

UK TYPE EXAMINATION CERTIFICATE

- [2] Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1
- [3] Type Examination Certificate Number: **DNV 22 UKEX 40131X** **Issue 1**
- [4] Product: **ISPKXXI, ISPKXXUC ISRXXX-HT, ISWXXX-HT & ISPKXXIUC SENSORS WITH 1281 BARRIER/PREAMP INTERFACE**
- [5] Manufacturer: **Mistras Group Inc.**
- [6] Address: **195 Clarksville Rd.
Princeton JCT. NJ 08550-5303 USA**
- [7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [8] DNV Business Assurance UK Ltd, Approved Body number 8501 in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.
- The examination and test results are recorded in confidential reports listed in item 16.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with: **EN IEC 60079-0:2018 and EN 60079-11:2012**
- [10] If the sign “X” is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.
- [11] This TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.
- [12] The marking of this product shall include the following:



II 1 G D

Ex See schedule in [15]

Date of issue:
2023-01-16



Asle Kaastad
For DNV Business Assurance UK Ltd
The Certificate has been digitally signed.
See www.dnv.com/digitalsignatures for info



[13]

Schedule

 [14] **Type Examination Certificate No:**

DNV 22 UKEX 40131X

Issue 1

 [15] **Description of Product**

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. Revision 2 includes new pre-amp configurations for different frequencies.

Type designation

Barrier Interface	1281, 1281-LP	Ex II (1) G [Ex ia] IIC Ga, Ex II (1) D [Ex ia] IIIC Da $-40^{\circ}\text{C} \leq \text{Ta} \leq 70^{\circ}\text{C}$
Sensors with integrated amplifier	ISPK3I, ISPK6I, ISPK15I, ISPK30I, ISPKWDI, ISPKF15I, ISPKF30I, ISPK50I, ISPKF50I, ISPK3KI-6dB, ISPK6I-6dB, ISPK15I-6dB, ISPKF15I-6dB, ISPK30I-6dB, ISPKF30I-6dB, ISPK50I-6dB, ISPKF50I-6dB, ISPKWDI-6dB,	Ex II 1 (1) G Ex ia IIC T6 Ga, $-40^{\circ}\text{C} \leq \text{Ta} \leq 70^{\circ}\text{C}$ Ex II 1 (1) D Ex ia IIIC T85°C Da, $-40^{\circ}\text{C} \leq \text{Ta} \leq 70^{\circ}\text{C}$
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 II 1 G Ex ia IIC T6 Ga, $-40^{\circ}\text{C} \leq \text{Ta} \leq 70^{\circ}\text{C}$ Ex II 1 D Ex ia IIIC T85°C Da, $-40^{\circ}\text{C} \leq \text{Ta} \leq 70^{\circ}\text{C}$
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 II 1 G Ex ia IIC T4-T6 Ga, $-55^{\circ}\text{C} \leq \text{Ta} \leq 75^{\circ}\text{C}$ Ex II 1 D Ex ia IIIC T135°C Da, $-55^{\circ}\text{C} \leq \text{Ta} \leq 120^{\circ}\text{C}$ Ex II 1 G Ex ia IIC T3 Ga, $-55^{\circ}\text{C} \leq \text{Ta} \leq 150^{\circ}\text{C}$ Ex II 1 D Ex ia IIIC T200°C Da, $-55^{\circ}\text{C} \leq \text{Ta} \leq 150^{\circ}\text{C}$
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 II 1 (1) G Ex ia IIC T6 Ga, $-55^{\circ}\text{C} \leq \text{Ta} \leq 70^{\circ}\text{C}$ Ex II 1 (1) D Ex ia IIIC T85°C Da, $-55^{\circ}\text{C} \leq \text{Ta} \leq 70^{\circ}\text{C}$

Electrical Data

Barrier interface:

 $U_m = 250V$, $U_o = 5,88V$, $I_o = 0,297A$, $P_o = 0,44W$, $L_o = 0,35mH$, $C_o = 43\mu F$
Ambient temperature:

See table above

Routine tests

None

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

 [17] **Specific Conditions of Use**

The instructions 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 (Regulations Schedule 1)**

In addition to the Essential Health and Safety Requirements covered by the standards listed at item 9, all other requirements are demonstrated in the relevant reports.

 [19] **Drawings and documents**

Drawing No.	Title	Rev.	Date:
1281-2010	Layers Drawing, 1281 IS Barrier / Preamp Interface (5 pages)	2	2017-04-11
1281-2011	Drill/Fabrication Drawing, 1281 IS Barrier / Preamp Interface (2 pages)	2	2017-04-11
1281-2014	Assembly Drawing, 1281 IS Barrier / Preamp Interface	2	2017-04-11
1281-3010	Schematic, 1281 IS Barrier/Preamp Interface	2	2017-04-20
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
1281-2034-15	Assembly, I.S. Low Power AE Preamp 150 kHz	0A	2022-03-01
1281-2034-3	Assembly, I.S. Low Power AE Preamp 30 kHz	0A	2022-03-01
1281-2034-30	Assembly, I.S. Low Power AE Preamp 300 kHz	0A	2022-03-01
1281-2034-6	Assembly, I.S. Low Power AE Preamp 60 kHz	0A	2022-03-01
1281-2034-WD	Assembly, I.S. Low Power AE Preamp WDE Band	0A	2022-03-01
1281-3030	Schematic, I.S. Low Power AE Preamp	0A	2022-02-28
1281-5011	Label, Front Panel, IS Barrier / Preamp Interface	7	2022-10-31
1281-5015	Assembly, IS Barrier / Preamp Interface	1	2013-07-03
1281-5115	Assembly, IS Low Power Barrier / Preamp Interface	0	2013-07-03
1281-6000	1281 System Connections	7	2021-05-17
ISPK3I-5015	Assembly, ISPK3I Sensor	6	2022-05-31
ISPK3I-6DB-5015	Assembly, ISPK3I 6 dB Sensor	3	2022-04-20
ISPK3IUC-5015	Assembly, ISPK3IUC	7	2022-04-22
ISPKXXI-6DB-5015	Assembly, ISPKXXI 6 dB Sensor	3	2022-04-20
ISPKXXI-5015	Assembly, ISPKXXI Sensor	6	2022-04-20
ISPKXXIUC-5015	Assembly, ISPKXXIUC	7	2022-04-22
ISPK3IUC-6DB-5015	Assembly, ISPK3IUC-6dB	3	2022-10-31
ISPKXXIUC-6DB-5015	Assembly, ISPKXXIUC	3	2022-04-22

Drawing No.	Title	Rev.	Date:
1281-5025	Ship Kit, ISPKxxl 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	6	2022-10-31
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	6	2022-04-22
ISXXCA-5015	Assembly ISR6CA-HT, ISR15CA-HT, ISR30CA-HT, ISR50CA-HT, ISWDCA-HT, ISF15CA-HT, ISF30CA-HT,& ISF50CA-HT	6	2022-04-22
1281-5013	Label Front Panel I.S. LP Barrier/Preamp Interface	3	2022-10-31
1281-5023	Label Top Side ISPK 6 dB Preamplifier	3	2022-10-31
1281-2040	Layers Drawing, 1281-LP IS Barrier Preamp Interface	1	2017-04-17
1281-2040	Layers Drawing, 1281-LP IS Barrier Preamp Interface	1	2017-04-11
1281-2041	Drill Fabrication Drawing, 1281-LP IS Barrier/Preamp Interface	0	2013-07-02
1281-2041	Drill Fabrication Drawing, 1281-LP IS Barrier/Preamp Interface	1	2017-04-17
1281-2044	Assembly Drawing, 1281-LP IS Barrier/Preamp Interface	0A	2016-12-06
1281-2044	Assembly Drawing, 1281-LP IS Barrier/Preamp Interface	1	2017-04-17
1281-3040	IS Low Power Barrier & Preamp Interface Schematic	0A	2016-12-06
1281-3040	IS Low Power Barrier & Preamp Interface Schematic	1	2017-04-20
1281-2050	IS Low Power Preamp Solder Mask Artwork	0	2013-02-12
1281-2051	Drill/Fabrication Drawing IS Low Power AE Preamp	0	2013-02-12
1281-2054	Assembly Drawing IS Low Power AE Preamp	0	2013-02-12
1281-3050	IS Low Power 6 dB AE Preamp Schematic	0	2013-06-28

[20] **Certificate History**

Issue	Description	Issue date	Report no.
0	Original issue	2022-12-12	2022-1117
1	Drawing date correction	2023-01-16	2022-1117

END OF CERTIFICATE