1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 05ATEX1296X** Issue: **7**

4 Equipment: **Series of Enclosures (See section 13 for available models)**

5 Applicant: **Trimec Industries Pty Limited**

6 Address: 1/16 Atkinson Road
Taren Point
NSW 2229
Australia

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2004 EN 60079-1:2004

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment 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. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

I M2
Ex d I Mb

or

II 2 G
Ex d IIB T6 (-20°C ≤ T_a ≤ +70°C) IP67 or
Ex d IIB T4 (-20°C ≤ T_a ≤ +120°C) IP67

Project Number 23242

C Ellaby
Deputy Certification Manager

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13 **DESCRIPTION OF EQUIPMENT**

The "MP" Series of Enclosures are intended for use as part of a Multipulse PD Flowmeter and consists of a common cover and up to four different sized bodies. The enclosure can be made of either aluminium or stainless steel and has two separate chambers. The lower chamber is non-flameproof and is attached to a suitable non-certified manifold. The upper flameproof chamber contains a printed circuit board and connection terminals. The flameproof cover forms a cylindrical joint with the body. Cable entry is by means of a threaded entry with either M20 or ½" NPT threads for the fitting of a suitably certified cable entry device. The flameproof enclosure houses electronic equipment and is completely sealed from the process fluid.

There are four different models in the series and all utilise the same principle of semi-rotary piston displacement to measure flow. The electronic compartment in the body is the same for all models, as is the cover. The table below summarises the models, material and cable entry options:

Model	Material	Threaded Entry
MP15	Aluminium or Stainless Steel	M20 or ½" NPT
MP25	Aluminium or Stainless Steel	M20 or ½" NPT
MP40	Aluminium or Stainless Steel	M20 or ½" NPT
MP50	Aluminium or Stainless Steel	M20 or ½" NPT

Variation 1

This variation recognised the following change:

i. The introduction of the following new models into the "MP" Series of Enclosures:
MPG025A Aluminium Enclosure
MPG025S Stainless Steel Enclosure
(These new models are almost identical to the previously certified "MP" Enclosures and use the same top cover and have either an M20 or ½" NPT threaded cable entry, however, the MPG025A and MPG025S Enclosures use oval gear positive displacement to measure flow.)

Variation 2

This variation recognised the following changes:

i. The effective thread depth of the conduit entry was reduced from 20.5 mm to 16 mm for both the aluminium and stainless steel cover in both M20 and ½" NPT versions.
ii. The introduction of minor drawing changes in the two, common, PCB schematics, the use of an alternative reed switch in the MP series PCB schematic was allowed; these changes do not alter the original flameproof assessment.
iii. The ambient temperature for the temperature class T6 was raised from +60°C to +70°C.
iv. The method of mounting the PCB was modified on the MP15, MP25, MP40 and MP50 versions; this change does not alter the operating principles of the flameproof chamber.
v. The Model MPG025, as detailed Variation 1 was re-designated the MG025, additional models are also added to this range, the table below summarises the models, material and cable entry options:

Model	Material	Threaded Entry
MG004	Aluminium or Stainless Steel	M20 or ½" NPT
MG006	Aluminium or Stainless Steel	M20 or ½" NPT
MG008	Aluminium or Stainless Steel	M20 or ½" NPT

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Model	Material	Threaded Entry
MG015	Aluminium or Stainless Steel	M20 or ½" NPT
MG025	Aluminium or Stainless Steel	M20 or ½" NPT
MG040	Aluminium or Stainless Steel	M20 or ½" NPT
MG050	Aluminium or Stainless Steel	M20 or ½" NPT
MG080	Aluminium or Stainless Steel	M20 or ½" NPT
MG080H	Aluminium or Stainless Steel	M20 or ½" NPT
MG100	Aluminium or Stainless Steel	M20 or ½" NPT

vi. The introduction of the "OM" Series of Enclosures, these are based on the Model MG025, the cover of which has been modified to remove the conduit entry, the conduit entry now being included in the enclosure base, the table below summarises the models, material and cable entry options:

Model	Material	Threaded Entry
OM015	Aluminium or Stainless Steel	M20 or ½" NPT
OM025	Aluminium or Stainless Steel	M20 or ½" NPT
OM040	Aluminium or Stainless Steel	M20 or ½" NPT
OM050	Aluminium or Stainless Steel	M20 or ½" NPT
OM080	Aluminium or Stainless Steel	M20 or ½" NPT
OM080H	Aluminium or Stainless Steel	M20 or ½" NPT
OM100	Aluminium or Stainless Steel	M20 or ½" NPT

Variation 3

This variation recognised the following changes:

i. Larger fixing screws were allowed to be used in the meter cap to the manifold of the MG004, MG006 and MG008 enclosures; these types are designated the MG004HP, MG006HP and MG008HP enclosures.
ii. The through holes in the MG015, MG025 and MG040 were increased in number, in addition, the size of the holes in the MG015 and MG040 was increased, these types are designated the MG015HP, MG025HP and MG040HP enclosures.
iii. Minor profile changes were recognised.

Variation 4 - This variation introduced the following change:

i. The introduction of the MP, MG and OM series enclosures for use within group I applications. The marking of the equipment to include:

I M2
Ex d I Mb

ii. The recognition of a change in the applicant's address from Northumberland Road Caringbah to Atkinson Road Taren Point.

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Variation 5 - This variation introduced the following changes:

i. The introduction of the "TG" Series of Enclosures. These are based on the MG series, the only difference is the shape of the measuring manifold and measuring element that the Ex d chamber is attached to, the table below summarises the models, material and cable entry options:

Model	Material	Threaded Entry
TG025	Aluminium or Stainless Steel	M20 or ½" NPT
TG040	Aluminium or Stainless Steel	M20 or ½" NPT
TG050	Aluminium or Stainless Steel	M20 or ½" NPT
TG080	Aluminium or Stainless Steel	M20 or ½" NPT
TG100	Aluminium or Stainless Steel	M20 or ½" NPT
TG150	Aluminium or Stainless Steel	M20 or ½" NPT

ii. The introduction of the "EX50" Series. This is a standalone enclosure used to house a PCB assembly fitted with terminal blocks, so that it can be electrically connected to the turbine flow meters and to other products via suitable Ex d I Mb or Ex d IIB certified conduit. The design is based on the existing MG and OM series enclosures, the table below summarises the models, material and cable entry options:

Model	Material	Thread Conduit Out	Thread Conduit In
EX50	Aluminium or Stainless Steel	M20 x 1.5 or 1/2" NPT	M20 x 1.5 or 1/2" NPT or 3/4" NPT or 3/4" BSPP (G Series)

iii. The recognition of other model type references that are based on existing designs, the complete range is as follows:

Model	Material
AIM002, AIM004, AIM006, AIM008, AIM015, AIM025	Aluminium or Stainless Steel
EX50	Aluminium or Stainless Steel
MG002, MG004, MG006, MG008, MG015, MG025, MG040, MG050, MG080, MG080E, MG100	Aluminium or Stainless Steel
MG002H, MG004H, MG006H, MG008H, MG015H, MG025H, MG040H, MG050H	Stainless Steel
MP15, MP25, MP40, MP50	Aluminium or Stainless Steel
OM002, OM004, OM006, OM008, OM015, OM025. OM040, OM050, OM050E, OM080, OM080E, OM100, OM100E	Aluminium or Stainless Steel
TG025, TG040, TG050, TG080, TG100, TG150	Aluminium or Stainless Steel

iv. The existing drawings were reviewed and some minor drawing modifications were recognised, however, the majority of documents were removed and new drawings were introduced; therefore, the latest, rationalised drawing list replaces all previous versions.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

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14.2 **Associated Sira Reports and Certificate History**

Issue	Date	Report no.	Comment
0	8 March 2006	R51F12898A	The release of prime certificate.
1	28 April 2006	R51F12898B	Re-issued to correct the certificate schedule and to permit report number R51F12898B to replace report number R51F12898A.
2	28 April 2006	R52A14891A	The introduction of Variation 1.
3	29 March 2007	R52A15751B	This Issue covers the following changes: • All previously issued certification were rationalised into a single certificate Issue 3, Issues 0 to 2 referenced above are only intended to reflect the history of the previous certification and have not been issued as actual documents. • The introduction of Variation 2.
4	7 October 2008	R59M18810A	The introduction of Variation 3.
5	8 September 2010	R22339A/00	The introduction of Variation 4.
6	15 December 2010	R23242A/00	The introduction of Variation 5.
7	04 April 2011	R23242A/01	Reissued to allow Sira R23242A/01 to replace R23242A/00

15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)

15.1 The maximum diametric clearance of the cylindrical joint between the cover and the body is 0.15mm.

15.2 The temperature of the process fluid is to be limited to less than:

- Less than 70°C for temperature class T6
- Less than 120°C for temperature class T4 and mining applications.

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 **CONDITIONS OF CERTIFICATION**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 Due to the welded joint on the turbine flowmeter, each EX50 series assembly shall be subjected to a routine pressure test of 9.48 bar for at least 10 s, as required by Clause 16.1 of EN 60079-1. There shall be no damage or deformation as a result of the test.

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Certificate Annexe

Certificate Number: **Sira 05ATEX1296X**

Equipment: **"MP", "MG", "OM", "TG" and "EX50" Series of Enclosures**

Applicant: **Trimec Industries Pty Limited**

Issues 0 to 5 (Drawings rationalised and superseded by issue 6)

Issue 6

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
13-02-248-EX	1 to 3	01	02 Dec 10	Ex d Typical Component Requirements
1306001-EX	1 of 1	05	02 Dec 10	MP Series Terminal Cover SS M20
13-06-003-EX	1 of 1	05	02 Dec 10	MP Series Terminal Cover AL M20
13-06-006-EX	1 to 2	05	14 Dec 10	MP Series Terminal Cover AL 0.5in NPT
13-06-008-EX	1 of 1	05	06 Apr 11	MP Series Cover SS 0.5in NPT Conduit Entry
13-06-020-EX	1 of 1	03	21 Feb 11	OM Series Terminal Cover AL
13-06-030-EX	1 of 1	02	21 Feb 11	OM Cover SS
13-12-052-EX	1 of 1	-	02 Dec 10	Ex d Typical PCB Assembly
13-15-001-EX	1 of 1	07	04 Jan 11	TRIMEC Customer Label
13-15-083-EX	1 of 1	02	02 Dec 10	TRIMEC Ex-d Group I Label
14-02-148-EX	1 to 3	-	02 Dec 10	MP Series Ex d Requirements
14-02-149-EX	1 to 3	-	02 Dec 10	OM Series Ex d Requirements
14-02-150-EX	1 to 3	-	02 Dec 10	MG-TG Series Ex d Requirements
14-02-151-EX	1 to 3	-	02 Dec 10	MG High Pressure Series Ex d Requirements
14-02-152-EX	1 to 4	01	19 Jan 11	EX50 Enclosure Ex d Requirements
14-02-154-EX	1 to 4	01	19 Jan 11	EX50 Enclosure Ex d Requirements
1315049-EX	1 of 1	08	04 Jan 11	TRIMEC Ex-d ATEX - IEC Label

Issue 7

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
13-02-248- ex	1 to 3	01	02 Dec 10	Ex d Typical Component Requirements
1306001-EX	1 of 1	05	02 Dec 10	MP Series Terminal Cover SS M20
13-06-003-EX	1 of 1	05	02 Dec 10	MP Series Terminal Cover AL M20
13-06-006-EX	1 to 2	05	14 Dec 10	MP Series Terminal Cover AL 0.5in NPT
13-06-008-EX	1 of 1	05	06 Apr 11	MP Series Cover SS 0.5in NPT Conduit Entry
13-06-020-EX	1 of 1	03	21 Feb 11	OM Series Terminal Cover AL
13-06-030-EX	1 of 1	02	21 Feb 11	OM Cover SS Machine Detail
13-12-052-EX	1 of 1	-	02 Dec 10	Ex d Typical PCB Assembly
13-15-001-EX	1 of 1	07	04 Jan 11	TRIMEC Customer Label
13-15-083-EX	1 of 1	02	02 Dec 10	TRIMEC Ex-d Group I Label
14-02-148-EX	1 to 3	-	02 Dec 10	MP Series Ex d Requirements
14-02-149-EX	1 to 3	-	02 Dec 10	OM Series Ex d Requirements
14-02-150-EX	1 to 3	-	02 Dec 10	MG-TG Series Ex d Requirements
14-02-151-EX	1 to 3	01	02 Dec 10	MG High Pressure Series Ex d Requirements
1315049-EX	1 of 1	08	04 Jan 11	TRIMEC Ex-d ATEX - IEC Label
14-02-154-EX	1 to 4	01	19 Jan 11	EX50 Enclosure Ex d Requirements

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