



# DET NORSKE VERITAS

## EC-TYPE EXAMINATION CERTIFICATE

- [2] **EQUIPMENT OR PROTECTIVE SYSTEM INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES DIRECTIVE 94/9/EC**
- [3] EC-Type Examination Certificate Number: **DNV-2008-OSL-ATEX-19218X** Rev. 9
- [4] Equipment or Protective System: **ISPKxxI, ISPKxxUC & ISPKxxIUC sensors and pre-amps with 1281 barrier/preamp interface**
- [5] Applicant – Manufacturer or Authorized representative: **Mistras Group Inc.**
- [6] Address: **195 Clarksville Rd.  
PRINCETON JCT., NJ 08550-5303  
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.
- 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 60079-0: 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 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 protected 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:



**II 1(1) G Ex ia IIC T6-T3 / [Ex ia] IIC see schedule**

**II 1(1) D Ex ia IIIC T85°C-T200°C / [Ex ia] IIIC see schedule**

Høvik, 2015-07-23  
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](http://www.dnv.com/digitalsignatures)

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.



[13]

## Schedule

[14] **EC-TYPE EXAMINATION CERTIFICATE No.:** DNV-2008-OSL-ATEX-19218X

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### Certificate History

Revision	Description	Report no.	Issue date
1	Original certificate	2007-3483	2008-04-04
2	Updated list of descriptive documents	2007-3483	2009-05-07
3	Included high temperature sensors with separate pre-amplifier	2007-3483	2010-03-26
4	Correction of descriptive documents list. New certificate format	2007-3483	2010-05-07
5	Corrected writing error	-	2010-07-13
6	Correction of IECEx certificate number on labels	2007-3483	2013-03-01
7	Update to company name, latest standard revisions, design changes, addition of dust ratings, change in T ratings, and addition of new transducers and low power pre-amp.	2007-3483	2014-12-02
8	Added four drawings to the document list that were omitted	2007-3483	2015-01-21
9	Correction of errors on revision level	2007-3483	2015-07-23

### [15] Description of Equipment or Protective System

The equipment consists of a series of ISPKxxI, ISPKxxUC and ISPKxxIUC sensors with a 1281 or 1281-LP barrier/preamp interface. The barrier interface supplies the sensors and pre-amps with an intrinsically safe signal. The Barrier/Preamp Interface also detects an AST signal from the standard AE system and sends it to the preamplifier/sensors where the sensors will generate tone bursts to send back to the AE system thru the barrier. The pre-amplifier can be integrated into the sensors or installed as a separate unit for high temperature applications.

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**Type Identification**

Barrier Interface	1281, 1281-LP	[Ex ia] IIC, [Ex ia] IIIC
Sensors with integrated amplifier	ISPK3I, ISPK6I, ISPK15I, ISPK30I, ISPKWDI, ISPKF15I, ISPKF30I, ISPK50I, ISPKF50I, ISPK3I-6dB, ISPK6I-6dB, ISPK15I-6dB, ISPKF15I-6dB, ISPK30I-6dB, ISPKF30I-6dB, ISPK50I-6dB, ISPKF50I-6dB, ISPKWDI-6dB,	Ex ia IIC T6, -55°C≤Ta≤70°C Ex ia IIIC T85°C, -55°C≤Ta≤70°C
Sensors with integrated amplifier for use under water	ISPK3IUC, ISPK6IUC, ISPK15IUC, ISPK30IUC, ISPKWDIUC, ISPKF15IUC, ISPKF30IUC, ISPK50IUC, ISPKF50IUC, ISPK3IUC-6dB, ISPK6IUC-6dB, ISPK15IUC-6dB, ISPKF15IUC-6dB, ISPK30IUC-6dB, ISPKF30IUC-6dB, ISPK50IUC-6dB, ISPKF50IUC-6dB, ISPKWDIUC-6dB	Ex ia IIC T6, -55°C≤Ta≤70°C Ex ia IIIC T85°C, -55°C≤Ta≤70°C
High temperature sensors for use with external pre-amplifier	ISR6CA-HT, ISR15CA-HT, ISR30CA-HT, ISWDCA-HT, ISR3CA-HT, ISRF15CA-HT, ISRF30CA-HT, ISR50CA-HT, ISRF50CA-HT	Ex ia IIC T4, -55°C≤Ta≤120°C Ex ia IIIC T135°C, -55°C≤Ta≤120°C  Ex ia IIC T3, -55°C≤Ta≤150°C Ex ia IIIC T200°C, -55°C≤Ta≤150°C
External pre-amplifier	ISPK-3S, ISPK-6S, ISPK-15S, ISPK-30S, ISPK-WS, ISPK-3S-6dB, ISPK-6S-6dB, ISPK-15S-6dB, ISPK-30S-6dB, ISPK-WS-6dB	Ex ia IIC T6, -55°C≤Ta≤70°C Ex ia IIIC T85°C, -55°C≤Ta≤70°C

**Electrical Data**

Barrier interface:

Um = 250V, Uo = 5,88V, Io = 0,297A, Po = 0,44W, Lo = 0,35mH, Co = 43µF

[16] Project No.: PRJC-489530-2013-PRC-USA

**Descriptive Documents**

Number	Title	Rev.	Date
1281-2010	Layers Drawing, 1281 IS Barrier / Preamp Interface (5 pages)	1	2007-12-31
1281-2011	Drill/Fabrication Drawing, 1281 IS Barrier / Preamp Interface (2 pages)	1A	2008-05-01
1281-2014	Assembly Drawing, 1281 IS Barrier / Preamp Interface	1	2007-12-31
1281-3010	Schematic, 1281 IS Barrier/Preamp Interface	1	2006-11-15
1281-2030	Layers Drawing, IS, Low Power AE Preamp (8 pages)	0	2007-12-31
1281-2031	Drill/Fabrication Drawing, I.S. Low Power AE Preamp (2 pages)	0A	2008-05-01
1281-2034	Assembly, I.S. Low Power AE Preamp	0	2006-07-17
1281-3030	Schematic, I.S. Low Power AE Preamp	0	2007-12-31
1281-5011	Label, Front Panel, IS Barrier / Preamp Interface	4	2013-11-14
1281-5015	Assembly, IS Barrier / Preamp Interface	1	2013-07-01
1281-5115	Assembly, IS Low Power Barrier / Preamp Interface	0	2013-07-03
1281-6000	1281 System Connections	5	2014-04-24
ISPK3I-5015	Assembly, ISPK3I Sensor	3	2014-04-24

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Number	Title	Rev.	Date
ISPK31-6DB-5015	Assembly, ISPKXXI 6 dB Sensor	0	2014-04-24
ISPK3IUC-5015	Assembly, ISPK3IUC	4	2014-04-24
ISPKXXI-6DB-5015	Assembly, ISPKXXI 6 dB Sensor	0	2014-04-24
ISPKXXI-5015	Assembly, ISPKxxI Sensor	3	2014-04-24
ISPKXXIUC-5015	Assembly, ISPKxxIUC	4	2014-04-24
ISPK31UC-6DB-5015	Assembly, ISPK31UC-6dB	0	2014-04-24
ISPKXXIUC-6DB-5015	Assembly, ISPKxxIUC	0	2014-04-24
1281-5025	Ship Kit, ISPKxxI to Barrier	1	2013-07-01
1281-5035	Ship Kit ISPKxxIUC to Barrier	1	2013-07-01
1110-2080	Sensor, diode protection board (5 pages)	0	2002-10-10
1110-2081-IS	Drill drawing IS sensor diode protection board (2 pages)	0	2002-10-10
1110-2084-IS	Top assembly drawing, IS sensor diode protection board	0	2002-10-10
1110-3080-IS	Schematic, IS sensor diode protection board	0	2002-10-08
1281-5021	Label, top side ISPK preamplifier	3	2014-04-24
1281-5045	Ship Kit ISRXXCA-HT/ISPK-XX-S to barrier	2	2013-07-01
1281-5085-XXS-IS	Assy, ISPK-XXS single ended preamplifier	2	2013-07-01
1281-5095-XXS-IS	Assy, ISPK-XXS 6 dB single ended preamplifier	0	2013-07-01
ISR3CA-5015	Assembly ISR3CA-HT	3	2014-04-24
ISXXXCA-5015	Assembly ISR6CA-HT, ISR15CA-HT, ISR30CA-HT, ISR50CA-HT, ISWDCA-HT, ISF15CA-HT, ISF30CA-HT, & ISF50CA-HT	3	2014-04-24
1281-5013	Label Front Panel I.S. LP Barrier/Preamp Interface	0	2013-11-14
1281-5023	Label Top Side ISPK 6 dB Preamplifier	0	2014-04-24
1281-2040	Layers Drawing, 1281-LP IS Barrier/Preamp Interface	0	2013-06-27
1281-2041	Drill Fabrication Drawing, 1281-LP IS Barrier/Preamp Interface	0	2013-06-27
1281-2044	Assembly Drawing, 1281-LP IS Barrier/Preamp Interface	0	2013-07-02
1281-3040	IS Low Power Barrier & Preamp Interface Schematic	0	2013-07-02
1281-2050	IS Low Power Preamp Solder Mask Artwork	0	2013-12-02
1281-2051	Drill/Fabrication Drawing IS Low Power AE Preamp	0	2013-07-02
1281-2054	Assembly Drawing IS Low Power AE Preamp	0	2013-07-02
1281-3050	IS Low Power 6 dB AE Preamp Schematic	0	2013-06-28



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**[17] Special Conditions for Safe Use**

The instruction indicates all the necessary information to ensure the installation minimizes the risk from electrostatic discharge.

Sensors with aluminium enclosures shall be installed as to protect them from ignition hazards due to impact.

**[18] Essential Health and Safety Requirements**

See part 9 of this certificate

END OF CERTIFICATE

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