UL Type Examination Certificate

ATEX Directive 2014/34/EU

Certificate

DEMKO 13 ATEX 1214780X
Rev. 21

Issue date
2013-05-26

Re-issued
2025-11-25

This is to acknowledge that

Nexus Controls LLC

1800 Nelson Rd., Longmont, CO 80501 USA

has had

Mark VIe Programmable Controller System

evaluated and meets the requirements of the standards

EN IEC 60079-0:2018
EN 60079-7:2015
EN IEC 60079-7:2015/A1:2018
EN 60079-11:2012
EN 60079-15:2010

Test Report No. **4791786112.2.1**

Certification Manager
Thomas Wilson

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

This is to certify that the sample(s) of the product described herein ("Certified Product") has been investigated and found in compliance with the above mentioned harmonized Standard(s) per Article 12 of Directive 2014/34/EU of the European Parliament and of the Council relating to equipment and protective systems for use in potentially explosive atmospheres indicated on this Certificate, in accordance with the UL Type Examination Certificate Scheme Requirements.
The responsibilities of manufacturers, their authorized representatives are provided in Articles 6 and 7 of the Directive 2014/34/EU. This remains the responsibility of the manufacturer and authorized representative and is not covered as part of this certificate.
This certificate and test results obtained apply only to the product sample(s) submitted by the Applicant. UL International Demko A/S (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 for inspection or other surveillance of the product. The Certificate Holder is solely and fully responsible for conformity of all products to all applicable Standards, specifications, requirements or Directives/Regulations. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

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UL TYPE EXAMINATION CERTIFICATE

TECHNICAL DETAILS/SCHEDULE

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. ISx00SPIDG1A. The Mark VIe Control PROFIBUS® Master Gateway, Cat No. IS220PPRFH1B is intended to be used with accessory terminal board Cat. No. ISx00SPIDG1A. The Mark VIe Control Isolated Discrete Input Module, Cat No. IS220PDIIH1B or IS42yPDIIH1C is intended to be used with accessory terminal board Cat. No. ISx0ySDIIH1A, ISx0ySDIIH2A. The Mark VIe Control Thermocouple Input Module, Cat No. IS220PTCCH1B or IS42yPTCCH1C 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 Discrete Output Module, Cat. No. IS42yPDOAH1C is intended to be used with accessory terminal board Cat. Nos. ISx0yTRLYH2E, ISx0yTRLYH3E, ISx0yTRLYH1F, ISx0yTRLYH2F, ISx0yTRLYS1F, ISx0yTRLYS2F; ISx0ySRLYH1A, ISx0ySRLYH2A with optional monitoring boards IS40yWROBH1A, IS40yWROGH1A, IS40yWROFH1A and IS40yWROHH1A. The Mark VIe Control Analog I/O Module, Cat. No. IS220PAICH1B or IS42yPAICH1C is intended to be used with accessory terminal board Cat. Nos. ISx0ySTAIH1A, ISx0ySTAIH2A, ISx0yTBAIH1C, where x = 2 or 4 and y = 0 or 1. With RoHS compliant boards, the Model IS220PAICH1B or IS42yPAICH1C is constructed with IS400BPAIH1A or IS400BPAIH2A and IS400STAIH1A, IS400STAIH2A, IS400TBAIH1C. Mark VIeS Safety Analog I/O pack ISx2yYAICS1B 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. With RoHS compliant boards, the Model IS220YAICS1B is constructed with internal acquisition board IS400BPAIS1A or IS400BPAIS2A and accessory terminal board IS400TBAIS1C, IS400STAIS2A, IS400STAIS1A. The Mark VIe Control Discrete Input Module, Cat. No. IS220PDIAH1B or IS42yPDIAH1C is intended to be used with accessory terminal board Cat. Nos. ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0ySTCIH8A, ISx0yTBCIH2C, ISx0yTBCIH4C, IS400STCIH4A, IS400STCIS4A, IS400TBCIH3C. Cat No. IS221PDIAH1B or IS42yPDIAH1C is intended to be used with accessory terminal board Cat. Nos. ISx01STCIH1A, ISx01STCIH2A, ISx01STCIH8A, ISx0yTBCIH2C or ISx01TBCIH4C, IS400STCIH4A, IS400STCIS4A, IS400TBCIH3C 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. ISx00TRTDH2D, ISx00SRTDH1A, ISx00SRTDH2A and Cat No. IS221PRTDH1B is intended to be used with accessory terminal board Cat. Nos. ISx01TRTDH2D, ISx01SRTDH1A, ISx01SRTDH2A. 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 or IS42yPDIOH1C is intended to be used with accessory terminal board Cat. Nos. ISx0yTDBSH2A, ISx0yTDBSH8A, ISx0yTDBTH2A, ISx0yTDBTH8A, IS400TDBTH4A, IS400TDBSH4A. 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 VIe Control Analog Output Module, Cat. No. IS42yPAOCH1C is intended to be used with accessory terminal board Cat. Nos. IS200STAOH1A, ISx0ySTAOH2A, IS400TBAOH1D 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.

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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, IS200TREAH1A, IS200TREAH3A.

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.

The Mark VIeS Core Safety Protection Module IS220YSILS1A and IS220YSILS1B are intended to be used with accessory boards IS200TCSAS1A, ISx0yWCSAS1A, ISx0ySCSAS1A and IS40ySSUPS1A.

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, IS42yPDIIH1C where x = 2 or 4 and y = 0 or 1.	Ex ec IIC T4 Gc
IS220PTCCH1B, IS42yPTCCH1C, IS220PRTDH1B, IS221PRTDH1B, IS220PDIAH1B, IS221PDIAH1B, IS42yPDIAH1C where x = 2 or 4 and y = 0 or 1.	Ex ec [ic] IIC T4 Gc
IS220PDOAH1B, IS221PDOAH1B, IS220PSVOH1B, ISx2yYSILS1A, ISx2yYSILS1B, IS42yPDOAH1C where x = 2 or 4 and y = 0 or 1.	Ex ic ec IIC T4 Gc
IS220PAICH1B, IS42yPAICH1C, ISx2yYAICS1B , IS220PCLAH1B, ISx2yPDIOH1B, IS220PAOCH1B, IS42yPAOCH1C, IS42yPDIOH1C where x = 2 or 4 and y = 0 or 1.	Ex ic ec [ic] IIC T4 Gc

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		Accessory Board Cat Nos. ISx00SPIDG1A , ISx0ySDIIH1A, ISx0ySTTCH1A, ISx0ySTTCH2A, ISx0yTBTCH1B, ISx0yTBTCH1C, ISx0yTRLYH2E, ISx0yTRLYH3E ISx0yTRLYH1F, ISx0yTRLYH2F, ISx0ySTAIH1A, ISx0ySTAIH2A, ISx0yTBAIH1C, ISx0ySTCIH8A , ISx0yTBCIH4C, ISx00TRTDH2D, ISx00SRTDH1A, ISx00SRTDH2A, IS210SCLSH1A, IS200SCLTH1A, ISx0yTDBSH8A, ISx0yTDBTH8A, IS200STAOH1A, ISx00STAOH2A, IS200TBAOH1C, IS400TBAOH1D, ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0yTBCIH2C, ISx0yTDBSH2A, ISx0yTDBTH2A, IS200TREAS1A, IS200WREAS1A IS200SPROH1A, IS200SPROH2A, IS200TPROH1C, IS200TPROH2C, IS200TPROS1C, IS200TPROS2C, IS200TREAH1A, IS200TREAH3A. IS200TRPAH1A. IS210WSVOH1A, IS200TSVCH2A. ISx0ySSCAH1A, ISx0ySSCAH2A, ISx0yTRLYS1F, ISx0yTRLYS2F,, ISx0yTBAIS1C, ISx0ySTAIS2A, ISx0ySTAIS1A, ISx0ySTCIS1A, ISx0ySTCIS2A, , ISx0yTBCIS2C, IS200SHRAH1A, IS200SHRAH2A, IS200TCSAS1A, I, ISx0yWCSAS1A, ISx0ySCSAS1A, IS40ySSUPS1A, ISx01STCIH1A, ISx01STCIH2A, ISx01STCIH8A, ISx0yTBCIH2C, ISx01TBCIH4C, ISx01TRLYH2E, ISx01TRLYH3E, ISx01TRLYH1F, ISx01TRLYH2F, ISx01SHRAH1A, ISx01SHRAH2A, ISx01TRTDH2D, ISx01SRTDH1A, ISx01SRTDH2A, ISx0ySRLYH1A, ISx0ySRLYH2A, IS40yWROBH1A, IS40yWROGH1A, IS40yWROFH1A, IS40yWROHH1A, IS40yTVBAH2B, ISx0yTVBAH2A, ISx0yWNPSH1A, IS40yTVBAS2B, ISx0yTVBAS2A, ISx0yWNPSS1A, IS400TDBTH4A, IS400TDBSH4A, IS400STCIH4A, IS400STCIS4A, IS400TBCIH3C, IS400SDIIH2A where x = 2 or 4 and y = 0 or 1.
Nomenclature		IS 2 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 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
Ex marking		**Ⓔx II 3 G Ex nA IIC T4 Gc or** **Ⓔx II 3 G Ex nA [ic] IIC T4 Gc or** **Ⓔx II 3 G Ex ic nA IIC T4 Gc or** **Ⓔx II 3 G Ex ic nA [ic] IIC T4 Gc** **Ⓔx II 3 G Ex ec IIC T4 Gc or** **Ⓔx II 3 G Ex ec [ic] IIC T4 Gc or** **Ⓔx II 3 G Ex ic ec IIC T4 Gc or** **Ⓔx II 3 G Ex ic ec [ic] IIC T4 Gc**
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: where x = 2 or 4 and y = 0 or 1. **Ambient temperature range** -30 °C to +65 °C **Temperature class** T4

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		The relation between ambient temperature and the assigned temperature class is as follows for Cat Nos. ISx2yPSCAH1B, IS42yPVIBH1B, ISx2yYAICS1B IS42yYVIBS1B, IS42yPDOAH1C, IS42yPDIAH1C, IS42yPDIIH1C, IS42yPDIOH1C, IS42yPAOCH1C, IS42yPAICH1C, IS42yPTCCH1C: 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
Trademark		GE VERNOVA The trademark will be used as the company identifier on the marking label.
Ratings		I/O pack System Cat. No IS220PCNOH1B with Cat. No. ISx00SPIDG1A Input: 28 Vdc, 0.17 A max I/O pack System Cat. No IS220PPRFH1B with Cat. No. ISx00SPIDG1A Input: 28 Vdc, 0.18 A max I/O pack System Cat. No IS220PDIIH1B or IS42yPDIIH1C with Cat. No. ISx0ySDIIH1A, ISx0ySDIIH2A Input: 28 Vdc, 0.15 A max Contact Input: :0 to 32 Vdc, 5.5mA I/O pack System Cat. No. IS220PTCCH1B or IS42yPTCCH1C 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; IS42yPDOAH1C with Cat. Nos. ISx0yTRLYH2E, ISx0yTRLYH3E, ISx0yTRLYH1F, ISx0yTRLYH2F, ISx0yTRLYS1F, ISx0yTRLYS2F ISx0ySRLYH1A, ISx0ySRLYH2A: Input: 24-28 Vdc, 0.71 A max Contact Out (TRLYH1F, 2F, S1F, S2F, 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 or IS42yPDOAH1C 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) I/O pack System Cat. No. IS220PAICH1B or IS42yPAICH1C with Cat. Nos. ISx0ySTAIH1A, ISx0ySTAIH2A, ISx0yTBAIH1C; may be used with IS400BPAIH1A or IS400BPAIH2A 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

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I/O pack System Cat. No. ISx2yYAICS1B with Cat. Nos. ISx0ySTAIS1A, ISx0ySTAIS2A, or ISx0yTBAIS1C; and IS220YAICS1B may be used with Cat Nos. IS400BPAIS1A or IS400BPAIS2A
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 or IS42yPDIAH1C with Cat. Nos. ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0ySTCIH8A, ISx0yTBCIH2C, ISx0yTBCIH4C, IS400STCIH4A, IS400STCIS4A, IS400TBCIH3C; and Cat. No. IS221PDIAH1B or IS42yPDIAH1C with Cat. Nos. ISx01STCIH1A, ISx01STCIH2A, ISx01STCIH8A, ISx0yTBCIH2C or ISx01TBCIH4C, IS400STCIH4A, IS400STCIS4A, IS400TBCIH3C:
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
STCIH4A, STCIS4C:
Contact Wetting Out (1-21): 55 V dc
Contact Wetting Out (22-24): 55 V dc
TBCIH3C:
Contact Wetting Out (1-21): 55 V dc
Contact Wetting Out (22-24): 55 V dc

I/O pack System Cat. Nos. IS220PRTDH1B with Cat. Nos. ISx00TRTDH2D, ISx00SRTDH1A, ISx00SRTDH2A and Cat. No. IS221PRTDH1B with Cat. Nos. ISx01TRTDH2D, ISx01SRTDH1A, ISx01SRTDH2A
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. ISx2yPDIOH1B or IS42yPDIOH1C with Cat. Nos. ISx0yTDBSH2A, ISx0yTDBSH8A, ISx0yTDBTH2A, ISx0yTDBTH8A, IS400TDBTH4A, IS400TDBSH4A
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
ISx0yTDBSH4A, ISx0yTDBTH4A:
Contact Wetting Out (1-21): 55V dc
Contact Wetting Out (22-24): 55 V dc

I/O pack System Cat. No. IS220PAOCH1B with Cat. Nos. IS200STAOH1A, IS200STAOH2A, IS200TBAOH1C and Cat No. IS42yPAOCH1C with Cat Nos. IS200STAOH1A, ISx0ySTAOH2A, IS400TBAOH1D:
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

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I/O pack System Cat. No. IS220PPROS1B with Cat. Nos. IS200SPROH1A, IS200SPROH2A, IS200TPROH1C, IS200TPROH2C, IS200TPROS1C, IS200TPROS2C, IS200TREAH1A, IS200TREAH3A

- 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
- 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 IS22yPHRAH1B; and may be used with Cat. Nos. IS400BHRAH1A or IS400BHRAH2A:

- 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, ISx0yWCSAS1A, ISx0ySCSAS1A, and 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

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I/O pack System Cat. No. IS42yPVIBH1B with IS40yTVBAH2B, or IS20yTVBAH2A and ISx0yWNPSH1A; I/O pack System Cat. No. IS42yYVIBSIB 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; and IS42yPTCCH1C with ISx0ySTTCH1A, ISx0ySTTCH2A, ISx0yTBTCH1B, ISx0yTBTCH1C:

Uo = 0.5 V dc
Io = 25 nA
Po = 13 nW
Co = 1000 µF
Lo = 100 mH

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. Nos. IS220PAICH1B or IS42yPAICH1C with IS200STAIH1A, IS200STAIH2A, IS200TBAIH1C; IS220PAICH1B or IS42yPAICH1C with IS400BPAIH1A or IS400BPAIH2A and IS400STAIH1A, IS400STAIH2A, IS400TBAIH1C; IS220YAICS1B with IS200STAIS1A, IS200STAIS2A, IS200TBAIS1C; IS220YAICS1B with IS400BPAIS1A or IS400BPAIS2A, and IS400STAIS1A, IS400STAIS2A, IS400TBAIS1C and IS221YAICS1B with IS201STAIS1A, IS201STAIS2A, IS201TBAIS1C:

Uo = 28.6 V dc
Io = 22.4 mA
Po = 0.641 W
Co = 0.255 µF
Lo = 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, IS200TRLYH1F, IS200TRLYH2F, IS400SRLYH1A, IS400SRLYH2A; IS221PDOAH1B with IS201TRLYH1F, IS201TRLYH2F; IS220YSILS1A or IS220YSILS1B with IS200TCSAS1A, ISx0yWCSAS1A, ISx0ySCSAS1A; IS42yPDOAH1C with ISx0yTRLYH2E, ISx0yTRLYH3E, ISx0yTRLYH1F, ISx0yTRLYH2F, ISx0yTRLYS1F, ISx0yTRLYS2F ISx0ySRLYH1A, ISx0ySRLYH2A:

Ui = 30.0 V dc
Ii = 152 mA
Pi = 4.56 W
Ci = 0 µF
Li = 0 mH

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. No. IS220PRTDH1B with ISx00TRTDH2D, ISx00SRTDH1A, ISx00SRTDH2A and Cat. No. IS221PRTDH1B with ISx01TRTDH2D, ISx01SRTDH1A, ISx01SRTDH2A:

Uo = 15 V dc
Io = 10 mA
Po = 150 mW
Co = 3 µF
Lo = 100 mH

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Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. No. IS220PDIAH1B or IS42yPDIAH1C with IS200STCIH1A, IS200STCIH2A, IS200STCIH8A, ISx0yTBCIH2C, IS200TBCIH4C, IS400STCIH4A, IS400STCIS4A, IS400TBCIH3C; IS220PDIAH1B or IS42yPDIAH1C with Cat. Nos. IS400BPDIH1A, IS400STCIH1A, IS400STCIH2A, IS400STCIH8A, ISx0yTBCIH2C, IS400TBCIH4C, IS400STCIH4A, IS400STCIS4A, IS400TBCIH3C; Cat. No. IS221PDIAH1B with ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0ySTCIH8A, ISx0yTBCIH2C, ISx0yTBCIH4C, IS400STCIH4A, IS400STCIS4A, IS400TBCIH3C:

Cat. Nos. ISx0ySTCIH8A, ISx0ySTCIH8A, ISx0yTBCIH4C

Circuits 1-21:	Circuits 22-24:
Uo = 31.0 V dc	Uo = 31.0 V dc
Io = 3.2 mA	Io = 13 mA
Co = 0.18 µF	Co = 0.18 µF
Lo = 100 mH	Lo = 100 mH
Po = 0.10 W	Po = 0.40 W

Cat. Nos. ISx0ySTCIH1A, ISx0ySTCIH2A, ISx0yTBCIH2C, ISx0ySTCIS1A, ISx0ySTCIS2A, ISx0yTBCIS2C:

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

Cat. Nos. ISx0ySTCIH4A, ISx0ySTCIS4A,:

Circuits 1-21:	Circuits 22-24:
Uo = 55.0 V dc	Uo = 55.0 V dc
Io = 3.0 mA	Io = 12.5 mA
Co = 0.04 µF	Co = 0.04 µF
Lo = 100 mH	Lo = 100 mH
Po = 0.165 W	Po = 0.687 W

Cat. Nos. IS400TBCIH3C:

Circuits 1-21:	Circuits 22-24:
Uo = 55.0 V dc	Uo = 55.0 V dc
Io = 3.3mA	Io = 11.5 mA
Co = 0.04 µF	Co = 0.04 µF
Lo = 100 mH	Lo = 100 mH
Po = 0.181 W	Po = 0.632 W

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

Thermocouple Inputs:
Uo = 0.5 V dc
Io = 25 nA
Po = 13 nW
Co = 1000 µF
Lo = 100 mH

RTD Inputs:
Uo = 15 V dc
Io = 1.0 mA
Po = 15 mW
Co = 3 µF
Lo = 100 mH

Analog Outputs
Uo = 28.6 V dc
Io = 22.4 mA
Po = 0.64 W
Co = 0.26 µF
Lo = 90 mH

Intrinsically Safe Field Wiring Parameters for I/O pack System Cat. No. ISx2yPDIOH1B or IS42yPDIOH1C with Cat. Nos. ISx0yTDBSH2A, ISx0yTDBSH8A, ISx0yTDBTH2A, ISx0yTDBTH8A , IS400TDBTH4A, IS400TDBSH4A:

Relay Contacts
Ui = 30 V dc
Ii = 156 mA
Pi = 4.56 W
Ci = 0 µF
Li = 0 mH

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		Contact Wetting Outputs: Cat. Nos. ISx0yTDBSH8A and ISx0yTDBTH8A Circuits 1-21: Circuits 22-24: Uo = 31.0 V dc Uo = 31.0 V dc Io = 3.2 mA Io = 13 mA 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 Cat. Nos. ISx0yTDBTH4A Circuits 1-21: Circuits 22-24: Uo = 55 V dc Uo = 55 V dc Io = 3.3 mA Io = 11.5 mA Po = 0.181 W Po = 0.632 W Co = 0.04 µF Co = 0.04 µF Lo = 100 mH Lo = 100 mH Cat. Nos. ISx0yTDBSH4A Circuits 1-21: Circuits 22-24: Uo = 55 V dc Uo = 55 V dc Io = 3.0 mA Io = 12.5 mA Po = 0.165 W Po = 0.687 W Co = 0.04 µF Co = 0.04 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 and Cat No. IS42yPAOCH1C with Cat Nos. IS200STAOH1A, ISx0ySTAOH2A, IS400TBAOH1D: 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.
Descriptive documents		The scheduled drawings are listed in the report no. provided under item “Test Report No.” on page 1 of this UL Type Examination Certificate.

Specific Conditions of Use		• 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.
		• This equipment shall be used in an environment 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 IP54 in accordance with EN IEC 60079-0.
		• 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, IS42yPTCCH1C, 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.

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