



Mining And Surface Certification (Pty) Ltd

(Pty) Ltd: 2015/021934/07

THIS CERTIFICATE IS ISSUED AS AN I.A. CERTIFICATE IN TERMS OF THE MINE HEALTH AND SAFETY ACT, ACT NO 29 OF 1996 (AND REGULATIONS), THE OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993) AND REGULATION 17 OF THE ELECTRICAL MACHINERY REGULATIONS

IA CERTIFICATE	MASC M/24-2113X	Issue	0
Issue Date	08 August 2024	Expiry Date	08 August 2034
Applicant	KonNx Africa (Pty) Ltd, 5 Brighton Rd, Bramley View, Gauteng, South Africa		
Manufacturer	KonNx Africa (Pty) Ltd, 5 Brighton Rd, Bramley View, Gauteng, South Africa		
Description (See "Annex A" below)			
Equipment	12kV 400Amp Coupler and Adaptor with Insulated End Cover	Type	Refer to "ANNEX A" below
Photo			
MARKING: <i>Must be additionally applied to the equipment</i>	Applicant Type Ex Marking IA Number Serial Number Ratings	KonNx Africa (Pty) Ltd. As applicable "Type" (See "ANNEX A" Below) Ex db I Mb MASC M/24-2113X See "Annex A" below 12kV 400A	
WARNING(S)	"DO NOT SEPARATE / CONNECT OR DISCONNECT WHILE THE CIRCUIT IS ENERGIZED"		
Compliance:			
The equipment as described above and in MASC report 24-2113 has been allocated the rating <u>Explosion Protected Ex db I Mb</u> utilizing the SANS Standards: <ul style="list-style-type: none"> SANS 60079-0: 2019 General requirements SANS 60079-1: 2015 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d" SANS 1489-1: 2016 Electrical connectors in Group I and Group II hazardous locations Part 1: General Requirements for Group I hazardous areas SANS 1489-4: 2022 Electrical connectors in Group I and Group II hazardous locations Part 4: Medium voltage couplers and adaptors for group I hazardous areas ARP 0108: 2018 Regulatory requirements for explosion protected apparatus 			
Conditions:			
<ul style="list-style-type: none"> ➤ This certificate covers only a national implementation of above standards for use in South African industry. ➤ It is up to the manufacturer to ensure that the product complies to all relevant standards for the application. ➤ This document will not be supported by MASC outside the borders of South Africa and may not be used for other/international certification purposes. ➤ This certificate may only be reproduced in full, is not transferable and remains the property of the issuing body. This certificate only covers the sample submitted and does not cover production units. ➤ According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved markscheme or batch testing by an accredited test laboratory). 			
Special conditions of safe use X:		Conditions of manufacture:	
<ul style="list-style-type: none"> See "Annex A" below 		<ul style="list-style-type: none"> See "Annex A" below 	
M. Erasmus TECHNICAL SPECIALIST		W. Haywood TECHNICAL SPECIALIST	



Apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:
SANS 10086 requirements;
Any conditions mentioned in the above certificate;
Any relevant requirements of the MHS Act;
Any restrictions and conditions enforced by the chief inspector of mines, principal inspector (Group I equipment) or chief inspector of factories (Group II equipment).

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Mining And Surface Certification (Pty) Ltd
Unit 5 Lelyta Park, 45 Jurg Avenue, Hennopspark, Ext 87
Centurion 0157





T0444

IA CERTIFICATE: MASC M/24-2113X
Equipment: 12kV 400Amp Coupler, Adaptor and
Insulated End Cover

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ANNEX A

Description	Populated	Unpopulated
	<p>The 12kV Coupler, Adaptor and End Cover as per description below:</p> <p>12kV Coupler (Standard Body) consist of the following components:</p> <ul style="list-style-type: none"> • a body with three Phase Isolators with phase pins and one Pilot Isolator with Pilot Pin, • a STD Retaining Ring that is bolted to the main body with four M5 x 0.8P countersunk cap screws, • an inner flange mounted sealing ring with a diameter of 175mm, • Three Phase and one Pilot connector(s). <div style="text-align: center;">  </div> <p>Two optional gland housings are provided that are bolted to the coupler body by means of four M12 x 1.75P hexagon bolts and nuts. Both these housings have a threaded filler hole with threaded filler plug for KonNx filling compound and have an integral gland at the tail end. One to support and secure armoured cable and the other for non-armoured cable.</p> <p>Note: This unit complied to the requirements of SANS 60079-0; SANS 60079-1; SANS 1489-1 and SANS 1489-4.</p> <p>12kV Coupler [RF LL Body (Removable Flange Live Line Body)] consist of the following components:</p> <ul style="list-style-type: none"> • a body with three Phase Isolators with phase pins and one Pilot Isolator with pilot pin, • Internal Guide Pin, • a STD Retaining Ring with internal guide pin that is bolted to the main body with four M5 x 0.8P countersunk cap screws, • an inner flange mounted sealing ring with a diameter of 175mm, • Removable Flange, • a body with three M25 x 1.5p threaded entries adjacent to the three phases for fitment of a live line indicator (the Live Line indicator is part of this approval and can only be used on the equipment as specified in this certificate) <div style="text-align: center;">  </div> <p>Two optional gland housings are provided that are bolted to the coupler body by means of four M12 x 1.75P hexagon bolts and nuts. Both these housings have a threaded filler hole with threaded filler plug for KonNx filling compound and have an integral gland at the tail end. One to support and secure armoured cable and the other for non-armoured cable.</p> <p>Note: This unit is not covered under the requirements of SANS 1489-1 and SANS 1489-4 but meet the requirements for SANS 60079-0 and SANS 60079-1.</p> <p>12kV Coupler [RF LL FO Body (Removable Flange / Live Line / Fibre Optic Body)] consist of the following components:</p> <ul style="list-style-type: none"> • a body with three Phase Isolators with phase pins and one Pilot Isolator with pilot pin, • a Fibre Optic Retaining Ring with internal Fibre Optic Mounting Block that is bolted to the main body with four M5 x 0.8P countersunk cap screws, • an inner flange mounted sealing ring with a diameter of 175mm, • Removable Flange, • a body with three M25 x 1.5p threaded entries adjacent to the three phases for fitment of a live line indicator (the Live Line indicator is part of this approval and can only be used on the equipment as specified in this certificate) 	

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Mining And Surface Certification (Pty) Ltd Reg No: 2015/021934/07
Directors: Roelof Viljoen & Francois du Toit
Unit #5, Lelyta Park, 45 Jurg Avenue, Hennopspark Ext 87, Centurion, 0157
P.O. Box 14344, Clubview, 0014
Tel: 012 653 2959 ♦ Fax: 086 605 8568
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IA CERTIFICATE: MASC M/24-2113X

Equipment: 12kV 400Amp Coupler, Adaptor and Insulated End Cover

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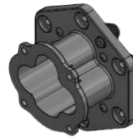
Two optional gland housings are provided that are bolted to the coupler body by means of four M12 x 1.75P hexagon bolts and nuts. Both these housings have a threaded filler hole with threaded filler plug for KonNx filling compound and have an integral gland at the tail end. One to support and secure armoured Cable and the other for non-armoured cable.

Note: This unit is not covered under the requirements of SANS 1489-1 and SANS 1489-4 but meet the requirements for SANS 60079-0 and SANS 60079-1.

12kV Adaptor Flange consist of the following components:

- Adaptor flange body with an Adaptor Cap that bolts to the body with four M6 x 1.0P x 16mm button head screws,
- three stepped grommets and a filler cap.

The adaptor can be bolted with four M12 x 1.75P to any of the couplers as described above and be filled with KonNx approved filling compound.



Note: This unit complied to the requirements of SANS 60079-0; SANS 60079-1; SANS 1489-1 and SANS 1489-4.

Phase Connectors & Pilot:

These units are used for connection between two sockets that is designed and certified to the same specification.



Insulated End Cover:

This unit provide protection, insulation and maintain the flameproof properties of an unused Socket.



Note: Only the 12kV Half Coupler (Standard Body) with housings, 12kV Adaptor, Phase Connectors/Pilot and 12kV Insulated End Cover meet the requirements of SANS 60079-0, SANS 60079-1, SANS 1489-1 and SANS 1489-4.

Material	The 12kV 400Amp Coupler, Adaptor and Insulated End Cover is manufactured from high-tensile Brass or Stainless Steel.
Standard compliance	See "certificate" above
Warnings	See "certificate" above

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IA CERTIFICATE: MASC M/24-2113X
Equipment: 12kV 400Amp Coupler, Adaptor and
Insulated End Cover

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Conditions of Certification	
Special Conditions of safe use (X)	<ul style="list-style-type: none">• The unit shall not remain / be energized when connected or disconnected.• The flamepath of the Adaptor must be considered when fitted to an Ex d enclosure.• The 12kV Coupler (Standard Body) must be used with an approved plug according to the same specification / standards as listed in this certificate.• The cable gland part on the Coupler Housing is only permitted to be used in a temperature range between -20°C to 40°C. However, the cable temperature range may be the limiting factor.• The 12kV Coupler, Adaptor and Insulated End Cover is only permitted to be used in ambient temperatures ranging between -20°C to 40°C• The 12kV Coupler must not remain / become energized when not engaged.• During installation provision shall be made for electrical stress relief on cable terminations.• It is up to the end user to ensure that adequate clamping of the cable is achieved as per prescribed installation torque for the plug gland on the instructions provided with each unit.• Only the 12kV Half Coupler (Standard Body) with housings, 12kV Adaptor, Phase Connectors/Pilot and 12kV Insulated End Cover meet the requirements of SANS 1489-1 and SANS 1489-4.
Conditions of manufacture	<ul style="list-style-type: none">• The fully assembled 12kV Coupler and Adaptor system must be fully filled without voids with KonNx filling compound.• It is a condition of certification that a copy of this certificate and instructions must be provided / made available with each assembly. The instructions should include the assembly, inspection, repair / maintenance requirements.• According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved mark scheme or batch testing by an accredited test laboratory.)

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MASC takes no responsibility for any non-conformances, exclusions or any results / assessments / inspections not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer / applicant attests on his own responsibility that the equipment / installation has been designed and constructed in accordance with the applicable requirements of the relevant standards and documentation, that the routine verifications / routine tests have been correctly completed and the equipment / installation complies with the documentation and standard(s).

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Our ref: 24-2113
Enquiries: M. Erasmus
Fax: 086 605 8568
Tel: (012) 653 2959
Date: 04 October 2024

KonNx Africa (Pty) Ltd.
5 Brighton Rd,
Bramley View,
Gauteng,
South Africa

MASC Report No: 24-2113

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12KV 400AMP COUPLER AND ADAPTOR WITH INSULATED END COVER

1. SUBJECT

The evaluation and verification of 12kV 400Amp Coupler and Adaptor with Insulated End Cover for compliance with the relevant requirements of the following standards:

- **SANS 60079-0: 2019** Explosive atmospheres – Part 0: Equipment – General requirements
- **SANS 60079-1: 2015** Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures “d”
- **SANS 1489-1: 2016** Electrical connectors in Group I and Group II hazardous locations Part 1: General Requirements for Group I hazardous areas
- **SANS 1489-4: 2022** Electrical connectors in Group I and Group II hazardous locations Part 4: Medium voltage couplers and adaptors for Group I hazardous areas

2. DESCRIPTION OF EQUIPMENT

The 12kV Coupler, Adaptor and End Cover as per description below:

12kV Coupler (Standard Body) consist of the following components:

- a body with three Phase Isolators with phase pins and one Pilot Isolator with Pilot Pin,
- a STD Retaining Ring that is bolted to the main body with four M5 x 0.8P countersunk cap screws,
- an inner flange mounted sealing ring with a diameter of 175mm,
- Three Phase and one Pilot connector(s).



Two optional gland housings are provided that are bolted to the coupler body by means of four M12 x 1.75P hexagon bolts and nuts. Both these housings have a threaded filler hole with threaded filler plug for KonNx filling compound and have an integral gland at the tail end. One to support and secure armoured cable and the other for non-armoured cable.

Note: This unit complied to the requirements of SANS 60079-0; SANS 60079-1; SANS 1489-1 and SANS 1489-4.

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12kV Coupler [RF LL Body (Removable Flange Live Line Body)] consist of the following components:

- a body with three Phase Isolators with phase pins and one Pilot Isolator with pilot pin,
- Internal Guide Pin, a STD Retaining Ring with internal guide pin that is bolted to the main body with four M5 x 0.8P countersunk cap screws,
- an inner flange mounted sealing ring with a diameter of 175mm,
- Removable Flange,
a body with three M25 x 1.5p threaded entries adjacent to the three phases for fitment of a live line indicator (the Live Line indicator is part of this approval and can only be used on the equipment as specified in this certificate)



Two optional gland housings are provided that are bolted to the coupler body by means of four M12 x 1.75P hexagon bolts and nuts. Both these housings have a threaded filler hole with threaded filler plug for KonNx filling compound and have an integral gland at the tail end. One to support and secure armoured cable and the other for non-armoured cable.

Note: This unit is not covered under the requirements of SANS 1489-1 and SANS 1489-4 but meet the requirements for SANS 60079-0 and SANS 60079-1.

12kV Coupler [RF LL FO Body (Removable Flange / Live Line / Fibre Optic Body)] consist of the following components:

- a body with three Phase Isolators with phase pins and one Pilot Isolator with pilot pin,
- a Fibre Optic Retaining Ring with internal Fibre Optic Mounting Block that is bolted to the main body with four M5 x 0.8P countersunk cap screws,
- an inner flange mounted sealing ring with a diameter of 175mm,
- Removable Flange,
- a body with three M25 x 1.5p threaded entries adjacent to the three phases for fitment of a live line indicator (the Live Line indicator is part of this approval and can only be used on the equipment as specified in this certificate)



Two optional gland housings are provided that are bolted to the coupler body by means of four M12 x 1.75P hexagon bolts and nuts. Both these housings have a threaded filler hole with threaded filler plug for KonNx filling compound and have an integral gland at the tail end. One to support and secure armoured Cable and the other for non-armoured cable.

Note: This unit is not covered under the requirements of SANS 1489-1 and SANS 1489-4 but meet the requirements for SANS 60079-0 and SANS 60079-1.

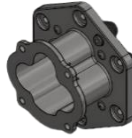
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MASC Report No 24-2113

12kV Adaptor Flange consist of the following components:

- Adaptor flange body with an Adaptor Cap that bolts to the body with four M6 x 1.0P x 16mm button head screws,
- three stepped grommets and a filler cap.

The adaptor can be bolted with four M12 x 1.75P to any of the couplers as described above and be filled with KonNx approved filling compound.



Note: This unit complied to the requirements of SANS 60079-0; SANS 60079-1; SANS 1489-1 and SANS 1489-4.

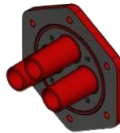
Phase Connectors & Pilot:

These units are used for connection between two sockets that is designed and certified to the same specification.



Insulated End Cover:

This unit provide protection, insulation and maintain the flameproof properties of an unused Socket.



Note: Only the 12kV Half Coupler (Standard Body) with housings, 12kV Adaptor, Phase Connectors/Pilot and 12kV Insulated End Cover meet the requirements of SANS 1489-1 and SANS 1489-4.

3. DOCUMENTATION

Document No.	Document Title	Sheet	Issue	Date dd/mm/yyyy
Ex 124B_000	12kV 400Amp Coupler & Adaptor System	1 of 15	1	20/04/2023
Ex 124B_001	Body Assemblies	2 of 15	1	20/04/2023
Ex 124B_002	Retaining Rings Removable Flange	3 of 15	1	20/04/2023
Ex 124B_003	Live Line Indicator	4 of 15	1	20/04/2023
Ex 124B_004	Adaptor Flange	5 of 15	1	20/04/2023
Ex 124B_005	Unarmoured Gland	6 of 15	1	20/04/2023
Ex 124B_006	Armoured Gland	7 of 15	1	20/04/2023
Ex 124B_007	Insulated End Cover	8 of 15	1	20/04/2023
Ex 124B_008	Phase Connectors and Pilots	9 of 15	1	20/04/2023
Ex 124B_009	Labels	10 of 15	1	20/04/2023
Ex 124B_010	Fastener Schedule	11 of 15	1	20/04/2023
Ex 124B_011	Material Schedule	12 of 15	1	20/04/2023
Ex 124B_012	Earthing Details	13 of 15	1	20/04/2023
Ex 124B_013	Earthing Details	14 of 15	1	20/04/2023
Ex 124B_014	Fibre Optics	15 of 15	1	20/04/2023
PL1869 12 kV	AusProof 12kV 400A Coupler System	1 to 36	1	26/01/2024

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Filling Compound / Non Metallic Data				
5633-30	Compound 53 Part A – Resin Ausproof (Pty) Ltd	1 to 14	2.1	20/10/2023
PL1767-1- KBX53	AusProof Compound 53	1 to 9	1	28/10/2021
PL1767-1- KBX53-Summary	Ausproof / PowerLab	1 of 1	-	22/10/2021
5633-30	Compound 53 Part A – Resin JoynX (Pty) Ltd	1 to 14	2.1	20/10/2023
5633-97	Compound 53 Part B – Hardner Ausproof (Pty) Ltd	1 to 13	2.1	20/10/2023
5633-97	Compound 53 Part b – Hardner JoynX (Pty) Ltd	1 to 13	2.1	20/10/2023
00000083899	SILASTIC 9161 RTV Silicone Rubber	1 to 2	-	16/12/2019
800-258-2436	SILASTIC 9161 RTV Silicone Rubber	1 to 16	-	11/09/2023
000000818424	SILASTIC 9161 RTV Silicone Rubber	1 of 1	-	16/12/2019
-	GUROFLEX MV – Component A	1 to 4	1.1	16/03/2010
-	GUROFLEX MV – Component B	1 to 4	1.1	16/03/2010
5511-74	Compound 78 Part A –Resin	1 to 8	3.1	10/01/2022
5511-76	Compound 78 Part B – Hardener	1 to 8	3.1	10/01/2022
PL1767-2- KBX78	PowerLab Test Report	1 to 8	1	28/10/2021
PL1767-2- KBX78 - Summery	PowerLab Test Report (Summary of Results) Compound 78 Electro Insulating Resin	1 of 1	-	22/10/2010

Customer Drawings:

Document No.	Document Title	Sheet	Issue	Date dd/mm/yyyy
Ex124B_C000	12kV 400Amp Coupler & Adaptor System CUSTOMER COPY	1 of 13	1	20/04/2023
Ex124B_C001	Body Assemblies CUSTOMER COPY	2 of 13	1	20/04/2023
Ex124B_C002	Retaining Rings/Removable Flange CUSTOMER COPY	3 of 13	1	20/04/2023
Ex124B_C003	Live Line Indicator CUSTOMER COPY	4 of 13	1	20/04/2023
Ex124B_C004	Adaptor Flange CUSTOMER COPY	5 of 13	1	20/04/2023
Ex124B_C005	Unarmoured Gland CUSTOMER COPY	6 of 13	1	20/04/2023
Ex124B_C006	Armoured Gland CUSTOMER COPY	7 of 13	1	20/04/2023
Ex124B_C007	Insulated End Cover CUSTOMER COPY	8 of 13	1	20/04/2023
Ex124B_C009	Labels CUSTOMER COPY	9 of 13	1	20/04/2023
Ex124B_C010	Fastener Schedule CUSTOMER COPY	10 of 13	1	20/04/2023
Ex124B_C012	Earthing Details CUSTOMER COPY	11 of 13	1	20/04/2023
Ex124B_C013	Earthing Details CUSTOMER COPY	12 of 13	1	20/04/2023
Ex124B_C014	Fiber Optics CUSTOMER COPY	13 of 13	1	20/04/2023

MASC lab notes and documentation is kept in the MASC **24-2113** project file.

4. METHOD OF EVALUATION

All tests were conducted with respect to SANS 60079-0, SANS 60079-1 and SANS 1489 part 1 and part 4 requirements.

5. RESULTS OF EVALUATION

Nothing contrary to the relevant requirements of SANS 60079-0, SANS 60079-1 and SANS 1489 part 1 and part 2 was observed with exclusion to 12kV Coupler models RF LL Body and RF LL FO Body to the requirements of SANS 1489 Part1 & Part 4.

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MASC Report No 24-2113

6. CONCLUSION

The 12kV Coupler and Adaptor with Insulated End Cover as described in Clause 2 of this report and in the condition as evaluated and examined is Explosion protected Ex db I Mb. It may be used in Zone 1, Gas Group I, hazardous areas underground in fiery mines (Methane and Coal Dust) maximum surface temperature 150°C according to SANS 60079-0 and SANS 60079-1 SANS 1489-1 and SANS 1489-4.

It is suitable for use in hazardous areas in underground coal mines.

SANS 1489-1 and SANS 1489-4 are excluded to 12kV Coupler models RF LL Body and RF LL FO Body.

7. CONDITIONS OF ASSESSMENT

- Any alterations and / or modifications to the design or construction of the system, its components or exceeding their ratings will invalidate this test report.
- All serial numbers must be manufactured under an approved mark scheme or covered by a valid batch report.
- This report only covers the prototype as described in Clause 2.

8. MARKING

The following marking must be applied to the equipment:

KonNx Africa (Pty) Ltd.	
Type:	As applicable "Type"
Ex Marking:	Ex db I Mb
IA Number:	MASC M/24-2113X
Serial Number:	As per "Conditions of Assessment"

"DO NOT SEPARATE / CONNECT OR DISCONNECT WHILE THE CIRCUIT IS ENERGIZED"

9. CONDITIONS OF CERTIFICATION**9.1 Special conditions of safe use (X)**

- The unit shall not remain / be energized when connected or disconnected.
- The flamepath of the Adaptor must be considered when fitted to an Ex d enclosure.
- The 12kV Coupler (Standard Body) must be used with an approved plug according to the same specification / standards as listed in this certificate.
- The cable gland part on the Coupler Housing is only permitted to be used in a temperature range between -20°C to 40°C. However, the cable temperature range may be the limiting factor.
- The 12kV Coupler, Adaptor and Insulated End Cover is only permitted to be used in ambient temperatures ranging between -20°C to 40°C
- The 12kV Coupler must not remain / become energized when not engaged.
- During installation provision shall be made for electrical stress relief on cable terminations.
- It is up to the end user to ensure that adequate clamping of the cable is achieved as per prescribed installation torque for the plug gland on the instructions provided with each unit.
- Only the 12kV Half Coupler (Standard Body) with housings, 12kV Adaptor, Phase Connectors/Pilot and 12kV Insulated End Cover meet the requirements of SANS 1489-1 and SANS 1489-4.

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9.2 Conditions of manufacture

- The fully assembled 12kV Coupler and Adaptor system must be fully filled without voids with KonNx filling compound.
- It is a condition of certification that a copy of this certificate and instructions must be provided / made available with each assembly. The instructions should include the assembly, inspection, repair / maintenance requirements.
- According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved mark scheme or batch testing by an accredited test laboratory.)

10. VALIDITY OF THIS REPORT

This Test Report only covers the equipment and process as stated in this report. Any alterations and/or modifications to the design / repairs or construction of the enclosure(s), exceeding the rating or using it in a hazardous location other than those for which tested, will invalidate this report.

Yours faithfully

**M. Erasmus
TECHNICAL SPECIALIST**

**W. Haywood
TECHNICAL SPECIALIST**

Mining And Surface Certification

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MASC takes no responsibility for any non-conformances, exclusions or any results / assessments not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer attests on his own responsibility that the equipment has been constructed in accordance with the applicable requirements of the relevant standards and that the routine verifications and routine tests have been successfully completed and the product complies with the documentation and standard(s).

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