




Mining And Surface Certification (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/24-2041X	Issue	2 – Supplementary to include revision R2A report
Issue Date	04 September 2024	Expiry Date	18 March 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	300A/425A 650V/1000V Restrained Plug and Socket	Type	Refer to “ANNEX A” below
Photo			
MARKING: <i>Must be additionally applied to the equipment</i>	Applicant / Manufacturer Type Ex Marking IA Number Serial Number Rating	KonNx Africa (Pty) Ltd. As applicable “Type” (See “ANNEX A” Below) Ex db I Mb MASC M/24-2041X See “Annex A” below As per description below	
WARNING(S)	“ DO NOT SEPARATE WHEN ENERGIZED”		
Compliance: The equipment as described above and in report MASC 24-2041-R2A has been allocated the rating <u>Explosion Protected Ex db I Mb</u> utilizing the principals in the following 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 1489-2: 2023 Electrical connectors in Group I and Group II hazardous locations Part 2: Restrained type plugs and sockets for Group I hazardous areas ARP 0108: 2018 Regulatory requirements for explosion protected apparatus NCoP 2398: 2022 National Code of Practice for Electrical Machinery in Hazardous Locations - 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:	
• See “ANNEX A” below		• See “ANNEX A” below	
M. Erasmus TECHNICAL SPECIALIST		W. Haywood TECHNICAL SPECIALIST	

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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



IA CERTIFICATE: MASC M/24-2041X
Equipment: 300 Series Plug and Socket

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ANNEX A

Description	Enclosure	Populated	Unpopulated																																																																											
	General	<p>The 300 series Restrained Plug and Socket was manufactured from high tensile Brass or Stainless Steel.</p> <p>The Plug consisted out of a body, cage and four tubes (three mains and one pilot) with insulators. Cable connections to the tubes are secured with either grub screws or crimp and soldered for cable core and earth. The front interface of the plug is compatible with socket assemblies manufactured according to the same specification.</p> <p>The Socket consisted out of a body, cage and four pins (three mains and one pilot) with insulators. Cable connections to the pins are secured with either grub screws or crimp and soldered for cable core and earth. The front interface of the Socket is compatible with Plug assemblies manufactured according to the same specification.</p> <p>The following Type / Models are provided in the 300 series that comply to the requirements of SANS 1489-1 and SANS 1489-2:</p> <p>Table 1:</p> <table><tr><th>Model</th><th>Volts</th><th>Amps</th></tr><tr><td>AP634</td><td>660</td><td>300</td></tr><tr><td>AS634</td><td>660</td><td>300</td></tr><tr><td>AS634TP</td><td>660</td><td>300</td></tr><tr><td>AP644</td><td>660</td><td>425</td></tr><tr><td>AS644</td><td>660</td><td>425</td></tr><tr><td>AS644TP</td><td>660</td><td>425</td></tr><tr><td>AP134</td><td>1100</td><td>300</td></tr><tr><td>AS134</td><td>1100</td><td>300</td></tr><tr><td>AS134TP</td><td>1100</td><td>300</td></tr><tr><td>AP144</td><td>1100</td><td>425</td></tr><tr><td>AS144</td><td>1100</td><td>425</td></tr><tr><td>AS144TP</td><td>1100</td><td>425</td></tr></table> <div><p>Product Name Format</p><p>Volts Number Of Pins</p><p>AS634</p><p>AP = African Plug AS = African Socket</p><p>Amps</p></div> <p>The following Type / Models are provided in the 300 series that do not form part to the requirements of SANS 1489-1 and SANS 1489-2 and only to SANS 60079-0 and SANS 60079-1:</p> <p>Table 2:</p> <table><tr><th>Model</th><th>Volts</th><th>Amps</th></tr><tr><td>AS634RR</td><td>660</td><td>300</td></tr><tr><td>QRAS634</td><td>660</td><td>300</td></tr><tr><td>QRAS634RR</td><td>660</td><td>300</td></tr><tr><td>AS644RR</td><td>660</td><td>425</td></tr><tr><td>QRAS644</td><td>660</td><td>425</td></tr><tr><td>QRAS644RR</td><td>660</td><td>425</td></tr><tr><td>AS134RR</td><td>1100</td><td>300</td></tr><tr><td>QRAS134RR</td><td>1100</td><td>300</td></tr><tr><td>AS144RR</td><td>1100</td><td>425</td></tr><tr><td>QRAS144</td><td>1100</td><td>425</td></tr><tr><td>QRAS144RR</td><td>1100</td><td>425</td></tr></table>	Model	Volts	Amps	AP634	660	300	AS634	660	300	AS634TP	660	300	AP644	660	425	AS644	660	425	AS644TP	660	425	AP134	1100	300	AS134	1100	300	AS134TP	1100	300	AP144	1100	425	AS144	1100	425	AS144TP	1100	425	Model	Volts	Amps	AS634RR	660	300	QRAS634	660	300	QRAS634RR	660	300	AS644RR	660	425	QRAS644	660	425	QRAS644RR	660	425	AS134RR	1100	300	QRAS134RR	1100	300	AS144RR	1100	425	QRAS144	1100	425	QRAS144RR	1100	425	
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Warnings	See "certificate" above																																																																													

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Mining And Surface Certification (Pty) Ltd Reg No: 2015/021934/07
Directors: Roelof Viljoen & Francois du Toit
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IA CERTIFICATE: MASC M/24-2041X
Equipment: 300 Series Plug and Socket

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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 socket must be considered when fitted to an Ex d enclosure.• The socket must be used with an approved plug according to the same specification / standards as listed in this certificate.• The cable gland part on the plug is only permitted to be used in a temperature range between -20°C to 40°C at the point of mounting. However, the cable temperature range may be the limiting factor.• The plug and socket is only permitted to be used in ambient temperatures ranging between -20°C to 40°C at the point of mounting.• The plug and socket must not remain or 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.• The units as listed in "Table 2" are only certified under SANS 60079-0 and SANS 60079-1 and not for SANS 1489-1 and SANS 1489-2.• Installation / supply cable shall comply with suitable current rating as applicable, keeping in mind the deratings for ambient / service temperatures.
Conditions of manufacture	<ul style="list-style-type: none">• It is a condition of certification that a copy of this certificate and instructions must be provided / made available with each plug and socket assembly. The instructions should include the plug and socket, assembly, inspection, repair / maintenance requirements.

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While every endeavour is made to ensure that a test / assessment / inspection is representative and accurately performed, and that a report / certificate is accurate in the quoted results and conclusions drawn from the test / assessment / inspection, MASC or its directors/employees shall in no way be liable for any error made in carrying out the test / assessment or for any erroneous statement, whether in fact or in opinion, contained in a report / certificate issued pursuant to a test / assessment / inspection.

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: 24-2041-R2A
Enquiries: M. Erasmus
Fax: 086 605 8568
Tel: (012) 653 2959
Date: 04 September 2024

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

MASC Report No: 24-2041-R2A

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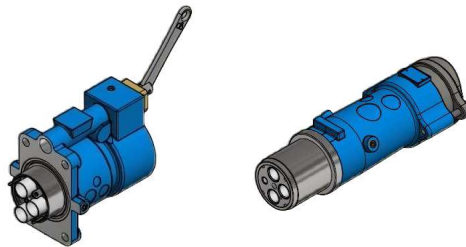
300A/425A 650/1100V RESTRAINED PLUG AND SOCKET

1. SUBJECT

The evaluation and verification of 300A/425A 650/1100V Restrained Plug and Socket 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 1489-2: 2023** Electrical connectors in Group I and Group II hazardous locations Part 2: Restrained type plugs and sockets for Group I hazardous areas

2. DESCRIPTION OF EQUIPMENT



The 300 series Restrained Plug and Socket was manufactured from high tensile Brass or Stainless Steel.

The Plug consisted out of a body, cage and four tubes (three mains and one pilot) with insulators. Cable connections to the tubes are secured with either grub screws or crimp and soldered for cable core and earth. The front interface of the plug is compatible with socket assemblies manufactured according to the same specification.

The Socket consisted out of a body, cage and four pins (three mains and one pilot) with insulators. Cable connections to the pins are secured with either grub screws or crimp and soldered for cable core and earth. The front interface of the Socket is compatible with Plug assemblies manufactured according to the same specification.

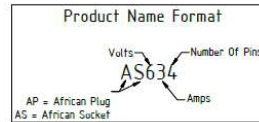
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MASC Report No 24-2041-R2A

The following Type / Models (Table 1) are provided in the 300 series that complies to SANS 60079-0; SANS 60079-1 and SANS 1489 part 1 and Part 2:

Table 1:

<u>Model</u>	<u>Volts</u>	<u>Amps</u>
AP634	660	300
AS634	660	300
AS634TP	660	300
AP644	660	425
AS644	660	425
AS644TP	660	425
AP134	1100	300
AS134	1100	300
AS134TP	1100	300
AP144	1100	425
AS144	1100	425
AS144TP	1100	425



The following Type / Models (Table 2) are provided in the 300 series that do not form part to the requirements of SANS 1489-1 and SANS 1489-2 and only to SANS 60079-0 and SANS 60079-1.

Table 2:

<u>Model</u>	<u>Volts</u>	<u>Amps</u>
AS634RR	660	300
QRAS634	660	300
QRAS634RR	660	300
AS644RR	660	425
QRAS644	660	425
QRAS644RR	660	425
AS134RR	1100	300
QRAS134RR	1100	300
AS144RR	1100	425
QRAS144	1100	425
QRAS144RR	1100	425

A revision was done to include additional models as per "Table 1 and Table 2" above with addition to corporate bolt head protection.

3. DOCUMENTATION

Document No.	Document Title	Sheet	Issue	Date yyyy/mm/dd
NSC-230124-00002B	ARC Fault Test	1 to 10	-	2023/01/24
NSC-230124-00002C	Test For Rated Short Term Current	1 to 8	-	2023/01/24
ExARPR300M2-1000	300 Series Index	1	5	2022/11/24
ExARPR300M2-1100	Common Socket Body	1	5	2022/11/29
ExARPR300M2-1101	Common Plug Body	1	5	2022/11/29
ExARPR300M2-1102	Plug And Socket Engaged	1	5	2022/11/29
ExARPR300M2-1103	Flame Path Specification	1	6	2024/02/26
ExARPR300M2-1104	Common 300 Operating Mechanism	1	5	2022/11/30
ExARPR300M2-1105	Common 300 Gland Bracket	1	5	2022/12/05
ExARPR300M2-1106	Common 300 Socket Tamper Proof Release	1	5	2023/03/28
ExARPR300M2-1200	650/1100V 300A 4 Pin	1	5	2022/11/29
ExARPR300M2-1201	650 425A 4 Pin	1	5	2022/11/29
ExARPR300M2-1202	1.1kV 300A 4 Pin	1	5	2022/11/30

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ExARPR300M2-1203	1.1kV 425A 4 Pin	1	5	2022/11/30
ExARPR300M2-1300	O-Ring Specifications	1	5	2022/11/30
ExARPR300M2-1301	300 Cavity Volume Min Plug Engagement	1	5	2022/11/30
ExARPR300M2-1302	300 Conductor Cable Insertion/Hole Depths	1	6	2024/02/22
ExARPR300M2-1303	Conductor Cable Insertion/Hole Depths	1	5	2022/12/05
ExARPR300M2-1304	Common 300 Plug Cable Clamp Assembly	1	6	2024/05/10
ExARPR300M2-1305	300 Receptacle And Plug Cage Dimensions	1	5	2022/11/30
ExARPR300M2-1306	16-150mm ² & 185mm ² Phase Insulator Assembly	1	5	2022/11/30
ExARPR300M2-1307	Common 300 Pawl Assembly	1	5	2022/11/30
ExARPR300M2-1308	Cage Locking Screw Details	1	5	2022/11/30
ExARPR300M2-1309	Material Schedule	1	5	2022/11/30
ExARPR300M2-1310	Fastener Schedule	1	5	2022/12/06
ExARPR300M2-1311	Product marking labels	1	5	2022/12/01
ExARPR300M2-1312	Common 300 Socket Body Quick Release	1	5	2022/12/05

300 Series Customer Drawings

Document No.	Document Title	Sheet	Issue	Date yyyy/mm/dd
ExARPR300M2-C1000	300 Series Index Customer Copy	1	5	2022/11/24
ExARPR300M2-C1100	Common Socket Body Customer Copy	1	5	2022/11/29
ExARPR300M2-C1101	Common Plug Body Customer Copy	1	5	2022/11/29
ExARPR300M2-C1102	Plug And Socket Engaged Customer Copy	1	5	2022/11/29
ExARPR300M2-C1103	Flame Path Specification Customer Copy	1	5	2022/11/29
ExARPR300M2-C1104	Common 300 Operating Mechanism Customer Copy	1	5	2022/11/30
ExARPR300M2-C1105	Common 300 Gland Bracket Customer Copy	1	5	2022/12/05
ExARPR300M2-C1106	Common 300 Receptacle Tamper Proof Release Customer Copy	1	5	2023/03/28
ExARPR300M2-C1304	Common 300 Plug Cable Clamp Assembly Customer Copy	1	6	2024/05/10
ExARPR300M2-C1306	16-150mm ² & 185mm ² Phase Insulator Assembly Customer Copy	1	5	2022/11/30
ExARPR300M2-C1310	Fastener Schedule Customer Copy	1	5	2022/12/06
ExARPR300M2-C1311	Product Marking Label Customer Copy	1	5	2022/12/01
ExARPR300M2-C1312	Common 300 Socket Body Quick Release Customer Copy	1	5	2022/12/05

MASC lab notes and documentation is kept in the MASC **24-2041-R1 / R2A** 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 2 requirements.

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MASC Report No 24-2041-R2A

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 "Table 2" models.

6. CONCLUSION

The 300 Series Plug and Socket 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 for "Table 1" Models including SANS 1489-1 and SANS 1489-2.

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

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/24-2041X
Serial Number:	As per "Conditions of Assessment"

"DO NOT SEPARATE WHEN 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 socket must be considered when fitted to an Ex d enclosure.
- The socket must be used with an approved plug according to the same specification / standards as listed in this certificate.
- The cable gland part on the plug is only permitted to be used in a temperature range between -20°C to 40°C at the point of mounting. However, the cable temperature range may be the limiting factor.
- The plug and socket is only permitted to be used in ambient temperatures ranging between -20°C to 40°C at the point of mounting.
- The plug and socket must not remain or 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.
- The units as listed in "Table 2" are only certified under SANS 60079-0 and SANS 60079-1 and not for SANS 1489-1 and SANS 1489-2.

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MASC Report No 24-2041-R2A

9.2 Conditions of manufacture

- It is a condition of certification that a copy of this certificate and instructions must be provided / made available with each plug and socket assembly. The instructions should include the plug and socket, 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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