



DET NORSKE VERITAS

EC-TYPE EXAMINATION CERTIFICATE

| [3] EC-Type Examination Certificate Number: DNV-2005-OSL-ATEX-0327X Rev. 5 [4] Equipment or Protective System: PAC 1278 2-wire IS.ALS subsystem [5] Applicant – Manufacturer or Authorized representative: MISTRAS Group Inc. [6] Address: PSC Charkesville Road, Princeton Junction, New Jersey 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] DNV, notified body number 0575 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifics 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. [9] The examination and test results are recorded in confidential reports listed in section 14. [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with: EN 60079-01: 2012 and EN 60079-11: 2012 [10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to specified on 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. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system. [12] The marking of the equipment or protective system shall include the following: [13] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified relates any supply of this equipment or protective system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system. If applicable, furth | [2] | EQUIPMENT OR PROTECTIVE SYSTEM INT 94/9/EC | TENDED FO | R USE IN POTENTIALLY EXPLOSIVE ATMOSPHER | RES DIRECTIVE | | |
|--|--------------|---|---|--|--------------------------------------|--|--|
| [5] Applicant – Manufacturer or Authorized representative: MISTRAS Group Inc. [6] Address: PSC Clarkesville Road, Princeton Junction, New Jersey 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] DNV, notified body number 0575 in accordance with Article 9 of 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. [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with: EN 60079-01: 2012 and EN 60079-11:2012 [10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to 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. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system. If applicable, further requirements of this Directive apply to the manufacturer and estimate the term of the te | [3] | EC-Type Examination Certificate Number: | | DNV-2005-OSL-ATEX-0327X | Rev. 5 | | |
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| $Ex ia IIC T6 Ga - 40 °C \le Ta \le +40 °C$ $I 1 D Ex ia IIC T135°C Da - 40 °C \le Ta \le +70 °C$ $Høvik, 2014-11-14$ for Det Norske Veritas AS $Asle Kaastad$ $Certification Manager$ Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The digitally signed and electronically distributed document is the original and valid certificate. Ref.: www.dnv.com/digitalsignatures | | equipment or protected system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system. | | | | | |
| Ex ia IIC T6 Ga $\cdot 40 \degree C \le Ta \le +40 \degree C$ II D Ex ia IIC T135°C Da $\cdot 40 \degree C \le Ta \le +70 \degree C$ Høvik, 2014-11-14 for Det Norske Veritas AS <u>Asle Kaastad</u> <u>Certification Manager</u> Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. <u>The digitally signed and electronically distributed document is the original and valid certificate. Ref.: www.dnv.com/digitalsignatures</u> ary person suffers loss or damage which is proved to have been caused by any negligent act or omispice not Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person buffers loss or damage which is proved of the service in Quelon, provided that the maximum compensation shall pay compensation to such person during the service in Quelon, provided that the maximum compensation shall personed used by any negligent act or omispice not pool to be Norske Veritas, then Det Norske Veritas shall pay compensation to such person during the person suffers loss or damage which is proved to have been caused by any negligent act or omispice not pool to be Norske Veritas, then Det Norske Veritas shall pay compensation to such person for the pervice in Quelon, provided that the maximum compensation shall never exerced USD 300000. In this proved diverse Veritas Veritas shall pervection the service in Quelon provided the termination compensation shall never exerced USD 300000. In this proved diverse Veritas Veritas shall person termination shall never exerced USD 300000. In this proved diverse Veritas Veritas verificate Verifica | | (Ex) |) ∏1G | Ex ia HC T4 Ga -40 °C < Ta < +70 °C | | | |
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| ARKHEDITENING PROD 021 PROD 021 Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The digitally signed and electronically distributed document is the original and valid certificate. Ref.: <u>www.dnv.com/digitalsignatures</u> any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas neall not exceede an amount requal to ten times the fee charged for the service in question, provided that the maximum compensation shall net verseed USD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision" Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision" Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shall net verseed uSD 300.000. In this provision "Det Norske Veritas shad" person 300.000. In this provision "Det | | | | | | | |
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Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE No.: DNV-2005-OSL-ATEX-0327X

Rev. 5

| Certificate History | | | | | | |
|---------------------|--|------------|------------|--|--|--|
| Revision | Description | Report no. | Issue date | | | |
| - | Original certificate | 2005-3340 | 2005-11-22 | | | |
| 1 | Supplement 1 | 2006-3010 | 2006-09-21 | | | |
| 2 | Updated to recent standards, minor changes on four drawings | 2011-3336 | 2011-07-29 | | | |
| 3 | Correction to label drawings | 2012-3404 | 2012-12-05 | | | |
| 4 | Reversal of label drawing correction | 2012-3404 | 2013-03-01 | | | |
| 5 | Update dust rating and update to latest standard versions, add | 2013-3369 | 2014-11-13 | | | |
| | T6 rating for +40 °C ambient. | | | | | |

[15] Description of Equipment or Protective System

[13]

The ASL Subsystem comprises an electronic circuit housed in aluminium enclosure. The circuit is partially encapsulated in an epoxy resin. The input of the ASL Subsystem must be connected to a power supply via an EC Type certified zener barrier with or without galvanic separation.

EC Type Examination Certified sensors that can be connected to the ASL subsystem output: ISR.45, ISR1.5, ISR3, ISR6, ISR15, ISR30, ISR50, ISWD, and ISD9203B.

Type Identification Model 1278 GDU 1278 The ASL Subsystem GDU 1278 has the following alternative Authorized Representative: Groverlely Detection Limited Anchor Works, Groverley Road, Christchurch, Dorset, BH23 3HB UK

Electrical Data $U_i=30V,\,I_i=100\,\text{mA},\,P_i=0.9W,\,L_i=100\,\,\mu\text{H},\,C_i=0.05\mu\text{F}$

Degrees of protection (IP Code) IP66

[16] Project No.: PRJC-449152-2013-PRC-USA

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 300.000. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.





EC-TYPE EXAMINATION CERTIFICATE No.: DNV-2005-OSL-ATEX-0327X Descriptive Documents

Rev. 5

| Descriptive Documents | | | | | | | |
|-----------------------|--|------|------------|--|--|--|--|
| Number | Title | Rev. | Date | | | | |
| 1277-2011 | 277-2011 Drill/fabrication drawing & Panel drawing | | 2005-01-22 | | | | |
| | 2-wire IS-ASL subsystem, (2 sheets) | | | | | | |
| 1278-2011 | Drill/fabrication drawing & Panel drawing | 1A | 2011-04-28 | | | | |
| | 2-wire IS-ASL subsystem, (2 sheets) | | | | | | |
| 1278-2014-XX | Assembly Drawing, 2-wire IS-ASL subsystem | 1B | 2011-04-28 | | | | |
| 1278-5015-XXX | Assembly Drawing, 1278 2-wire IS-ASL subsystem | 3 | 2014-06-04 | | | | |
| 1278-6000 | 1278 System Connections | 1 | 2014-06-04 | | | | |
| 1278-3010 | Schematic, 2-wire IS-ASL subsystem (3 sheets) | 1B | 2011-03-14 | | | | |
| 1277-2010 | 2-wire IS-ASL subsystem (PCB layout, 9 sheets) | 0 | 2005-01-26 | | | | |
| 1278-2010 | 2-wire IS-ASL subsystem (PCB layout, 8 sheets) | 1 | 2005-10-25 | | | | |

[17] Special Conditions for Safe Use

The enclosure is made of aluminium, and care must be taken due to the potention risk of sparks on avoid impact with iron or steel objects.

[18] Essential Health and Safety Requirements

See part 9 of this certificate

END OF CERTIFICATE

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