

Mark* Vle and Mark VleS Control Systems Equipment in Hazardous Locations (HazLoc) Instruction Guide

Sept 2020



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Document Updates

Rev	Location	Description
R	PDOA and YDOA Discrete Output Modules	Added IS40yWROBH1A, IS40yWROFH1A, IS40yWROGH1A and IS40yWROHH1A accessory boards to I/O pack IS220PDOAH1B
		Added IS40yWROHH1A accessory board to I/O pack ISx2yYDOAS1B
		Updated electrical ratings
		Updated field terminal details to add WROH
	PDAS and YDAS Data Acquisition System	Added IS42yPDASH1A and IS42yYDASS1A Data Acquisition Systems with accessory terminal boards IS40yTCDMS1A and IS40yTCDMS1A respectively including their electrical ratings
	Appendix A Classified Location Certifications Appendix B Classified Location Standards	Added IS40yWROBH1A, IS40yWROFH1A, IS40yWROGH1A and IS40yWROHH1A accessory boards to I/O pack IS220PDOAH1B Added IS40yWROHH1A accessory board to I/O pack ISx2yYDOAS1B Updated standard editions Added IS42yPDASH1A and IS42yYDASS1A Data Acquisition Systems
	Appendix C Equipment Markings	Added IS42yPDASH1A and IS42yYDASS1A Data Acquisition Systems

Document Updates — continued

Rev	Location	Description
Q	UCSA, UCSB, UCSC and UCSD Controllers	Updated this section to add UCSD Controller
	PDIO Discrete Input/Output Module	Changed the nomenclatures of TDBS and TDBT boards to include RoHS versions
	YSIL Core Safety Protection Module	Added IS40ySSUP as an accessory board and included it's electrical ratings
	Appendix A Classified Location Certifications	Changed the nomenclatures of TDBS and TDBT boards to include RoHS versions
	Appendix B Classified Location Standards	
	Appendix C Equipment Markings	Added SSUP as an accessory board to YSIL Added IS42#UCSDxyz
P	UCSA, UCSB, and UCSC Controllers	Added the section for the UCEC Module , which is supported for use in hazardous locations, and updated the section Electrical Ratings with the table Power Supply UCEC Module .
	Conditions of Safe Use	Added a bullet item in Power Distribution section stating that IS410BAPBH1A, IS400BAPBH1A, IS400BBAAH2A and IS210SAMBH1A should only be powered by ISxxxJPDHG1A
	PAMC Acoustic Monitoring Module	Added IS41yBAPBH1A
	Appendix A Classified Location Certifications, Mark VIe I/O Modules	
	Appendix B Classified Location Standards, Mark VIe I/O Modules	
	Appendix C Equipment Markings, Mark VIe I/O Modules	
Appendix D Ambient Temperature Ratings		
N	Conditions of Safe Use	Updated the statements and grouped them according to general use applicable to all modules and specific use based on module type
	PDOA and YDOA Discrete Output Modules	Added IS40yTRLYS1B terminal board for Mark VIeS Safety Discrete Output I/O pack ISx2yYDOAS1B
		Added TRLYS1B Contact Outputs Resistive Load and TRLYS1B Contact Outputs Inductive Load rows to Electrical Ratings table, including the TRLYS1B derating charts
	Intrinsic Safety "ic" for Accessory Terminal Board IS40yTRLYS1D & IS40yTRLYS1B	Added IS40yTRLYS1B to the section title and wiring diagram
		Added the IS40yTRLYS1B Field Terminals table
	PSCA Serial Communications Module	Added approved serial communication I/O pack IS42yPSCAH1B with accessory terminal board IS40ySSCAH1A or IS40ySSCAH2A
		Added minimum and nominal electrical ratings for PSCAH1B and PSCAH1A
	PUAA / YUAA Universal Analog I/O Module	Updated this section to include YUAA, and added IS42yYUAAAS1A with accessory terminal board IS41ySUAAS1A for Mark VIeS Universal Analog I/O pack
PVIB and YVIB Vibration Monitor Modules	Added IS40yTVBAH2B terminal board for Mark VIe Vibration Monitor I/O pack IS420PVIBH1B	
	Added IS40yTVBAS2B terminal board for Mark VIeS Vibration Monitor I/O pack IS42yYVIBS1B	
	Updated minimum and nominal voltage values for PVIBH1B/YVIBS1B	

Document Updates — continued

Rev	Location	Description
N	Power Distribution Instructions	Added bullet item for JPDE to the section TMR Control Power using JPDS
		Added bullet item for JPDD to the section Dual Control Power and I/O Wetting Power using JPDG
		Updated the diagram JPDS Power Distribution with Customer Supplied I/O Wetting One-line Diagram
		Added the diagram JPDS/JPDH High Availability (HA) Power Distribution for Control Power, JPDE for I/O Wetting One-line Diagram
		Updated the table title of the table General Market IEC Color Cables for JPDG and JPDS/JPDE Applications and added additional JPDS/JPDE part numbers
		Updated the diagram JPDG Power Distribution One-line Diagram to include JPDD
		Added the section JPDD I/O Wetting Branch Power Distribution
		Added the section JPDE I/O Wetting Power Distribution (Dual Sources)
	Appendix A Classified Location Certifications, Mark VIe I/O Modules	Added IS42yPSCAH1B with accessories IS40ySSCAH1A and IS40ySSCAH2A
		Replaced IS420PUAAH1A with IS42yPUAAH1A
		Added accessory IS40yTVBAH2B for IS420PVIBH1B
	Appendix A Classified Location Certifications, Mark VIeS Safety I/O Modules	Added accessory IS40yTRLYS1B for ISx2yYDOAS1B
		Added IS42yYUAAS1A with accessory IS41ySUAAS1A
		Added accessory IS40yTVBAS2B for IS42yYVIBS1B
	Appendix A Power Distribution	Added rows for IS41yJPDDG#A and IS41yJPDEG1A
	Appendix B Classified Location Standards, Mark VIe I/O Modules	Added IS42yPSCAH1B with accessories IS40ySSCAH1A and IS40ySSCAH2A
		Replaced IS420PUAAH1A with IS42yPUAAH1A, and replaced IS410SUAAS1A with IS41ySUAAS1A
		Added accessory IS40yTVBAH2B for IS420PVIBH1B
	Appendix B Classified Location Standards, Mark VIeS Safety I/O Modules	Added accessory IS40yTRLYS1B for ISx2yYDOAS1B, and updated Non-hazardous standards
		Added IS42yYUAAS1A with accessory IS41ySUAAS1A
		Added accessory IS40yTVBAS2B for IS42yYVIBS1B
	Appendix B Power Distribution	Added rows for IS41yJPDDG#A and IS41yJPDEG1A
	Appendix C Equipment Markings, Mark VIe I/O Modules	Added IS42yPSCAH1B with accessories IS40ySSCAH1A and IS40ySSCAH2A
		Replaced IS420PUAAH1A with IS42yPUAAH1A, and replaced IS410SUAAS1A with IS41ySUAAS1A
		Added accessory IS40yTVBAH2B for IS420PVIBH1B
	Appendix C Equipment Markings, Mark VIeS Safety I/O Modules	Added accessory IS40yTRLYS1B for ISx2yYDOAS1B
		Added IS42yYUAAS1A with accessory IS41ySUAAS1A
		Added accessory IS40yTVBAS2B for IS42yYVIBS1B
Appendix C Power Distribution	Added rows for IS41yJPDDG#A and IS41yJPDEG1A	
Appendix D Ambient Temperature Ratings	Updated ambient temperature ratings as follows: <ul style="list-style-type: none"> • Added: IS41yJPDDG1A, IS41yJPDDG2A, IS41yJPDDG3A, IS41yJPDDG4A, IS41yJPDEG1A, IS42yPSCAH1B, IS42yPUAAH1A, IS42yYUAAS1A • Removed: IS420PUAAH1A 	
M	Introduction	Added Attention statement that users application may not be licensed to access full system capability and I/O types described in this document

Document Updates — continued

Rev	Location	Description
L	Conditions of Safe Use	Updated as follows: <ul style="list-style-type: none"> • 1. Updated: removed specified power supply voltage • 2. Updated: specified equipment is power distribution boards powered using wire harnesses, referenced to wire harnesses specified in this document, added 20 A max for JPDS and 40 A max for JPDG, added redundancy and diode block accessory instructions • 3. New: added statement that equipment does not provide over-current protection for contact wetting/control power input harnesses • 4. Updated: specified equipment as Ethernet switches, controllers, and I/O modules as supplied with limited power • 8. Update: added must only be accessible by use of a tool • 18. New: thermocouple and RTD field wiring terminals • 19. New: wiring harnesses in North American locations • 20. New: explosion hazard • Deleted previous number 13
	Wire Size and Screw Torques	Updated Notes for both barrier types with temperatures
	UCSA, UCSB, and UCSC Controllers	Added UCSC as certified for use in certain specified hazardous (classified) locations, including <i>Electrical Ratings</i> table
	ESWx Industrial Switch Electrical Ratings , <i>Power Supply</i> table	Updated minimum and nominal voltage for ESWx switches
	PAIC and YAIC Analog I/O Modules	Added RoHS compliant versions, removed coated non-compliant versions, and updated minimum and nominal voltage electrical ratings, and updated Intrinsic Safety Field Terminal tables
	PDIA and YDIA Discrete Input Modules	
	Intrinsic Safety “ic” for Accessory Terminal Boards ISx00STCI 1A, ISx00STCI 2A, IS200TBCI 2C	
	PDOA and YDOA Discrete Output Modules	
	Intrinsic Safety “ic” for Accessory Terminal Board ISx00SRLY	
	Intrinsic Safety “ic” for Accessory Terminal Board IS40yTRLYS1D	
	Intrinsic Safety “ic” for Accessory Terminal Boards ISx0yTRLY 1F, ISx0yTRLY 2F	
	PVIB and YVIB Vibration Monitor Modules	
	<i>Power Distribution</i> , Overview	Added two new sections, <i>TMR Control Power using JPDS</i> and <i>Dual Control Power and I/O Wetting Power using JPDG</i> , to add JPDG power distribution board, new IEC color compliant cables for JPDS and JPDG, and <i>JPDG Power Distribution One-line Diagram</i>
<i>Power Distribution</i> , JPDH High Density Power Distribution	Updated minimum and nominal voltage electrical ratings	
<i>Power Distribution</i> , PPDA Power Distribution System Feedback	Added RoHS compliant versions, removed coated non-compliant versions, and updated additional minimum and nominal voltage electrical ratings	

Document Updates — continued

Rev	Location	Description
L	<i>Appendix A Classified Location Certifications,</i> <u>Mark VleS Safety I/O Modules</u>	Replaced IS220YAICS1B with ISx2yYAICS1B and updated accessories
		Removed IS221YAICS1B and accessories
		Replaced IS220YDIAS1B with ISx2yYDIAS1B, updated accessories, and updated certifications
		Replaced IS220YDIAS1B with ISx2yYDIAS1B, updated accessories, and updated ATEX certification
		Replaced IS220YDOAS1B with ISx2yYDOAS1B, updated accessories, and updated ATEX certification
		Removed IS221YDOAS1B and accessories
		Replaced IS420YVIBS1B with IS42yYVIBS1B and updated accessories
	<i>Appendix A Classified Location Certifications,</i> <u>Power Distribution</u>	Replaced IS220PPDAH1B with ISx2yPPDAH1B, updated accessories, and updated ATEX certification
		Removed IS221PPDAH1B and accessories
	<i>Appendix A Classified Location Certifications,</i> <u>Switches and Controllers</u>	Added IS420UCSCH1, IS420UCSCH2, and IS420UCSCH2 with certifications
	<i>Appendix B Classified Location Standards,</i> <u>Mark VleS Safety I/O Modules</u>	Replaced IS220YAICS1B with ISx2yYAICS1B, updated accessories, and updated certifications
		Removed IS221YAICS1B and accessories
		Replaced IS220YDIAS1B with ISx2yYDIAS1B and updated accessories
		Replaced IS220YDOAS1B with ISx2yYDOAS1B, updated accessories, and updated certifications
		Removed IS221YDOAS1B and accessories
	Replaced IS420YVIBS1B with IS42yYVIBS1B and updated accessories	
	<i>Appendix B Classified Location Standards,</i> <u>Switches and Controllers</u>	Added IS420UCSCH1, IS420UCSCH2, and IS420UCSCH2 with certifications
	<i>Appendix B Classified Location Standards,</i> <u>Power Distribution</u>	Replaced IS220PPDAH1B with ISx2yPPDAH1B, updated accessories, and updated certifications
		Removed IS221PPDAH1B and accessories
	<i>Appendix C Equipment Markings,</i> <u>Mark VleS Safety I/O Modules</u>	Replaced IS220YAICS1B with ISx2yYAICS1B and updated accessories
		Removed IS221YAICS1B and accessories
		Replaced IS220YDIAS1B with ISx2yYDIAS1B, updated accessories, and updated certifications
		Replaced IS220YDOAS1B with ISx2yYDOAS1B, updated accessories, and updated certifications
		Removed IS221YDOAS1B and accessories
Replaced IS420YVIBS1B with IS42yYVIBS1B and updated accessories		
<i>Appendix C Equipment Markings,</i> <u>Switches and Controllers</u>	Added IS420UCSCH1, IS420UCSCH2, and IS420UCSCH2 with certifications	
<i>Appendix C Equipment Markings,</i> <u>Power Distribution</u>	Replaced IS220PPDAH1B with ISx2yPPDAH1B, updated accessories, and updated certifications	
	Removed IS221PPDAH1B and accessories	

Document Updates — continued

Rev	Location	Description
L	Appendix D Ambient Temperature Ratings	<p>Updated ambient temperature ratings as follows:</p> <ul style="list-style-type: none"> Removed: IS210JPDHG1A, IS220PDIAH1B, IS220PDOAH1B, IS220PPDAH1B, IS220YAICS1B, IS220YDIAS1B, IS220YDOAS1B, IS221PDIAH1B, IS221PDOAH1B, IS221PPDAH1B, IS221YAICS1B, IS221YDOAS1B, IS400JPDHG1A, IS410JPDHG1A, IS411JPDHG1A, IS420ESWAH1A, IS420ESWAH2A, IS420ESWAH3A, IS420ESWAH4A, IS420ESWAH5A, IS420ESWBH1A, IS420ESWBH2A, IS420ESWBH3A, IS420ESWBH4A, IS420ESWBH5A, IS420PVIBH1B, IS420YVIBS1B, IS421ESWAH1A, IS421ESWAH2A, IS421ESWAH3A, IS421ESWBH1A, IS421ESWBH2A, IS421ESWBH3A Added: IS210JPDHG1A, IS400JPDHG1A, IS410JPDHG1A, IS411JPDHG1A, ISx2yPAICH1B, ISx2yPDIAH1B, ISx2yPDOAH1B, ISx2yPPDAH1B, IS42yPVIBH1B, ISx2yYAICS1B, ISx2yYDIAS1B, ISx2yYDOAS1B, IS42yYVIBS1B, IS42yESWAH1A, IS42yESWAH2A, IS42yESWAH3A, IS42yESWAH4A, IS42yESWAH5A, IS42yESWBH1A, IS42yESWBH2A, IS42yESWBH3A, IS42yESWBH4A, IS42yESWBH5A, IS420UCSCH1, IS420UCSCH2, IS420UCSCS2
K	PAIC and YAIC Analog I/O Modules	Added IS400STAIS1A and IS400STAIS2A
	PDIA and YDIA Discrete Input Modules	Added IS400TBCIH2C and IS400TBCIS2C
	PTCC and YTCC Thermocouple Input Modules	Added IS400STTCS1A, IS400STTCS2A, and IS400TBTCS1C
	YSIL Core Safety Protection Module	Added IS220YSILS1B
	Appendix A Classified Location Certifications, Mark VIe I/O Modules	Added IS400TBCIH2C to IS220PDIAH1B accessories
	Appendix A Classified Location Certifications, Mark VIeS Safety I/O Modules	Added IS400STAIS1A to IS220YAICS1A accessories
		Added IS400STAIS2A to IS220YAICS1B accessories
		Added IS400TBCIS2C to IS220YDIAS1A and IS220YDIAS1B accessories
		Added IS400STTCS1A, IS400STTCS2A, and IS400TBTCS1C to IS220YTCCS1A accessories
		Added IS220YSILS1B with accessories
	Appendix B Classified Location Standards, Mark VIe I/O Modules	Added IS400TBCIH2C to IS220PDIAH1B accessories
	Appendix B Classified Location Standards, Mark VIeS Safety I/O Modules	Added IS400STAIS1A and IS400STAIS2A to IS220YAICS1A accessories
		Added IS400TBCIS2C to IS220YDIAS1A accessories
		Added IS400TBCIS2C to IS220YDIAS1B accessories
		Added IS400STTCS1A, IS400STTCS2A, and IS400TBTCS1C to IS220YTCCS1A accessories
Added IS220YSILS1B with accessories		
Appendix C Equipment Markings, Mark VIe I/O Modules	Added IS400TBCIH2C to IS220PDIAH1B accessories	
Appendix C Equipment Markings, Mark VIeS Safety I/O Modules	Added IS400STAIS1A and IS400STAIS2A to IS220YAICS1A accessories	
	Added IS400TBCIS2C to IS220YDIAS1A accessories	
	Added IS400TBCIS2C to IS220YDIAS1B accessories	
	Added IS400STTCS1A, IS400STTCS2A, and IS400TBTCS1C to IS220YTCCS1A accessories	
	Added IS220YSILS1B with accessories	
Appendix D Ambient Temperature Ratings	Updated the Ambient Temperature Ratings table to include IS220YSILS1B	

Document Updates — continued

Rev	Location	Description
K	<u>PUAA — Discrete Inputs with Switch Power Output for Externally Fed Inputs</u>	Added a Note that the 12500 Ohm input resistor is not present in the Discrete Input Pulse Accumulator configuration and updated the illustration
	<u>PUAA — Discrete Inputs with Switch Power Output for Internally Fed Inputs</u>	Updated the illustration
	Intrinsic Safety sections	Added "ic" to Intrinsic Safety section headings for safety level clarification
J	<u>Appendix D Ambient Temperature Ratings</u>	Added this appendix to provide ambient temperature ratings for each GE part number
H	<u>ESWx Industrial Ethernet Switch</u>	Updated the table in these sections to include four new HazLoc certified modules: <ul style="list-style-type: none"> • IS420ESWAH4A • IS420ESWAH5A • IS420ESWBH4A • IS420ESWBH5A
	<u>Appendix A Classified Location Certifications, Switches and Controllers</u>	
	<u>Appendix B Classified Location Standards, Switches and Controllers</u>	
	<u>Appendix C Equipment Markings, Switches and Controllers</u>	
	<u>PUAA — Discrete Inputs with Switch Power Output for Externally Fed Inputs</u>	Added these sections to provide a Wiring Diagram and Entity Parameters table
<u>PUAA — Discrete Inputs with Switch Power Output for Internally Fed Inputs</u>		

Document Updates — continued

Rev	Location	Description
G	<u>PAIC and YAIC Analog I/O Modules</u>	Separated IS220PAICH1A and IS220PAICH1B and added terminal boards for use with IS220PAICH1B
		Separated IS220YAICS1A and IS220YAICS1B and added terminal boards for use with IS220YAICS1B
	<u>PDIA and YDIA Discrete Input Modules</u>	Separated IS220PDIAH1A and IS220PDIAH1B and added terminal boards for use with IS220PDIAH1B
		Separated IS220YDIAS1A and IS220YDIAS1B and added terminal boards for use with IS220YDIAS1B
	<u>PDOA and YDOA Discrete Output Modules</u>	Separated IS220PDOAH1A and IS220PDOAH1B and separated the terminal boards for use per I/O pack
	<u>PSVO Servo Control Module</u>	Separated IS220PSVOH1A and IS220PSVOH1B
	<u>PVIB and YVIB Vibration Monitor Modules</u>	Separated IS220PVIBH1A and IS420PVIBH1B and added the terminal board for use with IS420PVIBH1B
		Separated IS220YVIBS1A and IS420YVIBS1B and added the terminal board for use with IS420YVIBS1B
	<u>Appendix A Classified Location Certifications, Mark VIe I/O Modules</u>	Added terminal boards in the Equipment column for the following I/O modules: IS220PAICH1B, IS220PDIAH1B, IS220PDOAH1B, IS220PSVOH1B, IS420PVIBH1B
	<u>Appendix A Classified Location Certifications, Mark VIeS Safety I/O Modules</u>	Added terminal boards in the Equipment column for the following I/O modules: IS220YAICS1A IS220YAICS1B with updated ATEX Zone 2, Group IIC certification IS221YAICS1B updated ATEX Zone 2, Group IIC certification IS220YDIAS1A IS220YDIAS1B specifications and certifications IS220YDOAS1A IS220YDOAS1B with updated ATEX Zone 2, Group IIC certification IS221YDOAS1B updated ATEX Zone 2, Group IIC certification IS420YVIBS1B
	<u>Appendix B Classified Location Standards, Mark VIe I/O Modules</u>	Added terminal boards in the Equipment column for the following I/O modules: IS220PAICH1B, IS220PDIAH1B, IS220PDOAH1B, IS220PSVOH1B, IS420PVIBH1B
	<u>Appendix B Classified Location Standards, Mark VIeS I/O Modules</u>	Added terminal boards in the Equipment column for the following I/O modules: IS220YAICS1A, IS220YAICS1B, IS220YDIAS1A, IS220YDIAS1B, IS220YDOAS1A, IS220YDOAS1B, IS420YVIBS1B
<u>Appendix C Equipment Markings, Mark VIe I/O Modules</u>	Added terminal boards in the Equipment column for the following I/O modules: IS220PAICH1B, IS220PDIAH1B, IS220PDOAH1B, IS220PSVOH1B, IS420PVIBH1B	
<u>Appendix C Equipment Markings, Mark VIeS I/O Modules</u>	Added terminal boards in the Equipment column for the following I/O modules: IS220YAICS1A, IS220YAICS1B, IS220YDIAS1A, IS220YDIAS1B, IS220YDOAS1A, IS220YDOAS1B, IS420YVIBS1B	

Safety Symbol Legend



Warning

Indicates a procedure or condition that, if not strictly observed, could result in personal injury or death.



Caution

Indicates a procedure or condition that, if not strictly observed, could result in damage to or destruction of equipment.



Attention

Indicates a procedure or condition that should be strictly followed to improve these applications.

Hazardous Location Safety Warnings



Warning

Explosion hazard – do not connect or disconnect modules, connectors, cables, or terminal board wiring while circuits are energized unless the area is known to be non-hazardous.



Warning

Explosion hazard – substitution of any components may impair suitability for Class I, Division 2.



Warning

Do not assume any cable or circuitry is without power if one end of that cable could be connected to a power source. To prevent accidental electrical shock, do not touch any circuitry or bare wire without first ensuring that it does not carry electricity. When testing for the presence of electricity and when measuring any electrical circuit, use only the equipment approved for contact with those voltage levels.

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1 *General Instructions*

1.1 *Introduction*

This document is provided for use in parallel with the installation and operating instructions provided for each system when equipment is applied in hazardous (classified) locations (HazLoc).

For more information, refer to the following related documents:

GEH-6703	ToolboxST* User Guide for Mark Controls Platform
GEH-6723	Mark* VleS Safety Control Functional Safety Instruction Guide
GEH-6721_Vol_I	Mark Vle and Mark VleS Controls System Guide
GEH-6721_Vol_II	Mark Vle and Mark VleS Controls Volume II: General-purpose Applications

The information in this document applies to the overall Mark* Vle control system or Mark VleS Functional Safety System control products; however, your application may not be licensed to access full system capability and I/O packs as described in this document. For example, the Mark VleS Functional Safety System for General Markets only utilizes the following I/O packs:

- **Analog I/O (YAIC)**
- **Universal Analog (YUAA)**
- **Vibration Input Monitor (YVIB)**
- **Relay Output (YDOA)**
- **Discrete Contact Input (YDIA)**
- **Power Distribution System Diagnostics (PPDA)**
- **Serial Modbus Communication (PSCA)**
- **Mark VleS Safety Controller (UCSCS2x)**
- **Mark Vle Controller for Gateway (UCSCH1x)**



1.2 Conditions of Safe Use

The following requirements generally apply to all equipment listed in this document. Refer to the chapters [Controller and Switch](#), [Distributed I/O Module](#), and [Power Distribution Instructions](#) for equipment-specific requirements.

General Conditions of Safe Use

- Provision shall be made to limit power supply transient voltages to less than 140% of the peak rated power supply 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 North America, this equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D, or Class I, Zone 2, Group IIC, or non-hazardous locations only.
- For Class I Division 2, A, B, C, and D classified locations, this open-type equipment shall be installed within an enclosure that is suitable for the environment, requires a tool or key to open, and meets the requirements of the applicable codes.
- For US/Canada Zone 2 classified locations, this equipment shall be installed within an enclosure UL/cUL certified for Zone 2, and for European Union Zone 2 classified locations, this equipment shall be installed within an ATEX Zone 2 certified enclosure. The enclosure should have a minimum ingress protection rating of at least IP54 (as defined in IEC 60529), only be accessible by use of a tool, and meet the requirements of applicable codes.
- All wiring shall be installed using suitable Class I Division 2 or Zone 2 wiring methods in accordance with the National Electrical Code (ANSI/NFPA 70), the Canadian Electrical Code, or other local codes as applicable, in accordance with the authority having jurisdiction. Refer to IEC 60079-25 Intrinsically safe electrical systems for guidance.

Power Distribution

- Power distribution boards shall be powered using the wire harnesses specified in *Mark VIe and Mark VIeS Control Systems Equipment in Hazardous Locations (HazLoc) Instruction Guide* (GEH-6725) and by a switched-mode power supply (SMPS) that is certified for the applicable location, has its output current limited to 20 A maximum for JPDS, JPDE, and 40 A for JPDG, and meets the specifications for *Vendor Manufactured Control Power Supplies* in the document *Mark VIe and Mark VIeS Control Systems, Volume II* (GEH-6721 Vol II). When two UL listed power supplies are used for redundancy, the same make and model shall be used. A listed diode block accessory shall be used for reverse protection between power supplies where not provided by the source.
- For a customer-supplied contact wetting power source to an accessory terminal board through connector JF or JG, use an appropriate GE cable harness listed in *Mark VIe and Mark VIeS Control Systems Equipment in Hazardous Locations (HazLoc) Instruction Guide* (GEH-6725), the chapter [Power Distribution Instructions](#), and provide separate listed over-current protection based on the ampacity of the individual conductors, but not more than 15 A per conductor.
- For North American locations, if contact wetting power is customer-supplied to the accessory terminal board through connector JE1 or JE2, the wire harness specified on drawing 336A4937FJ or in GEH-6725, the chapter *Power Distribution Instructions*, shall be used, and the wetting power source shall be current-limited by either a UL-recognized fuse rated at not more than 3 A, or one of the following power supplies:
 - UL R/C, Phoenix Contact[®] GmbH & Co Kg, model QUINT-PS-100-240AC/24DC/5GE, or QUINT-PS/1AC/24DC/5GE
 - UL R/C, Convertec Ltd.[®], model TIS 150-124
- Power for Ethernet switches, controllers, and I/O modules shall be supplied through a power distribution board that limits the available current to 3.5 A maximum and is certified for the applicable classified location. Refer to GEH-6725, the chapter *Power Distribution Instructions*, for detailed information on power distribution boards.
- The Analog Processor, IS410BAPBH1A (comprised of IS400BAPBH1A and IS400BBAAH2A), and the IS210SAMBH1A terminal board should only be powered by the ISxxxJPDHG1A distribution board, which is a limited voltage limited current (LVLC) circuit, or similar.

Intrinsic Safety

- Selected intrinsically safe apparatus must be third-party listed as intrinsically safe for the application, and have intrinsically safe entity parameters conforming to the entity parameters specified for the associated apparatus.
- Capacitance and inductance of the field wiring from intrinsically safe apparatus to the associated apparatus shall be calculated and must be included in the system calculations. Cable capacitance, C_{cable} , plus intrinsically safe equipment capacitance, C_i , must not exceed the capacitance, C_a or C_o , specified for the associated apparatus. The same applies for inductance (L_{cable} , L_i , and L_a or L_o , respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: $C_{\text{cable}} = 60 \text{ pF/ft}$, $L_{\text{cable}} = 0.2 \text{ } \mu\text{H/ft}$.
- Field wiring terminals are intended for the connection of copper conductors with the insulation locally removed and without the addition of intermediate parts other than those replicating the form of a bare conductor, such as a ferrule.
- For thermocouple and RTD field wiring terminals:
 - Only resistive simple apparatus shall be connected.
 - Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.
 - The maximum cable length connecting each thermocouple to the device shall not exceed 304.8 m (1,000 ft).
- Adhere to the following warning for hazardous locations:



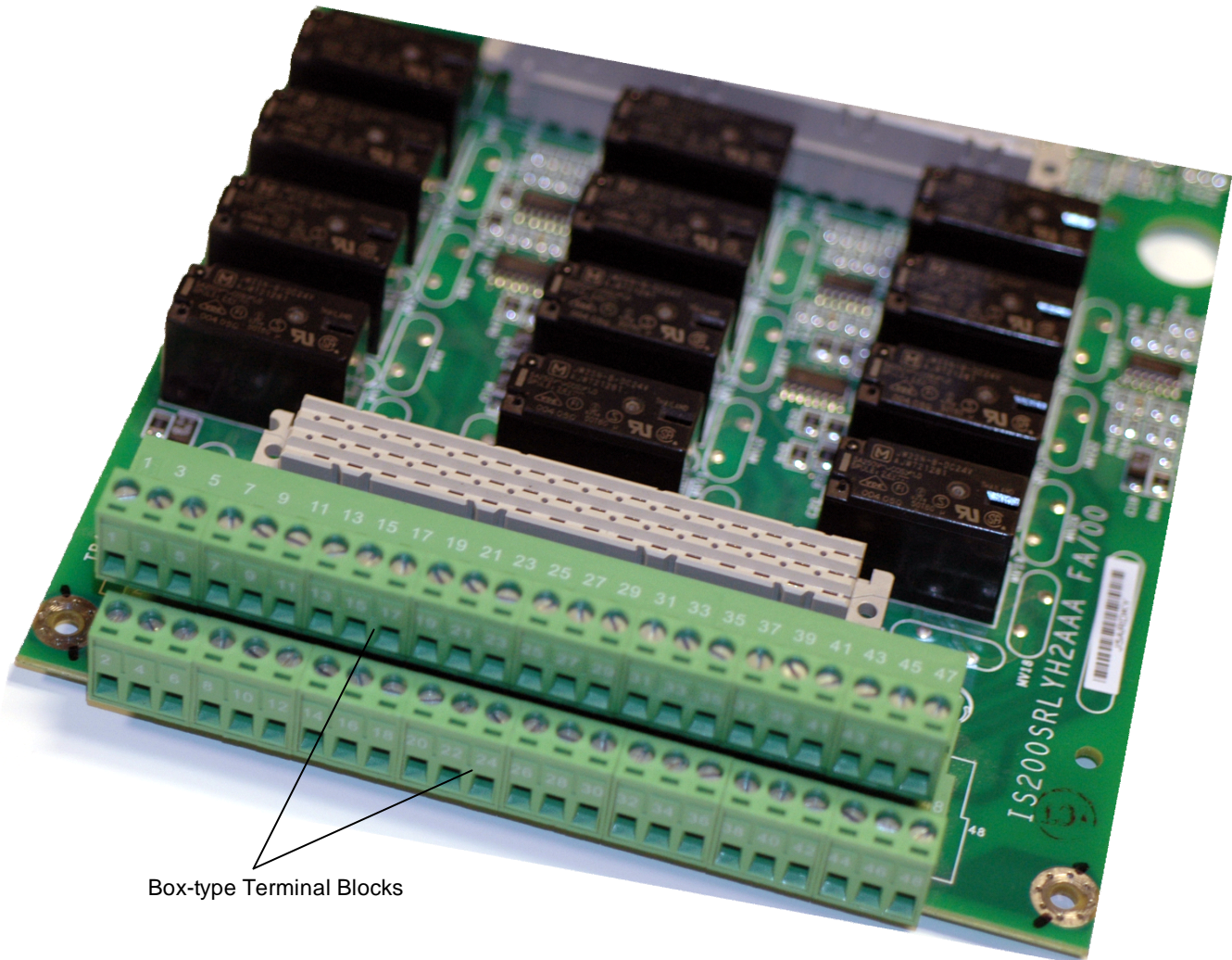
Explosion Hazard — Do not connect or disconnect modules, connectors, cables, fuses, or terminal board wiring, or operate power distribution switches while circuits are energized unless the area is known to be non-hazardous.

Explosion Hazard — Substitution of any components may impair suitability for Class I, Division 2.

1.3 Wire Size and Screw Torques

Euro Style Box-type Terminal Blocks

Item	Min	Nominal	Max	Units
Wire Size	24	—	12	AWG
Screw Torque	—	4	—	in-lb
Screw Torque	—	0.45	—	Nm

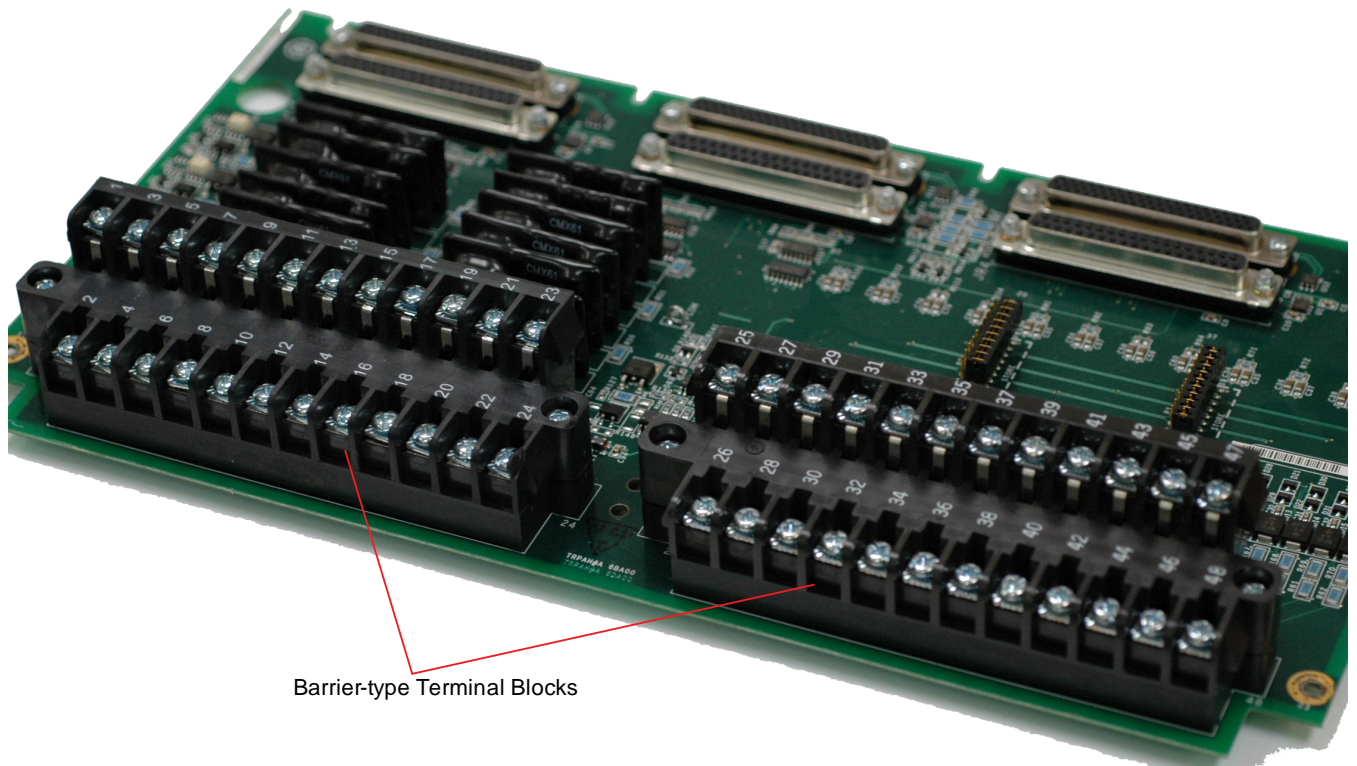


Box-type Terminal Blocks

Note Use only copper conductors rated 90 °C (194 °F) minimum up to 60 °C (140 °F) product ambient and 105 °C (221 °F) minimum above 60 °C (140 °F).

Barrier-type Terminal Blocks

Item	Min	Nominal	Max	Units
Wire Size	22	—	12	AWG
Screw Torque	—	9.6	—	in-lb
Screw Torque	—	1.1	—	Nm

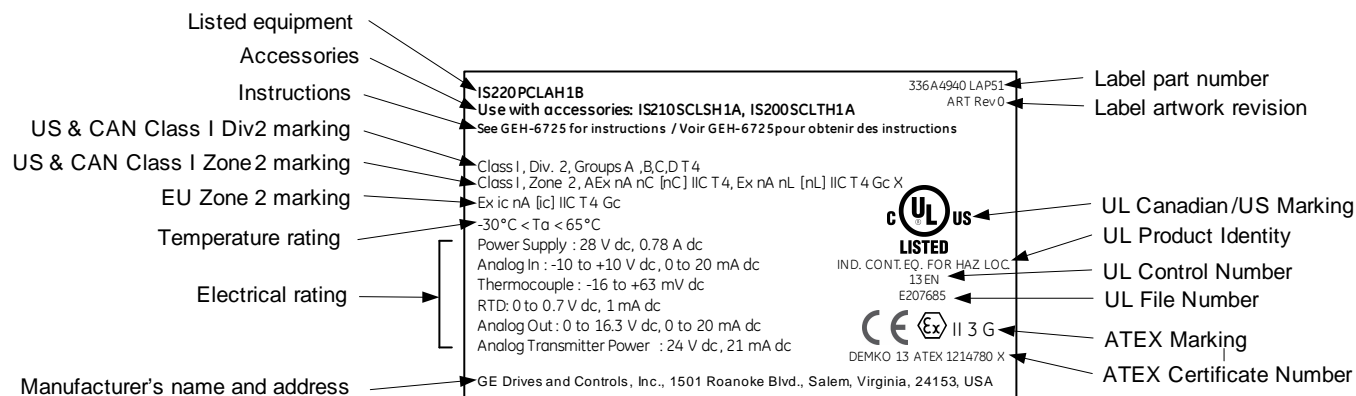


Barrier-type Terminal Blocks

Note Use only copper conductors rated 90 °C (194 °F) minimum up to 60 °C (140 °F) product ambient and 105 °C (221 °F) minimum above 60 °C (140 °F).

1.4 Equipment Markings

Hazardous location certifications vary, depending on the equipment release date and energy limiting characteristics. The following are actual size examples of HazLoc labels for control system equipment.



Example HazLoc Label on I/O Pack

See IO Pack
Installation
Instructions for
use in Hazloc
336A4940FFP80
Rev. 4, 12/2010

Example Accessory HazLoc Label

2 Controller and Switch Instructions

The equipment listed in this chapter is certified for use in certain specified hazardous (classified) locations. Follow all applicable instructions in the section [Conditions of Safe Use](#) and the specific section for each piece of equipment for proper use of this equipment in these locations.

2.1 UCSA, UCSB, UCSC and UCSD Controllers

The following table lists the controllers that are certified for hazardous location usage.

Note For UCSC, UCEC and UCSD controller conditions of safe use and hazardous locations installation requirements, refer to *UCSC, UCEC and UCSD Installation and Maintenance Requirements* (GFK-3006).

For general application information, refer to the *Mark VIe and Mark VIeS Control Systems Volume II: General-purpose Applications System Guide* (GEH-6721_Vol_II), the section *UCSC Controllers*.

Processor	Part Number	Name
Quad core, 1.2 GHz AMD® G-Series	IS420UCSCH1	Mark VIe controller
Dual core, 1.6 GHz AMD G-Series	IS420UCSCH2	MarkStat controller
Dual core, 1.6 GHz AMD G-Series	IS420UCSCS2	Mark VIeS Safety controller
Quad core, 1.6 GHz AMD V1000–Series	IS420UCSDH1	Mark VIe controller
Quad core, 1.6 GHz AMD V1000–Series	IS420UCSDS1	Mark VIeS Safety controller
600 MHz EP80579 Intel®	IS420UCSBS1A	Mark VIeS Safety controller
	IS421UCSBS1A (conformal coated)	
	IS420UCSBH1A	
1066 MHz EP80579 Intel	IS421UCSBH1A (conformal coated)	Mark VIe, EX2100e, or LS2100e controller
	IS420UCSBH4A	
	IS421UCSBH4A (conformal coated)	
1200 MHz EP80579 Intel	IS420PPNGH1A	PROFINET gateway module
	IS420UCSBH3A	Mark VIe or MarkStat controller
667 MHz PowerQUICC® Pro Freescale	IS220UCSAH1A	Mark VIe controller
		PAMC Acoustic Monitor (processor)
		PMVE Migration from Mark V Control (processor)

2.1.1 UCEC Module

The IS420UCECH1 module is certified for hazardous location usage. This module is an IS420UCSCH1 controller coupled with a seven I/O port expansion board. The UCSCH1 controller contained within the UCECH1 module has the same features and benefits as the stand-alone UCSCH1 controller. For further details on the UCECH1 module, refer to the *Mark VIe and Mark VIeS Control Systems Volume II: General-purpose Applications System Guide* (GEH-6721_Vol_II), the section *UCECH1x I/O Port Expansion Module*.

2.1.2 Electrical Ratings

Power Supply UCSD Controller

Item	Min	Nominal	Max	Units
Voltage	18.0	24.0/28.0	30.0	V dc
Current	—	—	1.1	A dc

Power Supply UCSC Controller

Item	Min	Nominal	Max	Units
Voltage	18.0	24.0/28.0	30.0	V dc
Current	—	—	1.1	A dc

Power Supply UCEC Module

Item	Min	Nominal	Max	Units
Voltage	18.0	24.0/28.0	30.0	V dc
Current	—	—	1.5	A dc

Power Supply UCSB Controller

Item	Min	Nominal	Max	Units
Voltage	27.4	28.0	28.6	V dc
Current	—	—	1.1	A dc

Power Supply UCSA Controller

Item	Min	Nominal	Max	Units
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.62	A dc

2.2 ESWx Industrial Ethernet Switch

Industrial Ethernet Switches Approved for Use in Hazardous Locations

Model	# of Copper Ports, 10/100 base T	# of Multi-mode Fiber-optic Uplinks, 100 base FX	# of Single-mode Fiber-optic Uplinks, 100 base FX
IS420ESWAH1A IS421ESWAH1A (conformal coated)	8	1	—
IS420ESWAH2A IS421ESWAH2A (conformal coated)		2	—
IS420ESWAH3A IS421ESWAH3A (conformal coated)		—	—
IS420ESWAH4A		—	1
IS420ESWAH5A		—	2
IS420ESWBH1A IS421ESWBH1A (conformal coated)		16	1
IS420ESWBH2A IS421ESWBH2A (conformal coated)	2		—
IS420ESWBH3A IS421ESWBH3A (conformal coated)	—		—
IS420ESWBH4A	—		1
IS420ESWBH5A	—		2

2.2.1 Electrical Ratings

Power Supply

Item	Min	Nominal	Max	Units
Voltage	22.5	24.0 / 28.0	28.6	V dc
Current	—	—	1	A dc

Notes

3 Distributed I/O Module Instructions

The equipment listed in this chapter is certified for use in certain specified hazardous (classified) locations. Follow all applicable instructions in [Conditions of Safe Use](#) and within the specific section for each piece of equipment for proper use of this equipment in these locations.

3.1 PAIC and YAIC Analog I/O Modules

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Mark VIe Analog I/O pack **IS220PAICH1A** with terminal boards (accessories) **IS200STAIH1A**, **IS200STAIH2A**, or **IS200TBAIH1C**
- Mark VIe Analog I/O pack **IS220PAICH1B** with terminal boards (accessories) **IS200STAIH1A**, **IS200STAIH2A**, or **IS200TBAIH1C**
- Mark VIeS Safety Analog I/O pack **IS220YAICS1A** with terminal boards (accessories) **IS200STAIS1A**, **IS400STAIS1A**, **IS200STAIS2A**, **IS400STAIS2A**, **IS200TBAIS1C**, or **IS400TBAIS1C**
- Mark VIeS Safety Analog I/O pack **ISx2yYAICS1B** (where x = 2 or 4 and y = 0 or 1) with terminal boards (accessories) **ISx0ySTAIS1A**, **ISx0ySTAIS2A**, or **ISx0yTBAIS1C**

3.1.1 Electrical Ratings

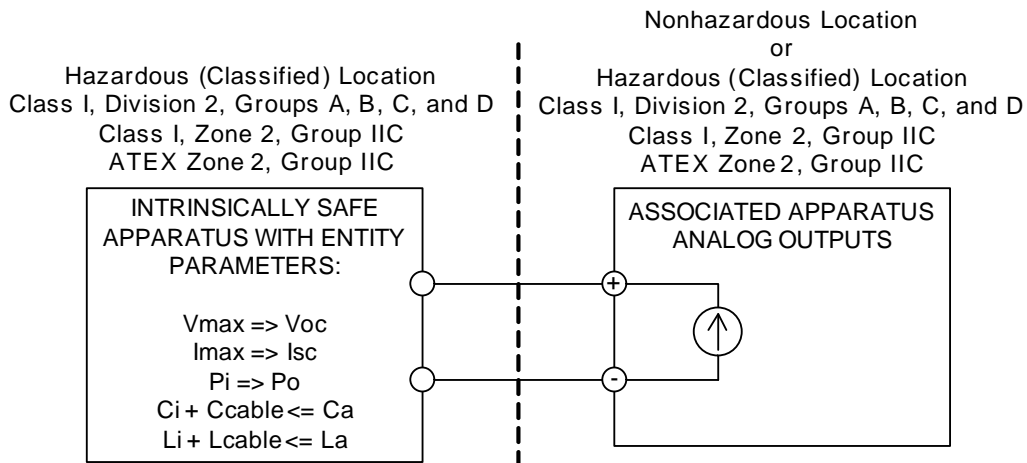
Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	PAICH1B / YAICS1B: 22.5 PAICH1A / YAICS1A: 27.4	PAICH1B / YAICS1B: 24.0/28.0 PAICH1A / YAICS1A: 28.0	28.6	V dc
Current	—	—	0.49	A dc
<i>Analog Inputs (1-8)</i>				
Voltage	-10	—	10	V dc
Current	0	—	20	mA dc
<i>Analog Inputs (9-10)</i>				
Current	-5	—	5	V dc
Current	-1	—	20	mA dc
<i>Analog Outputs</i>				
Voltage	0	—	16.3	V dc
Current	0	—	20	mA dc
<i>Analog Transmitter Power</i>				
Voltage	22.8	24.0	25.2	V dc
Current	—	—	21	mA dc

3.1.2 Field Wire Connections

Terminal Board	Terminal Block Type
ISx00STAI_1A, ISx00STAI_2A	Refer to the table Euro Style Box-type Terminal Blocks for wire size and screw torques.
ISx00TBAI_1C	Refer to the table Barrier-type Terminal Blocks for wire size and screw torques.

3.1.3 Intrinsic Safety “ic”

Wiring Diagram



Entity Parameters

Analog Outputs	Value	Unit
Voc or Uo	28.6	V
Isc or Io	22.4	mA
Po	0.64	W
Ca or Co	0.26	uF
La or Lo	100	mH

Note Analog outputs may be used with non-sparking (nA) devices using appropriate Class I Division 2 or Zone 2 wiring practices.

Field Terminals

Accessory TB	Name	(+) Terminal	Name	(-) Terminal
STAI	Signal 1	TB1.45	Return 1	TB1.46
STAI	Signal 2	TB1.47	Return 2	TB1.48
TBAI	Signal 1	TB2.45	Return 1	TB2.46
TBAI	Signal 2	TB2.47	Return 2	TB2.48

3.2 PAMC Acoustic Monitoring Module

The following equipment combination is approved for use in hazardous locations:

- [Mark VIe UCSA](#) processor used for the PAMC module
- Mark VIe Analog processor **IS210BAPAH1A** and **IS41yBAPBH1A** with terminal board (accessory) **IS210SAMBH1A**

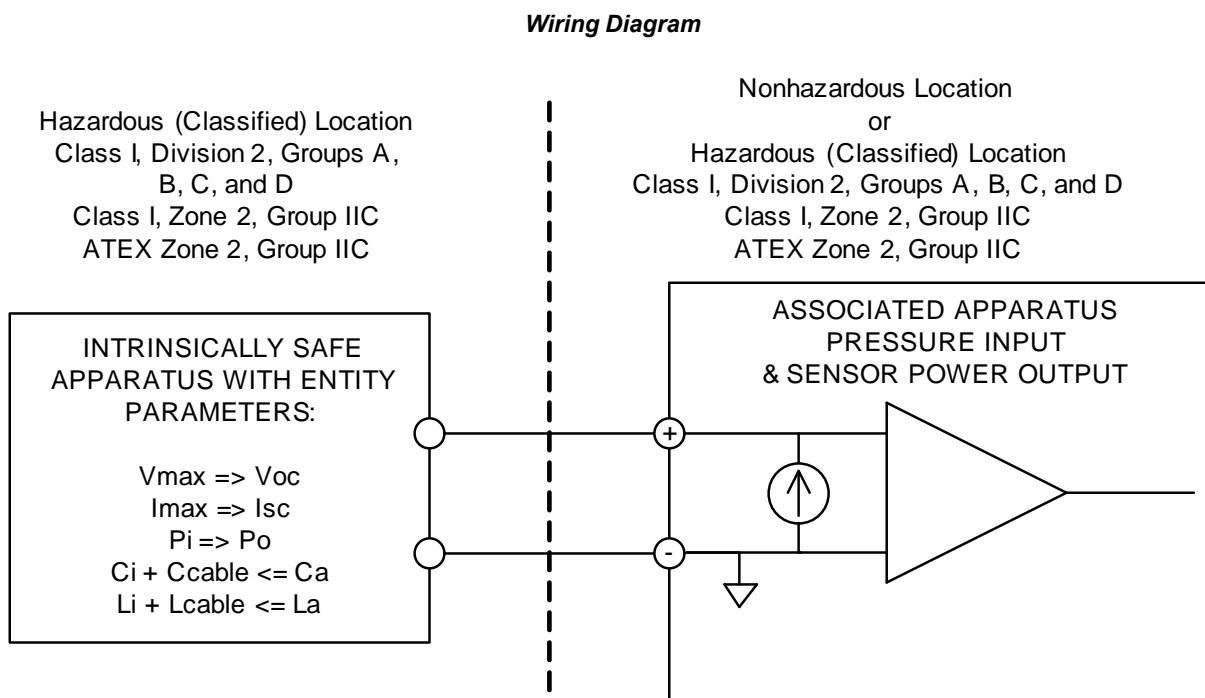
3.2.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>BAPA / BAPB Power Supply</i>				
Voltage	27.4	28	28.6	V dc
Current	—	—	0.5	A dc
<i>Pressure Inputs (SAMB)</i>				
Voltage	12	—	18.5	V dc
<i>Sensor Power Outputs (SAMB)</i>				
Voltage	12	—	18.5	V dc
Current	2.9	—	4.3	mA dc
<i>Buffered Outputs (SAMB)</i>				
Voltage	-10	—	10	V dc
Current	—	5	—	mA dc

3.2.2 Field Wire Connections

For the IS210SAMBH1A terminal board (accessory) wire sizes and screw torques, refer to the table [Euro Style Box-type Terminal Blocks](#).

3.2.3 Intrinsic Safety “ic”



Note 1. BAPA pressure inputs and sensor power outputs may be used with non-sparking (nA) devices using appropriate Class I Division 2 or Zone 2 wiring practices.

Note 2. Set jumpers JP1 – JP18 on SAMB accessory terminal board to the PCB position.

Note 3. The Analog Processor, IS410BAPBH1A (comprised of IS400BAPBH1A and IS400BBAAH2A), and the IS210SAMBH1A terminal board should only be powered by the ISxxxJPDHG1A distribution board, which is a limited voltage limited current (LVLC) circuit, or similar.

Entity Parameters

Pressure Inputs	Value	Unit	Sensor Power Outputs	Value	Unit
Vmax	25	V	Voc or Uo	25	V
I _{max}	4.3	mA	I _{sc} or I _o	4.3	mA
P _i	108	mW	P _o	108	mW
C _i	0.011	uF	C _a or C _o	0.4	uF
L _i	0	mH	L _a or L _o	100	mH

Field Terminals

Name	(+) Terminal	Name	(-) Terminal
SIG1	TB1A.2	RET1	TB1A.4
SIG2	TB1A.6	RET2	TB1A.8
SIG3	TB1A.10	RET3	TB1A.12
SIG4	TB1A.14	RET4	TB1A.16
SIG5	TB1A.18	RET5	TB1A.20
SIG6	TB1A.22	RET6	TB1A.24
SIG7	TB1B.26	RET7	TB1B.28
SIG8	TB1B.30	RET8	TB1B.32
SIG9	TB1B.34	RET9	TB1B.36
SIG10	TB1B.38	RET10	TB1B.40
SIG11	TB1B.42	RET11	TB1B.44
SIG12	TB1B.46	RET12	TB1B.48
SIG13	TB1C.50	RET13	TB1C.52
SIG14	TB1C.54	RET14	TB1C.56
SIG15	TB1C.58	RET15	TB1C.60
SIG16	TB1C.62	RET16	TB1C.64
SIG17	TB1C.66	RET17	TB1C.68
SIG18	TB1C.70	RET18	TB1C.72

3.3 PAOC Analog Output Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Analog output pack **IS220PAOCH1B** with terminal boards (accessories) **IS200STAOH1A**, **IS200STAOH2A**, or **IS200TBAOH1C**

3.3.1 Electrical Ratings

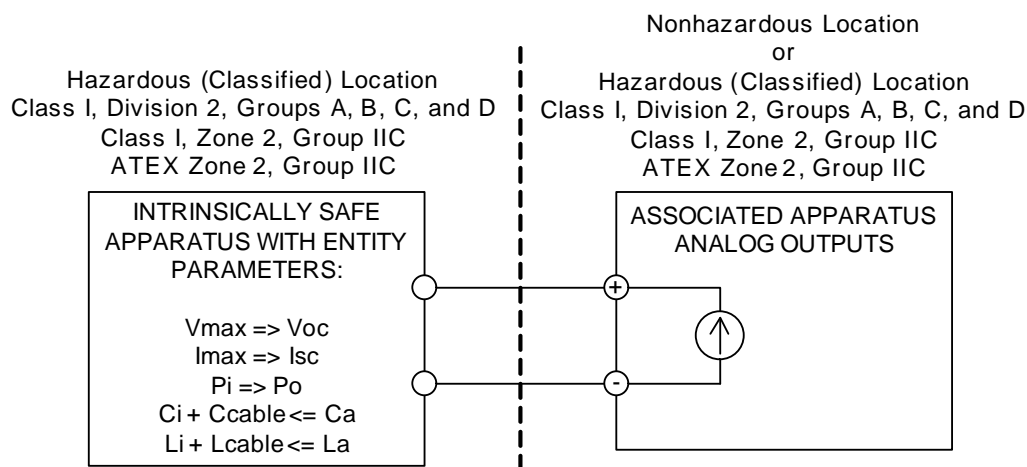
Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28	28.6	V dc
Current	—	—	0.45	A dc
<i>Analog Outputs</i>				
Voltage	0	—	18	V dc
Current	0	—	20	mA dc

3.3.2 Field Wire Connections

Terminal Board	Terminal Block Type
IS200STAOH1A, IS200STAOH2A	Refer to the table Euro Style Box-type Terminal Blocks for wire size and screw torques.
IS200TBAOH1C	Refer to the table Barrier-type Terminal Blocks for wire size and screw torques.

3.3.3 Intrinsic Safety “ic”

Wiring Diagram



Entity Parameters

Analog Outputs	Value	Unit
V_{oc} or U_o	28.6	V
I_{sc} or I_o	22.5	mA
P_o	0.64	W
C_a or C_o	0.26	uF
L_a or L_o	100	mH

Note Analog outputs may be used with non-sparking (nA) devices using appropriate Class I Division 2 or Zone 2 wiring practices.

Field Terminals

Accessory TB	Name	(+) Terminal	Name	(-) Terminal
STAO	Signal 1	TB1.1	Return 1	TB1.2
STAO	Signal 2	TB1.3	Return 2	TB1.4
STAO	Signal 3	TB1.5	Return 3	TB1.6
STAO	Signal 4	TB1.7	Return 4	TB1.8
STAO	Signal 5	TB1.9	Return 5	TB1.10
STAO	Signal 6	TB1.11	Return 6	TB1.12
STAO	Signal 7	TB1.13	Return 7	TB1.14
STAO	Signal 8	TB1.15	Return 8	TB1.16
TBAO	Signal 1	TB1.1	Return 1	TB1.2
TBAO	Signal 2	TB1.3	Return 2	TB1.4
TBAO	Signal 3	TB1.5	Return 3	TB1.6
TBAO	Signal 4	TB1.7	Return 4	TB1.8
TBAO	Signal 5	TB1.9	Return 5	TB1.10
TBAO	Signal 6	TB1.11	Return 6	TB1.12
TBAO	Signal 7	TB1.13	Return 7	TB1.14
TBAO	Signal 8	TB1.15	Return 8	TB1.16
TBAO	Signal 9	TB1.17	Return 9	TB1.18
TBAO	Signal 10	TB1.19	Return 10	TB1.20
TBAO	Signal 11	TB1.21	Return 11	TB1.22
TBAO	Signal 12	TB1.23	Return 12	TB1.24
TBAO	Signal 13	TB2.25	Return 13	TB2.26
TBAO	Signal 14	TB2.27	Return 14	TB2.28
TBAO	Signal 15	TB2.29	Return 15	TB2.30
TBAO	Signal 16	TB2.31	Return 16	TB2.32

3.4 PCLA Core Analog Module — Aero

The following hardware combinations are approved for use in hazardous locations:

- Core analog module **IS220PCLAH1A** or **IS220PCLAH1B**
- Terminal board (accessory) **IS210SCLSH1A**
- Optional terminal board (accessory) **IS200SCLTH1A**

3.4.1 Electrical Ratings

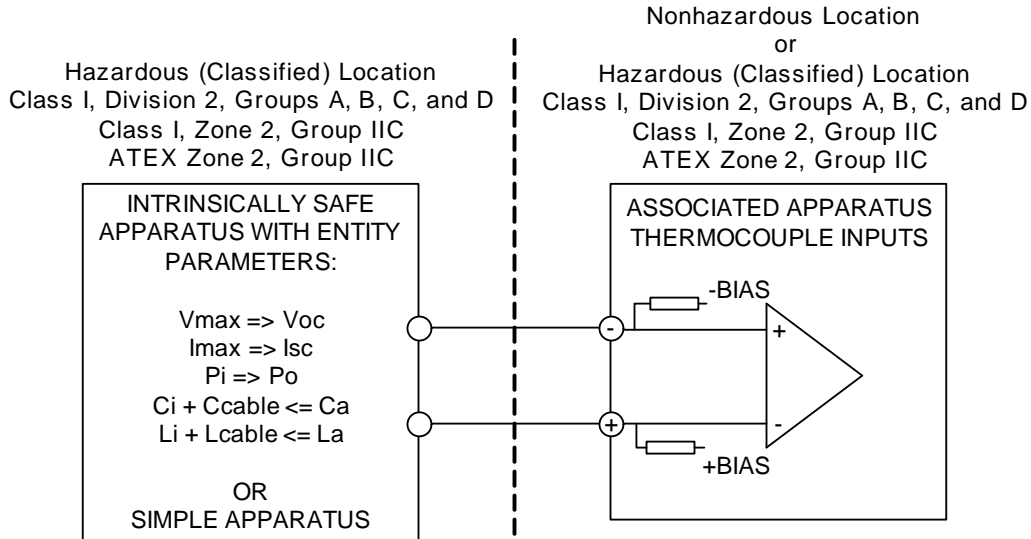
Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28	28.6	V dc
Current	—	—	0.78	A dc
<i>Analog Inputs</i>				
Voltage	-10	—	10	V dc
Current	0	—	20	mA dc
<i>Thermocouple Inputs</i>				
Voltage	-16	—	63	mV dc
<i>RTD Inputs</i>				
Voltage	0	—	0.7	V dc
Current	—	1.0	—	mA dc
<i>Analog Outputs</i>				
Voltage	0	—	16.3	V dc
Current	0	—	20	mA dc
<i>Analog Transmitter Power</i>				
Voltage	22.8	24.0	25.2	V dc
Current	—	—	21	mA dc

3.4.2 Field Wire Connections

For the core analog terminal boards (accessories) wire sizes and screw torques, refer to the table [Euro Style Box-type Terminal Blocks](#).

3.4.3 Intrinsic Safety “ic” for Thermocouple Inputs

Wiring Diagram



Entity Parameters

Thermocouple Inputs	Value	Unit
Voc or Uo	0.5	V
Isc or Io	25	nA
Po	13	nW
Ca or Co	1000	uF
La or Lo	100	mH

Note 1. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Note 2. Only resistive simple apparatus (such as thermocouples) shall be connected to thermocouple inputs

Note 3. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

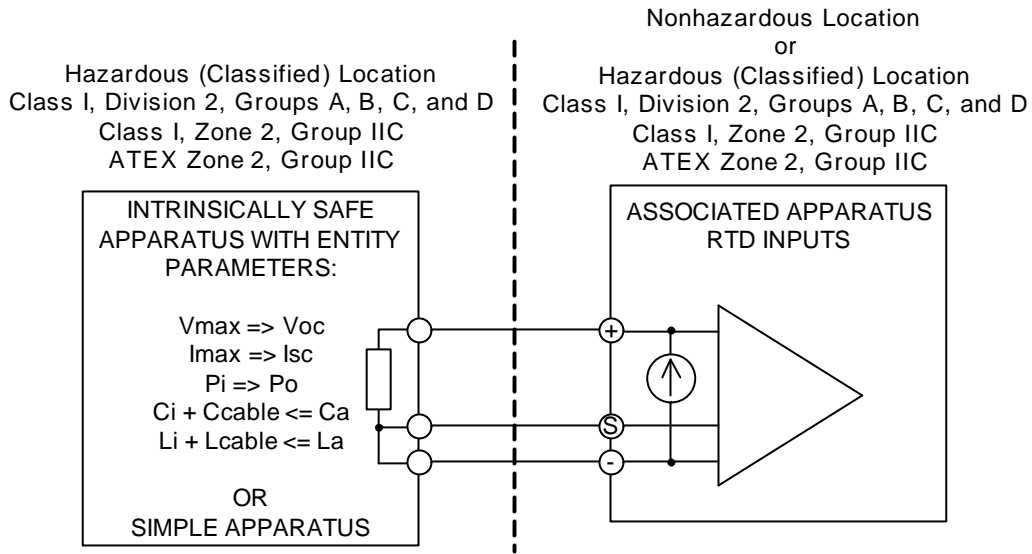
Note 4. The maximum cable length connecting each thermocouple to the device shall not exceed 1000 ft.

Field Terminals

Accessory TB	Name	(-) Terminal	Name	(+)Terminal
SCLS	TC1H	TB1B.25	TC1L	TB1B.26
	TC2H	TB1B.27	TC2L	TB1B.28
	TC3H	TB1B.29	TC3L	TB1B.30
	TC4H	TB1B.31	TC4L	TB1B.32
	TC5H	TB1B.33	TC5L	TB1B.34
	TC6H	TB1B.35	TC6L	TB1B.36
	TC7H	TB1B.37	TC7L	TB1B.38
	TC8H	TB1B.39	TC8L	TB1B.40
SCLT	TC9H	TB1.1	TC9L	TB1.2
	TC10H	TB1.3	TC10L	TB1.4
	TC11H	TB1.5	TC11L	TB1.6
	TC12H	TB1.7	TC12L	TB1.8
	TC13H	TB1.9	TC13L	TB1.10
	TC14H	TB1.11	TC14L	TB1.12
	TC15H	TB1.13	TC15L	TB1.14
	TC16H	TB1.15	TC16L	TB1.16

3.4.4 Intrinsic Safety “ic” for RTD Inputs

Wiring Diagram



Entity Parameters

RTD Inputs	Value	Unit
Voc or Uo	15	V
Isc or Io	1.0	mA
Po	15	mW
Ca or Co	3	uF
La or Lo	100	mH

Note 1. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Note 2. Only resistive simple apparatus (such as RTDs) shall be connected to RTD inputs.

Note 3. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

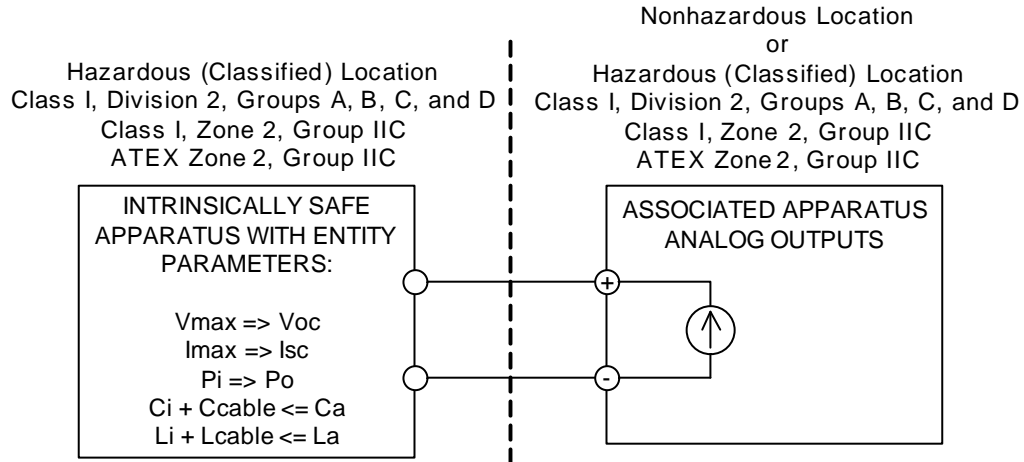
Note 4. The maximum cable length connecting each RTD to the device shall not exceed 1000 ft.

Field Terminals

Accessory TB	Name	(+) Terminal	Name	(S) Terminal	Name	(-)Terminal
SCLS	RTDEXC1	TB1C.49	RTDSIG1	TB1C.50	RTDRET1	TB1C.51
	RTDEXC2	TB1C.52	RTDSIG2	TB1C.53	RTDRET2	TB1C.54
	RTDEXC3	TB1C.55	RTDSIG3	TB1C.56	RTDRET3	TB1C.57
	RTDEXC4	TB1C.58	RTDSIG4	TB1C.59	RTDRET4	TB1C.60
	RTDEXC5	TB1C.61	RTDSIG5	TB1C.62	RTDRET5	TB1C.63
	RTDEXC6	TB1C.64	RTDSIG6	TB1C.65	RTDRET6	TB1C.66
	RTDEXC7	TB1C.67	RTDSIG7	TB1C.68	RTDRET7	TB1C.69
	RTDEXC8	TB1C.70	RTDSIG8	TB1C.71	RTDRET8	TB1C.72

3.4.5 Intrinsic Safety “ic” for Analog Outputs

Wiring Diagram



Entity Parameters

Analog Outputs	Value	Unit
Voc or Uo	28.6	V
Isc or Io	22.4	mA
Po	0.64	W
Ca or Co	0.26	uF
La or Lo	100	mH

Note Analog outputs may be used with non-sparking (nA) devices using appropriate Class I Division 2 or Zone 2 wiring practices.

Field Terminals

Accessory TB	Name	(+) Terminal	Name	(-) Terminal
SCLS	OP1	TB1A.21	OR1	TB1A.22
SCLT	OP2	TB1.37	OR2	TB1.38
	OP3	TB1.39	OR3	TB1.40
	OP4	TB1.41	OR4	TB1.42
	OP5	TB1.43	OR5	TB1.44
	OP6	TB1.45	OR6	TB1.46
	OP7	TB1.47	OR7	TB1.48

3.5 PCNO CANopen® Master Gateway Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- CANopen I/O pack **IS220PCNOH1A** or **IS220PCNOH1B** with accessory ID board **IS200SPIDG1A**

3.5.1 Electrical Ratings

Power Supply

Item	Min	Nominal	Max	Units
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.17	A dc

3.6 PDIA and YDIA Discrete Input Modules

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Mark VIe Discrete I/O pack **IS220PDIAH1A**
with terminal boards (accessories) **IS200STCIH1A**, **IS200STCIH2A**, **IS200STCIH8A**, **IS200TBCIH2C**, or **IS200TBCIH4C**
- Mark VIe Discrete I/O pack **IS220PDIAH1B**
with terminal boards (accessories) **IS200STCIH1A**, **IS200STCIH2A**, **IS200STCIH8A**, **IS200TBCIH2C**, **IS400TBCIH2C**, **IS200TBCIH4C**, **IS400STCIH1A**, **IS400STCIH2A**, or **IS400STCIH8A**
- Coated Mark VIe Discrete I/O pack **IS221PDIAH1B**
with coated terminal boards (accessories) **IS201STCIH1A**, **IS201STCIH2A**, **IS201STCIH8A**, **IS201TBCIH2C**, or **IS201TBCIH4C**
- Mark VIeS Safety Discrete I/O pack **IS220YDIAS1A**
with terminal boards (accessories) **IS200STCIS1A**, **IS200STCIS2A**, **IS400STCIS1A**, **IS400STCIS2A**, **IS200TBCIS2C**, or **IS400TBCIS2C**
- Mark VIeS Safety Discrete I/O pack **ISx2yYDIAS1B** (where x = 2 or 4 and y = 0 or 1)
with terminal boards (accessories) **ISx0ySTCIS1A**, **ISx0ySTCIS2A**, **IS40ySTCIS4A**, **ISx0yTBCIS2C**, or **IS40yTBCIS3C**

3.6.1 Electrical Ratings

PDIAH1A and PDIAH1B

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	PDIAH1B: 22.5 PDIAH1A: 27.4	PDIAH1B: 24.0/28.0 PDIAH1A: 28.0	28.6	V dc
Current	—	—	0.24	A dc
<i>Contact Inputs</i>				
Voltage	0	—	32	V dc
<i>STCIH1A, STCIH2A, TBCIH2C Contact Wetting Outputs</i>				
Voltage	18.5	—	32	V dc
Current	—	—	110	mA dc
<i>STCIH8A, TBCIH4C Contact Wetting Outputs (1-21)</i>				
Voltage	—	—	31	V dc
Current	—	—	10	mA dc
<i>STCIH8A, TBCIH4C Contact Wetting Outputs (22-24)</i>				
Voltage	—	—	31	V dc
Current	—	—	41	mA dc

YDIAS1A

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.24	A dc
<i>Contact Inputs</i>				
Voltage	0	—	32	V dc
<i>Contact Wetting Outputs</i>				
Voltage	PDIA	—	32	V dc
Current	—	—	110	mA dc

YDIAS1B

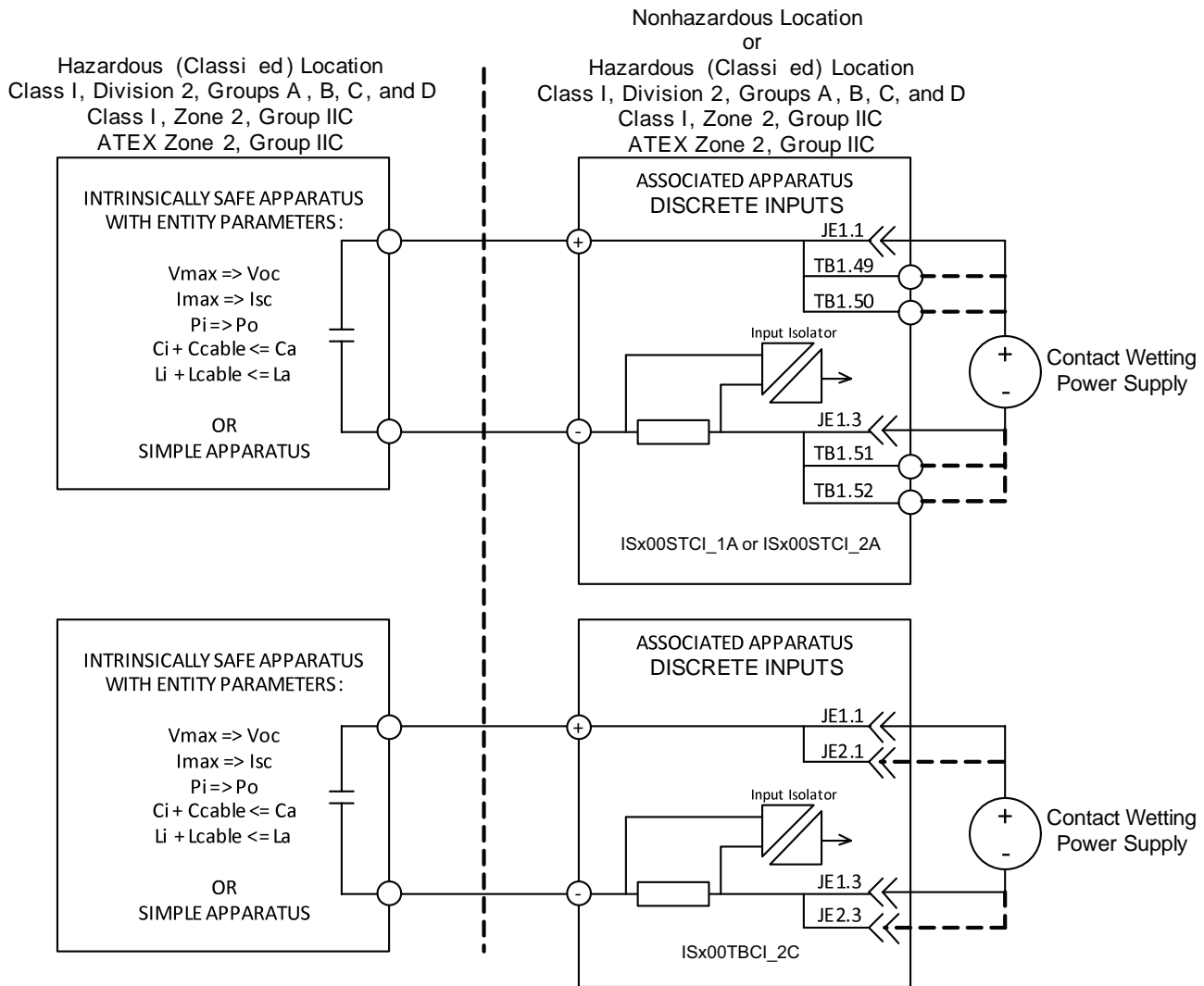
Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	22.5	28.0	28.6	V dc
Current	—	—	0.24	A dc
<i>Contact Inputs/Wetting (via JE1) STCIS1, STCIS2, TBCIS2</i>				
Voltage	20	24	32	V dc
Current	—	—	110	mA dc
<i>Contact Inputs/Wetting (via JE1) STCIS4, TBCIS3</i>				
Voltage	43	48	52.8	V dc
Current	—	—	110	mA dc

3.6.2 Field Wire Connections

Terminal Board	Terminal Block Type
STCI	Refer to the table Euro Style Box-type Terminal Blocks for wire size and screw torques.
TBCI	Refer to the table Barrier-type Terminal Blocks for wire size and screw torques.

3.6.3 Intrinsic Safety “ic” for Accessory Terminal Boards ISx0ySTCI_1A, ISx0ySTCI_2A, ISx0yTBCI_2C

Wiring Diagram



Entity Parameters

Discrete Inputs	Inputs 1–21 Value	Inputs 22–24 Value	Unit
Voc or Uo	32	32	V
Isc or Io	3.3	13.4	mA
Po	0.11	0.43	W
Ca or Co	0.18	0.18	uF
La or Lo	100	100	mH

Note 1. The contact wetting power supply shall be isolated from ground.

Note 2. For North American locations, if contact wetting power is supplied to the accessory terminal board through connector JE1 or JE2, the wire harness specified on drawing 336A4937FJ shall be used, and the wetting power source shall be current limited by either a UL recognized fuse rated at not more than 3 A, or one of the following power supplies:

- UL R/C, Phoenix Contact GmbH & Co Kg, model QUINT-PS-100-240AC/24DC/5 GE
 - UL R/C, Convertec Ltd., model TIS 150-124
-

Note 3. The output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.

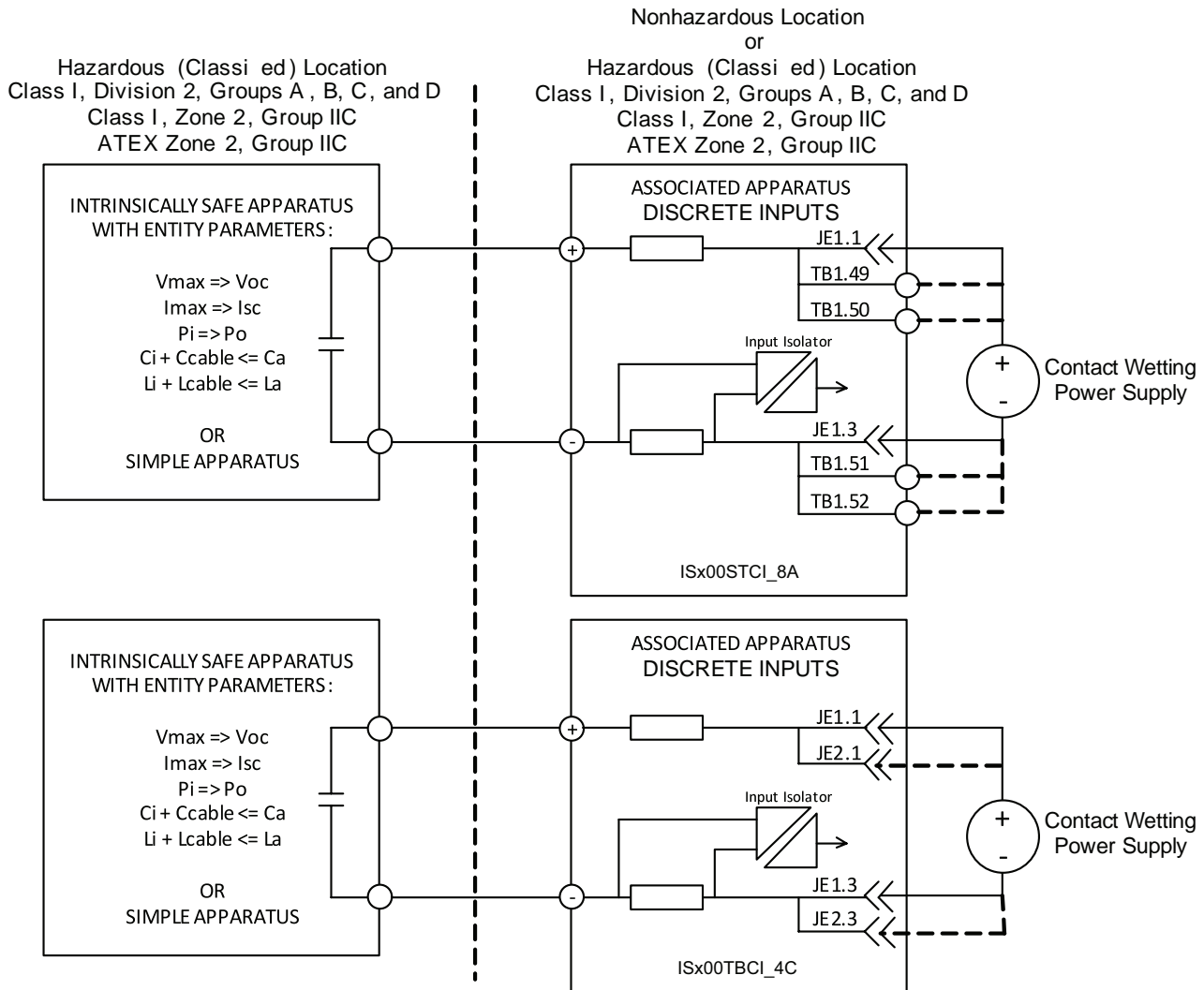
Note 4. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Note 5. Only resistive simple apparatus (such as relay contacts or switches) shall be connected to discrete inputs.

Note 6. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

3.6.4 Intrinsic Safety "ic" for Accessory Terminal Boards ISx00STCI_8A, IS200TBCI_4C

Wiring Diagram



Entity Parameters

Discrete Inputs	Inputs 1–21 Value	Inputs 22–24 Value	Unit
Voc or Uo	31	31	V
Isc or Io	3.2	13	mA
Po	0.10	0.40	W
Ca or Co	0.18	0.18	uF
La or Lo	100	100	mH

Note 1. The contact wetting power supply may be grounded.

Note 2. For North American locations, if contact wetting power is supplied to the accessory terminal board through connector JE1 or JE2, the wire harness specified on drawing 336A4937FJ shall be used, and the wetting power source shall be current limited by either a UL recognized fuse rated at not more than 3 A, or one of the following power supplies:

- UL R/C, Phoenix Contact GmbH & Co Kg, model QUINT-PS-100-240AC/24DC/5 GE
 - UL R/C, Convertec Ltd., model TIS 150-124
-

Note 3. The output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.

Note 4. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Note 5. Only resistive simple apparatus (such as relay contacts or switches) shall be connected to discrete inputs.

Note 6. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

Field Terminals

Accessory TB	Name	(+) Terminal	Input	(-)Terminal
STCI or TBCI	Contact Wetting 1	TB1.1	1	TB1.2
	Contact Wetting 2	TB1.3	2	TB1.4
	Contact Wetting 3	TB1.5	3	TB1.6
	Contact Wetting 4	TB1.7	4	TB1.8
	Contact Wetting 5	TB1.9	5	TB1.10
	Contact Wetting 6	TB1.11	6	TB1.12
	Contact Wetting 7	TB1.13	7	TB1.14
	Contact Wetting 8	TB1.15	8	TB1.16
	Contact Wetting 9	TB1.17	9	TB1.18
	Contact Wetting 10	TB1.19	10	TB1.20
	Contact Wetting 11	TB1.21	11	TB1.22
	Contact Wetting 12	TB1.23	12	TB1.24
STCI	Contact Wetting 13	TB1.25	13	TB1.26
	Contact Wetting 14	TB1.27	14	TB1.28
	Contact Wetting 15	TB1.29	15	TB1.30
	Contact Wetting 16	TB1.31	16	TB1.32
	Contact Wetting 17	TB1.33	17	TB1.34
	Contact Wetting 18	TB1.35	18	TB1.36
	Contact Wetting 19	TB1.37	19	TB1.38
	Contact Wetting 20	TB1.39	20	TB1.40
	Contact Wetting 21	TB1.41	21	TB1.42
	Contact Wetting 22	TB1.43	22	TB1.44
	Contact Wetting 23	TB1.45	23	TB1.46
	Contact Wetting 24	TB1.47	24	TB1.48
TBCI	Contact Wetting 13	TB2.25	13	TB2.26
	Contact Wetting 14	TB2.27	14	TB2.28
	Contact Wetting 15	TB2.29	15	TB2.30
	Contact Wetting 16	TB2.31	16	TB2.32
	Contact Wetting 17	TB2.33	17	TB2.34
	Contact Wetting 18	TB2.35	18	TB2.36
	Contact Wetting 19	TB2.37	19	TB2.38
	Contact Wetting 20	TB2.39	20	TB2.40
	Contact Wetting 21	TB2.41	21	TB2.42
	Contact Wetting 22	TB2.43	22	TB2.44
	Contact Wetting 23	TB2.45	23	TB2.46
	Contact Wetting 24	TB2.47	24	TB2.48

3.7 PDII Isolated Discrete Input Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Discrete I/O pack **IS220PDIIH1B** with terminal board (accessory) **IS200SDIIH1A**

3.7.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.15	A dc
<i>Contact inputs</i>				
Voltage	0	—	32	V dc

3.7.2 Field Wire Connections

For IS200SDIIH1A terminal board (accessory) wire sizes and screw torques, refer to the table [Euro Style Box-type Terminal Blocks](#).

3.8 PDIO Discrete Input/Output Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Discrete I/O pack **IS220PDIOH1A**
with terminal boards (accessories) **IS200TDBSH2A** or **IS200TDBTH2A**
- Discrete I/O pack **IS220PDIOH1B**
with terminal boards (accessories) **ISx0yTDBSH2A**, **ISx0yTDBSH8A**, **ISx0yTDBTH2A**, or **ISx0yTDBTH8A**

3.8.1 Electrical Ratings

PDIOH1A

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.81	A dc
<i>Contact Inputs</i>				
Voltage	0	—	32	V dc
<i>Contact Outputs</i>				
Voltage	—	—	32.0	V dc
Current	—	—	3.15	A dc
<i>Contact Wetting Outputs</i>				
Voltage	—	—	32	V dc
Current	—	—	110	mA dc

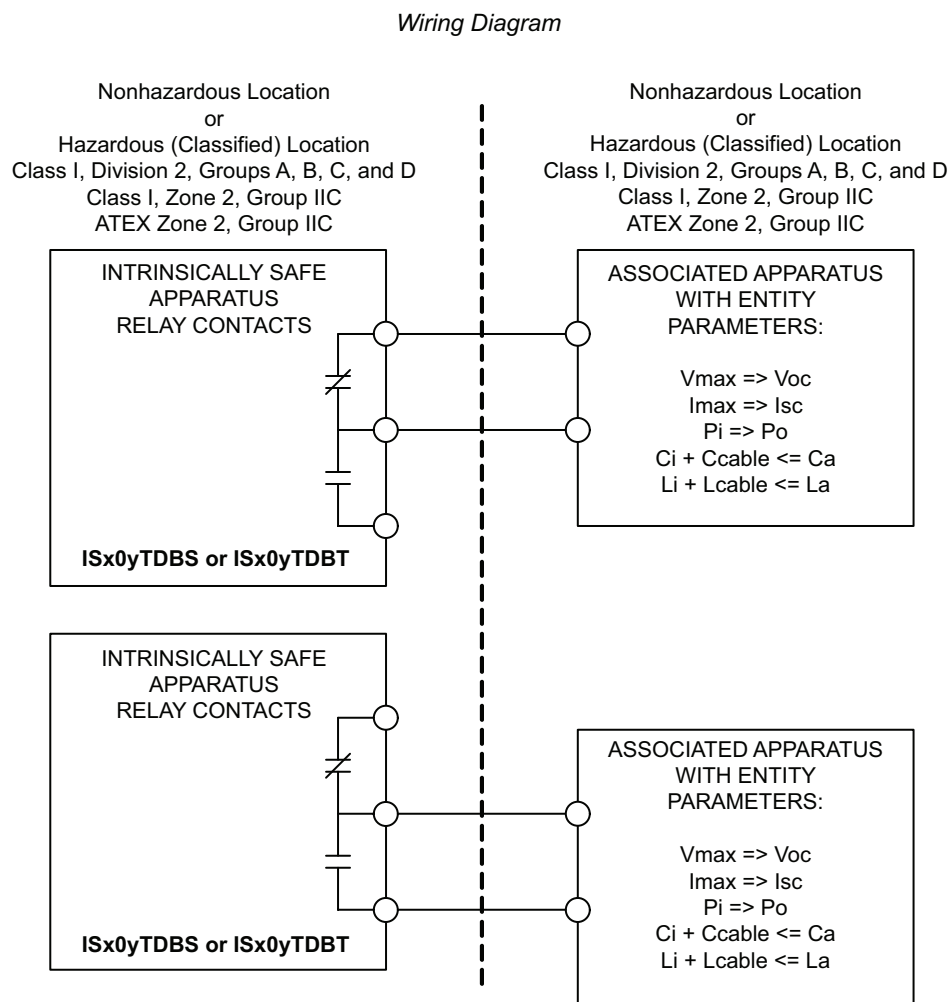
PDIOH1B

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.81	A dc
<i>Contact Inputs</i>				
Voltage	0	—	32	V dc
<i>TDBSH2A, TDBTH2A Contact Wetting Outputs</i>				
Voltage	16	—	32	V dc
Current	—	—	110	mA dc
<i>TDBSH8A, TDBTH8A Contact Wetting Outputs (1-21)</i>				
Voltage	—	—	31	V dc
Current	—	—	10	mA dc
<i>TDBSH8A, TDBTH8A Contact Wetting Outputs (22-24)</i>				
Voltage	—	—	31	V dc
Current	—	—	41	mA dc
<i>Contact Outputs</i>				
Voltage	—	—	32.0	V dc
Current	—	—	3.15	A dc

3.8.2 Field Wire Connections

For discrete input/output terminal boards (accessories) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.

3.8.3 Intrinsic Safety “ic” for Relay Contacts — Accessory Terminal Boards ISx0yTDBS and ISx0yTDBT



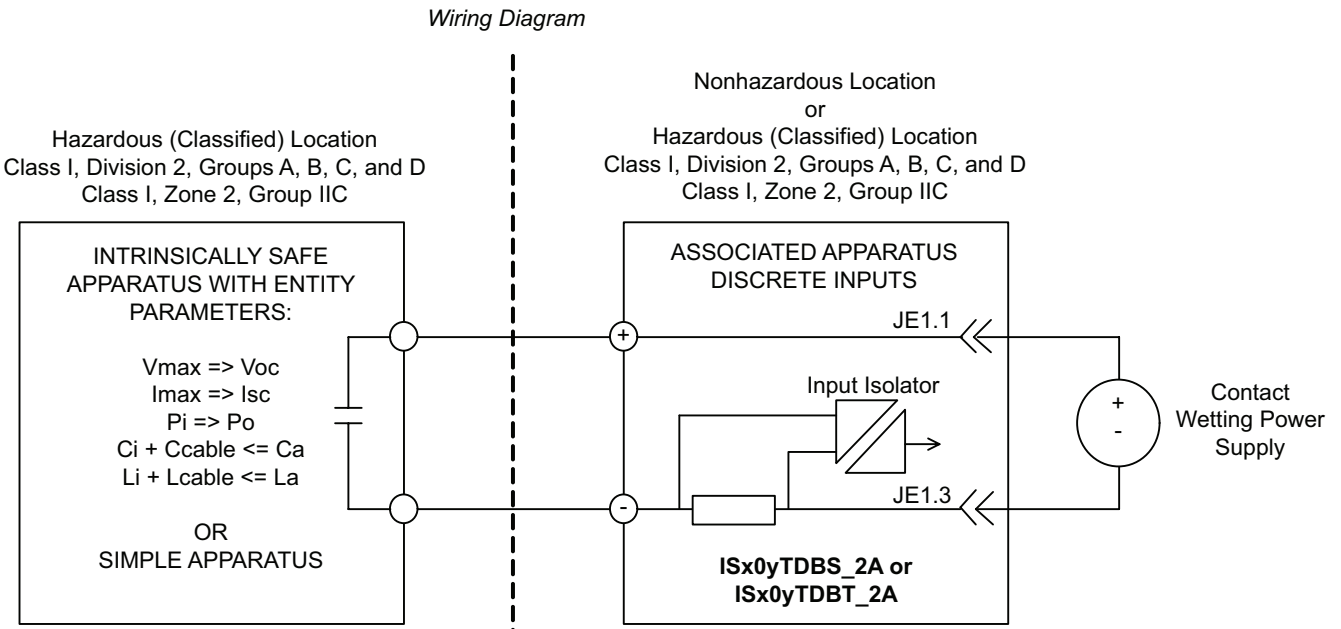
Entity Parameters

Relay Contacts	Value	Unit
V_{max} or U_i	32	V
I_{max} or i_i	132	mA
P_i	4.22	W
C_i	0	μF
L_i	0	mH

Field Terminals for Relay Contacts

Accessory TB	Name	Terminal	Output	Terminal
TDBS or TDBT	NC1	TB1.1	COM1	TB1.2
	NO1	TB1.3	Not used	TB1.4
	NC2	TB1.5	COM2	TB1.6
	NO2	TB1.7	Not used	TB1.8
	NC3	TB1.9	COM3	TB1.10
	NO3	TB1.11	Not used	TB1.12
	NC4	TB1.13	COM4	TB1.14
	NO4	TB1.15	Not used	TB1.16
	NC5	TB1.17	COM5	TB1.18
	NO5	TB1.19	Not used	TB1.20
	NC6	TB1.21	COM6	TB1.22
	NO6	TB1.23	Not used	TB1.24
	NC7	TB1.25	COM7	TB1.26
	NO7	TB1.27	Not used	TB1.28
	NC8	TB1.29	COM8	TB1.30
	NO8	TB1.31	Not used	TB1.32
	NC9	TB1.33	COM8	TB1.34
	NO9	TB1.35	Not used	TB1.36
	NC10	TB1.37	COM10	TB1.38
	NO10	TB1.39	Not used	TB1.40
	NC11	TB1.41	COM11	TB1.42
	NO11	TB1.43	Not used	TB1.44
	NC12	TB1.45	COM12	TB1.46
	NO12	TB1.47	Not used	TB1.48

3.8.4 Intrinsic Safety “ic” for Discrete Inputs — Accessory Terminal Boards ISx0yTDBS_2A, ISx0yTDBT_2A



Entity Parameters

Inputs 1 – 21			Inputs 22 - 24		
Discrete Inputs	Value	Unit	Discrete Inputs	Value	Unit
Voc or Uo	32	V	Voc or Uo	32	V
Isc or Io	3.3	mA	Isc or Io	13.4	mA
Po	0.11	W	Po	0.43	W
Ca or Co	0.18	uF	Ca or Co	0.18	uF
La or Lo	100	mH	La or Lo	100	mH

Note 1. The contact wetting power supply used with ISx0yTDBS_2A or ISx0yTDBT_2A shall be isolated from ground.

Note 2. For North American locations, if contact wetting power is supplied to the accessory terminal board through connector JE1, the wire harness specified on drawing 336A4937FJ shall be used, and the wetting power source shall be current limited by either a UL recognized fuse rated at not more than 3 A, or one of the following power supplies:

- UL R/C, Phoenix Contact GmbH & Co Kg, model QUINT-PS-100-240AC/24DC/5 GE
 - UL R/C, Convertec Ltd., model TIS 150-124
-

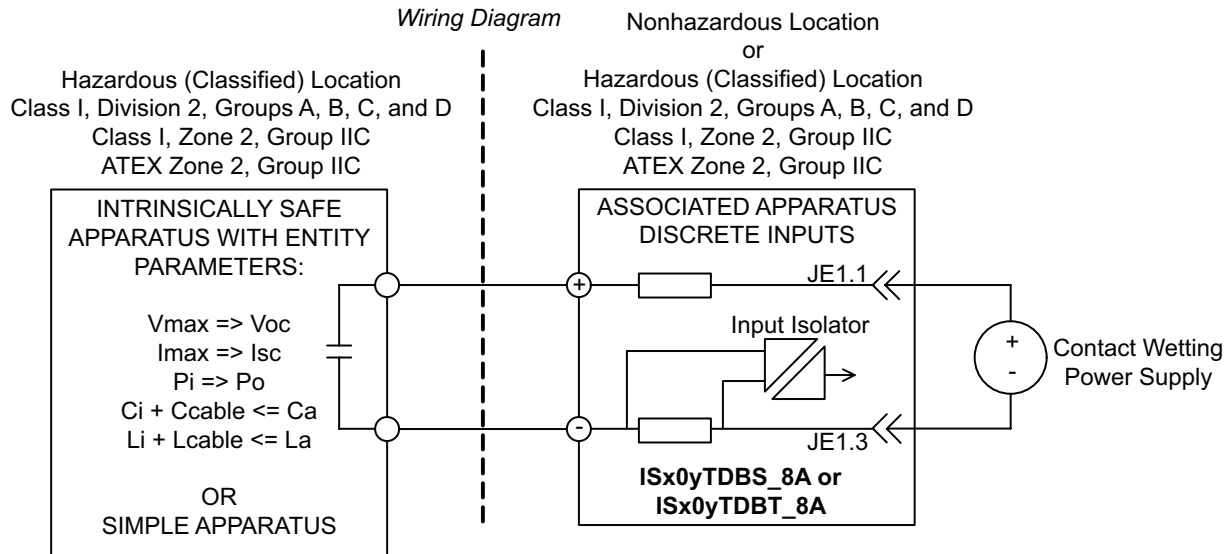
Note 3. The output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.

Note 4. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Note 5. Only resistive simple apparatus (such as relay contacts or switches) shall be connected to discrete inputs.

Note 6. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

3.8.5 Intrinsic Safety “ic” for Discrete Inputs — Accessory Terminal Boards ISx0yTDBS_8A, ISx0yTDBT_8A



Entity Parameters

Discrete Inputs	Inputs 1–21 Value	Inputs 22–24 Value	Unit
Voc or Uo	31	31	V
Isc or Io	3.2	13	mA
Po	0.10	0.40	W
Ca or Co	0.18	0.18	uF
La or Lo	100	100	mH

Note 1. The contact wetting power supply used with ISx0yTDBS_8A or ISx0yTDBT_8A may be grounded.

Note 2. For North American locations, if contact wetting power is supplied to the accessory terminal board through Connector JE1, the wire harness specified on drawing 336A4937FJ shall be used, and the wetting power source shall be current limited by either a UL recognized fuse rated at not more than 3 A, or one of the following power supplies:

- UL R/C, Phoenix Contact GmbH & Co Kg, model QUINT-PS-100-240AC/24DC/5 GE
- UL R/C, Convertec Ltd., model TIS 150-124

Note 3. The output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.

Note 4. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Note 5. Only resistive simple apparatus (such as relay contacts or switches) shall be connected to discrete inputs.

Note 6. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

Field Terminals for Discrete Inputs

Accessory TB	Name	(+) Terminal	Name	(-)Terminal
TDBS or TDBT	Contact Wetting 1	TB2.1	Input 1	TB2.2
	Contact Wetting 2	TB2.3	Input 2	TB2.4
	Contact Wetting 3	TB2.5	Input 3	TB2.6
	Contact Wetting 4	TB2.7	Input 4	TB2.8
	Contact Wetting 5	TB2.9	Input 5	TB2.10
	Contact Wetting 6	TB2.11	Input 6	TB2.12
	Contact Wetting 7	TB2.13	Input 7	TB2.14
	Contact Wetting 8	TB2.15	Input 8	TB2.16
	Contact Wetting 9	TB2.17	Input 9	TB2.18
	Contact Wetting 10	TB2.19	Input 10	TB2.20
	Contact Wetting 11	TB2.21	Input 11	TB2.22
	Contact Wetting 12	TB2.23	Input 12	TB2.24
	Contact Wetting 13	TB2.25	Input 13	TB2.26
	Contact Wetting 14	TB2.27	Input 14	TB2.28
	Contact Wetting 15	TB2.29	Input 15	TB2.30
	Contact Wetting 16	TB2.31	Input 16	TB2.32
	Contact Wetting 17	TB2.33	Input 17	TB2.34
	Contact Wetting 18	TB2.35	Input 18	TB2.36
	Contact Wetting 19	TB2.37	Input 19	TB2.38
	Contact Wetting 20	TB2.39	Input 20	TB2.40
	Contact Wetting 21	TB2.41	Input 21	TB2.42
	Contact Wetting 22	TB2.43	Input 22	TB2.44
	Contact Wetting 23	TB2.45	Input 23	TB2.46
	Contact Wetting 24	TB2.47	Input 24	TB2.48

3.9 PDOA and YDOA Discrete Output Modules

The following hardware combinations are approved for use in hazardous locations:

- Mark VIe Discrete Output I/O pack **IS220PDOAH1A**
with terminal board **IS200TRLYH2E, IS200TRLYH3E, IS200TRLYH1F, or IS200TRLYH2F**
- Mark VIe Discrete Output I/O pack **IS220PDOAH1B**
with terminal board **IS200TRLYH2E, IS200TRLYH3E, IS200TRLYH1F, IS200TRLYH2F, IS200SRLYH1A, IS200SRLYH2A, IS400SRLYH1A, IS400SRLYH2A, IS40yWROBH1A, IS40yWROFH1A, IS40yWROGH1A or IS40yWROHH1A**
- Coated Mark VIe Discrete Output I/O pack **IS221PDOAH1B** with terminal board **IS201TRLYH2E, IS201TRLYH3E, IS201TRLYH1F, or IS201TRLYH2F**
- Mark VIeS Safety Discrete Output I/O pack **IS220YDOAS1A**
with terminal board **IS200TRLYS1F, IS200TRLYS2F, IS400TRLYS1F, or IS400TRLYS2F**
- Mark VIeS Safety Discrete Output I/O pack **ISx2yYDOAS1B** (where x = 2 or 4 and y = 0 or 1)
with terminal board **IS40yTRLYS1B, ISx0yTRLYS1F, ISx0yTRLYS2F, IS40yTRLYS1D, IS40ySRLYS2A, IS40yWROBH1A, IS40yWROFH1A, IS40yWROGH1A, or IS40yWROHH1A**

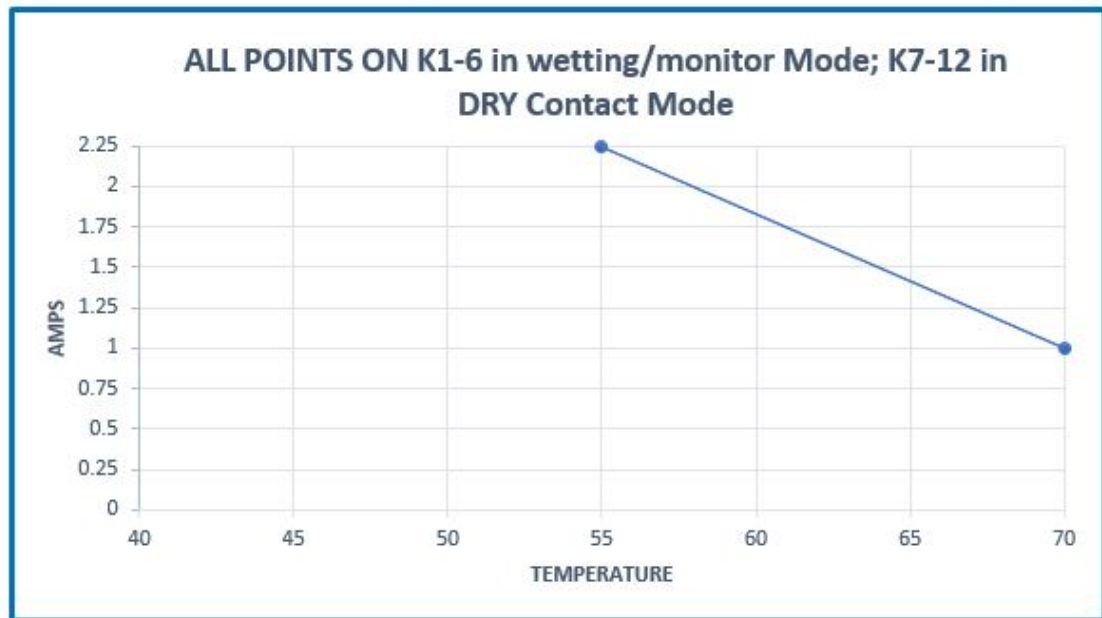
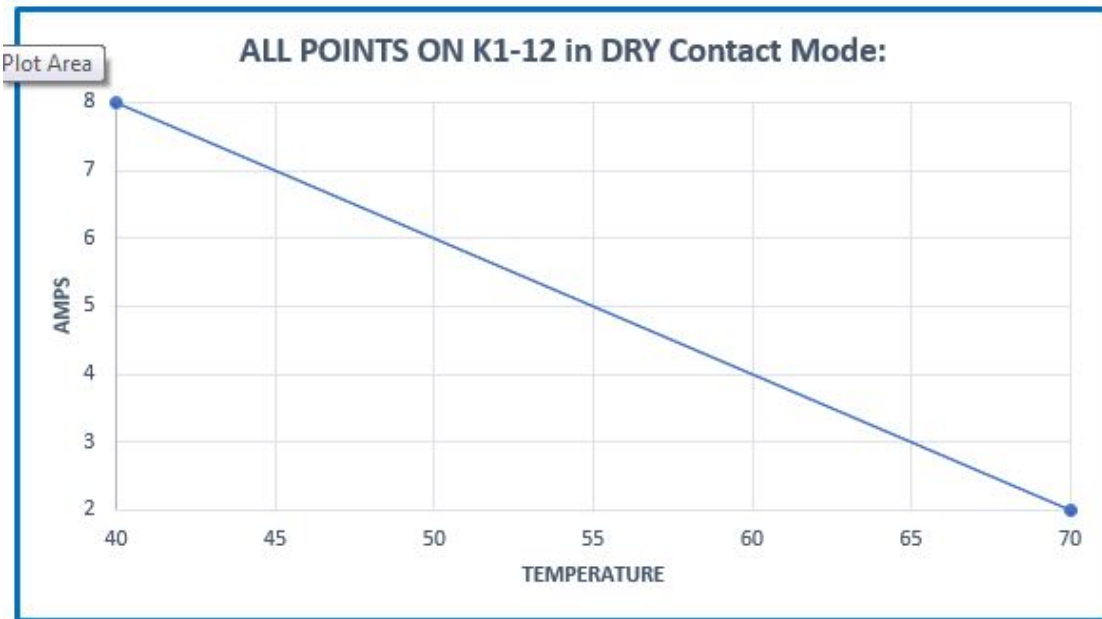
3.9.1 Electrical Ratings

PDOA and YDOA Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	PDOAH1B / YDOAS1B: 22.5 PDOAH1A / YDOAS1A: 27.4	PDOAH1B / YDOAS1B: 24.0 / 28.0 PDOAH1A / YDOAS1A: 28.0	28.6	V dc
Current	—	—	0.71	A dc
<i>Contact Outputs (TRLY_1F, 2F)</i>				
Voltage	—	—	30	V dc
Current	—	—	5	A dc
<i>Contact Outputs (TRLYH2E)</i>				
Voltage	—	—	28	V dc
Current	—	—	7	A dc
<i>Contact Outputs (TRLYH3E)</i>				
Voltage	—	—	140	V dc
Current	—	—	2	A dc
<i>Contact Outputs (TRLYS1D) – Resistive Load</i>				
Voltage	—	24 / 125	—	V dc
Current	—	—	2.25 / 0.5	A dc
Total Current (JF1/JF2)	—	—	13.5	A dc
<i>Contact Outputs (TRLYS1D) – Inductive Load</i>				
Voltage	—	24 / 125	—	V dc
Current	—	—	1 / 0.5	A dc
Total Current (JF1/JF2)	—	—	13.5	A dc
<i>Contact Outputs (TRLYS1B) – Resistive Load (Refer to following Derating Charts)</i>				
Voltage	14	24	28	V dc
Current	—	—	8	A dc
Voltage	113	125	137	V dc
Current	—	—	0.6	A dc
Voltage	108	120	132	V dc
Current	—	—	6	A dc
Voltage	216	240	264	V dc
Current	—	—	3	A dc
Total Current (JF1/JF2)	—	—	13.5	A dc
<i>Contact Outputs (TRLYS1B) – Inductive Load (Refer to following Derating Charts)</i>				
Voltage	14	24	30	V dc
Current	—	—	1	A dc
Voltage	113	125	137	V dc
Current	—	—	0.2	A dc
Voltage	108	120	132	V dc
Current	—	—	3	A dc
Voltage	216	240	264	V dc
Current	—	—	1.5	A dc
Total Current (JF1/JF2)	—	—	13.5	A dc
<i>Contact Outputs (SRLYH1A, SRLYH2A, & SRLYS2A)</i>				
Voltage	—	24/48/125	—	V dc
Current	—	—	5/1.2/0.6	A dc
Voltage	—	120/240	—	V dc
Current	—	—	5	A dc

PDOA and YDOA Electrical Ratings (continued)

Wetting Voltage Connector	SRLY Contact Outputs Fused via Optional Daughter Board	Voltage	Max Current per Channel (Amps)	Total Current (Amps)
JF1/JF2	WROB, WROF, WROG	240 V ac	2.25	13.5
		120 V ac	2.25	
		125 V dc	0.6	
		48 V dc	1.2	
		24 V dc	2.25	
JG1		240/120/125/48/24	5	5
J1	WROHH1A	48 V dc	1.2	18
		24 V dc	2.25	
JG1			24/48 V dc	5



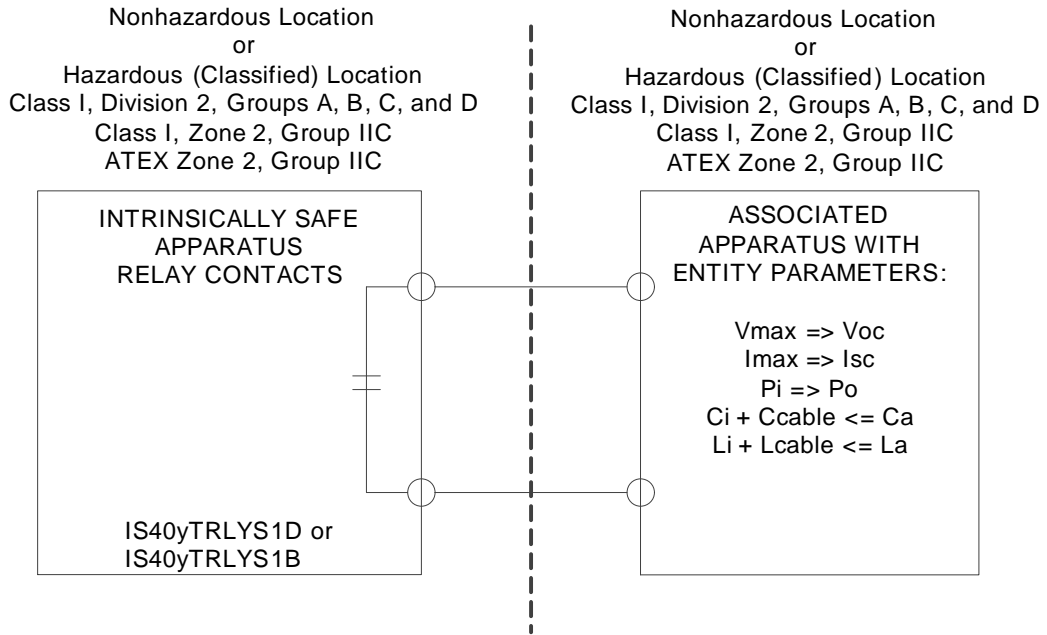
TRLYS1B Derating Charts

3.9.2 Field Wire Connections

For discrete output terminal boards (accessories) certified for HazLoc, refer to the table [Barrier-type Terminal Blocks](#) for wire size and screw torques.

3.9.3 Intrinsic Safety “ic” for Accessory Terminal Board IS40yTRLYS1D & IS40yTRLYS1B

Wiring Diagram



Entity Parameters

Relay Contacts	Value	Unit
V_{max} or U_i	24	V
I_{max} or i_i	261	mA
P_i	6.26	W
C_i	0	uF
L_i	0	mH

IS400TRLYS1D Field Terminals

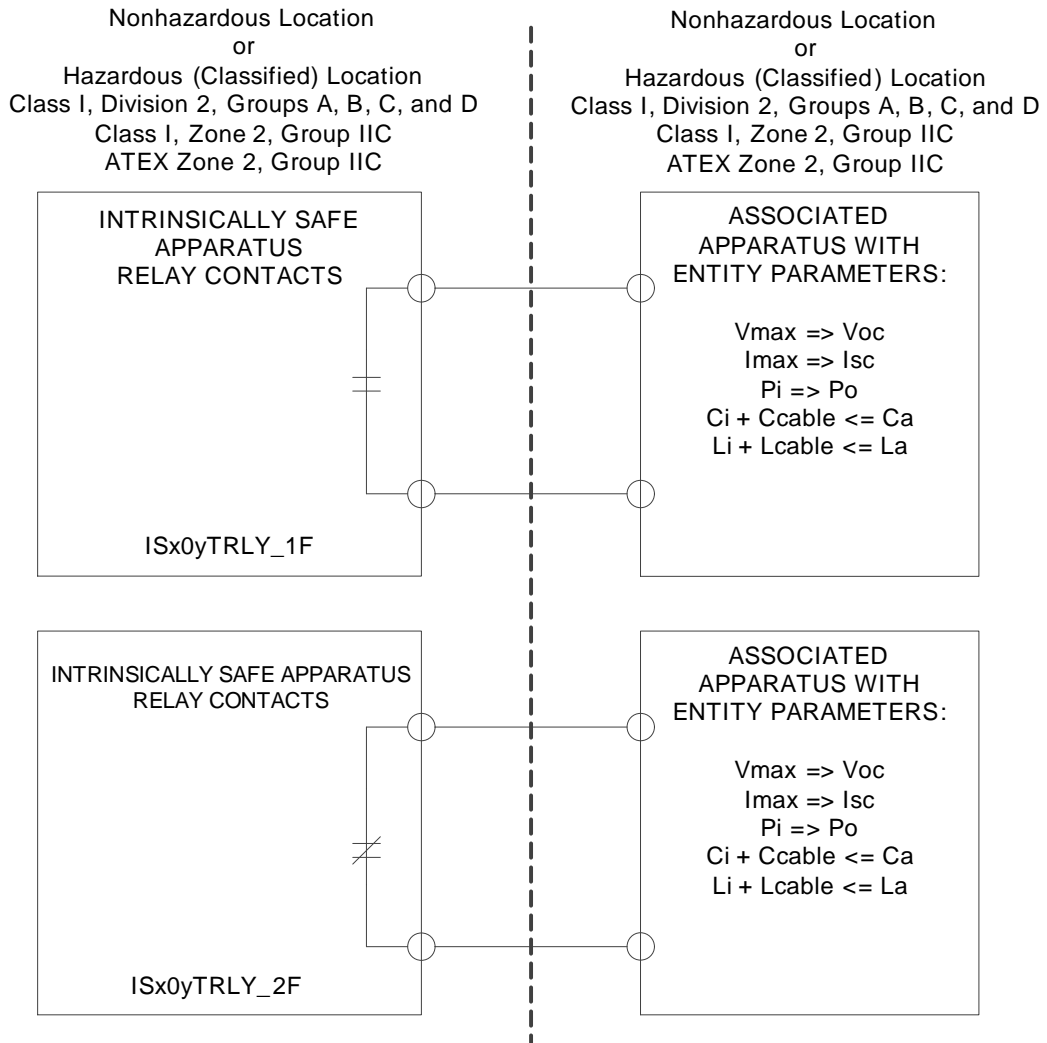
Relay	Name	TB1 Terminal	Description
1	NC	1	Do Not Use
	COM	2	Do Not Use
	NO	3	Field Solenoid +
	SOL	4	Field Solenoid -
2	NC	5	Do Not Use
	COM	6	Do Not Use
	NO	7	Field Solenoid +
	SOL	8	Field Solenoid -
3	NC	9	Do Not Use
	COM	10	Do Not Use
	NO	11	Field Solenoid +
	SOL	12	Field Solenoid -
4	NC	13	Do Not Use
	COM	14	Do Not Use
	NO	15	Field Solenoid +
	SOL	16	Field Solenoid -
5	NC	17	Do Not Use
	COM	18	Do Not Use
	NO	19	Field Solenoid +
	SOL	20	Field Solenoid -
6	NC	21	Do Not Use
	COM	22	Do Not Use
	NO	23	Field Solenoid +
	SOL	24	Field Solenoid -

IS40yTRLYS1B Field Terminals

Output Terminal	Relay	TRLYS1B Outputs	Output Terminal	Relay	TRLYS1B Outputs
1	1	NC	25	7	NC
2		COM	26		COM
3		NO	27		NO
4		SOL	28		—
5	2	NC	29	8	NC
6		COM	30		COM
7		NO	31		NO
8		SOL	32		—
9	3	NC	33	9	NC
10		COM	34		COM
11		NO	35		NO
12		SOL	36		—
13	4	NC	37	10	NC
14		COM	38		COM
15		NO	39		NO
16		SOL	40		—
17	5	NC	41	11	NC
18		COM	42		COM
19		NO	43		NO
20		SOL	44		—
21	6	NC	45	12	NC
22		COM	46		COM
23		NO	47		NO
24		SOL	48		SOL

3.9.4 Intrinsic Safety “ic” for Accessory Terminal Boards ISx0yTRLY_1F, ISx0yTRLY_2F

Wiring Diagram



Entity Parameters

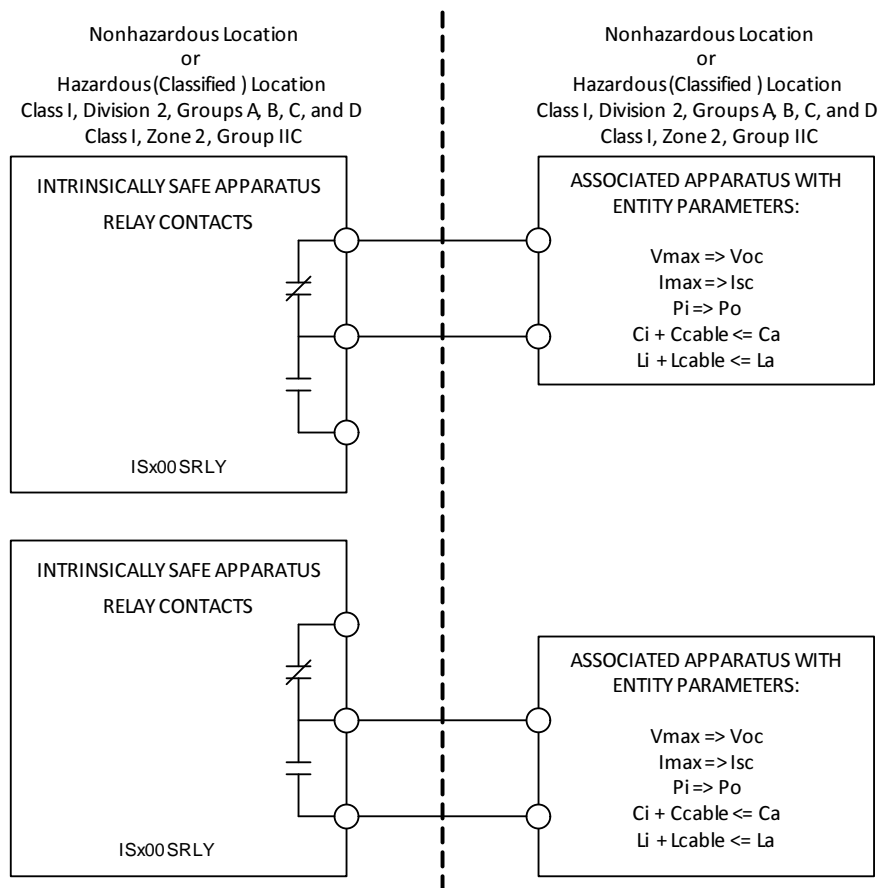
Relay Contacts	Value	Unit
V_{max} or U_i	30	V
I_{max} or i_i	152	mA
P_i	4.56	W
C_i	0	μF
L_i	0	mH

Field Terminals

Name	Terminal	Name	Terminal
K1b	TB1.2	K1a	TB1.3
K2b	TB1.6	K2a	TB1.7
K3b	TB1.10	K3a	TB1.11
K4b	TB1.14	K4a	TB1.15
K5b	TB1.18	K5a	TB1.19
K6b	TB1.22	K6a	TB1.23
K7b	TB2.26	K7a	TB2.27
K8b	TB2.30	K8a	TB2.31
K9b	TB2.34	K9a	TB2.35
K10b	TB2.38	K10a	TB2.39
K11b	TB2.42	K11a	TB2.43
K12b	TB2.46	K12a	TB2.47

3.9.5 Intrinsic Safety “ic” for Accessory Terminal Board ISx00SRLY

Wiring Diagram



Entity Parameters

Relay Contacts	Value	Unit
V_{max} or U_i	30	V
I_{max} or i_i	152	mA
P_i	4.56	W
C_i	0	μ F
L_i	0	mH

ISx0ySRLYH1A/H2A Field Terminals

Relay	Name	Terminal	Relay	Name	Terminal
1	NC	1	7	NC	25
	COM	2		COM	26
	NO	3		NO	27
2	NC	5	8	NC	29
	COM	6		COM	30
	NO	7		NO	31
3	NC	9	9	NC	33
	COM	10		COM	34
	NO	11		NO	35
4	NC	13	10	NC	37
	COM	14		COM	38
	NO	15		NO	39
5	NC	17	11	NC	41
	COM	18		COM	42
	NO	19		NO	43
6	NC	21	12	NC	45
	COM	22		COM	46
	NO	23		NO	47

IS40ySRLYS2A with WROB/WROF/WROG/WROH Field Terminals

Output Terminal	Relay	SRLY	SRLY + WROB	SRLY/WROF with Fuses	SRLY/WROF without Fuses	SRLY + WROG	SRLY + WROH
1	1	NC	NC	NC	NC	NC	NC
2		COM	COM	COM (unfused)	COM	POWER	POWER
3		NO	NO	NO	NO	NO	NO
4			SOL	COM (fused)	VSENSE	RETURN	RETURN
5	2	NC	NC	NC	NC	NC	NC
6		COM	COM	COM (unfused)	COM	POWER	POWER
7		NO	NO	NO	NO	NO	NO
8			SOL	COM (fused)	VSENSE	RETURN	RETURN
9	3	NC	NC	NC	NC	NC	NC
10		COM	COM	COM (unfused)	COM	POWER	POWER
11		NO	NO	NO	NO	NO	NO
12			SOL	COM (fused)	VSENSE	RETURN	RETURN
13	4	NC	NC	NC	NC	NC	NC
14		COM	COM	COM (unfused)	COM	POWER	POWER
15		NO	NO	NO	NO	NO	NO
16			SOL	COM (fused)	VSENSE	RETURN	RETURN
17	5	NC	NC	NC	NC	NC	NC
18		COM	COM	COM (unfused)	COM	POWER	POWER
19		NO	NO	NO	NO	NO	NO
20			SOL	COM (fused)	VSENSE	RETURN	RETURN
21	6	NC	NC	NC	NC	NC	NC
22		COM	COM	COM (unfused)	COM	POWER	POWER
23		NO	NO	NO	NO	NO	NO
24			SOL	COM (fused)	VSENSE	RETURN	RETURN
25	7	NC	NC	NC	NC	NC	NC
26		COM	COM	COM (unfused)	COM	POWER	POWER
27		NO	NO	NO	NO	NO	NO
28			SOL	COM (fused)	VSENSE	RETURN	RETURN

IS40ySRLYS2A with WROB/WROF/WROG/WROH Field Terminals (continued)

Output Terminal	Relay	SRLY	SRLY + WROB	SRLY/WROF with Fuses	SRLY/WROF without Fuses	SRLY + WROG	SRLY + WROH
29	8	NC	NC	NC	NC	NC	NC
30		COM	COM	COM (unfused)	COM	POWER	POWER
31		NO	NO	NO	NO	NO	NO
32				COM (fused)	VSENSE	RETURN	RETURN
33	9	NC	NC	NC	NC	NC	NC
34		COM	COM	COM (unfused)	COM	POWER	POWER
35		NO	NO	NO	NO	NO	NO
36				COM (fused)	VSENSE	RETURN	RETURN
37	10	NC	NC	NC	NC	NC	NC
38		COM	COM	COM (unfused)	COM	POWER	POWER
39		NO	NO	NO	NO	NO	NO
40				COM (fused)	VSENSE	RETURN	RETURN
41	11	NC	NC	NC	NC	NC	NC
42		COM	COM	COM (unfused)	COM	POWER	POWER
43		NO	NO	NO	NO	NO	NO
44				COM (fused)	VSENSE	RETURN	RETURN
45	12	NC	NC	NC	NC	NC	NC
46		COM	COM	COM (unfused)	COM	POWER	POWER
47		NO	NO	NO	NO	NO	NO
48			SOL	COM (fused)	VSENSE	RETURN	RETURN

Note The wiring harness connecting to J1 and JG1 should use wires with conductors rated minimum 105 °C.

3.10 PHRA and YHRA HART® Enabled I/O Modules

The following hardware combinations are approved for use in hazardous locations:

- HART enabled I/O pack **IS220PHRAH1A** or **IS220PHRAH1B** with terminal boards (accessories) **IS200SHRAH1A** or **IS200SHRAH2A**
- Coated HART enabled I/O pack **IS221PHRAH1B** with terminal boards (accessories) **IS201SHRAH1A** or **IS201SHRAH2A**
- Discrete output I/O pack **IS220YHRAS1A** with terminal board (accessory) **IS200SHRAS1A** or **IS200SHRAS2A**

3.10.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.5	A dc
<i>Analog Inputs (1-8)</i>				
Voltage	-5	—	5	V dc
Current	0	—	20	mA dc
<i>Analog Inputs (9-10)</i>				
Voltage	-5	—	5	V dc
Current	-1	—	20	mA dc
<i>Analog Outputs</i>				
Voltage	0	—	16.3	V dc
Current	0	—	20	mA dc
<i>Analog Transmitter Power</i>				
Voltage	22.8	24.0	25.2	V dc
Current	—	—	21	mA dc

3.10.2 Field Wire Connections

For HART analog input terminal boards (accessories) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.

3.11 PPRA Emergency Turbine Protection Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Turbine protection I/O pack **IS220PPRAH1A** with terminal board (accessory) **IS200TREA H1A** and daughter board (accessory) **IS200WREA H1A**
- Turbine protection I/O pack **IS220PPRAS1A** or **IS220PPRAS1B** with terminal board (accessory) **IS200TREA S1A** and daughter board (accessory) **IS200WREA S1A**

3.11.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.5	A dc
<i>Contact Inputs (TREA)</i>				
Voltage	0	—	32	V dc
<i>Voltage Detection Inputs (TREA)</i>				
Voltage	16	—	140	V dc
<i>E-stop Input (TREA)</i>				
Voltage	18	—	140	V dc
<i>Speed Inputs (TREA, WREA)</i>				
Voltage	-15	—	15	V dc
<i>Contact Outs 1-2 (TREA)</i>				
Voltage	—	—	28	V dc
Current	—	—	7	A dc
<i>Contact Out 3 (WREA)</i>				
Voltage	—	—	28	V dc
Current	—	—	5	A dc
<i>Contact Wetting Outputs (WREA)</i>				
Voltage	—	—	32	V dc
Current	—	—	13.2	mA dc

3.11.2 Field Wire Connections

For the TREA terminal board (accessory) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.

3.12 PPRF PROFIBUS® Master Gateway Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Analog output pack **IS220PPRFH1A** or **IS220PPRFH1B**
with accessory ID board **IS200SPIDG1A**

3.12.1 Electrical Ratings

Power Supply

Item	Min	Nominal	Max	Units
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.18	A dc

3.13 PPRO and YPRO Backup Turbine Protection Modules

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Mark VIe Backup turbine protection I/O pack **IS220PPROH1A** with terminal boards (accessories) **IS200SPROH1A, IS200SPROH2A, IS200TPROH1C, IS200TPROH2C, IS200TREA H1A, IS200TREA H3A**
- Mark VIe Backup turbine protection I/O pack **IS220PPROS1B** with terminal boards (accessories) **IS200SPROH1A, IS200SPROH2A, IS200TPROH1C, IS200TPROH2C, IS200TPROS1C, IS200TPROS2C, IS200TREA H1A, IS200TREA H3A**
- Mark VIeS Backup turbine protection I/O pack **IS220YPROS1A** with terminal boards (accessories) **IS200SPROS1A, IS200TPROS1C, IS200TPROS2C, IS200TREAS1A**

3.13.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.37	A dc
<i>Voltage Detection Inputs (TREA)</i>				
Voltage	16	—	140	V dc
<i>E-stop Input (TREA)</i>				
Voltage	18	—	140	V dc
<i>PT Inputs (SPRO, TPRO)</i>				
Voltage	0	—	138	V ac
Frequency	5	—	66	Hz
<i>Speed Inputs (SPRO, TPRO, TREA)</i>				
Voltage	-15	—	15	V dc
<i>Contact Out (TREA)</i>				
Voltage	—	—	28	V dc
Current	—	—	7	A dc
<i>Speed Sensor Power Output (TPRO)</i>				
Voltage	22.8	24.0	25.2	V
Current	—	—	25	mA

3.13.2 Field Wire Connections

For SPROH2A, TPRO_2A, and TREA H3A terminal boards (accessories) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.

For SPRO_1A, TPRO_1A, TREA_1A terminal boards (accessories) certified for HazLoc, refer to the table [Barrier-type Terminal Blocks](#) for wire size and screw torques.

3.14 PRTD Resistance Temperature Device Input Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- RTD input pack **IS220PRTDH1A** or **IS220PRTDH1B** with terminal board **IS200TRTDH2D**, **IS200SRTDH1A**, or **IS200SRTDH2A**
- Coated RTD input pack **IS221PRTDH1B** with terminal board **IS201TRTDH2D**, **IS201SRTDH1A**, or **IS201SRTDH2A**

3.14.1 Electrical Ratings

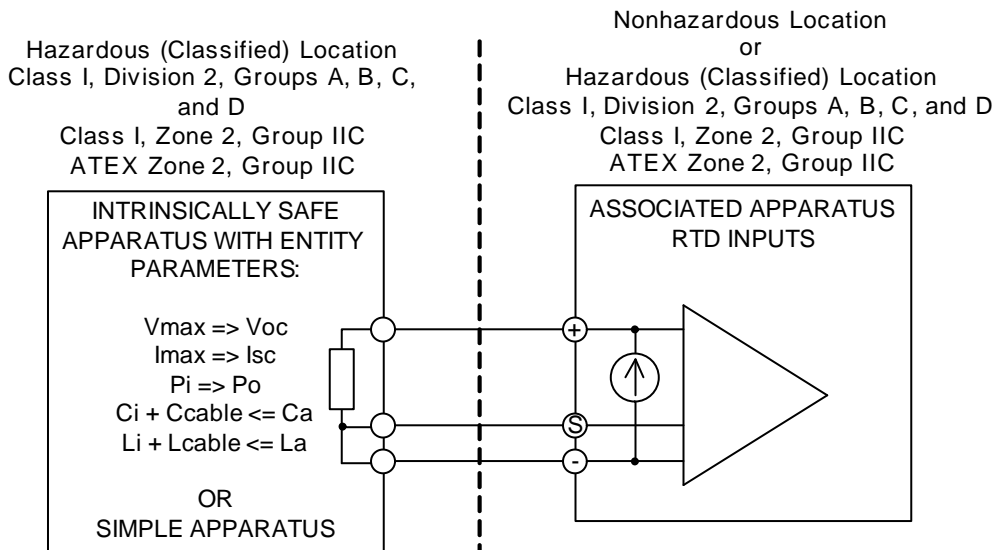
Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V
Current	—	—	0.24	A
<i>RTD Inputs</i>				
Voltage	0	—	4.2	V
Current	—	10.0	—	mA

3.14.2 Field Wire Connections

Terminal Board	Terminal Block Type
SRTD	Refer to the table Euro Style Box-type Terminal Blocks for wire size and screw torques.
TRTD	Refer to the table Barrier-type Terminal Blocks for wire size and screw torques.

3.14.3 Intrinsic Safety “ic”

Wiring Diagram



Entity Parameters

RTD Inputs	Value	Unit
Voc or Uo	15	V
Isc or Io	10	mA
Po	0.15	W
Ca or Co	3	uF
La or Lo	100	mH

Note 1. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Note 2. Only resistive simple apparatus (such as RTDs) shall be connected to RTD inputs.

Note 3. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

Note 4. Signal terminal (S) may be grounded.

Note 5. The maximum cable length connecting each RTD to the device shall not exceed 1000 ft.

Field Terminals

Accessory TB	Name	(+) Terminal	Name	(S) Terminal	Name	(-)Terminal
SCLS or TRTD	RTDEXC1	TB1.1	RTDSIG1	TB1.2	RTDRET1	TB1.3
	RTDEXC2	TB1.4	RTDSIG2	TB1.5	RTDRET2	TB1.6
	RTDEXC3	TB1.7	RTDSIG3	TB1.8	RTDRET3	TB1.9
	RTDEXC4	TB1.10	RTDSIG4	TB1.11	RTDRET4	TB1.12
	RTDEXC5	TB1.13	RTDSIG5	TB1.14	RTDRET5	TB1.15
	RTDEXC6	TB1.16	RTDSIG6	TB1.17	RTDRET6	TB1.18
	RTDEXC7	TB1.19	RTDSIG7	TB1.20	RTDRET7	TB1.21
	RTDEXC8	TB1.22	RTDSIG8	TB1.23	RTDRET8	TB1.24
TRTD	RTDEXC9	TB2.25	RTDSIG9	TB2.26	RTDRET9	TB2.27
	RTDEXC10	TB2.28	RTDSIG10	TB2.29	RTDRET10	TB2.30
	RTDEXC11	TB2.31	RTDSIG11	TB2.32	RTDRET11	TB2.33
	RTDEXC12	TB2.34	RTDSIG12	TB2.35	RTDRET12	TB2.36
	RTDEXC13	TB2.37	RTDSIG13	TB2.38	RTDRET13	TB2.39
	RTDEXC14	TB2.40	RTDSIG14	TB2.41	RTDRET14	TB2.42
	RTDEXC15	TB2.43	RTDSIG15	TB2.44	RTDRET15	TB2.45
	RTDEXC16	TB2.46	RTDSIG16	TB2.47	RTDRET16	TB2.48

3.15 PSCA Serial Communications Module

The following I/O pack and terminal board combinations are approved for use in hazardous locations:

- Serial communication I/O pack **IS220PSCAH1A** or **IS220PSCAH1B** with accessory terminal board **IS200SSCAH1A** or **IS200SSCAH2A**
- Coated serial communication I/O pack **IS221PSCAH1B** with accessory terminal board **IS201SSCAH1A** or **IS201SSCAH2A**
- Serial communication I/O pack **IS42yPSCAH1B** with accessory terminal board **IS40ySSCAH1A** or **IS40ySSCAH2A** (where y = 0 or 1)

3.15.1 Electrical Ratings

Power Supply

Item	Min	Nominal	Max	Units
Voltage	PSCAH1B: 22.5 PSCAH1A: 27.4	PSCAH1B: 24.0 / 28.0 PSCAH1A: 28.0	28.6	V
Current	—	—	0.36	A

3.15.2 Field Wire Connections

For serial communication terminal boards (accessories) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.

3.16 PSVO Servo Control Module

The following hardware combination is approved for use in hazardous locations:

- Servo control I/O pack **IS220PSVOH1A**
- Terminal board (accessory) **IS200TSVCH2A**
- Servo driver (accessory) **IS210WSVOH1A**

- Servo control I/O pack **IS220PSVOH1B**
- Terminal board (accessory) **IS200TSVCH2A**
- Servo driver (accessory) **IS410WSVOH1A**

3.16.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	1.0	A dc
<i>LVDT Inputs</i>				
Voltage	—	—	7.14	V ac
Frequency	—	3.2	—	KHz
<i>Speed Inputs</i>				
Voltage	-15	—	15	V dc
<i>LVDT Excitation Outputs</i>				
Voltage	6.86	7.00	7.14	V ac
Current	—	—	127	mA ac
Frequency	3.0	3.2	3.4	KHz
<i>Servo Outputs</i>				
Voltage	-10	—	10	V dc
Current	-120	—	120	mA dc
<i>Speed Sensor Power Output</i>				
Voltage	22.8	24.0	25.2	V dc
Current	—	40	—	mA dc

3.16.2 Field Wire Connections

For servo control terminal boards (accessories) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.

The servo outputs require a minimum resistive load of 27 Ω (TSVO Req + external Rcoil) to operate as intrinsically safe.

3.17 PTCC and YTCC Thermocouple Input Modules

The following hardware combinations are approved for use in hazardous locations:

- Mark VIe Thermocouple input pack **IS220PTCCH1A** or **IS220PTCCH1B** with terminal boards (accessories) **IS200STTCH1A**, **IS200STTCH2A**, **IS200TBTCH1B**, or **IS200TBTCH1C**
- Mark VIeS Safety Thermocouple input pack **IS220YTCCS1A** with terminal boards **IS200STTCS1A**, **IS400STTCS1A**, **IS200STTCS2A**, **IS400STTCS2A**, **IS200TBTCS1B**, **IS200TBTCS1C**, or **IS400TBTCS1C**

3.17.1 Electrical Ratings

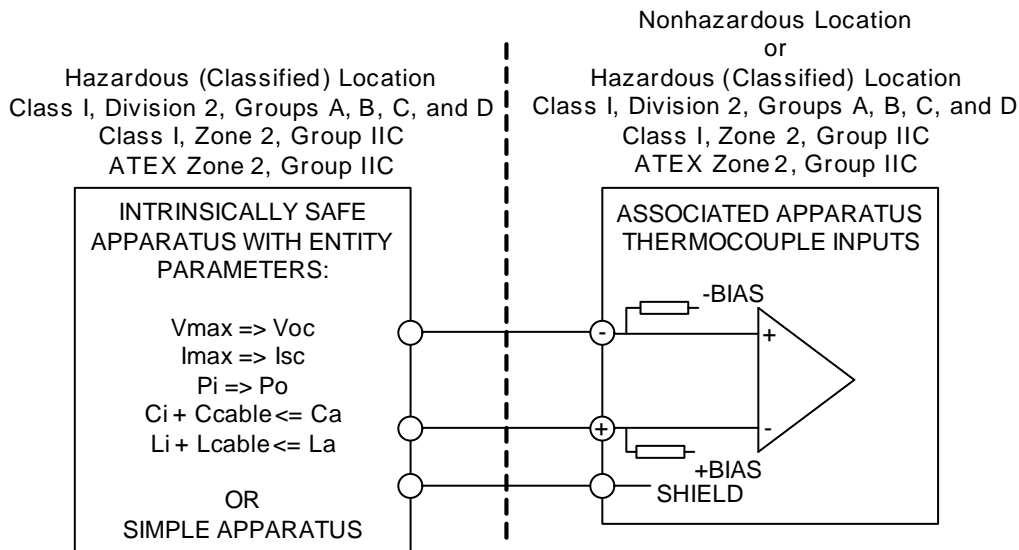
Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.16	A dc
<i>Thermocouple Inputs</i>				
Voltage	-8	—	45	mV dc

3.17.2 Field Wire Connections

Terminal Board	Terminal Block Type
STTC	Refer to the table Euro Style Box-type Terminal Blocks for wire size and screw torques.
TBTC	Refer to the table Barrier-type Terminal Blocks for wire size and screw torques.

3.17.3 Intrinsic Safety “ic”

Wiring Diagram



Entity Parameters

Thermocouple Inputs	Value	Unit
Voc or Uo	0.5	V
Isc or Io	25	nA
Po	13	nW
Ca or Co	1000	uF
La or Lo	100	mH

Note 1. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Note 2. Only resistive simple apparatus (such as thermocouples) shall be connected to thermocouple inputs.

Note 3. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

Note 4. The maximum cable length connecting each thermocouple to the device shall not exceed 1000 ft.

Field Terminals with STTC

Name	(+) Terminal	Name	(-)Terminal
Input 1 (+)	TB1.1	Input 1 (-)	TB1.2
Shield	TB1.3	Shield	TB1.4
Input 2 (+)	TB1.5	Input 2 (-)	TB1.6
Input 3 (+)	TB1.7	Input 3 (-)	TB1.8
Shield	TB1.9	Shield	TB1.10
Input 4 (+)	TB1.11	Input 4 (-)	TB1.12
Input 5 (+)	TB1.13	Input 5 (-)	TB1.14
Shield	TB1.15	Shield	TB1.16
Input 6 (+)	TB1.17	Input 6 (-)	TB1.18
Input 7 (+)	TB1.19	Input 7 (-)	TB1.20
Shield	TB1.21	Shield	TB1.22
Input 8 (+)	TB1.23	Input 8 (-)	TB1.24
Input 9 (+)	TB1.25	Input 9 (-)	TB1.26
Shield	TB1.27	Shield	TB1.28
Input 10 (+)	TB1.29	Input 10 (-)	TB1.30
Input 11 (+)	TB1.31	Input 11 (-)	TB1.32
Shield	TB1.33	Shield	TB1.34
Input 12 (+)	TB1.35	Input 12 (-)	TB1.36
No Connect	TB1.37	No Connect	TB1.38
No Connect	TB1.39	No Connect	TB1.40
Shield	TB1.41	Shield	TB1.42

Field Terminals with TBTC

Name	(+) Terminal	Name	(-)Terminal
Input 1 (+)	TB1.1	Input 1 (-)	TB1.2
Input 2 (+)	TB1.3	Input 2 (-)	TB1.4
Input 3 (+)	TB1.5	Input 3 (-)	TB1.6
Input 4 (+)	TB1.7	Input 4 (-)	TB1.8
Input 5 (+)	TB1.9	Input 5 (-)	TB1.10
Input 6 (+)	TB1.11	Input 6 (-)	TB1.12
Input 7 (+)	TB1.13	Input 7 (-)	TB1.14
Input 8 (+)	TB1.15	Input 8 (-)	TB1.16
Input 9 (+)	TB1.17	Input 9 (-)	TB1.18
Input 10 (+)	TB1.19	Input 10 (-)	TB1.20
Input 11 (+)	TB1.21	Input 11 (-)	TB1.22
Input 12 (+)	TB1.23	Input 12 (-)	TB1.24
Input 13 (+)	TB2.25	Input 13 (-)	TB2.26
Input 14 (+)	TB2.27	Input 14 (-)	TB2.28
Input 15 (+)	TB2.29	Input 15 (-)	TB2.30
Input 16 (+)	TB2.31	Input 16 (-)	TB2.32
Input 17 (+)	TB2.33	Input 17 (-)	TB2.34
Input 18 (+)	TB2.35	Input 18 (-)	TB2.36
Input 19 (+)	TB2.37	Input 19 (-)	TB2.38
Input 20 (+)	TB2.39	Input 20 (-)	TB2.40
Input 21 (+)	TB2.41	Input 21 (-)	TB2.42
Input 22 (+)	TB2.43	Input 22 (-)	TB2.44
Input 23 (+)	TB2.45	Input 23 (-)	TB2.46
Input 24 (+)	TB2.47	Input 24 (-)	TB2.48

3.18 PTUR and YTUR Turbine Specific Primary Trip Modules

The following hardware combinations are approved for use in hazardous locations:

- Mark VIe Turbine Specific Primary Trip I/O pack **IS220PTURH1A** or **IS220PTURH1B** with terminal board (accessory) **IS200TRPAH1A**
- Mark VIeS Turbine Specific Primary Trip I/O pack **IS220YTURS1A** or **IS220YTURS1B**‡ with terminal board (accessory) **IS200TRPAS1A**

Note ‡ Contact GE for hardware availability.

3.18.1 Electrical Characteristics

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28.0	28.6	V dc
Current	—	—	0.41	A dc
<i>Voltage Detection Inputs (TRPA)</i>				
Voltage	16	—	140	V dc
<i>E-stop Input (TRPA)</i>				
Voltage	18	—	140	V dc
<i>Speed Inputs (TRPA)</i>				
Voltage	-15	—	15	V dc
<i>E-stop Power Output</i>				
Voltage (O.C.)	—	28	—	V dc
Current (S.C.)	—	17	—	mA dc
<i>Contact Out (TRPA)</i>				
Voltage	—	24	28	V dc
Current	—	—	7	A dc

3.18.2 Field Wire Connections

For the TRPA_1A terminal board (accessory) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.

3.19 PUAA/YUAA Universal Analog I/O Module

The following hardware combinations are approved for use in hazardous locations where the ambient temperature (Ta) does not exceed the range -40 to 70°C (-40 to 158 °F):

- Mark VIe Universal Analog I/O pack **IS42yPUAAH1A** with terminal boards (accessory) **IS41ySUA AH1A**
- Mark VIeS Safety Universal Analog I/O pack **IS42yYUAA S1A** with terminal boards (accessory) **IS41ySUA AS1A**

3.19.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	25.2	28.0	30.8	V dc
Current	—	0.7	—	A dc
<i>Analog Inputs</i>				
Voltage	-5	—	5	V dc
Voltage	-10	—	10	V dc
Current	0	—	24	mA dc
<i>Thermocouple Inputs</i>				
Voltage	-154	—	154	mV dc
<i>RTD Inputs</i>				
Voltage	0	—	4	V dc
Current	—	1	—	mA dc
<i>Analog Outputs</i>				
Voltage	0	—	22	V dc
Current	0	—	24	mA dc

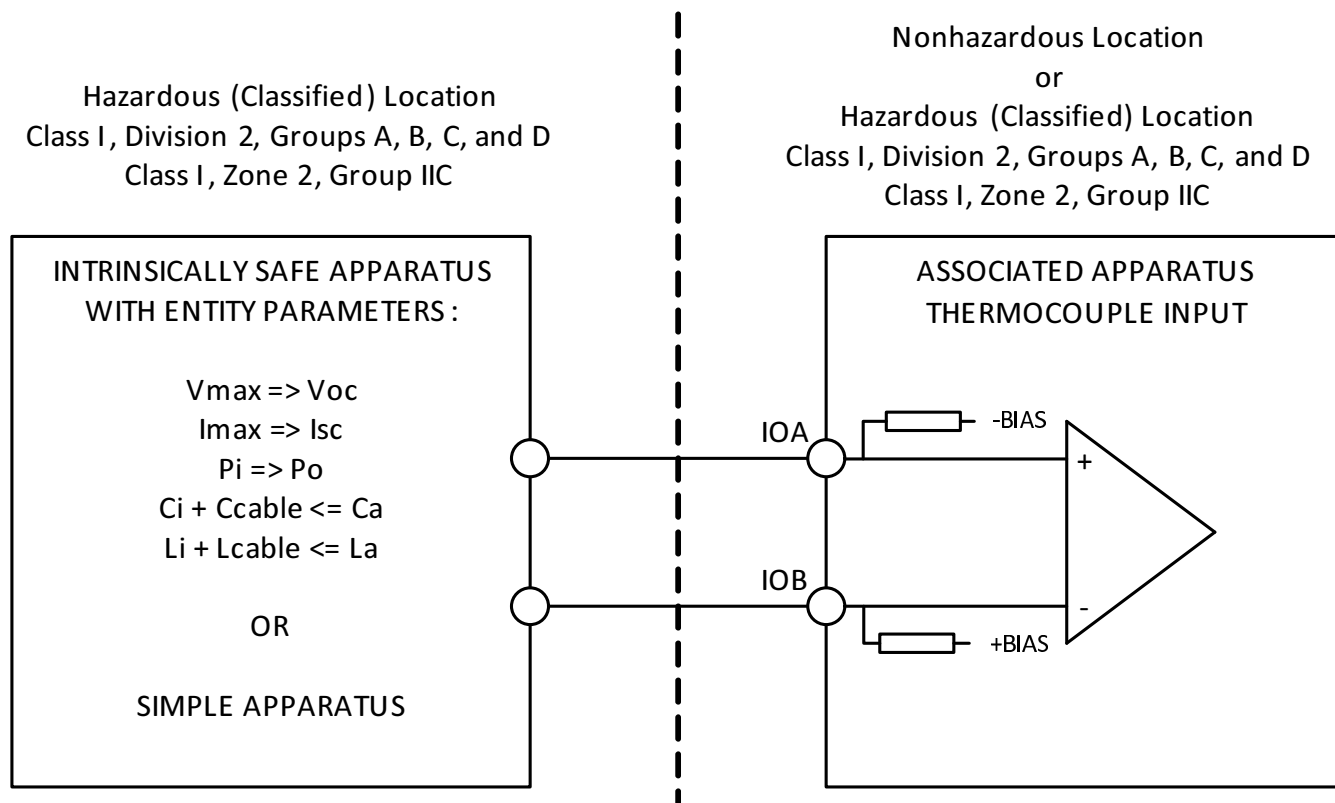
3.19.2 Field Wire Connections

For Universal Analog I/O terminal boards (accessories) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.

The power supply terminals are rated for wire size AWG 28 to 14, and screw torque 1.7 in-lb (0.19 Nm).

3.19.3 PUAAYUAA — Intrinsic Safety “ic” for Thermocouple Inputs

Wiring Diagram



Entity Parameters

Thermocouple Input	Value	Unit
Voc or Uo	24.5	V
Isc or Io	34.5	uA
Po	395	uW
Ca or Co	0.42	uF
La or Lo	100	mH

Note 1. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

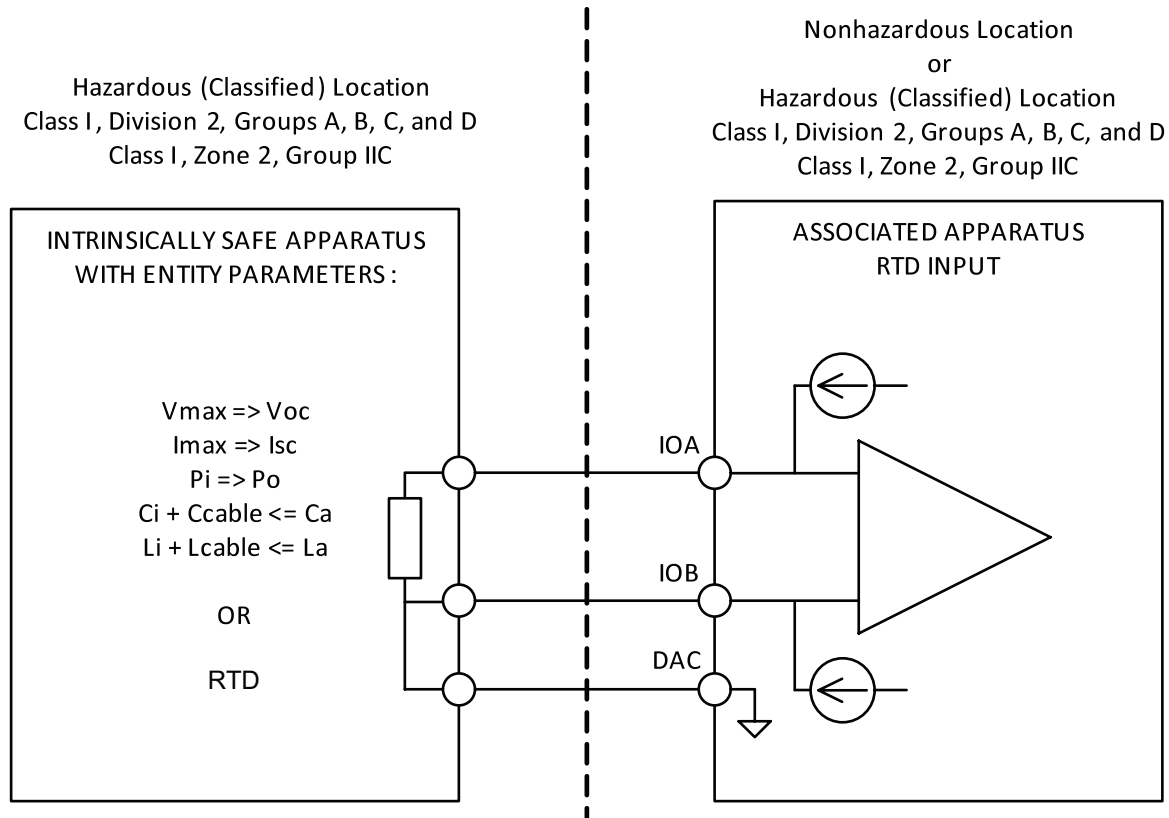
Note 2. Only resistive simple apparatus (such as thermocouples) shall be connected to thermocouple inputs.

Note 3. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

Note 4. The maximum cable length connecting each thermocouple to the device shall not exceed 304.8 m (1,000 ft).

3.19.4 PUAAYUAA — Intrinsic Safety “ic” for RTD Inputs

Wiring Diagram



Entity Parameters

RTD Input	Value	Unit
Voc or Uo	24.5	V
Isc or Io	3.03	mA
Po	74.2	mW
Ca or Co	0.42	uF
La or Lo	100	mH

Note 1. This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

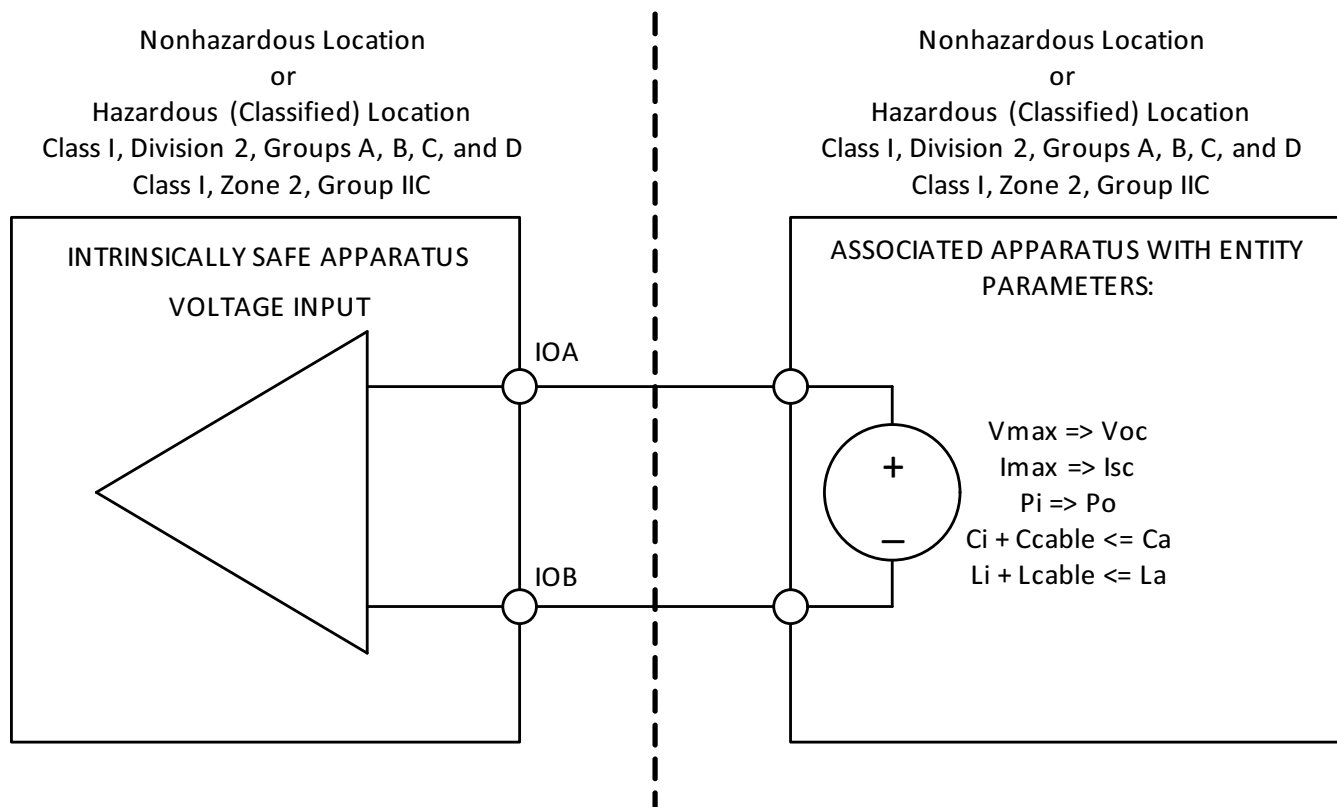
Note 2. Only resistive simple apparatus (such as RTDs) shall be connected to RTD inputs.

Note 3. Each cable used to connect the simple apparatus must have suitable insulation as required by the applicable local electrical codes.

Note 4. The maximum cable length connecting each RTD to the device shall not exceed 304.8 m (1,000 ft).

3.19.5 PUA/YUA — Intrinsic Safety “ic” for Voltage Inputs

Wiring Diagram



Input Parameters

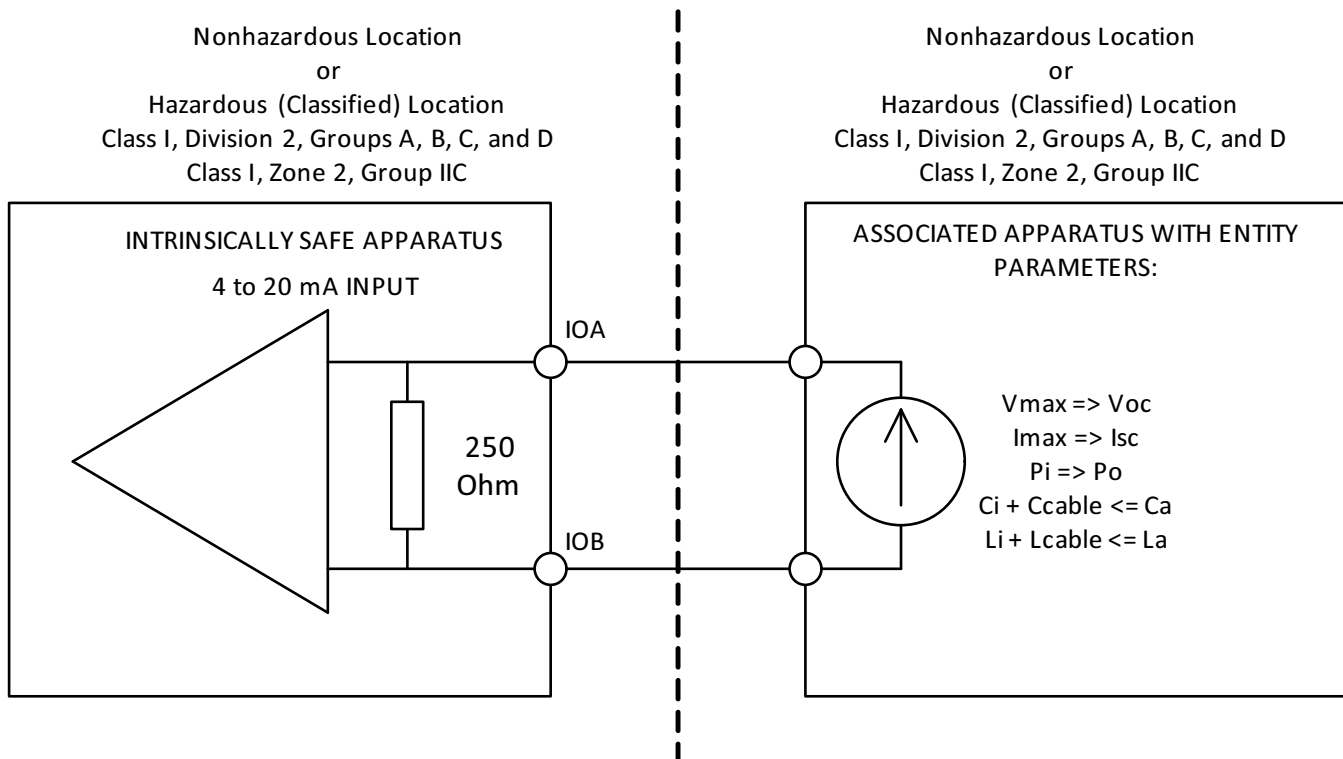
Voltage Input	Value	Unit
V_{max} or U_i	19 and -10	V
I_{max} or I_i	0.2	A
P_i	1	W
C_i	5.6	nF
L_i	0	—

Output Parameters

Voltage Output	Value	Unit
V_{oc} or U_o	24.5	V
I_{sc} or I_o	29.4	μ A
P_o	180	μ W
C_a or C_o	0.42	μ F
L_a or L_o	100	mH

3.19.6 PUA/YUA — Intrinsic Safety “ic” for 4 to 20 mA Inputs

Wiring Diagram



Input Parameters

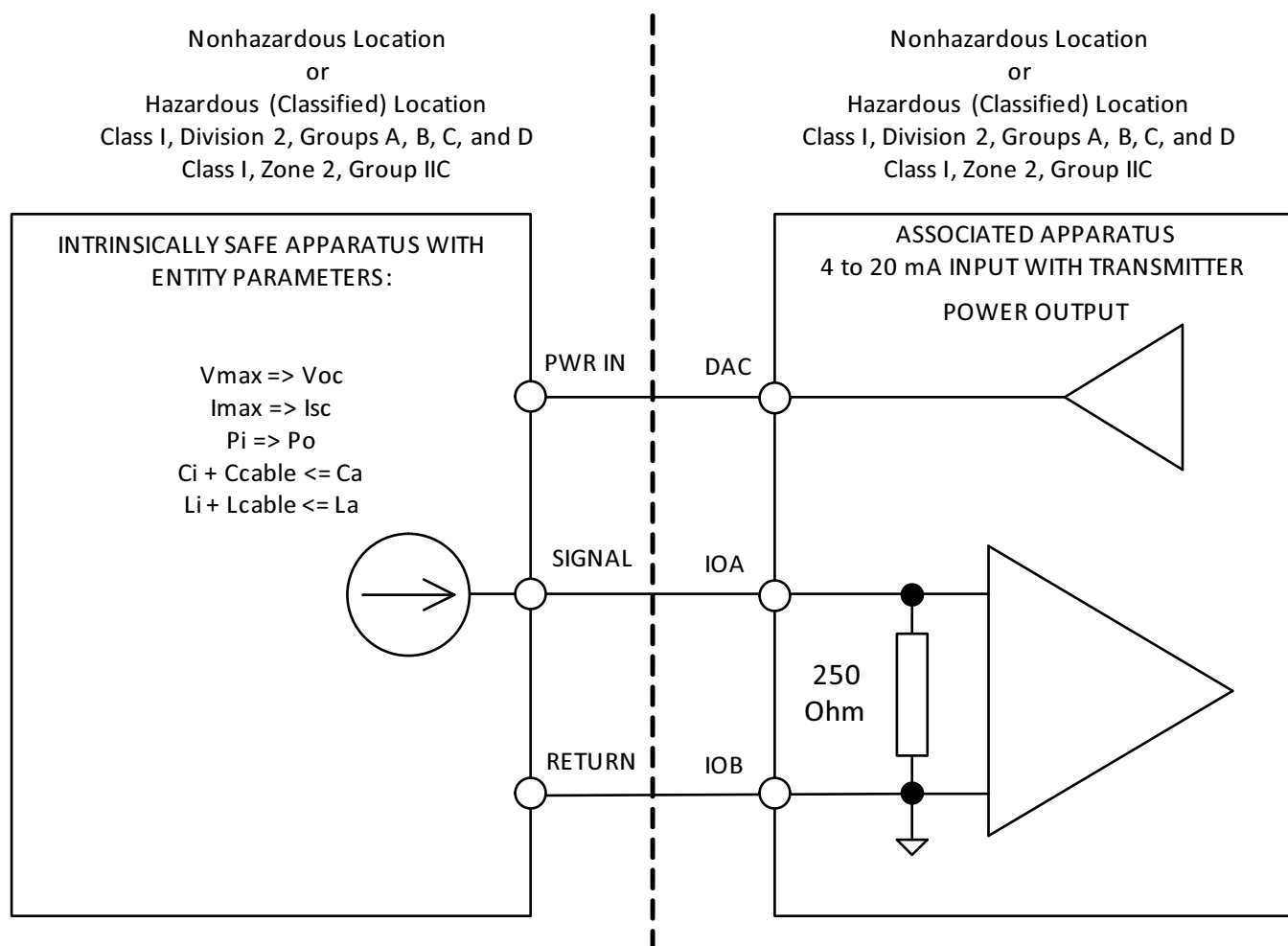
4 to 20 mA Input	Value	Unit
V_{max} or U_i	50	V
I_{max} or I_i	24	mA
P_i	1	W
C_i	5.6	nF
L_i	0	—

Output Parameters

4 to 20 mA Output	Value	Unit
V_{oc} or U_o	24.5	V
I_{sc} or I_o	29.4	uA
P_o	180	uW
C_a or C_o	0.42	uF
L_a or L_o	100	mH

3.19.7 PUA/YUA — Intrinsic Safety “ic” for 4 to 20 mA Inputs with Transmitter Power Outputs

Wiring Diagram



Entity Parameters

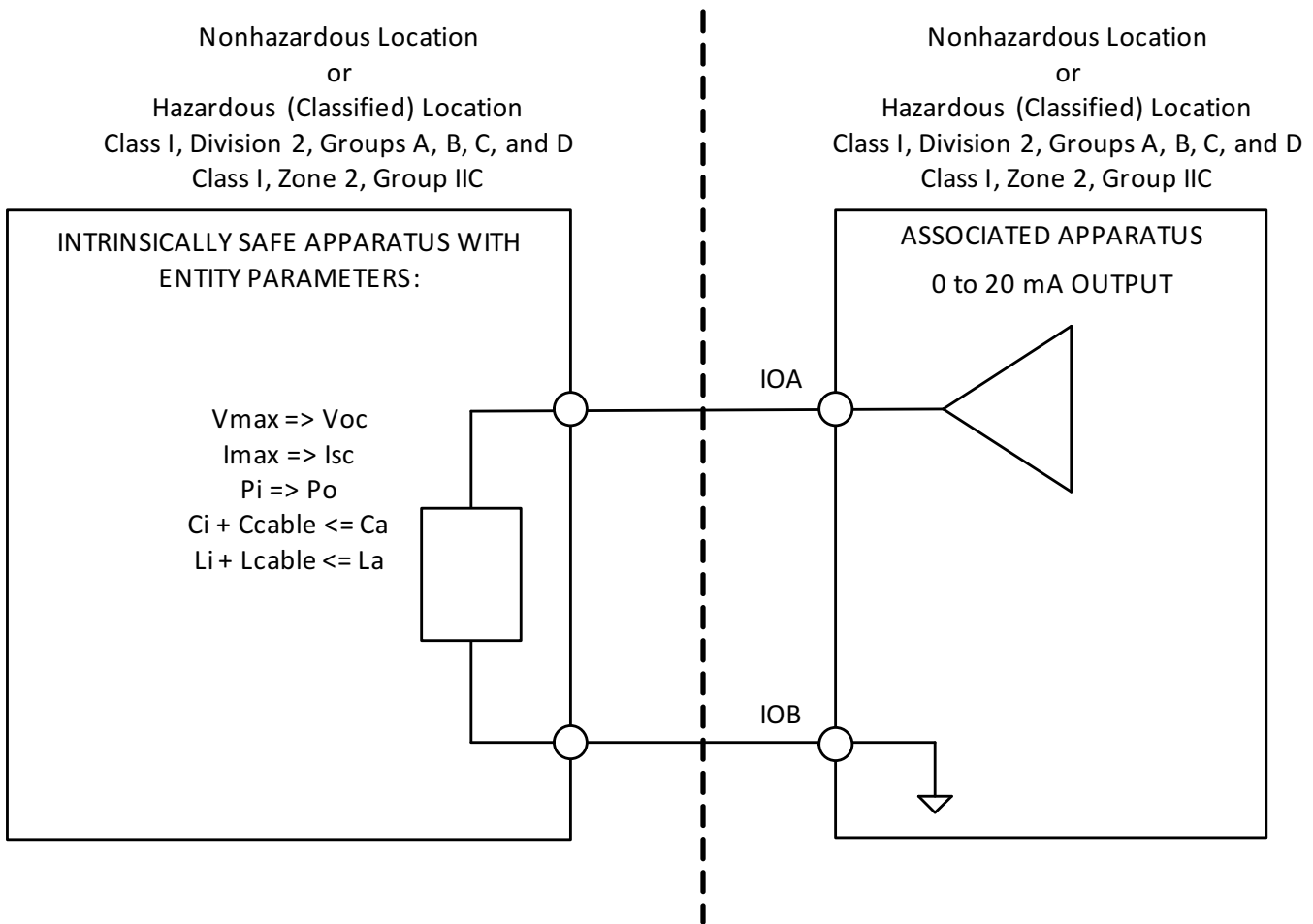
Transmitter Power Output	Value	Unit
Voc or Uo	24.5	V
Isc or Io	24.1	mA
Po	0.59	W
Ca or Co	100	nF
La or Lo	0.15	mH

Note 1. Connect the transmitter power input to the DAC terminal of the associated apparatus.

Note 2. For 3-wire transmitters, connect the power return to the IOB terminal of the associated apparatus.

3.19.8 PUAAYUAA — Intrinsic Safety “ic” for 0 to 20 mA Outputs

Wiring Diagram

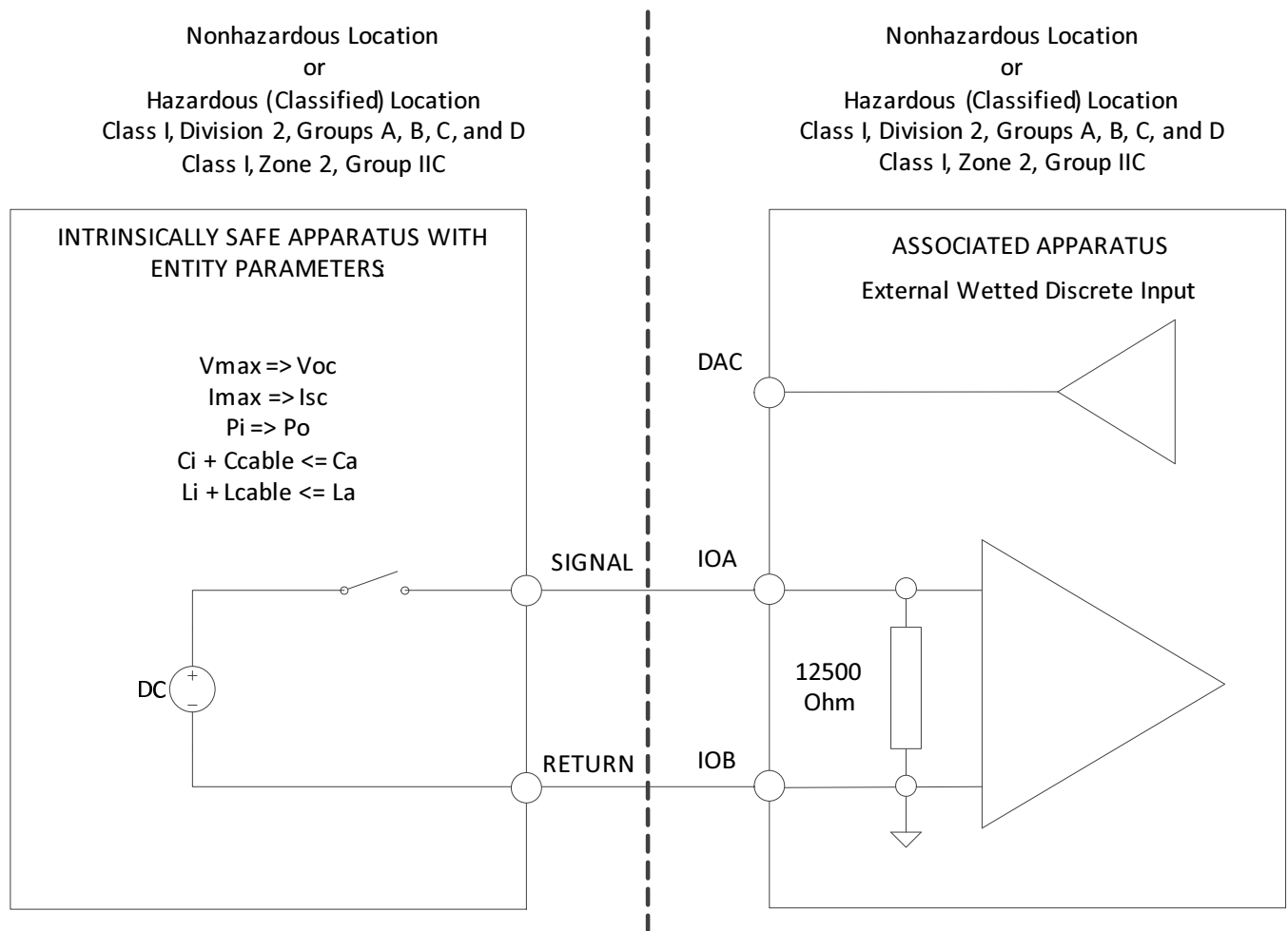


Entity Parameters

0 to 20 mA Output	Value	Unit
Voc or Uo	24.5	V
Isc or Io	24.1	mA
Po	0.59	W
Ca or Co	100	nF
La or Lo	0.15	mH

3.19.9 PUA/YUA — Discrete Inputs with Switch Power Output for Externally Fed Inputs

Wiring Diagram



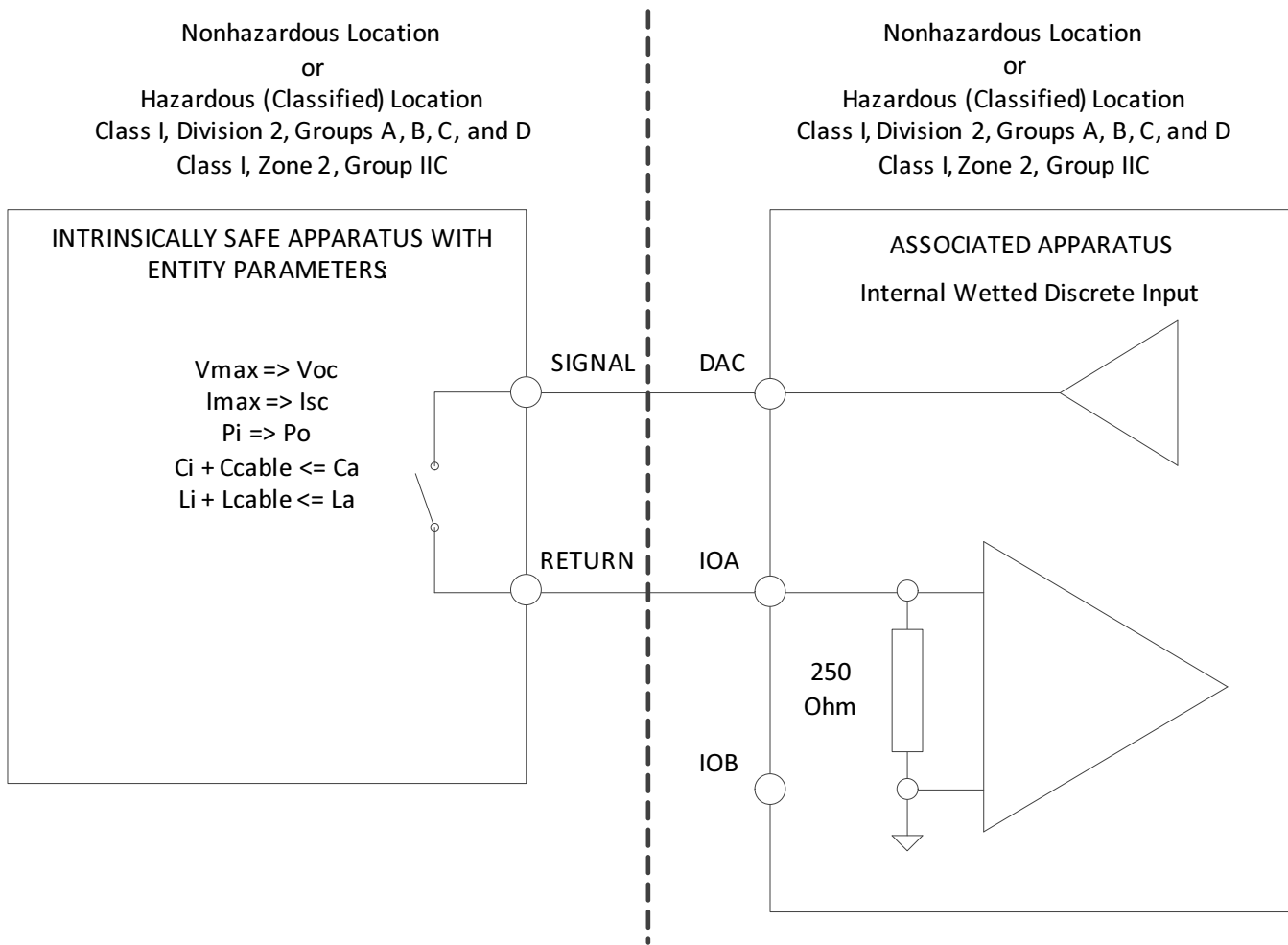
Note The 12500 Ohm input resistor is not present in the Discrete Input Pulse Accumulator configuration.

Entity Parameters

Transmitter Power Output	Value	Unit
Voc or Uo	30	V
Isc or Io	2.4	mA
Po	180	uW
Ca or Co	0.42	uF
La or Lo	100	mH

3.19.10 PUAA/YUAA — Discrete Inputs with Switch Power Output for Internally Fed Inputs

Wiring Diagram



Entity Parameters

Transmitter Power Output	Value	Unit
Voc or Uo	24.5	V
Isc or Io	24.1	mA
Po	0.59	W
Ca or Co	100	nF
La or Lo	0.15	mH

3.19.11 PUAA/YUAA — Field Wiring Terminals

Accessory TB	Name	Terminal	Name	Terminal	Name	Terminal
SUAA	DAC_1	TB1.1	IOA_1	TB1.3	IOB_1	TB1.5
SUAA	DAC_2	TB1.2	IOA_2	TB1.4	IOB_2	TB1.6
SUAA	DAC_3	TB1.7	IOA_3	TB1.9	IOB_3	TB1.11
SUAA	DAC_4	TB1.8	IOA_4	TB1.10	IOB_4	TB1.12
SUAA	DAC_5	TB1.13	IOA_5	TB1.15	IOB_5	TB1.17
SUAA	DAC_6	TB1.14	IOA_6	TB1.16	IOB_6	TB1.18
SUAA	DAC_7	TB1.19	IOA_7	TB1.21	IOB_7	TB1.23
SUAA	DAC_8	TB1.20	IOA_8	TB1.22	IOB_8	TB1.24
SUAA	DAC_9	TB1.25	IOA_9	TB1.27	IOB_9	TB1.29
SUAA	DAC_10	TB1.26	IOA_10	TB1.28	IOB_10	TB1.30
SUAA	DAC_11	TB1.31	IOA_11	TB1.33	IOB_11	TB1.35
SUAA	DAC_12	TB1.32	IOA_12	TB1.34	IOB_12	TB1.36
SUAA	DAC_13	TB1.37	IOA_13	TB1.39	IOB_13	TB1.41
SUAA	DAC_14	TB1.38	IOA_14	TB1.40	IOB_14	TB1.42
SUAA	DAC_15	TB1.43	IOA_15	TB1.45	IOB_15	TB1.47
SUAA	DAC_16	TB1.44	IOA_16	TB1.46	IOB_16	TB1.48
SUAA	0V	TB1.49	0V	TB1.51		
SUAA	0V	TB1.50	0V	TB1.52		

Note All field terminal wires must be rated for temperatures of 105°C or greater.

3.20 PVIB and YVIB Vibration Monitor Modules

The following hardware combinations are approved for use in hazardous locations:

- Mark VIe Vibration Monitor I/O pack **IS220PVIBH1A** with terminal board (accessory) **IS200TVBAH2A** and three negative power supply daughterboards (accessories) **IS200WNPSH1A**
- Mark VIe Vibration Monitor I/O pack **IS420PVIBH1B** with terminal board (accessory) **IS200TVBAH2A** and three negative power supply daughterboards (accessories) **IS200WNPSH1A**, **IS400WNPSH1A**, or **IS40yTVBAH2B**
- Mark VIeS Vibration Monitor I/O pack **IS220YVIBS1A** with terminal board **IS200TVBAS2A** and three negative power supply daughterboards (accessories) **IS200WNPSS1A**
- Mark VIeS Vibration Monitor I/O pack **IS42yYVIBS1B** (where y = 0 or 1) with terminal board **ISx0yTVBAS2A** (where x = 2 or 4 and y = 0 or 1) and three negative power supply daughterboards (accessories) **ISx0yWNPSS1A**, or **IS40yTVBAS2B**

3.20.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	PVIBH1B / YVIBS1B: 27.4 PVIBH1A / YVIBS1A: 27.4	PVIBH1B / YVIBS1B: 28.0 PVIBH1A / YVIBS1A: 28.0	28.6	V dc
Current	—	—	0.98	A dc
<i>Vibration Inputs</i>				
Voltage	-20	—	15.6	V dc
<i>Position Inputs</i>				
Voltage	-20	—	-0.5	V dc
<i>Buffered Outputs</i>				
Voltage	-20	—	4.5	V dc
Current	-3	—	—	mA dc
<i>Probe Power</i>				
Voltage	-25.2	-24	-22.8	V dc
Current	—	—	12	mA dc

3.21 YSIL Core Safety Protection Module

The following hardware combination is approved for use in hazardous locations:

Mark VIeS YSIL Core Safety Protection I/O pack **IS220YSILS1A** and **IS220YSILS1B**, with Core Protection Terminal Board (accessory) **IS200TCSAS1A** and daughterboard (accessory) **IS200WCSAS1A** and I/O Expansion Board (accessory) **IS200SCSAS1A** and Snubber board (accessory) **IS40ySSUPS1A**.

3.21.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>YSIL Power Supply In</i>				
Voltage	27.4	28	28.6	V dc
Current	-	-	1	A dc
<i>SCSA Power Supply In</i>				
Voltage	27.4	28	28.6	V dc
Current	-	-	0.75	A dc
<i>TCSA E-Stop In</i>				
Voltage	18	-	32	V dc
<i>TCSA E-Stop Wetting Power Out</i>				
Voltage	-	24	-	V dc
Current	-	-	100	mA dc
<i>TCSA Solenoid Out - Pilot Duty</i>				
Voltage	-	24	30	V dc
Current	-	-	2	A dc
<i>TCSA Contact Out</i>				
Voltage	-	24	30	V dc
Current	-	-	5	A
<i>TCSA PT In</i>				
Voltage	-	-	138	V ac
Frequency	5	-	66	Hz
<i>TCSA Contact In</i>				
Voltage	0	24	32	V dc
<i>TCSA Contact Wetting Power Out</i>				
Voltage	18	24	32	V dc
Current	-	-	3	mA dc
<i>TCSA Speed In</i>				
Voltage	-	-	+/- 15	V pk
Frequency	2	-	20k	Hz
<i>WCSA Reuter Stokes FD / Analog In</i>				
Current	0	-	20	mA dc

Item	Min	Nominal	Max	Units
<i>WCSA Reuter Stokes FD / Analog Transducer Power Out</i>				
Voltage	-	24	-	V dc
Current	-	-	21	mA dc
<i>WCSA Speed Repeater Out</i>				
Voltage		+/- 5		V pk
Current	-	-	250	mA dc
<i>SCSA Contact In</i>				
Voltage	0	24	32	V dc
<i>SCSA Contact Wetting Power Out</i>				
Voltage	18	24	32	V dc
Current	-	-	3	mA dc
<i>SCSA Contact Out</i>				
Voltage		24	30	V dc
Current			5	A
<i>SCSA Analog In</i>				
Current	0	-	20	mA dc
<i>SCSA Analog Transducer Power Out</i>				
Voltage	-	24	-	V dc
Current	-	-	21	mA dc
<i>SCSA Thermocouple In</i>				
Voltage	-8	-	45	mV dc
<i>SSUP Solenoid Out</i>				
Voltage	-	24	30	V dc
Current	-	-	2	A dc

3.21.2 Field Wire Connections

For TCSA, WCSA, SCSA and SSUP (accessories) certified for HazLoc, refer to the table [Euro Style Box-type Terminal Blocks](#) for wire size and screw torques.



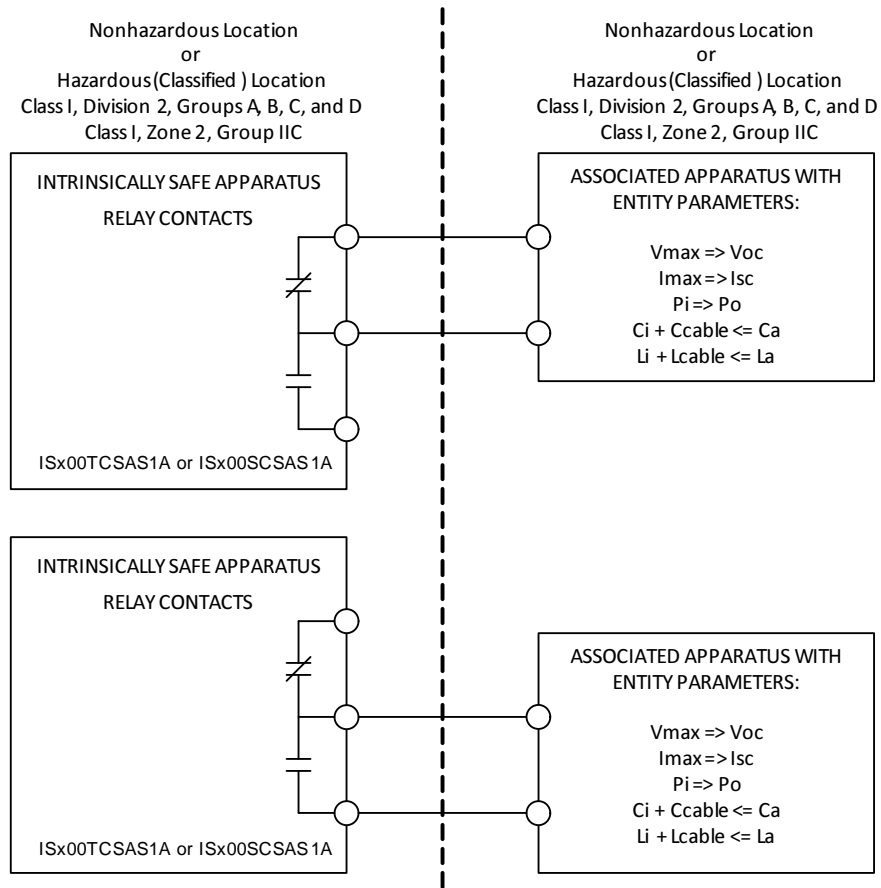
Caution

Add external suppression diode to each solenoid coil to ensure non-sparking behavior of this equipment.

Note TCSA Honeywell Flame Detector Inputs are not approved for use in Hazardous Locations.

3.21.3 Intrinsic Safety “ic” for Accessory Terminal Board Models IS200TCSAS1A, IS200SCSAS1A

Wiring Diagram



Entity Parameters

Relay Contacts	Value	Unit
V_{max} or U_i	30	V
I_{max} or I_i	152	mA
P_i	4.56	W
C_i	0	μF
L_i	0	mH

Field Terminals

Board	Name	Terminal
TCSA	D01_NO	1
	D01_COM	3
	D01_NC	5
	D02_NO	2
	D02_COM	4
	D02_NC	6
SCSA	K1NC	45
	K1C	47
	K1NO	49
	K2NC	46
	K2C	48
	K2NO	50

Note 1. For North American locations, if contact wetting power is supplied to the accessory terminal board through connector J1, the wire harness specified on drawing 336A4937FJ shall be used, and the wetting power source shall be current limited by either a UL recognized fuse rated at not more than 3 A, or one of the following power supplies:

- UL R/C, Phoenix Contact GmbH & Co Kg, model QUINT-PS-100-240AC/24DC/5 GE
- UL R/C, Convertec Ltd., model TIS 150-124

Note 2. For North American locations, if solenoid power is supplied to the accessory terminal board through connector J2 or J3, the wire harness specified on drawing 336A4937EP shall be used, and the solenoid power source shall be current limited by either a UL recognized fuse rated at not more than 3 A, or one of the following power supplies:

- UL R/C, Phoenix Contact GmbH & Co Kg, model QUINT-PS-100-240AC/24DC/5 GE
- UL R/C, Convertec Ltd., model TIS 150-124

3.22 PDAS and YDAS Data Acquisition System

The following equipment combination is approved for use in hazardous locations:

- Mark VIe Data Acquisition system **IS42yPDASH1A** with terminal board (accessory) **IS40yTCDMS1A**.
- Mark VIeS Data Acquisition system **IS42yYDASS1A** with terminal board (accessory) **IS40yTCDMS1A**.

3.22.1 Electrical Ratings

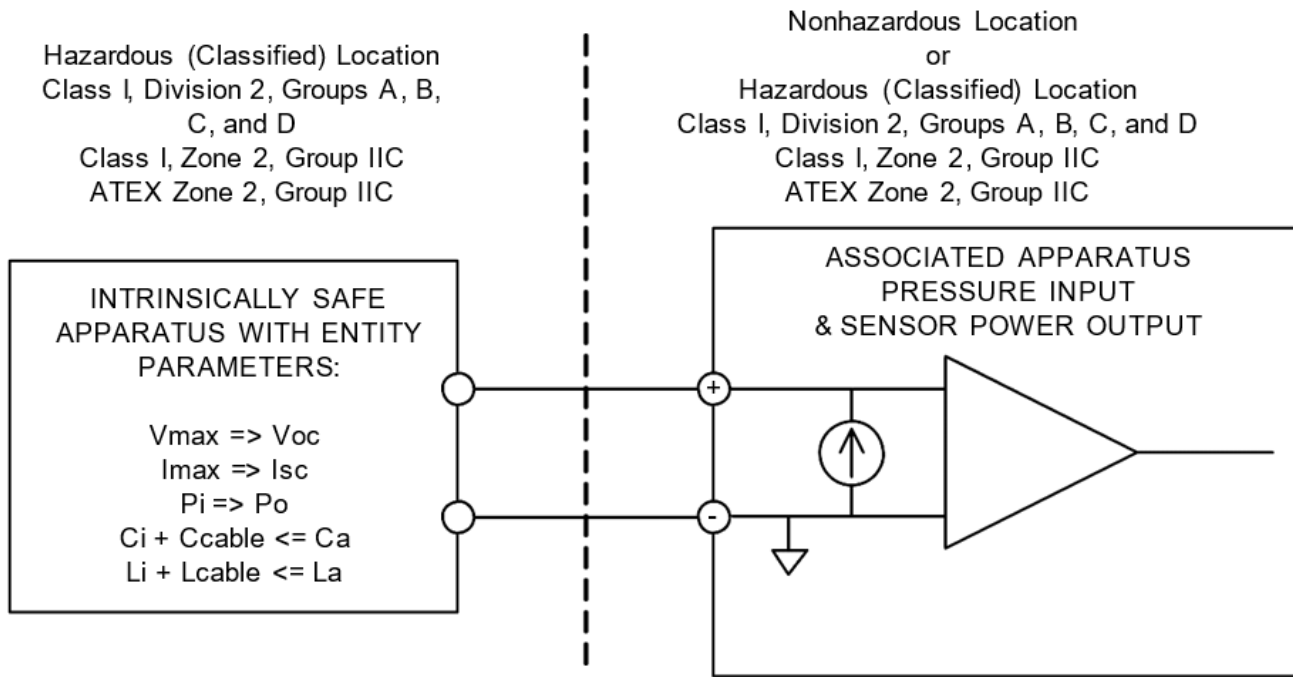
Item	Min	Nominal	Max	Units
<i>Power Supply</i>				
Voltage	27.4	28	28.6	V dc
Current	-	-	1.1	A dc
<i>Pressure Inputs (TCDM)</i>				
Voltage	-10	-	18.5	V dc
<i>Sensor Power Outputs (TCDM)</i>				
Voltage	10	-	18.5	V dc
Current	2.9	-	4.3	mA dc
<i>Buffered Outputs (TCDM)</i>				
Voltage	-10	-	10	V dc
Current	-	5	-	mA dc

3.22.2 Field Wire Connections

For the IS40yTCDMS1A terminal board (accessory) wire sizes and screw torques, refer to the table [Euro Style Box-type Terminal Blocks](#).

3.22.3 Intrinsic Safety “ic”

Wiring Diagram



Note 1. TCDM pressure inputs and sensor power outputs may be used with non-sparking (nA) devices using appropriate Class I Division 2 or Zone 2 wiring practices.

Note 2. Set jumpers JP1 – JP21 on TCDM accessory terminal board to the PCB position.

Note 3. The Data Acquisition System, IS42yPDASH1A and IS42yYDASS1A should only be powered by the ISxxxJPDHG1A distribution board, which is a limited voltage limited current (LVLC) circuit, or similar.

Entity Parameters

Pressure Inputs	Value	Unit	Sensor Power Outputs	Value	Unit
V_{max}	25	V	V_{oc} or U_o	25	V
I_{max}	4.3	mA	I_{sc} or I_o	4.3	mA
P_i	108	mW	P_o	108	mW
C_i	0.011	uF	C_a or C_o	0.4	uF
L_i	0	mH	L_a or L_o	100	mH

Field Terminals

Name	(+) Terminal		Name	(-) Terminal
SIG1	TB1A.2		RET1	TB1A.4
SIG2	TB1A.6		RET2	TB1A.8
SIG3	TB1A.10		RET3	TB1A.12
SIG4	TB1A.14		RET4	TB1A.16
SIG5	TB1A.18		RET5	TB1A.20
SIG6	TB1A.22		RET6	TB1A.24
SIG7	TB1B.26		RET7	TB1B.28
SIG8	TB1B.30		RET8	TB1B.32
SIG9	TB1B.34		RET9	TB1B.36
SIG10	TB1B.38		RET10	TB1B.40
SIG11	TB1B.42		RET11	TB1B.44
SIG12	TB1B.46		RET12	TB1B.48
SIG13	TB1C.50		RET13	TB1C.52
SIG14	TB1C.54		RET14	TB1C.56
SIG15	TB1C.58		RET15	TB1C.60
SIG16	TB1C.62		RET16	TB1C.64
SIG17	TB1C.66		RET17	TB1C.68
SIG18	TB1C.70		RET18	TB1C.72
SIG19	TB1C.74		RET19	TB1C.76
SIG20	TB1C.78		RET20	TB1C.80
SIG21	TB1C.82		RET21	TB1C.84

Notes

4 Power Distribution Instructions

The equipment listed in this chapter is certified for use in certain specified hazardous (classified) locations. Follow all applicable instructions in [Conditions of Safe Use](#) and within the specific section for each piece of equipment for proper use of this equipment in these locations.

4.1 Overview

Control power for Mark VIe equipment is distributed from the power supplies to the controllers, Ethernet switches, and I/O modules through a system of wire harnesses (refer to the tables in the following sections), and power distribution boards (JPDx).

4.1.1 TMR Control Power using JPDS

A power distribution system using the JPDS power distribution board supports up to three independent control power supply buses: R, S, and T. Following are specific instructions for these connections:

- Up to three 24 or 28 V dc, 20 A control power supplies (R, S, T) may be connected to the JPDS board using wire harness type A. The power supplies are connected to the mains supply.
- An optional PPDA module is used with the JPDS to monitor the health of the power distribution system. It is connected directly to I/O connector JA1, and to power supply connector P4 using wire harness type E.
- The JPDS board supplies R, S, and T power from connectors JAR, JAS, and JAT to controllers using wire harness type B or Ethernet switches using wire harness type C. Connectors JCR, JCS, and JCT are not used because these outputs are not current limited.
- The JPDS board may feed up to six JPDH boards using wire harness type D.
- The JPDH board fans out control power for up to eight R, S, and T (each) modules using wire harness type E. The R, S, and T control power buses can be extended to another JPDH from connector J1X using wire harness type D. Connectors JRS, JSS, and JTS are not used because these outputs are not current limited.
- The JPDE board can be used to provide redundantly sourced I/O wetting power via outputs JS1-3 and JFA-C. The I/O wetting power can be further fused and distributed to I/O terminal boards using the JPDD I/O wetting branch power distribution. Refer to the example diagram and cable table.

Note For more information, refer to the [JPDS Power Distribution with Customer Supplied I/O Wetting One-line Diagram](#) and the *Mark VIe and Mark VIeS Safety Systems Power Distribution Modules (PDM) Application Guide* (GEI-100861).

General Market IEC Color Cables for JPDS Applications

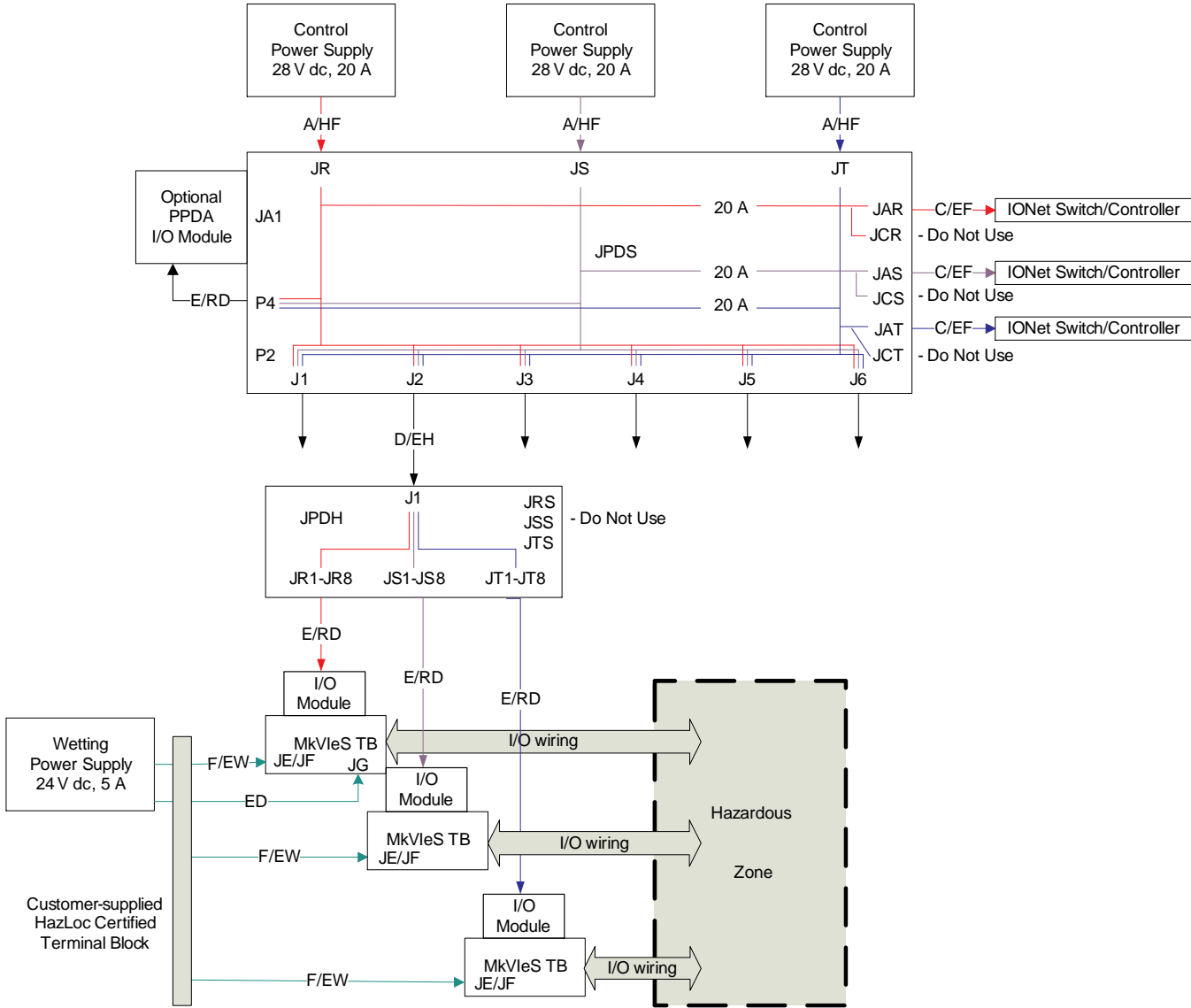
Type	GE Part Number †	Description
A	336A5026HFG015	Power supply to JPDS (4.57 m, 15 ft to be cut to length)
B	336A5026EFG015	JPDS to controller (4.57 m, 15 ft to be cut to length)
C	336A5026EFG015	JPDS to Ethernet switch (4.57 m, 15 ft to be cut to length)
D	336A5026EHG0xx	JPDS or JPDH to JPDH control power
E	336A5026RDG0xx	JPDS or JPDH to I/O pack power
F	336A5026EWG015	User supplied I/O terminal board input or output / solenoid wetting power to JE or JF plugs, DC Voltages (4.57 m, 15 ft to be cut to length)
G	336A5026EAW015	User supplied I/O terminal board input or output / solenoid wetting power to JF plugs, AC Voltages (4.57 m, 15 ft to be cut to length)

† xx is length of wire harness in inches

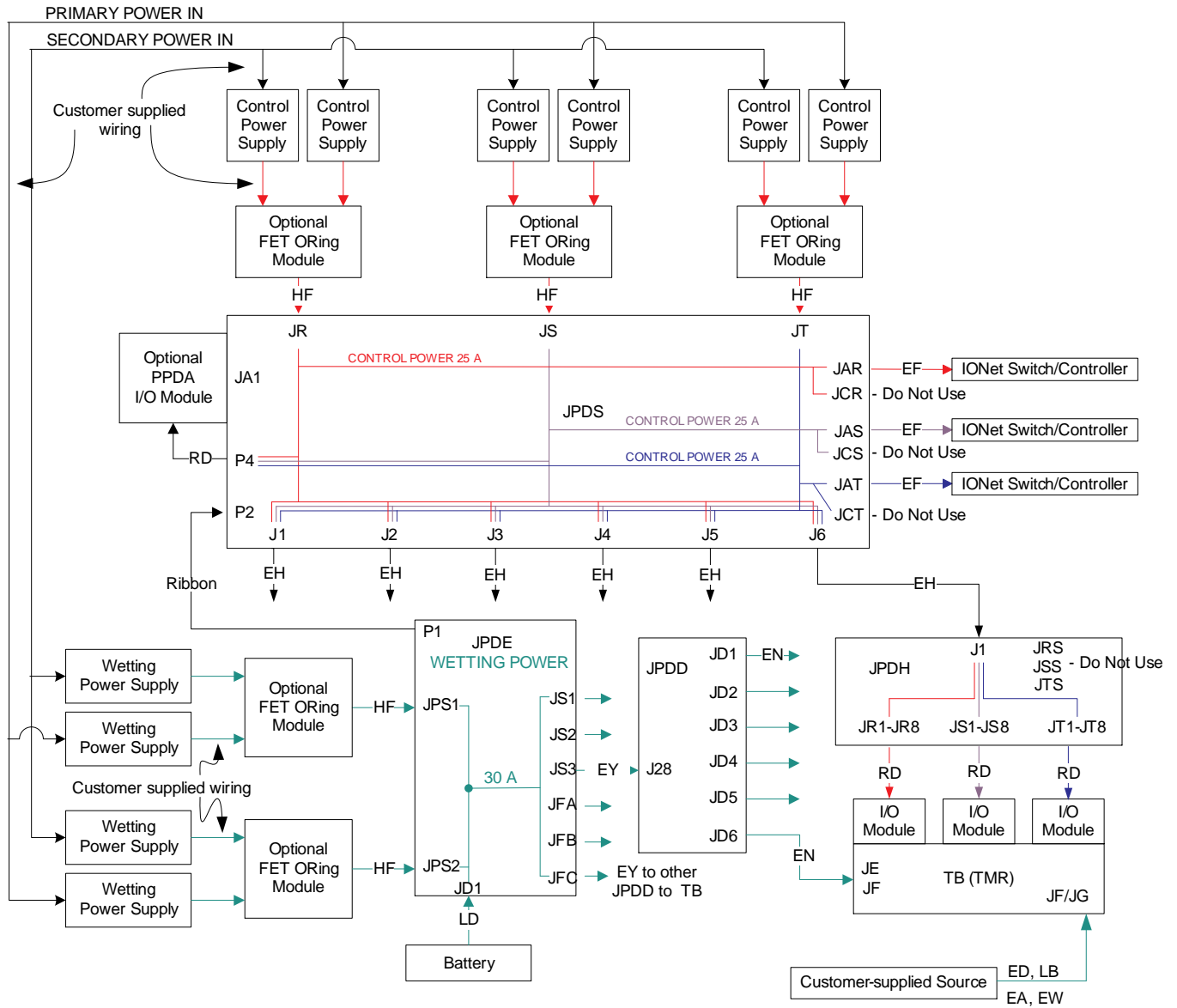
Legacy Mark VIe Wire Harnesses for JPDS Applications

Type	Legacy GE Part Number †	Description
A	336A4937HFGxxx	Power supply to JPDS
B	336A4937yyGxxx	JPDS to controller
C	336A4937EFGxxx	JPDS to Ethernet switch
D	336A4937EHGxxx	JPDS or JPDH to JPDH
E	336A4937zzGxxx	JPDS or JPDH to module
F	336A4937FJGxxx	User supplied I/O terminal board output / solenoid wetting power to JF plug
G	336A4937EPGxxx	User supplied I/O terminal board input wetting power to JE plug

† xxx is length of wire harness in inches
 yy is insulation color (R: red + white = FE, S: black + white = GA, T: blue + white = GB)
 zz is insulation color (R: red + white = RD, S: black + white = BK, T: blue + white = BU)



JPDS Power Distribution with Customer Supplied I/O Wetting One-line Diagram



JPDS/JPDH High Availability (HA) Power Distribution for Control Power, JPDE for I/O Wetting One-line Diagram

Note For cable part numbers, refer to the table [General Market IEC Color Cables for JPDG and JPDS/JPDE Applications](#).

4.1.2 Dual Control Power and I/O Wetting Power using JPDG

A power distribution system using the JPDG power distribution board supports a redundantly fed Mark VIe control power supply and a redundantly fed I/O wetting power supply. Following are specific instructions for these connections:

- Two 24 or 28 V dc, 40 A control power supplies may be connected to the JPDG board using wire harness type LG. The power supplies are connected to the mains supply.
- Two 24 or 48 V dc, 40 A I/O wetting power supplies may be connected to the JPDG board using wire harness type JF. The power supplies are connected to the mains supply.
- An optional PPDA module is used with the JPDG to monitor the health of the power distribution system. It is connected directly to I/O connector JA1 and to power supply connector JDx using wire harness type RD.
- The JPDG board supplies R, S, and T power from connectors JC1-JC4 and JD1-JD5 to UCSC Mark VIe controllers and IONet switches using wire harness type EG.
- The JPDG may feed up to four JPDH boards through J1-J4 using wire harness type JB.
- The JPDG may feed I/O wetting power for up to 7 I/O terminal boards through JFA – JFG using wire harness type EN.
- The JPDH board fans out control power for up to eight R, S, and T (each) modules using wire harness type RD. The R, S, and T control power buses can be extended to another JPDH from connector J1X using wire harness type EH.
- The JPDD board can be used to add fused, switched I/O wetting power branches to individual I/O terminal boards. From JPDG, JFx to JPDD J28, use harness type JG.

Note For more information, refer to the [JPDG Power Distribution One-line Diagram](#) and the *Mark VIe and Mark VIeS Safety Systems Power Distribution Modules (PDM) Application Guide* (GEI-100861).

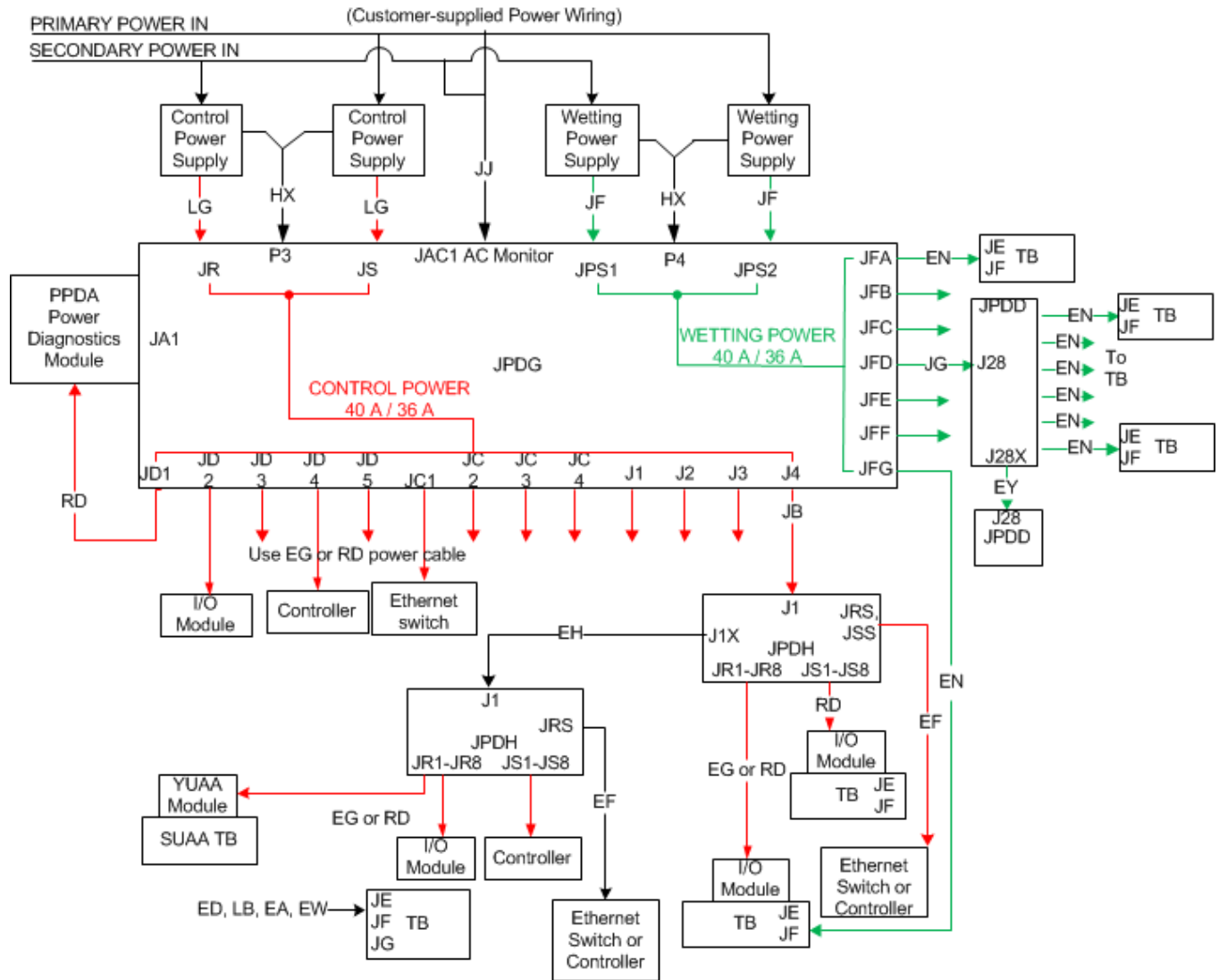
General Market IEC Color Cables for JPDG and JPDS/JPDE Applications

Type	GE Part Number †	Description
LG	336A5026LGG015	Power supply to JPDG control power JR/JS (4.57 m, 15 ft to be cut to length)
JF	336A5026JFG015	Power supply to JPDG I/O wetting power JPS1/JPS2 (4.57 m, 15 ft to be cut to length)
HX	336A5026HXG015	Power supply power health dry contacts to JPDG P3/P4 inputs (4.57 m, 15 ft to be cut to length)
JJ	336A5026JJG015	AC Mains power supplies health monitoring to JPDG JAC1 (4.57 m, 15 ft to be cut to length)
EG	336A5026EGG015	JPDG JC1-JC4 control power to UCSC controller, IONet switch, or YUAA I/O module (4.57 m, 15 ft to be cut to length)
JB	336A5026JBG0xx	JPDG J1-J4 control power extension to JPDH J1
EH	336A5026EHG0xx	JPDH J1X extension to JPDH J1
RD	336A5026RDG0xx	JPDG JD1-JD5 or JPDH JRx/JSx/JTx to I/O pack power
EN	336A5026ENG0xx	JPDG JFA-JFG I/O wetting power to I/O terminal boards plugs JE, JF, and JG
EW	336A5026EWG015	User / Application supplied ATEX compliant I/O terminal board wetting power to JE, JF plug, DC voltages (4.57 m, 15 ft to be cut to length)
ED	336A5026EDW015	User / Application supplied ATEX compliant I/O terminal board wetting power to JG plug, DC voltages (4.57 m, 15 ft to be cut to length)
EA	336A5026EAW015	User / Application supplied ATEX compliant I/O terminal board wetting power to JF plug, AC voltages (4.57 m, 15 ft to be cut to length)
LB	336A5026LBW015	User / Application supplied ATEX compliant I/O terminal board wetting power to JG plug, AC voltages (4.57 m, 15 ft to be cut to length)
JG	336A5026JGG0xx	JPDG JFA-JFG I/O wetting power to JPDD J28 plug or I/O Terminal Board JG plug.
EY	336A5026EYG0xx	JPDE JSx, JFx of JPDD J28X I/O wetting power to JPDD J28 plug
HF	336A5026HFG015	I/O wetting bulk supply cable into JPDE plugs JPS1 or JPS2 (4.57 m, 15 ft to be cut to length)
HC	336A5026HCG015	Control Power bulk supply cable into JPDS plugs JR, JS, or JT (4.57 m, 15 ft to be cut to length)

General Market IEC Color Cables for JPDG and JPDS/JPDE Applications (continued)

Type	GE Part Number †	Description
LD	336A5026LDG015	Optional 24/48 V dc battery or input of backup I/O wetting power into JPDE plug JD1 (4.57 m, 15 ft to be cut to length)
EF	336A5026EFG015	JPDH JxS or JPDS JAx/JCx control power to IONet switch or UCSC controller (4.57 m, 15 ft to be cut to length)
Ribbon	PDMC10SS50P06IN, 18IN, 36IN	Power diagnostics ribbon cable from JPDS P2 to JPDE P1, when using PPDA on JPDS for power and fusing diagnostics: 152.4 mm (6 in), 457.2 mm (18 in), or 914.4 mm (36 in) ribbon

† xx is length of wire harness in feet



JPDG Power Distribution One-line Diagram

4.2 JPDD I/O Wetting Branch Power Distribution

The IS41yJPDDG#A I/O wetting power distribution boards are approved for use in hazardous locations.



Warning

Do not change fuses or operate power distribution switches while circuits are energized unless the area is known to be non-hazardous.

4.2.1 Electrical Ratings

IS41yJPDDG#A

Item	Min	Nominal	Max	Units
<i>Power Supply Inputs (J28, J28X)</i>				
Voltage	18.5	24.0 / 48.0	60	V dc
Current (60°C, 140 °F ambient)	—	—	20	A dc
Current (70°C, 158 °F ambient)	—	—	18	A dc
<i>Power Supply Inputs (J125, J125X)</i>				
Voltage	90	125	140	V dc
Current	—	—	10	A dc
<i>Power Supply Outputs (JD1–6)</i>				
Voltage	18.5	24.0 / 48.0 / 125	140	V dc
Current	—	—	7	A dc

4.3 JPDE I/O Wetting Power Distribution (Dual Sources)

The IS41yJPDEG1A I/O wetting power distribution board is approved for use in hazardous locations.



Warning

Do not change fuses or operate power distribution switches while circuits are energized unless the area is known to be non-hazardous.

4.3.1 Electrical Ratings

IS41yJPDEG1A

Item	Min	Nominal	Max	Units
<i>Power Supply Inputs (JPDS1, JPDS2)</i>				
Voltage	18.5	24.0 / 48.0	50	V dc
Current (60°C, 140 °F ambient)	—	—	24	A dc
Current (70°C, 158 °F ambient)	—	—	20	A dc
<i>Power Supply Inputs (JPD1)</i>				
Voltage	18.5	24.0 / 48.0	50	V dc
Current	—	—	30	A dc
<i>Power Supply Outputs (JF1–3)</i>				
Voltage	18.5	24.0 / 48.0	50	V dc
Current	—	—	5	A dc
<i>Power Supply Outputs (JFA-C)</i>				
Voltage	18.5	24.0 / 48.0	50	V dc
Current	—	—	10	A dc

4.4 JPDH High Density Power Distribution

The IS210JPDHG1A, IS410JPDHG1A, and IS411JPDHG1A (coated) 28 V dc power distribution modules are approved for use in hazardous locations.

4.4.1 Electrical Ratings

Item	Min	Nominal	Max	Units
<i>Power Supply Inputs (J1, J1X)</i>				
Voltage	22.5	24.0/28.0	28.6	V dc
Current	—	—	13	A dc
<i>Power Supply Outputs (JR1-8, JS1-8, JT1-8)</i>				
Voltage	—	24.0/28.0	-	V dc
Current	—	—	0.8	A dc

4.5 PPDA Power Distribution System Feedback

The following hardware combinations are approved for use in hazardous locations:

- Mark VIe Power Distribution system feedback I/O pack **IS220PPDAH1A** or **ISx2yPPDAH1B** with accessory **ISx0yJPDSG1A** or **IS40yJPDGH1A** (where x = 2 or 4 and y = 0 or 1)

4.5.1 Electrical Ratings

PPDA Power Supply

Item	Min	Nominal	Max	Units
Voltage	PPDAH1B: 22.5 PPDAH1A: 27.4	PPDAH1B: 24.0/28.0 PPDAH1A: 28.0	28.6	V dc
Current	—	—	0.24	A dc

ISx2yPPDAH1B used with Accessory IS40yJPDGH1A

Item	Min	Nominal	Max	Units
<i>Control Power Input (JR, JS)</i>				
Voltage	22.5	24.0/28.0	28.6	V dc
Current at 70°C (158 °F)	—	—	36	A dc
Current at 55°C (131 °F)	—	—	40	A dc
<i>Control Power Outputs (J1-J4)</i>				
Continuous Current	—	—	7	A dc
<i>Control Power Outputs (JC1-JC4)</i>				
Continuous Current	—	—	1.5	A dc
Continuous Current with Ambient 55°C (131 °F)	—	—	2	A dc

ISx2yPPDAH1B used with Accessory IS40yJPDGH1A (continued)

Item	Min	Nominal	Max	Units
<i>Control Power Outputs (JD1-JD5)</i>				
Continuous Current	—	—	0.5	A dc
Continuous Current with Ambient 55°C (131 °F)	—	—	0.9	A dc
<i>Wetting Power Inputs (JPS1, JPS2)</i>				
Voltage	22.5	24.0/48.0	52.8	V dc
Current	—	—	40	A dc
<i>Wetting Power Outputs (JFA-JFG)</i>				
Continuous Current	—	—	8	A dc
Continuous Current with Ambient 55°C (131 °F)	—	—	10	A dc
<i>AC Feedback (JAC1)</i>				
Voltage	—	120/240	—	V ac

ISx2yPPDAH1B used with Accessory ISx0yJPDSG1A

Item	Min	Nominal	Max	Units
<i>Control Power Input (JR, JS, JT)</i>				
Voltage	—	24.0/28.0	—	V dc
Current	—	—	20	A dc
<i>Control Power Outputs (J1-J6)</i>				
Continuous Current	—	—	13	A dc
<i>Control Power Outputs (JAR, JAS, JAT)</i>				
Continuous Current	—	—	0.8	A dc

Appendix A Classified Location Certifications

Note In the following tables, **x** = 2 or 4 and **y** = 0 or 1 for I/O module part numbers.

Mark VIe I/O Modules

Mark VIe I/O Modules Classified Location Certifications

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS210BAPAH1A Accessories: IS210SAMBH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS41yBAPBH1A Accessories: IS210SAMBH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 18 ATEX 2032X
IS220PAICH1A Accessories: IS200STAIH1A IS200STAIH2A IS200TBAIH1C	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PAICH1B Accessories: IS200STAIH1A IS200STAIH2A IS200TBAIH1C IS400STAIH1A IS400STAIH2A IS400TBAIH1C	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PAOCH1B Accessories: IS200STAOH1A IS200STAOH2A IS200TBAOH1C	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X

Mark VIe I/O Modules Classified Location Certifications (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PCLAH1A Accessories: IS210SCLSH1A IS200SCLTH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PCLAH1B Accessories: IS210SCLSH1A IS200SCLTH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PCNOH1A Accessories: IS200SPIDG1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PCNOH1B Accessories: IS200SPIDG1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PDIAH1A Accessories: IS200STCIH1A IS200STCIH2A IS200STCIH8A IS200TBCIH2C IS200TBCIH4C	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PDIAH1B Accessories: IS200STCIH1A IS200STCIH2A IS200STCIH8A IS200TBCIH2C IS400TBCIH2C IS200TBCIH4C IS400STCIH1A IS400STCIH2A IS400STCIH8A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X

Mark VIe I/O Modules Classified Location Certifications (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS221PDIAH1B Accessories: IS201STCIH1A IS201STCIH2A IS201STCIH8A IS201TBCIH2C IS201TBCIH4C	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PDIIH1B Accessories: IS200SDIIH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PDIOH1A Accessories: IS200TDBSH2A IS200TDBTH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PDIOH1B Accessories: ISx0yTDBSH2A ISx0yTDBSH8A ISx0yTDBTH2A ISx0yTDBTH8A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PDOAH1A Accessories: IS200TRLYH2E IS200TRLYH3E IS200TRLYH1F IS200TRLYH2F	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X

Mark VIe I/O Modules Classified Location Certifications (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PDOAH1B Accessories: IS200TRLYH2E IS200TRLYH3E IS200TRLYH1F IS200TRLYH2F IS200SRLYH1A IS200SRLYH2A IS400SRLYH1A IS400SRLYH2A IS40yWROBH1A IS40yWROFH1A IS40yWROGH1A IS40yWROHH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS221PDOAH1B Accessories: IS201TRLYH2E IS201TRLYH3E IS201TRLYH1F IS201TRLYH2F	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PHRAH1A Accessories: IS200SHRAH1A IS200SHRAH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PHRAH1B Accessories: IS200SHRAH1A IS200SHRAH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS221PHRAH1B Accessories: IS201SHRAH1A IS201SHRAH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PPRAH1A Accessories: IS200TREA1A IS200WREA1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X

Mark VIe I/O Modules Classified Location Certifications (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PPRAS1A Accessories: IS200TREAS1A IS200WREAS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PPRAS1B Accessories: IS200TREAS1A IS200WREAS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PPRFH1A Accessories: IS200SPIDG1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PPRFH1B Accessories: IS200SPIDG1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PPROH1A Accessories: IS200SPROH1A IS200SPROH2A IS200TPROH1C IS200TPROH2C IS200TREAH1A IS200TREAH3A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PPROS1B Accessories: IS200SPROH1A IS200SPROH2A IS200TPROH1C IS200TPROH2C IS200TPROS1C IS200TPROS2C IS200TREAH1A IS200TREAH3A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PRTDH1A Accessories: IS200TRTDH2D IS200SRTDH1A IS200SRTDH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X

Mark VIe I/O Modules Classified Location Certifications (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PRTDH1B Accessories: IS200TRTDH2D IS200SRTDH1A IS200SRTDH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS221PRTDH1B Accessories: IS201TRTDH2D IS201SRTDH1A IS201SRTDH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PSCAH1A Accessories: IS200SSCAH1A IS200SSCAH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PSCAH1B Accessories: IS200SSCAH1A IS200SSCAH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS221PSCAH1B Accessories: IS201SSCAH1A IS201SSCAH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS42yPSCAH1B Accessories: IS40ySSCAH1A IS40ySSCAH2A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PSVOH1A Accessories: IS200TSVCH2A IS210WSVOH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PSVOH1B Accessories: IS200TSVCH2A IS210WSVOH1A IS410WSVOH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X

Mark VIe I/O Modules Classified Location Certifications (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PTCCH1A Accessories: IS200STTCH1A IS200STTCH2A IS200TBCH1B IS200TBCH1C	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PTCCH1B Accessories: IS200STTCH1A IS200STTCH2A IS200TBCH1B IS200TBCH1C	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220PTURH1A Accessories: IS200TRPAH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PTURH1B Accessories: IS200TRPAH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS42yPUAAH1A Accessories: IS410SUAAH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 16 ATEX 1738X
IS220PVIBH1A Accessories: IS200TVBAH2A IS200WNPSH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS420PVIBH1B Accessories: IS200TVBAH2A IS40yTVBAH2B IS200WNPSH1A IS400WNPSH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS42yPDASH1A Accessories: IS40yTCDMS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 18 ATEX 2032X

Mark VIeS Safety I/O Modules

Mark VIeS Safety I/O Modules Classified Location Certifications

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220YAICS1A Accessories: IS200STAIS1A IS400STAIS1A IS200STAIS2A IS400STAIS2A IS200TBAIS1C IS400TBAIS1C	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
ISx2yYAICS1B Accessories: ISx0ySTAIS1A ISx0ySTAIS2A ISx0yTBAIS1C	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220YDIAS1A Accessories: IS200STCIS1A IS200STCIS2A IS200TBCIS2C IS400TBCIS2C IS400STCIS1A IS400STCIS2A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
ISx2yYDIAS1B Accessories: ISx0ySTCIS1A ISx0ySTCIS2A IS40ySTCIS4A ISx0yTBCIS2C IS40yTBCIS3C	UL E207685	UL E207685	UL E207685	UL DEMKO 18 ATEX 2032X
IS220YDOAS1A Accessories: IS200TRLYS1F IS200TRLYS2F IS400TRLYS1F IS400TRLYS2F	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X

Mark VIeS Safety I/O Modules Classified Location Certifications (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
ISx2yYDOAS1B Accessories: IS40yTRLYS1B ISx0yTRLYS1F ISx0yTRLYS2F IS40yTRLYS1D IS40ySRLYS2A IS40yWROBH1A IS40yWROFH1A IS40yWROGH1A IS40yWROHH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 18 ATEX 2032X
IS220YHRAS1A Accessories: IS200SHRAS1A IS200SHRAS2A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220YPROS1A Accessories: IS200SPROS1A IS200TPROS1C IS200TPROS2C IS200TREAS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220YTCCS1A Accessories: IS200STTCS1A IS400STTCS1A IS200STTCS2A IS400STTCS2A IS200BTCS1B IS200BTCS1C IS400BTCS1C	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220YTURS1A Accessories: IS200TRPAS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS42yYUAAS1A Accessories: IS41ySUAAS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 16 ATEX 1738X

Mark VIeS Safety I/O Modules Classified Location Certifications (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220YVIBS1A Accessories: IS200TVBAS2A IS200WNPSS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS42yYVIBS1B Accessories: ISx0yTVBAS2A IS40yTVBAS2B ISx0yWNPSS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1214780X
IS220YSILS1A Accessories: IS200TCSAS1A IS200WCSAS1A IS200SCSAS1A IS40ySSUPS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1114875X
IS220YSILS1B Accessories: IS200TCSAS1A IS200WCSAS1A IS200SCSAS1A IS40ySSUPS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 13 ATEX 1114875X
IS42yYDASS1A Accessories: IS40yTCDMS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 18 ATEX 2032X

Switches and Controllers

Switches and Controllers Classified Location Certifications

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS420ESWAH1A IS421ESWAH1A IS420ESWAH2A IS421ESWAH2A IS420ESWAH3A IS421ESWAH3A IS420ESWAH4A IS420ESWAH5A IS420ESWBH1A IS421ESWBH1A IS420ESWBH2A IS421ESWBH2A IS420ESWBH3A IS421ESWBH3A IS420ESWBH4A IS420ESWBH5A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220UCSAH1A IS420UCSBH1A IS421UCSBH1A IS420UCSBH3A IS420UCSBH4A IS4210UCSBH4A IS420UCSBS1A IS421UCSBS1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS420UCSCH1 IS420UCSCH2 IS420UCSCS2	UL E207685	UL E207685	UL E207685	UL DEMKO 20 ATEX 2359X
IS420UCSDH1 IS420UCSDS1	UL E207685	UL E207685	UL E207685	UL DEMKO 20 ATEX 2359X

Power Distribution

Power Distribution Classified Location Certifications

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS210JPDHG1A IS410JPDHG1A IS411JPDHG1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
IS220PPDAH1A Accessories: IS200JPDSG1A	UL E207685	UL E207685	UL E207685	UL DEMKO 12 ATEX 1114875X
ISx2yPPDAH1B Accessories: ISx0yJPDSG1A IS40yJPDGH1A	UL E207685	UL E207685	UL E207685	UL DEMKO 18 ATEX 2032X
IS41yJPDDG1A IS41yJPDDG2A IS41yJPDDG3A IS41yJPDDG4A	UL E207685	UL E207685	UL E207685	UL DEMKO 18 ATEX 2032X
IS41yJPDEG1A	UL E207685	UL E207685	UL E207685	UL DEMKO 18 ATEX 2032X

Appendix B Classified Location Standards

Note In the following tables, **x** = 2 or 4 and **y** = 0 or 1 for I/O module part numbers.

Mark VIe I/O Modules

Mark VIe I/O Modules Classified Location Standards

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS210BAPAH1A Accessories: IS210SAMBH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS410BAPBH1A Accessories: IS210SAMBH1A	UL 61010-1 Ed. 3 UL 61010-2-201 Ed. 1 CAN/CSA-C22.2 No. 61010-1-12 CAN/CSA-IEC 61010-2-201:14	UL 121201 Ed. 9 CAN/CSA-C22.2 No. 213-17	UL 60079-0 Ed. 6 UL 60079-7 Ed. 5 UL 60079-11 Ed. 6 CAN/CSA-C22.2 No. 60079-0:15 CAN/CSA-C22.2 No. 60079-7:16 CAN/CSA-C22.2 No. 60079-11:14	EN 60079-0:2018 EN 60079-7:2015 EN 60079-11:2012
IS220PAICH1A Accessories: IS200STAIH1A IS200STAIH2A IS200TBAIH1C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010

Mark VIe I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PAICH1B Accessories: IS200STAIH1A IS200STAIH2A IS200TBAIH1C IS400STAIH1A IS400STAIH2A IS400TBAIH1C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PAOCH1B Accessories: IS200STAOH1A IS200STAOH2A IS200TBAOH1C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PCLAH1A Accessories: IS210SCLSH1A IS200SCLTH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PCLAH1B Accessories: IS210SCLSH1A IS200SCLTH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PCNOH1A Accessories: IS200SPIDG1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PCNOH1B Accessories: IS200SPIDG1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010

Mark VIe I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PDIAH1A Accessories: IS200STCIH1A IS200STCIH2A IS200STCIH8A IS200TBCIH2C IS200TBCIH4C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PDIAH1B Accessories: IS200STCIH1A IS200STCIH2A IS200STCIH8A IS200TBCIH2C IS400TBCIH2C IS200TBCIH4C IS400STCIH1A IS400STCIH2A IS400STCIH8A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS221PDIAH1B Accessories: IS201STCIH1A IS201STCIH2A IS201STCIH8A IS201TBCIH2C IS201TBCIH4C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PDIIH1B Accessories: IS200SDIIH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010

Mark VIe I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PDIOH1A Accessories: IS200TDBSH2A IS200TDBTH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PDIOH1B Accessories: ISx0yTDBSH2A ISx0yTDBSH8A ISx0yTDBTH2A ISx0yTDBTH8A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PDOAH1A Accessories: IS200TRLYH2E IS200TRLYH3E IS200TRLYH1F IS200TRLYH2F	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PDOAH1B Accessories: IS200TRLYH2E IS200TRLYH3E IS200TRLYH1F IS200TRLYH2F IS200SRLYH1A IS200SRLYH2A IS400SRLYH1A IS400SRLYH2A IS40yWROBH1A IS40yWROFH1A IS40yWROGH1A IS40yWROHH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2017 CAN/CSA-C22.2 No. 213-17	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012+A11:2013 EN 60079-11:2012 EN 60079-15:2010

Mark VIe I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS221PDOAH1B Accessories: IS201TRLYH2E IS201TRLYH3E IS201TRLYH1F IS201TRLYH2F	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PHRAH1A Accessories: IS200SHRAH1A IS200SHRAH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PHRAH1B Accessories: IS200SHRAH1A IS200SHRAH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS221PHRAH1B Accessories: IS201SHRAH1A IS201SHRAH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PPRAH1A Accessories: IS200TREA1A IS200WREA1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PPRAS1A Accessories: IS200TREAS1A IS200WREAS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PPRAS1B Accessories: IS200TREAS1A IS200WREAS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010

Mark VIe I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PPRFH1A Accessories: IS200SPIDG1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PPRFH1B Accessories: IS200SPIDG1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PPROH1A Accessories: IS200SPROH1A IS200SPROH2A IS200TPROH1C IS200TPROH2C IS200TREA1A IS200TREA3A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PPROS1B Accessories: IS200SPROH1A IS200SPROH2A IS200TPROH1C IS200TPROH2C IS200TPROS1C IS200TPROS2C IS200TREA1A IS200TREA3A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PRTDH1A Accessories: IS200TRTDH2D IS200SRTDH1A IS200SRTDH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010

Mark VIe I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PRTDH1B Accessories: IS200TRTDH2D IS200SRTDH1A IS200SRTDH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS221PRTDH1B Accessories: IS201TRTDH2D IS201SRTDH1A IS201SRTDH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PSCAH1A Accessories: IS200SSCAH1A IS200SSCAH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PSCAH1B Accessories: IS200SSCAH1A IS200SSCAH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS221PSCAH1B Accessories: IS201SSCAH1A IS201SSCAH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS42yPSCAH1B Accessories: IS40ySSCAH1A IS40ySSCAH2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PSVOH1A Accessories: IS200TSVCH2A IS210WSVOH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PSVOH1B Accessories: IS200TSVCH2A IS210WSVOH1A IS410WSVOH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010

Mark VIe I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PTCCH1A Accessories: IS200STTCH1A IS200STTCH2A IS200BTCH1B IS200BTCH1C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PTCCH1B Accessories: IS200STTCH1A IS200STTCH2A IS200BTCH1B IS200BTCH1C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220PTURH1A Accessories: IS200TRPAH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PTURH1B Accessories: IS200TRPAH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS42yPUAAH1A Accessories: IS41ySUAH1A	UL 61010-1 Ed. 3 UL 61010-2-201 Ed. 1 CAN/CSA-C22.2 No. 61010-1-12 CAN/CSA-IEC 61010-2-201:14	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 6 UL 60079-11 Ed. 6 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:15 CAN/CSA-C22.2 No. 60079-11:14 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012+A11:2013 EN 60079-11:2012 EN 60079-15:2010
IS42yPDASH1A Accessories: IS40yTCDMS1A	UL 61010-1 Ed. 3 UL 61010-2-201 Ed. 2 CAN/CSA-C22.2 No. 61010-1-19 CAN/CSA-C22.2 No. 61010-2-201:18	ANSI/ISA-12.12.01-2017 CAN/CSA-C22.2 No. 213-17	UL 60079-0 Ed. 6 UL 60079-7 Ed. 5 UL 60079-11 Ed. 6 CAN/CSA-C22.2 No. 60079-0:15 CAN/CSA-C22.2 No. 60079-7:16 CAN/CSA-C22.2 No. 60079-11:14	EN 60079-0:2018 EN 60079-7:2015+A1:2018 EN 60079-11:2012

Mark VIe I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220PVIBH1A Accessories: IS200TVBAH2A IS200WNPSH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
S420PVIBH1B Accessories: IS40yTVBAH2B IS200TVBAH2A IS200WNPSH1A IS400WNPSH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010

Mark VIeS Safety I/O Modules

Mark VIeS Safety I/O Modules Classified Location Standards

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220YAICS1A Accessories: IS200STAIS1A IS400STAIS1A IS200STAIS2A IS400STAIS2A IS200TBAIS1C IS400TBAIS1C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
ISx2yYAICS1B Accessories: ISx0ySTAIS1A ISx0ySTAIS2A ISx0yTBAIS1C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220YDIAS1A Accessories: IS200STCIS1A IS200STCIS2A IS200TBCIS2C IS400TBCIS2C IS400STCIS1A IS400STCIS2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
ISx2yYDIAS1B Accessories: ISx0ySTCIS1A ISx0ySTCIS2A IS40ySTCIS4A ISx0yTBCIS2C IS40yTBCIS3C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-7 Ed. 5 (STCIS4A and TBCIS3C only) UL 60079-15 Ed. 3 (STCIS1A, STCIS2A, and TBCIS2C only) CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-7:16 (STCIS4A and TBCIS3C only) CAN/CSA-C22.2 No. 60079-15:12 (STCIS1A, STCIS2A, and TBCIS2C only)	EN 60079-0:2012 EN 60079-11:2012 (does not apply to STCIS4A or TBCIS3C) EN 60079-7:2015

Mark VIeS Safety I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220YDOAS1A Accessories: IS200TRLYS1F IS200TRLYS2F IS400TRLYS1F IS400TRLYS2F	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
ISx2yYDOAS1B Accessories: IS40yTRLYS1B ISx0yTRLYS1F ISx0yTRLYS2F IS40yTRLYS1D IS40ySRLYS2A IS40yWROBH1A IS40yWROFH1A IS40yWROGH1A IS40yWROHH1A	UL 61010-1 Ed. 3 UL 61010-2-201 Ed. 1 CAN/CSA-C22.2 No. 61010-1-12 CAN/CSA-IEC 61010-2-201:14 (TRLYS1D, TRLYS1B, WROBH1A, WROFH1A, and WROGH1A only) UL 61010-1 Ed. 3 UL 61010-2-201 Ed. 2 CAN/CSA-C22.2 No. 61010-1-19 CAN/CSA-IEC 61010-2-201:18 (WROHH1A only) UL 508 Ed. 17 CSA-C22.2 No. 142-M1987 (SRLYS2A, TRLYS1F, and TRLYS2F only)	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15 ANSI/ISA-12.12.01-2017 CAN/CSA-C22.2 No. 213-17 (WROHH1A only)	UL 60079-0 Ed. 5 UL 60079-0 Ed.6 (WROHH1A only) UL 60079-7 Ed. 5 (TRLYS1B, TRLYS1D, WROBH1A, WROFH1A, and WROGH1A only) UL 60079-15 Ed. 3 (SRLYS2A, TRLYS1F, and TRLYS2F only) CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-0:15 (WROHH1A only) CAN/CSA-C22.2 No. 60079-7:16 (TRLYS1D, WROBH1A, WROFH1A, and WROGH1A only) CAN/CSA-C22.2 No. 60079-15:12 (SRLYS2A, TRLYS1F, and TRLYS2F only)	EN 60079-0:2018 EN 60079-11:2012 EN 60079-7:2015+A1:2018
IS220YHRAS1A Accessories: IS200SHRAS1A IS200SHRAS2A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010

Mark VIeS Safety I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS220YPROS1A Accessories: IS200SPROS1A IS200TPROS1C IS200TPROS2C IS200TREAS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220YTCCS1A Accessories: IS200STTCS1A IS400STTCS1A IS200STTCS2A IS400STTCS2A IS200BTCS1B IS200BTCS1C IS400BTCS1C	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2010
IS220YTURS1A Accessories: IS200TRPAS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS42yYUAAS1A Accessories: IS41ySUAAS1A	UL 61010-1, 3rd Edition UL 61010-2-201, 1st Edition CAN/CSA-C22.2 No. 61010-1-12 CAN/CSA-IEC 61010-2-201:14	ANSI/ISA 12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 6 UL 60079-11 Ed. 6 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:15 CAN/CSA-C22.2 No. 60079-11:14	EN 60079-0:2012+A11:2013 EN 60079-11:2012 EN 60079-15:2010
IS220YVIBS1A Accessories: IS200TVBAS2A IS200WNPSS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS42yYVIBS1B Accessories: ISx0yTVBAS2A IS40yTVBAS2B ISx0yWNPSS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010

Mark VIeS Safety I/O Modules Classified Location Standards (continued)

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS42yYDASS1A Accessories: IS40yTCDMS1A	UL 61010-1 Ed. 3 UL 61010-2-201 Ed. 2 CAN/CSA-C22.2 No. 61010-1-19 CAN/CSA-C22.2 No. 61010-2-201:18	ANSI/ISA-12.12.01-2017 CAN/CSA-C22.2 No. 213-17	UL 60079-0 Ed. 6 UL 60079-7 Ed. 5 UL 60079-11 Ed. 6 CAN/CSA-C22.2 No. 60079-0:15 CAN/CSA-C22.2 No. 60079-7:16 CAN/CSA-C22.2 No. 60079-11:14	EN 60079-0:2018 EN 60079-7:2015+A1:2018 EN 60079-11:2012
IS220YSILS1A Accessories: IS200TCSAS1A IS200WCSAS1A IS200SCSAS1A IS40ySSUPS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220YSILS1B Accessories: IS200TCSAS1A IS200WCSAS1A IS200SCSAS1A IS40ySSUPS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010

Switches and Controllers

Switches and Controllers Classified Location Standards

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS420ESWAH1A IS421ESWAH1A IS420ESWAH2A IS421ESWAH2A IS420ESWAH3A IS421ESWAH3A IS420ESWAH4A IS420ESWAH5A IS420ESWBH1A IS421ESWBH1A IS420ESWBH2A IS421ESWBH2A IS420ESWBH3A IS421ESWBH3A IS420ESWBH4A IS420ESWBH5A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220UCSAH1A IS420UCSBH1A IS421UCSBH1A IS420UCSBH3A IS420UCSBH4A IS421UCSBH4A IS420UCSBS1A IS421UCSBS1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS420UCSCH1 IS420UCSCH2 IS420UCSCS2	UL 61010-1 UL 61010-2-201 CSA-C22.2 No. 61010-1 CSA-C22.2 No. 61010-2-201	ANSI/ISA-12.12.01-2015 CSA-C22.2 No. 213-15	UL 60079-0 UL 60079-15 CAN-CSA-C22.2 No. 60079-0:11 CAN-CSA-C22.2 No. 60079-15:12	EN 60079-0:2012+A11:2013 EN 60079-7:2015
IS420UCSDH1 IS420UCSDS1	UL 61010-1 UL 61010-2-201 CSA-C22.2 No. 61010-1 CSA-C22.2 No. 61010-2-201	ANSI/ISA-12.12.01-2015 CSA-C22.2 No. 213-15	UL 60079-0 UL 60079-15 CAN-CSA-C22.2 No. 60079-0:11 CAN-CSA-C22.2 No. 60079-15:12	EN 60079-0:2012+A11:2013 EN 60079-7:2015+A1:2018

Power Distribution

Power Distribution Classified Location Standards

Equipment	Non-hazardous	Class I, Division 2, Groups A, B, C, D	Class I, Zone 2, Group IIC	ATEX Zone 2, Group IIC
IS210JPDHG1A IS410JPDHG1A IS411JPDHG1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
IS220PPDAH1A Accessories: IS200JPDSG1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-15 Ed. 3 CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-15:12	EN 60079-0:2012 EN 60079-15:2010
ISx2yPPDAH1B Accessories: ISx0yJPDSG1A IS40yJPDGH1A	UL 508 Ed. 17 CSA-C22.2 No. 142-M1987	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-7 Ed. 5 (JPDGH1A only) UL 60079-15 Ed. 3 (JPDSG1A only) CAN/CSA-C22.2 No. 60079-0:11 CAN/CSA-C22.2 No. 60079-7:16 (JPDGH1A only) CAN/CSA-C22.2 No. 60079-15:12 (JPDSG1A only)	EN 60079-0:2012 EN 60079-7:2015
IS41yJPDDG1A IS41yJPDDG2A IS41yJPDDG3A IS41yJPDDG4A	UL 61010-1 Ed. 3 UL 61010-2-201 Ed. 1 CAN/CSA-C22.2 No. 61010-1-12 CAN/CSA-IEC 61010-2-201:14	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-7 Ed. 5 CAN/CSA-C22.2 No. 60079-7:16	EN 60079-0:2012 EN 60079-7:2015
IS41yJPDEG1A	UL 61010-1 Ed. 3 UL 61010-2-201 Ed. 1 CAN/CSA-C22.2 No. 61010-1-12 CAN/CSA-IEC 61010-2-201:14	ANSI/ISA-12.12.01-2015 CAN/CSA-C22.2 No. 213-15	UL 60079-0 Ed. 5 UL 60079-7 Ed. 5 CAN/CSA-C22.2 No. 60079-7:16	EN 60079-0:2012 EN 60079-7:2015

Appendix C Equipment Markings

Note In the following tables, **x** = 2 or 4 and **y** = 0 or 1 for I/O module part numbers.

Mark VIe I/O Modules

Mark VIe I/O Modules Equipment Markings

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS210BAPAH1A Accessories: IS210SAMBH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS410BAPBH1A Accessories: IS210SAMBH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx ic ec [ic] IIC T4 Gc; Ex ic ec [ic] IIC T4 Gc X	Ex ic ec [ic] IIC T4 Gc
IS220PAICH1A Accessories: IS200STAIH1A IS200STAIH2A IS200TBAIH1C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS220PAICH1B Accessories: IS200STAIH1A IS200STAIH2A IS200TBAIH1C IS400STAIH1A IS400STAIH2A IS400TBAIH1C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS220PAOCH1B Accessories: IS200STAOH1A IS200STAOH2A IS200TBAOH1C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc

Mark VIe I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS220PCLAH1A Accessories: IS210SCLSH1A IS200SCLTH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS220PCLAH1B Accessories: IS210SCLSH1A IS200SCLTH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS220PCNOH1A Accessories: IS200SPIDG1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PCNOH1B Accessories: IS200SPIDG1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PDIAH1A Accessories: IS200STCIH1A IS200STCIH2A IS200STCIH8A IS200TBCIH2C IS200TBCIH4C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
IS220PDIAH1B Accessories: IS200STCIH1A IS200STCIH2A IS200STCIH8A IS200TBCIH2C IS400TBCIH2C IS200TBCIH4C IS400STCIH1A IS400STCIH2A IS400STCIH8A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc

Mark VIe I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS221PDIAH1B Accessories: IS201STCIH1A IS201STCIH2A IS201STCIH8A IS201TBCIH2C IS201TBCIH4C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
IS220PDIIH1B Accessories: IS200SDIIH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PDIOH1A Accessories: IS200TDBSH2A IS200TDBTH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS220PDIOH1B Accessories: ISx0yTDBSH2A ISx0yTDBTH2A ISx0yTDBSH8A ISx0yTDBTH8A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS220PDOAH1A Accessories: IS200TRLYH2E IS200TRLYH3E IS200TRLYH1F IS200TRLYH2F	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic nA IIC T4 Gc

Mark VIe I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS220PDOAH1B Accessories: IS200TRLYH2E IS200TRLYH3E IS200TRLYH1F IS200TRLYH2F IS200SRLYH1A IS200SRLYH2A IS400SRLYH1A IS400SRLYH2A IS40yWROBH1A IS40yWROFH1A IS40yWROGH1A IS40yWROHH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic nA IIC T4 Gc
IS221PDOAH1B Accessories: IS201TRLYH2E IS201TRLYH3E IS201TRLYH1F IS201TRLYH2F	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic nA IIC T4 Gc
IS220PHRAH1A Accessories: IS200SHRAH1A IS200SHRAH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PHRAH1B Accessories: IS200SHRAH1A IS200SHRAH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS221PHRAH1B Accessories: IS201SHRAH1A IS201SHRAH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc

Mark VIe I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS220PPRAH1A Accessories: IS200TREA1A IS200WREA1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PPRAS1A Accessories: IS200TRES1A IS200WRES1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PPRAS1B Accessories: IS200TRES1A IS200WRES1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PPRFH1A Accessories: IS200SPIDG1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PPRFH1B Accessories: IS200SPIDG1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PPROH1A Accessories: IS200SPROH1A IS200SPROH2A IS200TPROH1C IS200TPROH2C IS200TREA1A IS200TREA3A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PPROS1B Accessories: IS200SPROH1A IS200SPROH2A IS200TPROH1C IS200TPROH2C IS200TPROS1C IS200TPROS2C IS200TREA1A IS200TREA3A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc

Mark VIe I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS220PRTDH1A Accessories: IS200TRTDH2D IS200SRTDH1A IS200SRTDH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
IS220PRTDH1B Accessories: IS200TRTDH2D IS200SRTDH1A IS200SRTDH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
IS221PRTDH1B Accessories: IS201TRTDH2D IS201SRTDH1A IS201SRTDH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
IS220PSCAH1A Accessories: IS200SSCAH1A IS200SSCAH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PSCAH1B Accessories: IS200SSCAH1A IS200SSCAH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS221PSCAH1B Accessories: IS201SSCAH1A IS201SSCAH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS42yPSCAH1B Accessories: IS40ySSCAH1A IS40ySSCAH2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PSVOH1A Accessories: IS200TSVCH2A IS210WSVOH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic nA IIC T4 Gc

Mark VIe I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS220PSVOH1B Accessories: IS200TSVCH2A IS210WSVOH1A IS410WSVOH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic nA IIC T4 Gc
IS220PTCCH1A Accessories: IS200STTCH1A IS200STTCH2A IS200BTCH1B IS200BTCH1C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
IS220PTCCH1B Accessories: IS200STTCH1A IS200STTCH2A IS200BTCH1B IS200BTCH1C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
IS220PTURH1A Accessories: IS200TRPAH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PTURH1B Accessories: IS200TRPAH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS42yPUAAH1A Accessories: IS41ySUAH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx ic nA [ic] IIC T4, Ex ic nA [ic] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS220PVIBH1A Accessories: IS200TVBAH2A IS200WNPSH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc

Mark VIe I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS420PVIBH1B Accessories: IS200TVBAH2A IS40yTVBAH2B IS200WNPSH1A IS400WNPSH1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS42yPDASH1A Accessories: IS40yTCDMS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx ec ic [ic] IIC T4, Ex ec ic [ic] IIC T4 Gc X	Ex ec ic [ic] IIC T4 Gc

Mark VIeS Safety I/O Modules

Mark VIeS Safety I/O Modules Equipment Markings

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS220YAICS1A Accessories: IS200STAIS1A IS400STAIS1A IS200STAIS2A IS400STAIS2A IS200TBAIS1C IS400TBAIS1C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
ISx2yYAICS1B Accessories: ISx0ySTAIS1A ISx0ySTAIS2A ISx0yTBAIS1C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC [nC] IIC T4, Ex nA nL [nL] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc
IS220YDIAS1A Accessories: IS200STCIS1A IS200STCIS2A IS200TBCIS2C IS400TBCIS2C IS400STCIS1A IS400STCIS2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
ISx2yYDIAS1B Accessories: ISx0ySTCIS1A ISx0ySTCIS2A IS40ySTCIS4A ISx0yTBCIS2C IS40yTBCIS3C	Class I, Div 2, Groups A, B, C, D, T4	When used with accessories ISx0ySTCIS1A, ISx0ySTCIS2A, ISx0yTBCIS2C: Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X When used with accessories IS40ySTCIS4A, IS40yTBCIS3C: Class I, Zone 2, AEx/Ex ec IIC T4 Gc X	When used with accessories ISx0ySTCIS1A, ISx0ySTCIS2A, ISx0yTBCIS2C: Ex ec [ic] IIC T4 Gc When used with accessories IS40ySTCIS4A, IS40yTBCIS3C: Ex ec IIC T4 Gc
IS220YDOAS1A Accessories: IS200TRLYS1F IS200TRLYS2F IS400TRLYS1F IS400TRLYS2F	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic nA IIC T4 Gc

Mark VIeS Safety I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
ISx2yYDOAS1B Accessories: IS40yTRLYS1B ISx0yTRLYS1F ISx0yTRLYS2F IS40yTRLYS1D IS40ySRLYS2A IS40yWROBH1A IS40yWROFH1A IS40yWROGH1A IS40yWROHH1A	Class I, Div 2, Groups A, B, C, D, T4	When used with accessories IS40yTRLYS1D, IS40yTRLYS1B, IS40yWROBH1A, IS40yWROFH1A, IS40yWROGH1A: Class I, Zone 2, AEx/Ex ic ec IIC T4 Gc X When used with accessories ISx0yTRLYS1F, ISx0yTRLYS2F, IS40ySRLYS2A: Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic ec IIC T4 Gc
IS220YHRAS1A Accessories: IS200SHRAS1A IS200SHRAS2A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220YPROS1A Accessories: IS200SPROS1A IS200TPROS1C IS200TPROS2C IS200TREAS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220YTCCS1A Accessories: IS200STTCS1A IS400STTCS1A IS200STTCS2A IS400STTCS2A IS200BTCS1B IS200BTCS1C IS400BTCS1C	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA [nC] IIC T4, Ex nA [nL] IIC T4 Gc X	Ex nA [ic] IIC T4 Gc
IS220YTURS1A Accessories: IS200TRPAS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS42yYUAAS1A Accessories: IS41ySUAAS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx ic nA [ic] IIC T4, Ex ic nA [ic] IIC T4 Gc X	Ex ic nA [ic] IIC T4 Gc

Mark VIeS Safety I/O Modules Equipment Markings (continued)

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS220YVIBS1A Accessories: IS200TVBAS2A IS200WNPSS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS42yYVIBS1B Accessories: ISx0yTVBAS2A IS40yTVBAS2B ISx0yWNPSS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220YSILS1A Accessories: IS200TCSAS1A IS200WCSAS1A IS200SCSAS1A IS40ySSUPS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic nA IIC T4 Gc
IS220YSILS1B Accessories: IS200TCSAS1A IS200WCSAS1A IS200SCSAS1A IS40ySSUPS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA nC IIC T4, Ex nA nL IIC T4 Gc X	Ex ic nA IIC T4 Gc
IS42yYDASS1A Accessories: IS40yTCDMS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx ec ic [ic] IIC T4, Ex ec ic [ic] IIC T4 Gc X	Ex ec ic [ic] IIC T4 Gc

Switches and Controllers

Switches and Controllers Equipment Markings

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS420ESWAH1A IS421ESWAH1A IS420ESWAH2A IS421ESWAH2A IS420ESWAH3A IS421ESWAH3A IS420ESWAH4A IS420ESWAH5A IS420ESWBH1A IS421ESWBH1A IS420ESWBH2A IS421ESWBH2A IS420ESWBH3A IS421ESWBH3A IS420ESWBH4A IS420ESWBH5A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220UCSAH1A IS420UCSBH1A IS421UCSBH1A IS420UCSBH3A IS420UCSBH4A IS421UCSBH4A IS420UCSBS1A IS421UCSBS1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS420UCSCH1 IS420UCSCH2 IS420UCSCS2	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx/Ex nA IIC T4 Gc	Ex ec IIC T4 Gc
IS420UCSDH1 IS420UCSDS1	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx/Ex nA IIC T4 Gc	Ex ec IIC T4 Gc

Power Distribution

Power Distribution Equipment Markings

Equipment	US & CAN Class I Div 2	US & CAN Class I Zone 2	ATEX Zone 2
IS210JPDHG1A IS410JPDHG1A IS411JPDHG1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
IS220PPDAH1A Accessories: IS200JPDSG1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex nA IIC T4 Gc
ISx2yPPDAH1B Accessories: ISx0yJPDSG1A IS40yJPDGH1A	Class I, Div 2, Groups A, B, C, D, T4	When used with accessories IS40yJPDGH1A: Class I, Zone 2, AEx/Ex ec IIC T4 Gc X When used with accessories ISx0yJPDSG1A: Class I, Zone 2, AEx nA IIC T4, Ex nA IIC T4 Gc X	Ex ec IIC T4 Gc
IS41yJPDDG1A IS41yJPDDG2A IS41yJPDDG3A IS41yJPDDG4A	Class I, Div 2, Groups A, B, C, D, T3A	Class I, Zone 2, AEx/Ex ec IIC T3 Gc X	Ex ec IIC T3 Gc
IS41yJPDEG1A	Class I, Div 2, Groups A, B, C, D, T4	Class I, Zone 2, AEx/Ex ec IIC T4 Gc X	Ex ec IIC T4 Gc

Notes

Appendix D Ambient Temperature Ratings

Note In the following tables, **y** = 0 or 1 for module part numbers.

Ambient Temperature Ratings

GE Part Number	Ambient Temperature Rating
IS200JPDLG1A	-30 to + 65 °C (-22 to +149 °F)
IS210BAPAH1A	
IS220PAICH1A	
IS220PAOCH1B	
IS220PCLAH1A	
IS220PCLAH1B	
IS220PDIAH1A	
IS220PDIIH1B	
IS220PDIOH1A	
IS220PDIOH1B	
IS220PDOAH1A	
IS220PHRAH1A	
IS220PHRAH1B	
IS220PPDAH1A	
IS220PPRAH1A	
IS220PPRAS1A	
IS220PPRAS1B	
IS220PPROH1A	
IS220PPROS1B	
IS220PRTDH1A	
IS220PRTDH1B	
IS220PSCAH1A	
IS220PSCAH1B	
IS220PSCHH1A	
IS220PSVOH1A	
IS220PSVOH1B	
IS220PTCCH1A	
IS220PTCCH1B	
IS220PTURH1A	
IS220PTURH1B	
IS220PVIBH1A	
IS220YAICS1A	
IS220YDIAS1A	
IS220YDOAS1A	
IS220YHRAS1A	
IS220YPROS1A	
IS220YSILS1A	
IS220YSILS1B	
IS220YTCCS1A	
IS220YTURS1A	
IS220YVIBS1A	
IS221PHRAH1B	

Ambient Temperature Ratings (continued)

GE Part Number	Ambient Temperature Rating
IS221PRTDH1B	-30 to + 65 °C (-22 to +149 °F)
IS221PSCAH1B	
IS420PPNGH1A	
IS420UCSBH1A	
IS420UCSBH4A	
IS420UCSBS1A	
IS421UCSBH1A	
IS421UCSBH4A	
IS421UCSBS1A	
IS421UCSBS1A	
IS220PCNOH1A	-20 to +55 °C (-4 to +131 °F)
IS220PCNOH1B	
IS220PPRFH1A	
IS220PPRFH1B	
IS220UCSAH1A	0 to 65 °C (32 to 149 °F)
IS420UCSBH3A	
IS41yBAPBH1A	-40 to +70 °C (-40 to 158 °F)
IS41yJPDDG1A	
IS41yJPDDG2A	
IS41yJPDDG3A	
IS41yJPDDG4A	
IS41yJPDEG1A	
IS210JPDHG1A	
IS400JPDHG1A	
IS410JPDHG1A	
IS411JPDHG1A	
ISx2yPAICH1B	
ISx2yPDI AH1B	
ISx2yPDOAH1B	
ISx2yPPDAH1B	
IS42yPSCAH1B	
IS42yPVIBH1B	
IS42yPUAAH1A	
ISx2yYAICS1B	
ISx2yYDIAS1B	
ISx2yYDOAS1B	
IS42yYUAAS1A	
IS42yYVIBS1B	
IS42yESWAH1A	
IS42yESWAH2A	
IS42yESWAH3A	
IS42yESWAH4A	
IS42yESWAH5A	
IS42yESWBH1A	
IS42yESWBH2A	
IS42yESWBH3A	

Ambient Temperature Ratings (continued)

GE Part Number	Ambient Temperature Rating
IS42yESWBH4A	-40 to +70 °C (-40 to 158 °F)
IS42yESWBH5A	
IS420UCSCH1	
IS420UCSCH2	
IS420UCSCS2	
IS420UCSDH1	
IS420UCSDS1	
IS42yPDASH1A	
IS42yYDASS1A	

Notes



Public Information