



1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**
3 **Directive 94/9/EC**

3 Supplementary EC - Type Examination Certificate Number: **Baseefa04ATEX0366X/1**

4 Equipment or Protective System: **Model 220 Differential Pressure Switch**

5 Manufacturer: **Mid-West Instruments**

6 Address: **6500 Dobry Drive, Sterling Heights, MI 48138, USA**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa04ATEX0366X** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

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

Baseefa Customer Reference No. **5269**

Project File No. **08/0645**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

A handwritten signature in blue ink, appearing to read "R S Sinclair".

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R S SINCLAIR
DIRECTOR
On behalf of
Baseefa



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Schedule

14

Certificate Number Baseefa04ATEX0366X/1

15 **Description of the variation to the Equipment or Protective System**

Variation 1.1

Miscellaneous minor dimensional changes and alternative material specifications.

16 **Report Number**

None

17 **Special Conditions for Safe Use**

None additional to those listed previously

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Issue	Date	Description
110806 Sheets 1 to 8	E	10/28/08	Type 240 Differential Pressure Switch
110807 Sheets 1 to 8	E	10/27/08	Type 220 Differential Pressure Switch



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2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
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3 EC - Type Examination Certificate Number: **Baseefa04ATEX0366X**

4 Equipment or Protective System: **Model 220 Differential Pressure Switch**

5 Manufacturer: **Mid-West Instruments**

6 Address: **6500 Dobry Drive, Sterling Heights, MI 48138, USA**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa (2001) Ltd., Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. 04(C)0554

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0: 2004

EN 60079-1: 2004

EN 50281-1-1: 1998 + Amendment 1


EN 13463-1: 2001

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following :

 **II 2 GD Ex d IIB+H₂ T* (*see certificate schedule)**

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Baseefa Customer Reference No. 5269

Project File No. 04/0554

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Schedule

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Certificate Number Baseefa04ATEX0366X

15 Description of Equipment or Protective System

The Model 220 Differential Pressure Switch comprises of a pressure assembly, a single or double reed switch assembly, a circuit board with a terminal strip interface or a single or double relay assembly with terminal strip interface, a cover and an optional indicating dial gauge. The switch(es) and pressure indication are magnetically coupled to a moving magnet inside the pressure assembly.

The Model 220 Differential Pressure Switch with a maximum working pressure rating up to 20.7MPa (3000psig) comprises of a cast body and cover manufactured from aluminium.

The body is provided with bored and tapped pressure ways to accommodate the high and low pressure side assemblies and pressure gauge components, the metallic parts of which are manufactured from aluminium or stainless steel. The body may optionally include a stainless steel insert to provide all stainless steel wetted parts.

The cover is secured to the 25.15mm deep body with seven 33.28mm to 33.66mm long M5, 0.8mm pitch Grade 416 stainless steel to AMS 5610 REV L (1988) hexagon head captive screws each having a yield stress value of 1050N/mm² and a tensile stress value of 1340 N/mm².

The enclosure houses a magnetically operated reed switch assembly surface mounted to the top of the pressure assembly. Pillar mounted above the switch assembly is a printed circuit board on which are mounted, the relay(s) when fitted together with terminals for connection of the user's circuit wiring.

Internal and external earth facilities are provided.

To obviate the risk from any internal hot surfaces the Model 220 Differential Pressure Switch must not be opened when an explosive atmosphere is present. A label is fitted to each and every enclosure which states this information.

A ½" NPT-14 cable entry hole is provided as specified on the certificate schedule drawings for the accommodation of a suitable certified flameproof cable entry device, with or without the interposition of a suitable certified flameproof thread adaptor. The cabling methods used in service must be suitable for the conditions of use.

The cable entry device and thread adaptor shall be suitable for the equipment, the cable and the conditions of use and shall be certified as Equipment (not a Component) under an EC-Type Examination Certificate to Directive 94/9/EC.

The various electrical configurations for the Model 220 Differential Pressure Switch are identified by a 3 letter code, where;

The first letter identifies the number of switches fitted;

R = single switch

S = double switch

The second letter identifies the input voltage;

A = no input power required

B = 5/6 V dc

C = 12V dc

D = 24V dc



E = 48V dc
F = 24V ac
G = 120V ac
H = 240V ac

The third letter identifies the output option

A = 120V ac/dc, E, F, G or H = 240V ac/dc and R indicates relay output.

The electrical ratings, the temperature classifications, ambient temperature ranges together with the temperature markings for dust atmospheres associated with each version are listed in Table 1 below.

TABLE 1

CONFIGURATION CODE	ELECTRICAL RATINGS	TEMPERATURE CLASSIFICATION	AMBIENT TEMPERATURE RANGE	TEMPERATURE MARKING FOR DUST
RAA; SAA	0.025A 120V dc/ac 0.1A 30V dc/ac 0.25A 12V dc/ac	T6 T5	-40°C ≤ Ta ≤ 70°C -40°C ≤ Ta ≤ 85°C	T85°C T100°C
RAE; SAE	0.25A 240V dc/ac	T6	-40°C ≤ Ta ≤ 70°C	T85°C
RAF*; SAF*	0.5A 120V dc/ac	T5	-40°C ≤ Ta ≤ 85°C	T100°C
RAG*; SAG*	3.0A 12V dc/ac			
RAH; SAH	0.25A 240V dc/ac 0.5A 120V dc/ac 1.0A 30V dc/ac	T6 T5	-40°C ≤ Ta ≤ 70°C -40°C ≤ Ta ≤ 85°C	T85°C T100°C
RBR; SBR	10A 30V dc	T6	-40°C ≤ Ta ≤ 70°C	T85°C
RCR; SCR	10A 120Vac			
RDR; SDR	10A 240V ac			
RER; SER				
RFR; SFR				
RGR; SGR				
RHR; SHR		T4	-40°C ≤ Ta ≤ 70°C	T135°C

Variation 0.1

An alternative design with a maximum working pressure rating of up to 10.3MPa (1500psig) and with the electrical ratings, the temperature classifications, ambient temperature ranges together with the temperature markings for dust atmospheres associated with each version listed in Table 1 above.

The cover is secured to the 31.5mm deep body with seven 40mm long, M5, 0.8mm pitch Grade 416 stainless steel hexagon head captive screws each having a yield stress value of 1050N/mm² and a tensile stress value of 1340 N/mm².

In this form the equipment is designated a Model 240 Pressure Switch.

* These electrical configurations are not available for the Model 240 Pressure Switch.

Variation 0.2

The optional fitting of a dial gauge assembly for the indication of differential pressure. The pressure gauge comprises a circular body manufactured from a thermoplastic material into which is fitted an aluminium dial and a magnetically operated indicating mechanism. The dial is protected by a lens which is secured in position, over a gasket, by the cover, the cover being secured in position by four raised head machine screws. Additional holes are provided in the sidewall of the body for the fitting of the assembly.



Alternatively the pressure gauge comprises a circular body manufactured from aluminium, the lens being secured in position over a gasket by a stainless steel 'E' ring.

16 Report Number

Baseefa Certification Report No 04(C)0554

17 Special Conditions for Safe Use

- 1) The maximum gap permitted between the body and cover is less than the maximum permitted in the standard. Therefore it is the responsibility of the user of this equipment to ensure the maximum gap between the body and the cover is not greater than 0.038mm (0.0015").
- 2) For replacement purposes the cover fasteners shall be obtained from the manufacturer.

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
110807	1	D	7/8/05	General Assembly -220
110807	2	D	7/8/05	Body – 220
110807	3	D	7/8/05	Cover- 220
110807	4	D	7/8/05	Fastener Arrangement – 220
110807	5	D	7/8/05	Electrical Details – 220
110807	6	D	7/8/05	Internal Drilling Details - 220
110807	7	D	7/8/05	Materials Specification Details – 220
110807	8	D	7/8/05	Sectional Views - 220
110806	1	D	7/6/05	General Assembly - 240
110806	2	D	7/6/05	Body – 240
110806	3	D	7/6/05	Cover – 240
110806	4	D	7/6/05	Fastener Arrangement – 240
110806	5	D	7/6/05	Electrical Details - 240
110806	6	D	7/6/05	Internal Drilling Details - 240
110806	7	D	7/6/05	Materials Specification Details – 240
110806	8	D	7/6/05	Sectional Views - 240
110776	-	A	7/13/05	Certification Label