

# TYPE EXAMINATION CERTIFICATE



## Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

- [3] Type Examination Certificate Number: **DEMKO 13 ATEX 1214780X Rev. 16**
- [4] Product: **Mark VIe Programmable Controller System**
- [5] Manufacturer: **GE Drives & Controls Inc.**
- [6] Address: **1501 Roanoke Boulevard, 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. **4790038633.1.1**

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

**EN IEC 60079-0:2018  
EN 60079-11:2012**

**EN IEC 60079-7: 2015 +A1:2018  
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:

	<b>II 3 G</b>	<b>Ex nA IIC T4 Gc or</b>
	<b>II 3 G</b>	<b>Ex nA [ic] IIC T4 Gc or</b>
	<b>II 3 G</b>	<b>Ex ic nA IIC T4 Gc or</b>
	<b>II 3 G</b>	<b>Ex ic nA [ic] IIC T4 Gc</b>
	<b>II 3 G</b>	<b>Ex ec IIC T4 Gc or</b>
	<b>II 3 G</b>	<b>Ex ec [ic] IIC T4 Gc or</b>
	<b>II 3 G</b>	<b>Ex ic ec IIC T4 Gc or</b>
	<b>II 3 G</b>	<b>Ex ic ec [ic] IIC T4 Gc</b>

**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:** 2013-05-26

**Re-issued:** 2021-08-25

**Certification Body**

UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark  
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## Schedule

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Description of Product:

The Mark VIe control system 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. Models included are as follows:

The Mark VIe Control CANopen® Master Gateway Module, Cat No. IS220PCNOH1B is intended to be used with accessory terminal board Cat. No. IS200SPIDG1A.

The Mark VIe Control PROFIBUS® Master Gateway, Cat No. IS220PPRFH1B is intended to be used with accessory terminal board Cat. No. IS200SPIDG1A.

The Mark VIe Control Isolated Discrete Input Module, Cat No. IS220PDIIH1B is intended to be used with accessory terminal board Cat. No. ISx0ySDIIH1A.

The Mark VIe Control Thermocouple Input Module, Cat No. IS220PTCCH1B is intended to be used with accessory terminal board Cat. Nos. ISx0ySTTCH1A, ISx0ySTTCH2A, ISx0yTBTCH1B, ISx0yTBTCH1C.

The Mark VIe Control Discrete Output Module, Cat. No. IS220PDOAH1B is intended to be used with accessory terminal board Cat. Nos. ISx0yTRLYH2E, ISx0yTRLYH3E, ISx0yTRLYH1F, ISx0yTRLYH2F, ISx0ySRLYH1A or ISx0ySRLYH2A; Cat No. IS221PDOAH1B is intended to be used with accessory terminal board Cat. Nos. ISx01TRLYH2E, ISx01TRLYH3E, ISx01TRLYH1F or ISx01TRLYH2F.

The Mark VIe Control Discrete Output Module, Cat. No. IS220PDOAH1B is intended to be used with accessory terminal board Cat. Nos. ISx0ySRLYH1A or ISx0ySRLYH2A with optional monitoring boards IS40yWROBH1A, IS40yWROGH1A, IS40yWROFH1A and IS40yWROHH1A.

The Mark VIe Control Analog I/O Module, Cat. No. IS220PAICH1B is intended to be used with accessory terminal board Cat. Nos. ISx0ySTAIH1A, ISx0ySTAIH2A, ISx0yTBAIH1C.

Mark VIeS Safety Analog I/O pack ISx2yYAIICS1B with accessory terminal board ISx0ySTAIS1A, ISx0ySTAIS2A, or ISx0yTBAIS1C, where x = 2 or 4 and y = 0 or 1. where x = 2 or 4 and y = 0 or 1.

The Mark VIe Control Discrete Input Module, Cat. No. IS220PDIAH1B is intended to be used with accessory terminal board Cat. Nos. ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0ySTCIH8A, ISx0yTBCIH2C, ISx0yTBCIH4C.

Cat No. IS221PDIAH1B is intended to be used with accessory terminal board Cat. Nos. ISx01STCIH1A, ISx01STCIH2A, ISx01STCIH8A, ISx0yTBCIH2C or ISx01TBCIH4C where x = 2 or 4 & y = 0 or 1.

The Mark VIe Control Resistance Temperature Device (RTD) Input Modules, Cat No. IS220PRTDH1B is intended to be used with accessory terminal board Cat. Nos. IS200TRTDH2D, IS200SRTDH1A, IS200SRTDH2A and Cat No. IS221PRTDH1B is intended to be used with accessory terminal board Cat. Nos. IS201TRTDH2D, IS201SRTDH1A, IS201SRTDH2A.

The Mark VIe Control Core Analog Module, Cat. No. IS220PCLAH1B is intended to be used with accessory terminal board Cat. Nos. IS210SCLSH1A, IS200SCLTH1A.

The Mark VIe Control Discrete I/O Module, Cat. No. ISx2yPDIOH1B is intended to be used with accessory terminal board Cat. Nos. ISx0yTDBSH2A, ISx0yTDBSH8A, ISx0yTDBTH2A, ISx0yTDBTH8A

The Mark VIe Control Analog Output Module, Cat. No. IS220PAOCH1B is intended to be used with accessory terminal board Cat. Nos. IS200STAOH1A, IS200STAOH2A, IS200TBAOH1C

The Mark VIes Control PPRA Emergency Turbine Protection Module Cat. No. IS220PPRAS1B is intended to be used with accessory terminal board Cat. Nos. IS200TREAS1A and IS200WREAS1A.

The Mark VIe Backup turbine protection I/O Module, Cat. No. IS220PPROS1B is intended to be used with accessory terminal board Cat. Nos. IS200SPROH1A, IS200SPROH2A, IS200TPROH1C, IS200TPROH2C, IS200TPROS1C, IS200TPROS2C, IS200TREAHA1A, IS200TREAHA3A.

The Mark VIe Turbine Specific Primary Trip I/O Module IS220PTURH1B is intended to be used with accessory terminal board Cat. No. IS200TRPAH1A.

The Mark VIe Servo Control Module, Cat. No. IS220PSVOH1B is intended to be used with accessory servo driver board Cat. No. IS210WSVOH1A and accessory terminal board Cat. No. IS200TSVCH2A; with RoHS compliant boards, the model IS220PSVOH1B constructed with internal acquisition board IS400BSVOH1A, intended to be used with accessory terminal board Cat. Nos. IS200TSVCH2A and RoHS compliant board IS410WSVOH1A.

The Mark VIe PSCA Serial Communications Modules, Cat. No. ISx2yPSCAH1B is intended to be used with accessory terminal boards ISx0ySSCAH1A or ISx0ySSCAH2A.

The Mark VIe HART enabled I/O Module IS220PHRAH1B is intended to be used with accessory terminal boards ISx0ySHRAH1A or ISx0ySHRAH2A and Module IS221PHRAH1B is intended to be used with accessory terminal boards ISx01SHRAH1A or ISx01SHRAH2A.



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The Mark VIeS Core Safety Protection Module IS220YSILS1A and IS220YSILS1B are intended to be used with accessory boards IS200TCSAS1A, IS200WCSAS1A and IS200SCSAS1A.

The Mark VIe Control Vibration Monitor Module, Cat. No. IS42yPVIBH1B, consisting of IS40yBBAAH1A I/O Board and IS40yBPPCH1A CPU Board, is intended to be used with accessory terminal board Cat. No. IS40yTVBAH2B, or IS200TVBAH2A and negative power supply daughter board accessory Cat. No. ISx0yWNPSh1A

The Mark VIeS Control Vibration Monitor Module, Cat. No. IS42yYVIBS1B, consisting of IS40yBBAAS1A I/O Board and IS40yBPPCS1A CPU Board, is intended to be used with accessory terminal board Cat. No. IS40yTVBAS2B, or IS20yTVBAS2A and negative power supply daughter board accessory Cat. No. ISx0yWNPSS1A, where x = 2 or 4 and y = 0 or 1.

The optical radiation output of the product 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.

Cat. Nos.	Protection Method Employed
IS220PCNOH1B, IS220PPRFH1B, IS220PDIIH1B, IS220PPRAS1B, IS220PPROS1B, IS220PTURH1B, ISx2yPSCAH1B, IS220PHRAH1B, IS221PHRAH1B, IS42yPVIBH1B, IS42yYVIBS1B where x = 2 or 4 and y = 0 or 1.	Ex nA IIC T4 Gc
IS220PTCCH1B, IS220PRTDH1B, IS221PRTDH1B, IS220PDIAH1B, IS221PDIAH1B	Ex nA [ic] IIC T4 Gc
IS220PDOAH1B, IS221PDOAH1B, IS220PSVOH1B, ISx2yYSILS1A, ISx2yYSILS1B	Ex ic nA IIC T4 Gc
IS220PAICH1B, ISx2yYAICS1B, IS220PCLAH1B, ISx2yPDIOH1B, IS220PAOCH1B where x = 2 or 4 and y = 0 or 1.	Ex ic nA [ic] IIC T4 Gc
IS220PCNOH1B, IS220PPRFH1B, IS220PDIIH1B, IS220PPRAS1B, IS220PPROS1B, IS220PTURH1B, ISx2yPSCAH1B, IS220PHRAH1B, IS221PHRAH1B, IS42yPVIBH1B, IS42yYVIBS1B where x = 2 or 4 and y = 0 or 1.	Ex ec IIC T4 Gc
IS220PTCCH1B, IS220PRTDH1B, IS221PRTDH1B, IS220PDIAH1B, IS221PDIAH1B	Ex ec [ic] IIC T4 Gc
IS220PDOAH1B, IS221PDOAH1B, IS220PSVOH1B, ISx2yYSILS1A, ISx2yYSILS1B	Ex ic ec IIC T4 Gc
IS220PAICH1B, ISx2yYAICS1B, IS220PCLAH1B, ISx2yPDIOH1B, IS220PAOCH1B where x = 2 or 4 and y = 0 or 1.	Ex ic ec [ic] IIC T4 Gc

Accessory Board Cat Nos.
IS200SPIDG1A, ISx0ySDIIH1A, ISx0ySTTCH1A, ISx0ySTTCH2A, ISx0yTBTCH1B, ISx0yTBTCH1C, ISx0yTRLYH2E, ISx0yTRLYH3E, ISx0yTRLYH1F, ISx0yTRLYH2F, ISx0ySTAIH1A, ISx0ySTAIH2A, ISx0yTBAlH1C, ISx0ySTCIH8A, ISx0yTBCIH4C, IS200TRTDH2D, IS200SRTDH1A, IS200SRTDH2A, IS210SCLSH1A, IS200SCLTH1A, ISx0yTDBSH8A, ISx0yTDBTH8A, IS200STAOH1A, IS200STAOH2A, IS200TBAOH1C, ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0yTBCIH2C, ISx0yTDBSH2A, ISx0yTDBTH2A, IS200TREAS1A, IS200WREAS1A, IS200SPROH1A, IS200SPROH2A, IS200TPROH1C, IS200TPROH2C, IS200TPROS1C, IS200TPROS2C, IS200TREAHA1A, IS200TREAHA3A, IS200TRPAH1A, IS210WSVOH1A, IS200TSVCH2A, ISx0ySSCAH1A, ISx0ySSCAH2A, ISx0yTRLYS1F, ISx0yTRLYS2F, ISx0yTBAlS1C, ISx0ySTAlS2A, ISx0ySTAlS1A, ISx0ySTCIS1A, ISx0ySTCIS2A, ISx0yTBCIS2C, IS200SHRAH1A, IS200SHRAH2A, IS200TCSAS1A, IS200WCSAS1A, IS200SCSAS1A, IS40ySSUPS1A, ISx01STCIH1A, ISx01STCIH2A, ISx01STCIH8A, ISx0yTBCIH2C, ISx01TBCIH4C, ISx01TRLYH2E, ISx01TRLYH3E, ISx01TRLYH1F, ISx01TRLYH2F, ISx01SHRAH1A, ISx01SHRAH2A, IS201TRTDH2D, IS201SRTDH1A, IS201SRTDH2A, ISx0ySRLYH1A, ISx0ySRLYH2A, IS40yWROBH1A, IS40yWROGH1A, IS40yWROFH1A, IS40yWROHH1A, IS40yTVBAH2B, ISx0yTVBAH2A, ISx0yWNPSh1A, IS40yTVBAS2B, ISx0yTVBAS2A, ISx0yWNPSS1A where x = 2 or 4 and y = 0 or 1.

Nomenclature:

IS 2 0 PAIC H 1 B 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



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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 for Cat Nos. IS220PDIIH1B, IS220PTCCH1B, IS220PRTDH1B, IS221PRTDH1B, IS220PDIAH1B, IS221PDIAH1B, IS220PDOAH1B, IS221PDOAH1B, IS220PAICH1B, IS220PCLAH1B, ISx2yPDIOH1B, IS220PAOCH1B, IS220PPRAS1B, IS220PPROS1B, IS220PTURH1B, IS220PSVOH1B, IS220PHRAH1B, IS221PHRAH1B, IS220YSILS1A, IS220YSILS1B:

**Ambient temperature range**  
-30 °C to +65 °C

**Temperature class**  
T4

The relation between ambient temperature and the assigned temperature class is as follows for Cat Nos. ISx2yPSCAH1B, IS42yPVIBH1B, ISx2yYAICS1B and IS42yYVIBS1B: where x = 2 or 4 and y = 0 or 1.

**Ambient temperature range**  
-40 °C to +70 °C

**Temperature class**  
T4

The relation between ambient temperature and the assigned temperature class is as follows for Cat Nos. IS220PCNOH1B and IS220PPRFH1B:

**Ambient temperature range**  
-20 °C to +55 °C

**Temperature class**  
T4

#### Electrical data

I/O pack System Cat. No IS220PCNOH1B with Cat. No. IS200SPIDG1A  
Input: 28 Vdc, 0.17 A max

I/O pack System Cat. No IS220PPRFH1B with Cat. No. IS200SPIDG1A  
Input: 28 Vdc, 0.18 A max

I/O pack System Cat. No IS220PDIIH1B with Cat. No. ISx0ySDIIH1A  
Input: 28 Vdc, 0.15 A max  
Contact Input: :0 to 32 Vdc

I/O pack System Cat. No. IS220PTCCH1B with Cat. Nos. ISx0ySTTCH1A, ISx0ySTTCH2A, ISx0yTBTCH1B, ISx0yTBTCH1C  
Input: 28 Vdc, 0.16 A max  
Thermocouple: -8 to +45 mV dc

I/O pack System Cat No. IS220PDOAH1B with Cat. Nos. ISx0yTRLYH2E, ISx0yTRLYH3E ISx0yTRLYH1F, ISx0yTRLYH2F, ISx0ySRLYH1A or ISx0ySRLYH2A; and Cat No. IS221PDOAH1B with Cat. Nos. ISx01TRLYH2E, ISx01TRLYH3E, ISx01TRLYH1F, ISx01TRLYH2F

Input: 24-28 Vdc, 0.71 A max  
Contact Out (TRLYH1F, 2F, SRLY): 30 V dc, 5 A dc  
Contact Out (TRLYH2E): 28 V dc, 7 A dc  
Contact Out (TRLYH3E): 140 V dc, 2 A dc

I/O Pack system Cat. No. IS220PDOAH1B with cat. Nos. ISx0ySRLYH1A and ISx0ySRLYH2A with optional monitoring boards. IS40yWROBH1A, IS40yWROGH1A, IS40yWROFH1A, IS40yWROHH1A.

IS40yWROBH1A, IS40yWROGH1A, IS40yWROFH1A:

Supply Ratings (Wetting Power): 24/125Vdc/120/240Vac, 13.5A max.  
(monitors 6 relays fused 3.15A)

Supply Rating (Wetting Power (WROB) - JG1): 24/125Vdc/120/240Vac, 5A max.

IS40yWROHH1A

Supply Ratings (Wetting Power J1): 24/48Vdc, 18 A max.

(monitors 12 relays fused 3.15A)

Supply Rating (Wetting Power - JG1): 24/48Vdc, 5A max.



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I/O pack System Cat. No. IS220PAICH1B with Cat. Nos. ISx0ySTAIH1A, ISx0ySTAIH2A, ISx0yTBAIH1C

Input: 24-28 Vdc, 0.49 A max  
Analog In (1-8): -10 to +10 V dc, 0 to 20 mA dc  
Analog In (9-10): -5 to +5 V dc, -1 to 20 mA dc  
Analog Out: 0 to 16.3 V dc, 0 to 20 mA dc  
Analog Transmitter Power: 24 V dc, 21 mA dc

I/O pack System Cat. No. ISx2yYAICS1B with Cat. Nos. ISx0ySTAIS1A, ISx0ySTAIS2A, or ISx0yTBAIS1C

Input: 24-28 Vdc, 0.49 A max  
Analog In (1-8): -10 to +10 V dc, 0 to 20 mA dc  
Analog In (9-10): -5 to +5 V dc, -1 to 20 mA dc  
Analog Out: 0 to 16.3 V dc, 0 to 20 mA dc  
Analog Transmitter Power: 24 V dc, 21 mA dc

I/O pack System Cat. No. IS220PDIAH1B with Cat. Nos. ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0ySTCIH8A, ISx0yTBCIH2C, ISx0yTBCIH4C; and Cat. No. IS221PDIAH1B with Cat. Nos. ISx01STCIH1A, ISx01STCIH2A, ISx01STCIH8A, ISx0yTBCIH2C or ISx01TBCIH4C

Input: 24-28 Vdc, 0.24 A max  
Contact In: 0 to 32 V dc  
STCIH1A, 2A, TBCIH2C:  
Contact Wetting Out: 32 V dc, 110 mA dc  
STCIH8A, TBCIH4C:  
Contact Wetting Out (1-21): 31 V dc, 10 mA dc  
Contact Wetting Out (22-24): 31 V dc, 41 mA dc

I/O pack System Cat. Nos. IS220PRTDH1B with Cat. Nos. IS200TRTDH2D, IS200SRTDH1A, IS200SRTDH2A and Cat. No. IS221PRTDH1B with Cat. Nos. IS201TRTDH2D, IS201SRTDH1A, IS201SRTDH2A

Input: 28 Vdc, 0.24 A max  
RTD: 0 to 4.2 V dc, 10 mA dc

I/O pack System Cat. No. IS220PCLAH1B with Cat. Nos. IS210SCLSH1A, IS200SCLTH1A.

Input: 28 Vdc, 0.78 A max  
Analog In: -10 to +10 V dc, 0 to 20 mA dc  
Thermocouple: -16 to +63 mV dc  
RTD: 0 to 0.7 V dc, 1 mA dc  
Analog Out: 0 to 16.3 V dc, 0 to 20 mA dc  
Analog Transmitter Power: 24 V dc, 21 mA dc

I/O pack System Cat. No. ISx2yPDIH1B with Cat. Nos. ISx0yTDBSH2A, ISx0yTDBSH8A, ISx0yTDBTH2A, ISx0yTDBTH8A

Input: 28 Vdc, 0.81 A max  
Contact In: 0 to 32 V dc  
Contact Out: 32 V dc, 3.15 A dc  
ISx0yTDBSH2A, ISx0yTDBTH2A:  
Contact Wetting Out: 32 V dc, 110 mA dc  
ISx0yTDBSH8A, ISx0yTDBTH8A:  
Contact Wetting Out (1-21): 31 V dc, 10 mA dc  
Contact Wetting Out (22-24): 31 V dc, 41 mA dc

I/O pack System Cat. No. IS220PAOCH1B with Cat. Nos. IS200STAOH1A, IS200STAOH2A, IS200TBAOH1C

Input: 28 Vdc, 0.45 A max  
Analog Out: 0 to 18 V dc, 0 to 20 mA dc

I/O pack System Cat. No. IS220PPRAS1B with Cat. Nos. IS200TREAS1A, IS200WREAS1A

Input: 28 Vdc, 0.5 A max.  
Speed In: -50 to 50 V dc  
Voltage In: 16 to 140 V dc  
E-Stop In: 18 to 140 V dc  
Contact In: 0 to 32 V dc  
Contact Out: (1-2): 28 V dc, 7 A dc  
Contact Out: 28 V dc, 5 A dc  
Contact Wetting Out: 32 V dc, 13.2 mA dc

I/O pack System Cat. No. IS220PPROS1B with Cat. Nos. IS200SPROH1A, IS200SPROH2A, IS200TPROH1C, IS200TPROH2C, IS200TPROS1C, IS200TPROS2C, IS200TREAHA1A, IS200TREAHA3A

Power Supply: 28 V dc, 0.37 A dc  
PT In (SPRO/TPRO): 0 to 138 V ac, 5 to 66 Hz  
Speed In (SPRO/TPRO): -15 to +15 V dc  
Speed Sensor Power Out (TPRO): 24 V dc, 25 mA dc  
Voltage In (TREA): 16 to 140 V dc  
E-stop In (TREA): 18 to 140 V dc  
Contact Out (TREA): 28 V dc, 7 A dc

I/O pack System Cat. No. IS220PTURH1B with Cat. No. IS200TRPAH1A

Power Supply: 28 V dc, 0.41 A dc  
Speed In: -15 to +15 V dc



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Voltage In: 16 to 140 V dc  
E-stop In: 18 to 140 V dc  
E-stop Power Out: 24 V dc O.C., 24 mA dc S.C.  
Contact Out: 28 V dc, 7 A dc

I/O pack System Cat. No. IS220PSVOH1B with Cat. Nos. IS200TSVCH2A, IS210WSVOH1A; IS220PSVOH1B with Cat. Nos. IS400BSVOH1A, IS200TSVCH2A, IS410WSVOH1A:

Power Supply: 28 V dc, 1 A dc  
LVDT In: 7.14 V ac, 3.2 KHz  
Speed In: -15 to +15 V dc  
LVDT Out: 7.14 V ac, 127 mA ac, 3.2 KHz  
Servo Out: -10 to +10 V dc, -120 to +120 mA dc  
Speed Sensor Power Out: 24 V dc, 40 mA dc

I/O pack System Cat. No. ISx2yPSCAH1B with Cat. Nos. ISx0ySSCAH1A, ISx0ySSCAH2A

Power Supply: 24-28 V dc, 0.36 A dc

I/O pack System Cat. No. IS220PHRAH1B with Cat. Nos. ISx0ySHRAH1A, ISx0ySHRAH2A and IS221PHRAH1B with Cat. Nos. ISx0ySHRAH1A, ISx0ySHRAH2A

Power Supply: 28 V dc, 0.5 A dc  
Analog In (1-8): -5 to +5 V dc, 0 to 20 mA dc  
Analog In (9-10): -5 to +5 V dc, -1 to 20 mA dc  
Analog Out: 0 to 16.3 V dc, 0 to 20 mA dc  
Analog Transmitter Power: 24 V dc, 21 mA dc

I/O pack System Cat. No. IS220YSILS1A or IS220YSILS1B with Cat. Nos. IS200TCSAS1A, IS200WCSAS1A, IS200SCSAS1A, IS40ySSUPS1A:

Power Supply (YSIL): 28 V dc, 1 A dc  
Power Supply (SCSA): 28 V dc, 0.75 A dc  
E-Stop In (TCSA): 32 V dc  
E-Stop Wetting Power Out (TCSA): 24 V dc, 100 mA dc  
Solenoid Out (TCSA): 30 V dc, 2 A dc, pilot duty (SSUPS1A inputs)  
Contact Out (TCSA): 30 V dc, 5 A dc  
PT In (TCSA): 138 V ac, 5 to 66 Hz  
Contact In (TCSA): 32 V dc  
Contact Wetting Power Out (TCSA): 32 V dc, 3 mA dc  
Speed In (TCSA): +/- 15 V pk, 2 to 20,000 Hz  
RSFD/Analog In (WCSA): 0 to 20 mA dc  
RSFD/ Analog Transducer Power Out (WCSA): 24 V dc, 21 mA dc  
Speed Repeater Out (WCSA): +/- 5 V pk, 250 mA dc  
Contact In (SCSA): 32 V dc  
Contact Wetting Power Out (SCSA): 32 V dc, 3 mA dc  
Contact Out (SCSA): 30 V dc, 5 A dc  
Analog In (SCSA): 0 to 20 mA dc  
Analog Transducer Power Out (SCSA): 24 V dc, 21 mA dc  
Thermocouple In (SCSA): -8 to 45 mV dc

I/O pack System Cat. No. IS42yPVIH1B with IS40yTVBAH2B, or IS20yTVBAH2A and ISx0yWNPSH1A; I/O pack System Cat. No. IS42yYVIBS1B with IS40yTVBAS2B, or IS20yTVBAS2A and ISx0yWNPSS1A:

Power Supply: 24-28 V dc, 0.98 A dc  
Vibration In: -20 to 15.6 V dc  
Position In: -20 to -0.5 V dc  
Buffered Out: -20 to 4.5 V dc, -3 mA dc  
Probe Power: -24 V dc, 12 mA dc

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. Nos. IS220PTCCH1B with IS200STTCH1A, IS200STTCH2A, IS200TBTCH1B, IS200TBTCH1C; and IS220YTCCS1A with IS200STTCS1A, IS200STTCS2A, IS200TBTCS1B, IS200TBTCS1C:

$U_o = 0.5$  V dc  
 $I_o = 25$  nA  
 $P_o = 13$  nW  
 $C_o = 1000$   $\mu$ F  
 $L_o = 100$  mH

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. Nos. IS220PAICH1B with IS200STAIH1A, IS200STAIH2A, IS200TBAIH1C; IS220PAICH1B with IS400BPAIH1A, IS400STAIH1A, IS400STAIH2A, IS400TBAIH1C; IS220YAICS1B with IS200STAIS1A, IS200STAIS2A, IS200TBAIS1C and IS221YAICS1B with IS201STAIS1A, IS201STAIS2A, IS201TBAIS1C:

$U_o = 28.6$  V dc  
 $I_o = 22.4$  mA  
 $P_o = 0.641$  W  
 $C_o = 0.255$   $\mu$ F  
 $L_o = 100$  mH

Intrinsically Safe Parameters for I/O pack System Cat. Nos. IS220PDOAH1B with IS200TRLYH2E, IS200TRLYH3E, IS200TRLYH1F, IS200TRLYH2F, IS200SRLYH1A, IS200SRLYH2A; IS220PDOAH1B with IS400BPDOH1A, IS200TRLYH2E, IS200TRLYH3E,



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IS200TRLYH1F, IS200TRLYH2F, IS400SRLYH1A, IS400SRLYH2A; IS221PDOAH1B with IS201TRLYH1F, IS201TRLYH2F; IS220YSILS1A or IS220YSILS1B with IS200TCSAS1A, IS200WCSAS1A, IS200SCSAS1A:

$U_i = 30.0 \text{ V dc}$   
 $I_i = 152 \text{ mA}$   
 $P_i = 4.56 \text{ W}$   
 $C_i = 0 \text{ } \mu\text{F}$   
 $L_i = 0 \text{ mH}$

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. No. IS220PRTDH1B with IS200TRTDH2D, IS200SRTDH1A, IS200SRTDH2A and Cat. No. IS221PRTDH1B with IS201TRTDH2D, IS201SRTDH1A, IS201SRTDH2A:

$U_o = 15 \text{ V dc}$   
 $I_o = 10 \text{ mA}$   
 $P_o = 150 \text{ mW}$   
 $C_o = 3 \text{ } \mu\text{F}$   
 $L_o = 100 \text{ mH}$

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. No. IS220PDIAH1B with IS200STCIH1A, IS200STCIH2A, IS200STCIH8A, ISx0yTBCIH2C, IS200TBCIH4C; IS220PDIAH1B with Cat. Nos. IS400BPDIH1A, IS400STCIH1A, IS400STCIH2A, IS400STCIH8A, ISx0yTBCIH2C, IS400TBCIH4C; Cat. No. IS221PDIAH1B with ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0ySTCIH8A, ISx0yTBCIH2C, ISx0yTBCIH4C:

Cat. Nos. ISx0ySTCIH8A, ISx0ySTCIH8A, ISx0yTBCIH4C	
Circuits 1-21:	Circuits 22-24:
$U_o = 31.0 \text{ V dc}$	$U_o = 31.0 \text{ V dc}$
$I_o = 3.2 \text{ mA}$	$I_o = 13 \text{ mA}$
$C_o = 0.18 \text{ } \mu\text{F}$	$C_o = 0.18 \text{ } \mu\text{F}$
$L_o = 100 \text{ mH}$	$L_o = 100 \text{ mH}$
$P_o = 0.10 \text{ W}$	$P_o = 0.40 \text{ W}$

Cat. Nos. ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0yTBCIH2C, ISx0ySTCIS1A, ISx0ySTCIS2A, ISx0yTBCIS2C:	
Circuits 1-21:	Circuits 22-24:
$U_o = 32.0 \text{ V dc}$	$U_o = 32.0 \text{ V dc}$
$I_o = 3.3 \text{ mA}$	$I_o = 13.4 \text{ mA}$
$C_o = 0.18 \text{ } \mu\text{F}$	$C_o = 0.18 \text{ } \mu\text{F}$
$L_o = 100 \text{ mH}$	$L_o = 100 \text{ mH}$
$P_o = 0.11 \text{ W}$	$P_o = 0.43 \text{ W}$

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. No. IS220PCLAH1B with Cat. Nos. IS210SCLSH1A, IS200SCLTH1A:

Thermocouple Inputs:  
 $U_o = 0.5 \text{ V dc}$   
 $I_o = 25 \text{ nA}$   
 $P_o = 13 \text{ nW}$   
 $C_o = 1000 \text{ } \mu\text{F}$   
 $L_o = 100 \text{ mH}$

RTD Inputs:  
 $U_o = 15 \text{ V dc}$   
 $I_o = 1.0 \text{ mA}$   
 $P_o = 15 \text{ mW}$   
 $C_o = 3 \text{ } \mu\text{F}$   
 $L_o = 100 \text{ mH}$

Analog Outputs  
 $U_o = 28.6 \text{ V dc}$   
 $I_o = 22.4 \text{ mA}$   
 $P_o = 0.64 \text{ W}$   
 $C_o = 0.26 \text{ } \mu\text{F}$   
 $L_o = 90 \text{ mH}$

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. No. ISx2yPDIOH1B with Cat. Nos. ISx0yTDBSH2A, ISx0yTDBSH8A, ISx0yTDBTH2A, ISx0yTDBTH8A:

Relay Contacts  
 $U_i = 32 \text{ V dc}$   
 $I_i = 132 \text{ mA}$   
 $P_i = 4.224 \text{ W}$   
 $C_i = 0 \text{ } \mu\text{F}$   
 $L_i = 0 \text{ mH}$

Contact Wetting Outputs:

Cat. Nos. ISx0yTDBSH8A and ISx0yTDBTH8A	
Circuits 1-21:	Circuits 22-24:
$U_o = 31.0 \text{ V dc}$	$U_o = 31.0 \text{ V dc}$
$I_o = 3.2 \text{ mA}$	$I_o = 13 \text{ mA}$



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Po = 0.10 W	Po = 0.40 W
Co = 0.18 µF	Co = 0.18 µF
Lo = 100 mH	Lo = 100 mH

Cat. Nos. ISx0yTDBSH2A and ISx0yTDBTH2A	
Circuits 1-21:	Circuits 22-24:
Uo = 32.0 V dc	Uo = 32.0 V dc
Io = 3.3 mA	Io = 13.4 mA
Po = 0.11 W	Po = 0.43 W
Co = 0.18 µF	Co = 0.18 µF
Lo = 100 mH	Lo = 100 mH

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. No. IS220PAOCH1B with Cat. Nos. IS200STAOH1A, IS200STAOH2A, IS200TBAOH1C:

Analog Outputs  
 Uo = 28.6 V dc  
 Io = 22.5 mA  
 Po = 0.641 W  
 Co = 0.255 µF  
 Lo = 100 mH

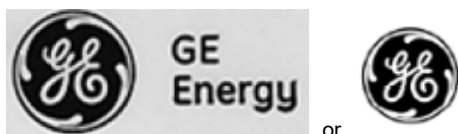
Routine tests  
 Routine dielectric test is not required.

[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:

- Provision shall be made to limit transient voltages to less than 140% of the peak rated voltage.
- This equipment shall be used in an environment of not more than Pollution Degree 2 (as defined in EN 60664-1).
- For installation in the European Union, this equipment shall be installed within an ATEX Zone 2 certified enclosure with a minimum ingress protection rating of at least IP54 (as defined in EN60529).
- This equipment shall be powered through a power distribution board that is certified for the applicable classified location. This equipment shall be powered by a switched-mode power supply (SMPS) that is certified for the applicable location and has its output current limited to 20 A maximum, and has the features listed for Vendor Manufactured Control Power supplies in GEH-6721\_Vol\_II, Mark VIe Control, Volume II System Hardware Guide.
- Mark VIe Cat Nos. IS220PTCCH1B, IS220PRTDH1B, IS221PRTDH1B and IS220PCLAH1B must contain the following installation conditions:
  - Only resistive simple apparatus, such as thermocouples or RTD's shall be connected.
  - Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

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



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

