IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx BAS 12.0024U	Issue No: 0	Certificate history: Issue No. 0 (2014-07-09)
Status:	**Current**	Page 1 of 4	
Date of Issue:	**2014-07-09**		

Applicant:
GE Intelligent Platforms
2500 Austin Drive
Charlottesville
Virginia 22911
United States of America

Electrical Apparatus: **8205-TI-IS, 8 Channel IS Thermocouple Input Module and 8206-TI-IS, 8-Channel IS, RTD Input Module**

Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking:

[Ex ia Ga] IIC (-40°C ≤ Ta ≤ +70°C)
[Ex ia Da] IIIC (-40°C ≤ Ta ≤ +70°C)

Approved for issue on behalf of the IECEx Certification Body: R S Sinclair

Position: General Manager

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton
Derbyshire
SK17 9RZ
United Kingdom

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Manufacturer:	**GE Intelligent Platforms** 2500 Austin Drive Charlottesville Virginia 22911 **United States of America**	
Additional Manufacturing location(s):		

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

GB/BAS/ExTR12.0029/00

Quality Assessment Report:

GB/FME/QAR11.0010/03

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The 8205-TI-IS, 8-Channel IS, Thermocouple Input Module and the 8206-TI-IS, 8-Channel IS, RTD Input Module differ only in the input circuit and are designed to restrict the transfer of energy, from an input supply voltage of 18V, provided with galvanic isolation and voltage clamping with triplicated crowbar protection e.g. the 8920-PS-DC, I.S. System Power Supply, to eight galvanically isolated and independent intrinsically safe circuits, by the limitation of voltage and current.

Digital data is passed between the Hazardous Area and the Safe Area equipment, via power blocking circuitry within the module, to a data interface unit such as the 8922-RB-IS, Railbus Isolator.

The module consists of electronic components on three printed circuit boards mounted within a moulded plastic enclosure. Each module has eight separate channels which are all referenced to a common electrical connection but will be considered as separate intrinsically safe circuits. Each channel is designed to accept an input from a thermocouple, which may be situated within a hazardous area, and to convert it into an output for use on the railbus data lines within a safe area.

The safe area connections of the 8205-TI-IS, 8-Channel IS, Thermocouple Input and the 8206-TI-IS, 8-Channel IS, RTD Input Module are made via a certified module carrier such as an 8720-CA-04 4-Module carrier or an 8729-CA-08 8-Module carrier and the hazardous area connections are made via certified IS field terminals such as the 8625-FT-IS Thermocouple Field Terminals or the 8626-FT-IS RTD Field Terminals respectively.

See Page 4 of the certificate for Schedule of Limitations

CONDITIONS OF CERTIFICATION: NO

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EQUIPMENT (continued):

Schedule of Limitations

1) For the 8205-TI-IS 8 Channel IS Thermocouple Input Module each output channel must be considered as a separate intrinsically safe circuit which must be segregated from all other circuits by the requirements of Table 5 of IEC 60079-11: 2011 Ed 6. This limitation does not apply to the 8206-TI-IS, 8-Channel IS, RTD Input Module.

2) These modules must be mounted with suitable connection facilities such that the output connectors are provided with a degree of protection of at least IP20.

3) Plugs and sockets for external connections must be designed such that incorrect connections or interchangeability with in-appropriate field connections is prevented.

4) These modules must be segregated from any other Non-IS or IS circuits, by the requirements of Table 5 of IEC 60079-11: 2011 Ed 6.

See Annex for electrical parameters

Annex:

IECEx BAS 12.0024U Annex.pdf

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The 8205-TI-IS 8 Channel IS Thermocouple Input Module

Input Parameters

CON 2 Pins 1, 3-5, 10-12, 15 and 16.

U_m = 18V (from the PSU)
The maximum prospective current must be limited to 85A.

CON 2 Pins 13, 14, 17-22 and 31, 33 & 34.

U_m = 18V (from the RBI)
The maximum input power must be limited to 2.5W.

All of the data lines between the module and the Railbus Isolator are diode blocked and/or optocoupled to prevent power transfer from the module back onto the data lines.

Pins 31, 33 and 34 are connected to the common 0V(A) connection on the hazardous area side of the galvanic isolation. These connections must remain segregated from all safe area circuitry to maintain the galvanic isolation.

Both the PSU and the Railbus Isolator supplies and the Railbus data signals are referenced to a common point within the Railbus Isolator to ensure that the galvanically isolated supplies are not additive.

Output Parameters

Channels 1 to 8 and the Constant Current Supply on Connectors CON5 and CON6

Ch	Output pins	Output pins	Output pins	Ch	Output pins	Output pins	Output pins
1	Con 5, pin 7c	Con 5, pin 6c	Con 5, pin 5c	**5**	Con 6, pin 7c	Con 6, pin 6c	Con 6, pin 5c
2	Con 5, pin 3c	Con 5, pin 2c	Con 5, pin 1c	**6**	Con 6, pin 3c	Con 6, pin 2c	Con 6, pin 1c
3	Con 5, pin 7a	Con 5, pin 6a	Con 5, pin 5a	**7**	Con 6, pin 7a	Con 6, pin 6a	Con 6, pin 5a
4	Con 5, pin 3a	Con 5, pin 2a	Con 5, pin 1a	**8**	Con 6, pin 3a	Con 6, pin 2a	Con 6, pin 1a
|1+	Con 5, pin 1b	**|1-(-2.5V)**	Con 5, pin 3b				
0V	Con 5, pin 4a	Con 5, pin 4b	Con 5, pin 4c	and	Con 5 pin 2b		

Channels 1, 2, 3, 4, 7 and 8 on Connectors CON5 and CON6 – Each channel wired as a separate I.S. circuit.

U_o = 16.4V I_o = 79mA P_o = 0.33W C_i = 16nF L_i = 65µH

Channels 5 and 6 on Connectors CON5 and CON6 – Each channel wired as a separate I.S. circuit.

U_o = 1.5V I_o = 1.3mA P_o = 0.5mW C_i = 5.8nF L_i = 15µH

which meet the requirements for simple apparatus.

Connections CON 5, pin 1b, [|1+] and CON 5, pin 3b, [|1-(-2.5V)] are used internally within the 8625-FT-IS Field Terminal for the cold junction compensation circuit and have no external connection to the hazardous area circuit.

The field outputs share a common rail between the eight channels but are galvanically isolated from the PSU and Railbus Isolator supplies and the Railbus data signals.

Load Parameters

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the load connected to the output terminals must not exceed the following values:

Channels 1, 2, 3, 4, 7 and 8 on Connectors CON5 and CON6 - Each channel wired as a separate I.S. Circuit

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.408	5.8		62
IIB*	2.49	23.8		227
IIA	9.98	49.1		480

Channels 5 and 6 on Connectors CON5 and CON6 - Each channel wired as a separate I.S. Circuit

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	100	1,000		1,100
IIB*	1,000	1,000		1,100
IIA	1,000	1,000		1,100

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

1) The above load parameters apply when one of the two conditions below is given:
   - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
   - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

2) The above parameters are reduced to 50% when both of the two conditions below are given:
   - the total L_i of the external circuit (excluding the cable) is ≥ 1% of the L_o value and
   - the total C_i of the external circuit (excluding the cable) is ≥ 1% of the C_o value.

   The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIB & IIA and 600nF for Group IIC.

8206-TI-IS, 8-Channel IS, RTD Input Module

Input Parameters

CON 2 Pins 1, 3-5, 10-12, 15 and 16.

U_m = 18V (from the PSU)
The maximum prospective current must be limited to 85A.

CON 2 Pins 13, 14, 17-22 and 31, 33 & 34.

U_m = 18V (from the RBI)
The maximum input power must be limited to 2.5W.

All of the data lines between the module and the Railbus Isolator are diode blocked and/or optocoupled to prevent power transfer from the module back onto the data lines.

Pins 31, 33 and 34 are connected to the common 0V(A) connection on the hazardous area side of the galvanic isolation. These connections must remain segregated from all safe area circuitry to maintain the galvanic isolation.

Both the PSU and the Railbus Isolator supplies and the Railbus data signals are referenced to a common point within the Railbus Isolator to ensure that the galvanically isolated supplies are not additive.

Output Parameters

Channels 1 to 8 and the Constant Current Supply on Connectors CON5 and CON6

Ch	Output pins	Output pins	Output pins	Ch	Output pins	Output pins	Output pins
1	Con 5, pin 7c	Con 5, pin 6c	Con 5, pin 5c	**5**	Con 6, pin 7c	Con 6, pin 6c	Con 6, pin 5c
2	Con 5, pin 3c	Con 5, pin 2c	Con 5, pin 1c	**6**	Con 6, pin 3c	Con 6, pin 2c	Con 6, pin 1c
3	Con 5, pin 7a	Con 5, pin 6a	Con 5, pin 5a	**7**	Con 6, pin 7a	Con 6, pin 6a	Con 6, pin 5a
4	Con 5, pin 3a	Con 5, pin 2a	Con 5, pin 1a	**8**	Con 6, pin 3a	Con 6, pin 2a	Con 6, pin 1a
|1+	Con 5, pin 1b	**|1-(-2.5V)**	Con 5, pin 3b				
0V	Con 5, pin 4a	Con 5, pin 4b	Con 5, pin 4c	and	Con 5 pin 2b		

Channels 1 to 8 and the common constant current supply on Connectors CON5 and CON6

U_o = 16.4V I_o = 217mA P_o = 0.9W C_i = 45.1nF L_i = 170µH

The common constant current supply connections CON 5, pin 1b, [|1+] and CON 5, pin 3b, [|1-(-2.5V)] may be used within the external hazardous area circuit.

The field outputs share a common rail between the eight channels but are galvanically isolated from the PSU and Railbus Isolator supplies and the Railbus data signals.

Load Parameters

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the load connected to the output terminals must not exceed the following values:

Channels 1 to 8 on Connectors CON5 and CON6 - Total Load for all channels combined

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.378	0.39		20
IIB*	2.46	1.5		90
IIA	9.95	4.2		182

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

1) The above load parameters apply when one of the two conditions below is given:
   - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
   - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

2) The above parameters are reduced to 50% when both of the two conditions below are given:
   - the total L_i of the external circuit (excluding the cable) is ≥ 1% of the L_o value and
   - the total C_i of the external circuit (excluding the cable) is ≥ 1% of the C_o value.

   The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIB & IIA and 600nF for Group IIC.