[1] # TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

[3] Type Examination Certificate Number: **DEMKO 16 ATEX 1738X Rev. 2**

[4] Product: **Universal Analog I/O Model IS42yPUAAH1A use with Terminal Board Accessory Model IS41ySUAAH1A and Model IS42yYUAAS1A use with Terminal Board Accessory Models IS40ySUAAS1A and IS41ySUAAS1A**

[5] Manufacturer: **GE Drives & Controls Inc.**

[6] Address: **1501 Roanoke Blvd., Salem, VA 24153 USA**

[7] This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S 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 Annex II to Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in confidential report no. **4788369128.4.1**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012+A11:2013 **EN 60079-11:2012** **EN 60079-15:2010**

except in respect of those requirements listed at item 18 of the Schedule.

[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 of the specified product, and not to specific items of product subsequently manufactured.

[12] The marking of the product shall include the following:

II 3 (3) G Ex ic nA [ic] IIC T4 Gc

Certification Manager
Jan-Erik Storgaard

This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2016-10-28

Re-issued: 2018-06-25

Certification Body UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
Tel. +45 44 85 65 65, info.dk@ul.com, www.ul.com

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Schedule
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[15] Description of Product:

The Mark VIe Analog Universal IO model is part of the Mark VIe control system which is an open type microprocessor based system designed for complete integrated control, protection and monitoring of generator and mechanical drive applications for gas and steam turbines and other industrial control applications. The devices are field mounted in a suitable electrical enclosure adjacent to the turbine.

Universal Analog I/O Model IS42yPUAAH1A is intended for use with Terminal Board Accessory Model IS41ySUAAH1A. Universal Analog I/O Model IS42yPUAAH1A is constructed with following boards: 4 (four) IS405MIOBH1A or IS405MIOBS1A circuit boards, IS40yBCARH1A carrier board, IS40yBPPCH2A CPU board and IS40yKPSAH1A or IS40yKPSAS1A Voltage Regulator Board. Terminal Board Accessory Model IS41ySUAAH1A is constructed with the following board: IS40ySUAAH1A.

Universal Analog I/O Model IS42yYUAAS1A is intended for use with Terminal Board Accessory Model IS40ySUAAS1A and IS41ySUAAS1A. Universal Analog I/O Model IS42yYUAAS1A is constructed with following boards: 4 (four) IS405MIOBS1A circuit boards, IS40yBCARS1A carrier board, IS40yBPPCS2A, CPU board and IS40yKPSAS1A Voltage Regulator Board. Terminal Board Accessory Model IS41ySUAAS1A is constructed with the following board: IS40ySUAAS1A.

The IS42yPUAAH1A or IS42yYUAAS1A supports 16 programmable analog I/O channels. The initial power-on state for each channel is “unused” and all I/O field wiring terminals are high impedance nodes. Each channel can be configured individually to operate in any of the following modes: thermocouple input, RTD input (3-wire), voltage input, 4–20 mA input (with externally or internally supplied transmitter power), or 0–20 mA output. Under normal operating conditions, the I/O field wiring circuits are intrinsically safe. Isolation from mains power and voltage limiting is provided by an external certified switch mode power supply, as described in instruction manuals GEH-6721 Volume II, and GEH-6725.

The optical radiation output of the apparatus with respect to explosion protection, according to Annex II clause 1.3.1 of the Directive 2014/34/EU is covered in this certificate based on Exception 1) to the scope of EN 60079-28:2015.

Nomenclature:

IS	4	2	0	PUAA	H	1	A	A
	I	II	III	IV	V	VI	VII	VIII

I - 2 – not RoHS compliant
4 – RoHS compliant

II – 0 – single circuit board assembly
1 – single circuit board assembly + mechanical assembly
2 – one or more circuit board assemblies + housing

III – 0 – not conformal coated
1 – conformal coated (not required for safety)

Note - coated or non-coated versions of the circuit board assemblies have identical constructions and schematic drawings

IV – Function mnemonic - Any four A-Z characters

V - H – Surface mount components
G – No surface mount components
S – SIL-certified (IEC 61508)

VI – BOM variant – Any number 1-9

VII – Major revision – Single letter

VIII– Minor revision – One or two letters

Temperature range

The relation between ambient temperature and the assigned temperature class is as follows:

Ambient temperature range	**Temperature class**
-40 °C ≤ Ta ≤ +70 °C	T4

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Electrical data

Supply: 24-28 Vdc, 0.7A

Thermocouple In(1-16): -154 to + 154 mV dc
RTD In (1-16): 0 to 4 V dc, 1 mA dc
Analog In (1-16): -5 to +5 V dc, -10 to +10 V dc, 0 to 20 mA dc
Analog Out (1-16): 0 to 22 V dc, 0 to 24 mA dc

Intrinsically safe specifications:

Thermocouple Input:

Uo:	24.5 V
Io	434.5 uA
Po	395 uW
Co	0.42 uF
Lo	100 mH

RTD Input:

Uo	24.5 V
Io	3.03 mA
Po	74.2 mW
Co	0.42 uF
Lo	100 mH

Voltage Input:

Ui	+19V and -10V
Ii	0.2 A
Pi	1 W
Ci	5.6 nF
Li	0

Uo	24.5 V
Io	29.4 uA
Po	180 uW
Co	0.42 uF
Lo	100 mH

Externally Powered 4-20 mA Input:

Ui	50 V
Ii	24 mA
Pi	1 W
Ci	5.6 nF
Li	0

Uo	24.5 V
Io	29.4 uA
Po	180 uW
Co	0.42 uF
Lo	100 mH

Internally Powered 4-20 mA Input:

Uo	24.5 V
Io	24.1 mA
Po	0.590 W
Co	100 nF
Lo	0.15 mH

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0 to 20 mA Current Output:

Uo	24.5 V
Io	24.1 mA
Po	0.590 W
Co	100 nF
Lo	0.15 mH

Routine tests:
Routine tests are not required.

[16] Descriptive Documents
The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this Type Examination Certificate.

[17] Special Conditions of Use:

- The equipment shall only be used in an area of not more than pollution degree 2, as defined in EN 60664-1.
- The equipment shall be installed in an enclosure that provides a degree of protection not less than IP 54 in accordance with EN 60079-15.
- Transient protection shall be provided that is set at a level not exceeding 140 % of the peak rated voltage value at the supply terminals to the equipment.

[18] Essential Health and Safety Requirements
The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

The trademark GE Energy or will be used as the company identifier on the marking label.