



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEX UL 21.0091X** Page 1 of 3 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2021-09-16

Applicant: **GE Drives & Controls Inc.**
1501 Roanoke Blvd.
Salem, VA 24153
United States of America

Equipment: **Mark VIe Programmable Controller System, I/O Packs, Cat. Nos. IS42yYDOAS1B, IS42yYDIAS1B, IS42yPPDAH1B, IS41yJPDDGzA, IS41yJPDEG1A, IS41yBAPBH1A, IS42yPDASH1A, IS42yYDASS1A.**

Optional accessory: I/O Terminal Boards ISx0yTRLYS1D, ISx0yTRLYS1B, ISx0yTRLYS1F, ISx0yTRLYS2F, ISx0ySRLYS2A, ISx0ySTCIS4A, ISx0yTBCIS3C, ISx0ySTCIS1A, ISx0ySTCIS2A, ISx0yTBCIS2C, IS21ySAMBH1A and IS40yTCDMS1A; Power Distribution Boards, ISx0yJPDGH1A and ISx0yJPDSG1A; and Output Monitor Boards, IS40yWROBH1A, IS40yWROFH1A, IS40yWROGH1A and IS40yWROHH1A

Type of Protection: **Increased safety "ec", Intrinsic safety "ic"**

Marking: Ex ec IIC T4 Gc
Ex ec IIC T3 Gc
Ex ic ec IIC T4 Gc
Ex ec [ic] IIC T4 Gc
Ex ic ec [ic] IIC T4 Gc
Power Distribution Boards IS41yJPDDGzA:
-40°C to +70°C or -40°C to +60°C
For all other models:
-40°C to +70°C or -40°C to +55°C
Refer to Annex for details.

Approved for issue on behalf of the IECEx
Certification Body:

Katy A. Holdredge

Position:

Senior Staff Engineer

Signature:
(for printed version)

Date:

2021-09-16

1. This certificate and schedule may only be reproduced in full.
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Certificate issued by:

UL LLC
333 Pfingsten Road
Northbrook IL 60062-2096
United States of America





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Manufacturer: **GE Drives & Controls Inc.**
1501 Roanoke Blvd.
Salem, VA 24153
United States of America

Additional manufacturing locations: **Jabil Circuit (Guangzhou) Ltd.**
128 Jun Cheng Road, East Section,
Guangzhou Economic and
Technological Development District,
Guangdong Province, 510530
China

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

STANDARDS :

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

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

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

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

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

TEST & ASSESSMENT REPORTS:

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

Test Report:

[US/UL/ExTR21.0093/00](#)

Quality Assessment Reports:

[US/UL/QAR21.0014/00](#)

[US/UL/QAR21.0016/00](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

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

The Mark VIe I/O Packs Modules, Cat No IS42yYDOAS1B, IS42yYDIAS1B, IS42yPPDAH1B, IS41yJPDDGzA, IS41yJPDEG1A, IS41yBAPBH1A, IS42yPDASH1A, and IS42yYDASS1A are intended to be used with accessory terminal boards, power distribution boards and optional output monitor boards as shown in Table I below. Installation of these I/O packs must be in accordance with the Control Drawing No. GEH-6725.

Please see Annex for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- Provision shall be made to limit transient voltages to less than 140% of the peak rated voltage.
- This equipment shall be used in an environment of not more than Pollution Degree 2 (as defined in IEC 60664-1).
- The equipment are intended to be installed in an enclosure providing ingress protection not less than IP54 in accordance with IEC 60079-0.
- This equipment shall be powered through a power distribution board that is certified for the applicable classified location. This equipment shall be powered by a switched-mode power supply (SMPS) that is certified for the applicable location and has its output current limited to 20 A maximum, and has the features listed for Vendor Manufactured Control Power supplies in GEH-6721_Vol_II, Mark VIe Control, Volume II System Hardware Guide.

Annex:

[Annex to IECEx UL 21.0091X Issue 0.pdf](#)



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TYPE DESIGNATION

Nomenclature:

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

I - 2 – not RoHS compliant
4 – RoHS compliant

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

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

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

IV – Function mnemonic – Any four A-Z characters

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

VI – BOM variant – Any number 1-9

VII – Major revision – Single letter

VIII – Minor revision – One or two letters

TABLE I

I/O Pack	I/O Terminal Boards	Power Distribution Boards	Optional Output Monitor Boards	Protection Method Employed
ISx2yYDOAS1B	ISx0yTRLYS1D	-	-	Ex ic ec IIC T4 Gc
	ISx0yTRLYS1B	-	-	
	ISx0yTRLYS1F	-	-	
	ISx0yTRLYS2F	-	-	
	ISx0ySRLYS2A	-	-	
-		-	IS40yWROFH1A	
-		-	IS40yWROGH1A	
-		-	IS40yWROHH1A	
ISx2yYDIAS1B	ISx0ySTCIS4A	-	-	Ex ec IIC T4 Gc
	ISx0yTBCIS3C	-	-	
	ISx0ySTCIS1A	-	-	Ex ec [ic] IIC T4 Gc
	ISx0ySTCIS2A	-	-	
	ISx0yTBCIS2C	-	-	
ISx2yPPDAH1B	-	ISx0yJPDGH1A	-	Ex ec IIC T4 Gc
	-	ISx0yJPDSG1A	-	
IS41yJPDDGZA	-	-	-	Ex ec IIC T3 Gc



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I/O Pack	I/O Terminal Boards	Power Distribution Boards	Optional Output Monitor Boards	Protection Method Employed
IS41yJPDEG1A	-	-	-	Ex ec IIC T4 Gc
IS41yBAPBH1A	IS21ySAMBH1A	-	-	Ex ic ec [ic] IIC T4 Gc
IS42yPDASH1A	IS40yTCDMS1A	-	-	Ex ic ec [ic] IIC T4 Gc
IS42yYDASS1A				

Note – (where x is 2 or 4, y is 0 or 1, and z is 1, 2, 3 or 4)

PARAMETERS RELATING TO SAFETY

Ambient & T-code:

Cat. No.	Ambient Temperature Range	Temperature Class
ISx2yYDOAS1B	-40°C to +55°C -40°C to +70°C	T4
ISx2yYDIAS1B	-40°C to +55°C -40°C to +70°C	T4
ISx2yPPDAH1B	-40°C to +55°C -40°C to +70°C	T4
IS41yJPDDGzA	-40°C to +60°C -40°C to +70°C	T3
IS41yJPDEG1A	-40°C to +55°C -40°C to +70°C	T4
IS41yBAPBH1A	-40°C to +55°C -40°C to +70°C	T4
IS42yPDASH1A	-40°C to +70°C	T4
IS42yYDASS1A	-40°C to +70°C	T4

Electrical Ratings:

I/O Pack	With Accessory Board	Ratings
ISx2yYDOAS1B	ISx0yTRLYS1D; ISx0yTRLYS1B	'ic' Apparatus Entity Parameters Vmax = 24 Vdc Imax = 261 mA per relay Pi = 6.26 W Ci = 0 uF Li = 0 mH
	ISx0yTRLYS1F ISx0yTRLYS2F	24-48Vdc, 0.71A max, Contact Out : Ui = 30.0 V dc li = 152 mA Pi = 4.56 W Ci = 0 uF Li = 0 mH



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I/O Pack	With Accessory Board	Ratings
	ISx0ySRLYS2A	<p>24-48Vdc, 0.71A max, Contact Out (TRLYS1F, 2F): 30 V dc, 5 A dc</p> <p> $U_i = 30.0 \text{ V dc}$ $I_i = 152 \text{ mA}$ $P_i = 4.56 \text{ W}$ $C_i = 0 \text{ uF}$ $L_i = 0 \text{ mH}$ </p> <p>When used with Optional Output Monitor Boards IS40yWROBH1A, IS40yWROGH1A and IS400WROFH1A, the following additional rating applies: Supply Ratings (Wetting Power): 24/125Vdc/120/240Vac, 13.5A max. (monitors 6 relays fused by 3.15A) Supply Rating (Wetting Power – JG1): 24/125Vdc/120/240Vac, 5A</p> <p>When used with Optional Monitor Board IS40yWROHH1A: Supply ratings (Wetting power): J1: 24/48Vdc, 18 A max (provides 3.15A fused power distribution and monitors fuse status) JG1: 24/48Vdc, 5A</p>
ISx2yYDIAS1B	ISx0ySTCIS4A	Wetting Voltage: 48V,0.1A TB: 48V
	ISx0yTBCIS3C	Wetting Voltage: 48V,0.1A TB: 48V
	ISx0ySTCIS1A ISx0ySTCIS2A ISx0yTBCIS2C	<p>Input: 24-28 Vdc, 0.24 A max Contact In: 0 to 32 V dc STCIS1A, 2A, TBCIS2C: Contact Wetting Out: 32 V dc, 110 mA dc</p> <p> Circuits 1-21 : Circuits 22-24 : $U_o = 32.0 \text{ V dc}$ $U_o = 32.0 \text{ V dc}$ $I_o = 3.3 \text{ mA}$ $I_o = 13.4 \text{ mA}$ $C_o = 0.18 \text{ uF}$ $C_o = 0.18 \text{ uF}$ $L_o = 100 \text{ mH}$ $L_o = 100 \text{ mH}$ $P_o = 0.11 \text{ W}$ $P_o = 0.43 \text{ W}$ </p>
ISx2yPPDAH1B	ISx0yJPDGH1A	<p>Power Supply (PPDA): 24-28 V dc, 0.24 A dc Control Power Inputs (JR, JS): 24-28 V dc, 36 A dc@ 70C or 40A dc @ 55C ambient</p> <p>Control Power Outputs (J1-J4): 24-28 V dc, 7 A dc Control Power Outputs (JC1-JC4): 24-28 V dc, 1.5 A dc @ 70C or 2A dc @ 55C ambient. Control Power Outputs (JD1-JD5): 24-28 V dc, 0.5 A dc@ 70C or 0.9A dc @ 55C ambient.</p> <p>Wetting Power Inputs(JPS1, JPS2): 28-48 V dc, 40A dc Wetting Power Outputs (JFA-JFG): 28-48 V dc, 8 A dc@ 70C or 10A dc @ 55C ambient. AC Feedback(JAC1): 120-240 Vac</p>
	ISx0yJPDSG1A	<p>Power Supply (PPDA): 24-28 V dc, 0.24 A dc Power Supply Inputs (JR, JS, JT): 24-28 V dc, 20 A dc Power Supply Outputs (J1-J6): 24-28 V dc, 13 A dc Power Supply Outputs (JAR, JAS, JAT): 24-28 V dc, 0.8 A dc</p>
	IS41yJPDDG1A IS41yJPDDG2A	Wetting voltage: 24/48/125/Vdc Output:



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I/O Pack	With Accessory Board	Ratings
	IS41yJPDDG3A	6 outputs 7A max each, limited to 20A max total at 60°C; Limited to 18A max total @ 70°C
	IS41yJPDDG4A	Wetting voltage: 24/48/125Vdc Output: 6 outputs 0.5A on each output
	IS41yJPDEG1A	Wetting Voltage: 24/48Vdc Output: JS1,JS2,JS3 5A each JFA,JFB,JFC 10A each 30A max total when using JD1; 24A max total when using JPS1
I/O Pack IS41yBAPBH1A	IS21ySAMBH1A	Power Supply: 28 V dc, 0.5 A dc Pressure In: 12 to 18.5 V dc Sensor Power Out: 12 to 18.5 V dc, 2.9 to 4.3 mA dc Buffered Out: -10 to +10 V dc, 5 mA dc Surrounding Air Temperature: 70°C Non-incendive Field Wiring Parameters for Controller pack System Cat. No. IS410BAPBH1A: Pressure Inputs Vmax = 25 Vdc Imax = 4.3 mA Pi = 108 mW Ci = 0.011 uF Li = 0 mH Sensor Power Outputs: Voc or Uo = 25 V Isc or Io = 4.3 mA Po = 108 mW Ca or Co = 0.4 uF La or Lo = 100 mH
I/O Pack IS42yPDASH1A and IS42yYDASS1A	IS40yTCDMS1A	Power Supply: 28 V dc, 1.1 A dc Pressure In: -10 to 18.5 V dc Sensor Power Out: 10 to 18.5 V dc, 2.9 to 4.3 mA dc Buffered Out: -10 to +10 V dc, 5 mA dc Surrounding Air Temperature: 70°C Non-incendive Field Wiring Parameters: Pressure Inputs Sensor Power Outputs Vmax = 25 Vdc Imax = 4.3 mA Pi = 108 mW Ci = 0.011 uF Li = 0 mH Sensor Power Outputs: Voc or Uo = 25 V Isc or Io = 4.3 mA Po = 108 mW Ca or Co = 0.4 uF La or Lo = 100 mH



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
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
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MARKING

Marking has to be readable and indelible; it has to include the following indications:

1. The registered GE Drives & Controls Inc. trademark;
2. 1501 Roanoke Blvd, Salem, Virginia, 24153, USA;
3. Cat. No. or Model Name;
4. Electrical Supply Ratings;
5.  For reference to installation instruction information;
6. Date code in text or barcode form;
7. Serial number;
8. Protection string as defined in "General Information" section; and
9. Certificate numbers.

Accessory board markings:

1. The registered GE Drives & Controls Inc. trademark;
2. Cat. No. or Model Name;
3. Electrical Supply Ratings;
4.  For reference to installation instruction information; and
5. Certificate numbers.

Additional Marking for Replaceable Fuses:

The below Fuse Type, Voltage and Current ratings shall be marked adjacent to the Fuse holders on the below Terminal Boards & Power Distribution boards.

IS41yJPDDGzA	FU1N-FU6N, FU1P-FU6P – 48VDC minimum, 15A maximum.
IS41yJPDEG1A	FU11,12,21,22,31,32 - 48VDC minimum, 7A maximum. FUA1-2, FUB1-2, FUC1-2 - 48VDC minimum, 15A maximum.
IS40yTRLYS1D	125VDC minimum, 3.15A
IS40yWROBH1A, IS40yWROFH1A, IS40yWROGH1A, IS40yWROHH1A, IS40yTRLYS1B	250VAC, 125VDC minimum, 3.15A
IS40yJPDGH1A	FU1-FU8 – 28VDC minimum, 10A FU10-FU23 –48VDC minimum, 15A