \text{ mA}$ ,  $P_i = 0.4\text{W}$ ,  $C_i = 3\text{nF}$ ,  $L_i = 0$

Solenoid Junction Terminals:  $U_i = 28 \text{ Vdc}$ ,  $I_i = 120 \text{ mA}$ ,  $C_i = 0$ ,  $L_i = 0$

Entity Parameters when b = 1 or 2

Sensor:  $U_i = 22 \text{ Vdc}$ ,  $I_i = 120 \text{ mA}$ ,  $P_i = 0.4\text{W}$ ,  $C_i = 3\text{nF}$ ,  $L_i = 0$

Solenoid:  $U_i = 28 \text{ Vdc}$ ,  $I_i = 120 \text{ mA}$ ,  $P_i = 0.84\text{W}$ ,  $C_i = 3\text{nF}$ ,  $L_i = 0$

Division 2 and Zone 2 (Models AN35W)

Sensor: 0.1A, 18-250 VDC; 0.1A, 20-250 VAC

Solenoid: 20mA, 20-55 VDC; 12mA, 20-250 VAC

Division 2 and Zone 2 (Models AN35S)

Sensor: 0.1A, 8-250 VDC; 0.1A, 20-250 VAC

Solenoid: 20mA, 20-55 VDC; 12mA, 20-250 VAC

Division 2 and Zone 2 (Models AN92)

Sensor: 35mA, 25 VDC max; Output 150mA max

Solenoid: 24 VDC; 0.5W

Division 2 and Zone 2 (Models AN96)

Sensor: 35mA, 31.6 VDC max, Output 100mA max

Solenoid: 24 VDC; 0.5W

Division 2 and Zone 2 (Models AN97)

Sensor: 35mA, 31.6 VDC max, Output 100mA max

Solenoid: 24 VDC; 0.5W

**AN45Sbcdefg-h. Valve Position Monitor**

NI / I-II-III / 2 / ABCDFG / T5; Type 4 / 4X / 6 / IP66 / IP67;  $T_a = -40^\circ\text{C}$  to  $+80^\circ\text{C}$

IS / I-II-III / 1 / ABCDFG / T5; Type 4 / 4X / 6 / IP66 / IP67;  $T_a = -40^\circ\text{C}$  to  $+80^\circ\text{C}$  - 105412

CI I / 2 / IIC / T5; Type 4 / 4X / 6 / IP66 / IP67;  $T_a = -40^\circ\text{C}$  to  $+80^\circ\text{C}$

CI I / 0 / AEx ia IIC T5 Ga; Type 4 / 4X / 6 / IP66 / IP67;  $T_a = -40^\circ\text{C}$  to  $+80^\circ\text{C}$  - 105412

Entity Parameters when b = 9

Sensor:  $U_i = 22 \text{ Vdc}$ ,  $I_i = 120 \text{ mA}$ ,  $P_i = 0.4\text{W}$ ,  $C_i = 3\text{nF}$ ,  $L_i = 0$

Solenoid Junction Terminals:  $U_i = 28 \text{ Vdc}$ ,  $I_i = 120 \text{ mA}$ ,  $C_i = 0$ ,  $L_i = 0$

Entity Parameters when b = 1 or 2

Sensor:  $U_i = 22 \text{ Vdc}$ ,  $I_i = 120 \text{ mA}$ ,  $P_i = 0.4\text{W}$ ,  $C_i = 3\text{nF}$ ,  $L_i = 0$

Solenoid:  $U_i = 28 \text{ Vdc}$ ,  $I_i = 120 \text{ mA}$ ,  $P_i = 0.84\text{W}$ ,  $C_i = 3\text{nF}$ ,  $L_i = 0$

b = Solenoid 9, 1 or 2

c = Override X, N, M, L, E, Y or G

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d = Enclosure A or Ce = Conduit Entries 02, 05, 08, 09, 10, 11, 13, 15, 18, 19, 20, 21 or 22  
f = Visual Indication X, G, R, 1 or 2  
g = Branding A or M  
h = Options 'Special Unit Digits'

**ANabcdefg-h. Valve Position Monitor**

NI / I-II-III / 2 / ABCDFG / T5; Type 4 / 4X / 6 / IP66 / IP67; Ta = -40°C to +80°C  
I / 2 / IIC / T5 ; Type 4 / 4X / 6 / IP66 / IP67; Ta = -40°C to +80°C

a = Function 35S, 35W, 92S, 92W, 96S, 97S, or 97W  
b = Solenoid 9, 1 or 2  
c = Override X, N, M, L, E, Y or G  
d = Enclosure A or C  
e = Conduit Entries 02, 05, 08, 09, 10, 11, 13, 15, 18, 19, 20, 21 or 22  
f = Visual Indication X, G, R, 1 or 2.  
g = Branding A or M  
h = Options 'Special Unit Digits'

**13. Specific Conditions of Use:**

**AN45Sbcdefg-h. Valve Position Monitor**

1. Part of the enclosure is constructed from plastic. To prevent the risk of electrostatic sparking the plastic surface should only be cleaned only with a damp cloth.
2. The apparatus enclosure may contain aluminum which is considered to constitute a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact or friction.
3. The Turck minifast® and eurofast® male receptacles shall be mated with a Turck minifast or eurofast female cordset and the use of a tool secured Turck lokfast® guard is required.

**ANabcdefg-h. Valve Position Monitor**

When e = Connector, 10, 11, 13, 15, 18, 19, 20, 21 or 22

The Turck minifast® and eurofast® male receptacles shall be mated with a Turck minifast or eurofast female cordset and the use of a tool secured Turck lokfast® guard is required.

**14. Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

**15. Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

**16. Certificate History**

Details of the supplements to this certificate are described below:

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Member of the FM Global Group

US Certificate Of Conformity No: FM16US0468X

Date	Description
2 <sup>nd</sup> March 2017	Original Issue.
17 <sup>th</sup> October 2017	<u>Supplement 1:</u> Report Reference: – 3062508 dated 17 <sup>th</sup> October 2017. Description of the Change: Addition of I.S. Solenoid and revisions to Universal Solenoid.
18 <sup>th</sup> April 2021	<u>Supplement 2:</u> Report Reference: – PR455127 dated 18 <sup>th</sup> April 2021. Description of the Change: Consolidation of Connectors 10 to 22, Addition of models 35W and 96S; Consolidation of Type and IP ratings.Addition of 2 solenoid option.

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