BEKA associates

BA329 Indicator certificates which comprise, BA3101 or BA3102 Operator Display, BA3201 CPU module and BA3301 AI module 4-20mA.

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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Certificate No.:	**IECEx CML 20.0150X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2023-03-22) Issue 0 (2021-06-25)
Date of Issue:	2024-05-14		

Applicant: **BEKA associates Ltd.**
Old Charlton Road
Hitchin SG5 2DA
United Kingdom

Equipment: **BA3101 and BA3102: Pageant Operator Display. BA3103: Pageant Backplane.**

Optional accessory:

Type of Protection: **Intrinsic safety Ex "i"**

Marking: Ex ia IIC T4 Ga

Ex ia IIIC T135°C Da

-40°C ≤ Ta ≤ +65°C

Approved for issue on behalf of the IECEx Certification Body: **L A Brisk**

Position: **Assistant Certification Manager**

Signature: (for printed version)

Date: (for printed version) 14 May 2024

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Certificate issued by:

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Unit 1, Newport Business Park
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Ellesmere Port, CH65 4LZ
United Kingdom

IECEx Certificate of Conformity

Certificate No.: **IECEx CML 20.0150X**

Date of issue: 2024-05-14 Issue No: 2

Manufacturer: **BEKA associates Ltd.**
Old Charlton Road
Hitchin SG5 2DA
United Kingdom

Manufacturing locations: **BEKA associates Ltd.**
Old Charlton Road
Hitchin SG5 2DA
United Kingdom

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 Edition:7.0 — Explosive atmospheres - Part 0: Equipment - General requirements

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

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 Reports:

GB/CML/ExTR20.0215/00 GB/CML/ExTR23.0071/00 GB/CML/ExTR24.0044/00

Quality Assessment Report:

GB/ITS/QAR06.0002/11

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The BA3101/BA3102 Pageant Operator Display is the heart of the Pageant system and comprises a motherboard, LCD, backlight, touch buttons, and associated electronics housed within a non-metallic enclosure.

See annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:
See Annex for Specific Conditions of Use.

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Issue 1
This issue introduces the following changes:

1. Minor change to PCB layout.
2. Component value changes.
3. Other minor documentation updates.

Issue 2
This issue introduces the following changes:

1. Introduction of a new type of display with a polycarbonate window, type BA3102.
2. Introduction of a new type of display with no viewing window, type BA3103.
3. Introduction of IP66 rating to the three types.

Annex:

Certificate Annex IECEx 20.0150X, Issue 2.pdf

Annexe to:	IECEx CML 20.0150X Issue 02
Applicant:	BEKA Associates Ltd.
Apparatus:	BA3101 and BA3102: Pageant Operator Display. BA3103: Pageant Backplane.

Description

The BA3101/BA3102 Pageant Operator Display is the heart of the Pageant system and comprises a motherboard, LCD, backlight, touch buttons, and associated electronics housed within a non-metallic enclosure.

The front face of the equipment incorporates a window for the display and buttons. The rear of the equipment contains 8 slots for the connection of up to 8, separately certified, intrinsically safe modules.

The BA3103 Pageant Backplane has no window, LCD backlight or touch buttons.

The equipment is certified for use in areas requiring equipment protection levels Ga and Da and intrinsic safety is achieved by limiting energy storage and discharge, and by connecting to other intrinsically safe equipment.

The sockets have the following intrinsic safety parameters:

SK1 (CPU interface, Slot C)			**SK2 – SK8 (I/O module, slots 1-7)**	
Barrier Power in **Terminals 39, 40**	**3V3_CPU supply** **Terminals 29, 31**	**Data Buses** **Terminals 1-14, 17-22, 24, 26, 28, 30, 32**	**Barrier Power out** **Terminals 1-4**	**Data/supply** **Terminals 21-40**
Ui = 12.4V		Ui = 4.1V		Ui = 0
Ii = 2.68A		Ii = 203mA		Ii =0
Pi = 5.44W		Pi = 208mW		Pi = 0
	Uo = 4.0V	Uo = 4.1V	Uo = 12.4V	Uo = 4.1V
	Io = 2.25A	Io = 2.5A	Io = 2.68A	Io = 2.7A
	Po = 1.06W	Po = 1.06W	Po = 5.44W	Po = 1.27W
Ci = 0	Ci = 3.40µF	Ci = 34.02µF	Ci = 0	Ci = 34.02µF
Li = 0	Li = 0	Li = 0	Li = 0	Li = 0

The front of the BA3102 complies with the requirements of EN/IEC 60079-0 for Metallic and non-Metallic parts (Group II or Group III equipment). When a BA3102 is correctly installed in an Ex e or Ex t certified enclosure, the BA3102 will not invalidate the certification of the enclosure and maintain the IP rating of the enclosure to a degree of IP66 protection.

Eurofins E&E CML Limited
Newport Business Park
New Port Road
Ellesmere Port
CH65 4LZ

T +44 (0) 151 559 1160
E info@cmlex.com

www.cmlex.com

Company Reg No. 8554022 VAT No. GB163023642

Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

i. Where the product incorporates certified parts or safety critical components, the manufacturer of the product defined on this certificate shall continually monitor these parts/components for any modifications introduced by the manufacturer(s) of these constituent parts. If the manufacturer of any constituent part introduces any changes which affect the compliance of the certified product that is the subject of this certificate, the manufacturer is required to have this certificate updated.

ii. The manufacturer shall ensure that sufficient documentation is provided with the equipment pertaining to the architecture and design of the BEKA Pageant System, to permit the user to make the necessary intrinsically safe system calculations and documentation.

Specific Conditions of Use

The following conditions relate to safe installation and/or use of the equipment.

i. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with a damp cloth.

ii. The metal bezel of the equipment shall be connected to earth via the integral earth stud.

iii. In installations requiring EPLs Da, Db, or Dc, the surface temperature assigned to this equipment shall take precedence over the surface temperature assigned to any module which may be installed within its enclosure.

iv. In installations requiring EPL Da, Db, or Dc, the equipment shall be mounted as part of an enclosure which provides a minimum degree of protection of IP5X and which meets the requirements of EN/IEC60079-0 Clause 8.4 (material composition requirements for metallic enclosures for Group III) and/or EN/IEC60079-0 Clause 7.4.3 (avoidance of a build-up of electrostatic charge for Group III) as appropriate.

All cable entries into the equipment shall be made via cable glands which provide a minimum degree of protection of IP5X.

v. This equipment shall only be used as part of a BEKA Pageant System.

Components covered by Ex Certificates issued to older editions of Standards

None.

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Certificate No.:	**IECEx CML 20.0152X**	Page 1 of 3	Certificate history:
Status:	**Current**	Issue No: 0	
Date of Issue:	2021-06-25		
Applicant:	**BEKA associates Ltd.** Old Charlton Road Hitchin SG5 2DA **United Kingdom**		
Equipment:	**BA320x CPU Module**		
Optional accessory:			
Type of Protection:	**Intrinsic safety**		
Marking:	Ex ia IIC T4 Ga Ex ia IIIC T120°C Da -40°C ≤ Ta ≤ +65°C		

Approved for issue on behalf of the IECEx Certification Body: **A Snowdon MIET**

Position: **Assistant Certification Manager**

Signature: (for printed version)

Date: 2021-06-25

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IECEx Certificate of Conformity

Certificate No.: **IECEx CML 20.0152X** Page 2 of 3

Date of issue: 2021-06-25 Issue No: 0

Manufacturer: **BEKA associates Ltd.**
Old Charlton Road
Hitchin SG5 2DA
United Kingdom

Additional manufacturing locations:

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

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:

GB/CML/ExTR20.0217/00

Quality Assessment Report:

GB/ITS/QAR06.0002/08

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The BA320x CPU Module is an intrinsically safe module intended for use with the Pageant system. The module comprises circuit boards mounted within a non-metallic enclosure with a single card edge connector for plugging into separately certified equipment (e.g. the Pageant Display unit).

See Annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:
See Annex for Specific Conditions of Use.

Annex:

IECEx CML 20.0152X Annex Iss 0.pdf

Annexe to: IECEx CML 20.0152X, Issue 0

Applicant: BEKA associates Ltd.

Apparatus: BA320x CPU Module

Description

The BA320x CPU Module is an intrinsically safe module intended for use with the Pageant system. The module comprises circuit boards mounted within a non-metallic enclosure with a single card edge connector for plugging into separately certified equipment (e.g. the Pageant Display unit).

The equipment also carries a terminal block for connection of the external supply and a programming connector for use in the safe area only.

Depending on the model type, the equipment may contain a communications module with connector for connection to separately certified intrinsically safe equipment.

The following model types are available:

Model number	Description
BA3201	CPU only, no communications option fitted
BA3202	CPU unit with Modbus RTU communications
BA3203	CPU unit with Profibus DP communications

Intrinsic safety is achieved by limiting energy storage and discharge, and by connecting to other equipment via intrinsically safe interface devices.

The equipment has the following intrinsically safe parameters for each connector:

Barrier Power in **TB1** **Terminals 1-2**	**Barrier Power out** **PL1 Terminals 39, 40**	**3V3_CPU supply** **PL1 Terminals 29, 31**	**Data Buses** **PL1 Terminals 1-14, 17-22, 24, 26, 28, 30, 32**	**Comms Port SK100** **Terminals 1-9**
Ui = 12.4V		Ui = 4.1V	Ui = 4.1V	Ui = 4.2V
Ii = 2.68A		Ii = 2.30A		
Pi = 5.44W		Pi = 1.09W		
	Uo = 12.4V		Uo = 4.1V	Uo = 3.8V
	Io = 2.68A		Io = 203mA	Io = 132mA
	Po = 5.44W		Po = 208mW	Po = 126mW
Ci = 0	Ci = 0	Ci = 498µF	Ci = 0	Ci = 0
Li = 0	Li = 4µH	Li = 0	Li = 0	Li = 0

Unit 1, Newport Business Park
New Port Road
Ellesmere Port
CH65 4LZ

T +44 (0) 151 559 1160
E info@cmlex.com

www.cmlex.com

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Barrier Power in TB1 Terminals 1-2	Barrier Power out PL1 Terminals 39, 40			3V3_CPU supply PL1 Terminals 29, 31	Data Buses PL1 Terminals 1-14, 17-22, 24, 26, 28, 30, 32	Comms Port SK100 Terminals 1-9
	SEE NOTE 1	Co =	Lo =			
	IIA	30µF	35.6µH			
	IIB	7.9µF	15.8µH			
	IIC	1.24µF	0.95µH			
	III	7.9µF	15.8µH			

NOTE 1 - The above load parameters apply when one of the two conditions below is met:

- the total Li of the external circuit (excluding the cable) is < 1% of the Lo value or
- the total Ci of the external circuit (excluding the cable) is < 1% of the Co value.

If neither of the above conditions are met, the load parameters are both reduced by 50%. Additionally, the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIA, IIB, and III, and 600nF for Group IIC.

Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

i. Where the product incorporates certified parts or safety critical components, the manufacturer shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.

ii. The manufacturer shall ensure that sufficient documentation is provided with the equipment pertaining to the architecture and design of the BEKA Pageant System, to permit the user to make the necessary intrinsically safe system calculations and documentation.

Specific Conditions of Use

The following conditions relate to safe installation and/or use of the equipment.

i. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with a damp cloth.

ii. In installations requiring EPL Da, Db, or Dc, the equipment shall be mounted within an enclosure which provides a minimum degree of protection of IP5X and which meets the requirements of IEC 60079-0 Clause 8.4 (material composition requirements for metallic enclosures for Group III) and/or IEC 60079-0 Clause 7.4.3 (Avoidance of a build-up of electrostatic charge for Group III) as appropriate.

All cable entries into the equipment shall be made via cable glands which provide a minimum degree of protection of IP5X.

iii. The equipment shall only be connected to programming equipment via SK3 when in the safe area and shall only be connected via the galvanically isolating interface unit provided by the manufacturer.

iv. This equipment shall only be used as part of a BEKA Pageant System.

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Certificate No.:	**IECEx CML 21.0101X**	Page 1 of 3	Certificate history:
Status:	**Current**	Issue No: 0	
Date of Issue:	2021-07-30		
Applicant:	**BEKA associates Ltd.** Old Charlton Road Hitchin SG5 2DA **United Kingdom**		
Equipment:	**BA3301 AI Module 4-20mA**		
Optional accessory:			
Type of Protection:	**Intrinsic safety**		
Marking:	Ex ia IIC T4 Ga Ex ia IIIC T135°C Da Ta = -40°C to +65°C		

Approved for issue on behalf of the IECEx Certification Body:	**A Snowdon MIET**
Position:	**Assistant Certification Manager**
Signature: (for printed version)	A Snowdon
Date:	2021-07-30

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IECEx Certificate of Conformity

Certificate No.: **IECEx CML 21.0101X** Page 2 of 3

Date of issue: 2021-07-30 Issue No: 0

Manufacturer: **BEKA associates Ltd.**
Old Charlton Road
Hitchin SG5 2DA
United Kingdom

Additional manufacturing locations:

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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

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:

GB/CML/ExTR21.0145/00

Quality Assessment Report:

GB/ITS/QAR06.0002/08

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The BA3301 AI module 4-20mA is an intrinsically safe module intended for use with the Pageant system. The module comprises a circuit board mounted within a non-metallic enclosure with a single card edge connector for plugging into separately certified equipment (e.g. the Pageant Display unit).

See Annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:
See Annex for specific conditions of use.

Annex:

IECEx CML 21.0101X Annex Issue 0.pdf

Annexe to: IECEx CML 21.0101X, Issue 0

Applicant: BEKA associates Ltd.

Apparatus: BA3301 AI module 4-20mA

Description

The BA3301 AI module 4-20mA is an intrinsically safe module intended for use with the Pageant system. The module comprises a circuit board mounted within a non-metallic enclosure with a single card edge connector for plugging into separately certified equipment (e.g. the Pageant Display unit).

The equipment also carries terminal blocks for the connection to external analogue inputs.

Intrinsic safety is achieved by limiting energy storage and discharge, and by connecting to other equipment via intrinsically safe interface devices. The equipment has the following parameters:

Barrier Power in PL3 Terminals 1 - 4	**3V3 supply and data PL3 Terminals 21 - 40**	**Analogue Inputs TB1 – TB4 (values are for each input)**
Ui = 12.4V	Ui = 4.1V	Ui = 30V
Ii = 2.68A		Ii = 200mA
Pi = 5.44W		Pi = 0.84W
	Uo = 0	Uo = 0
	Io = 0	Io = 0
	Po = 0	Po = 0
Ci = 0	Ci = 0	Ci = 0
Li = 0	Li = 0	Li = 4µH

Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification:

i. Where the product incorporates certified parts or safety critical components, the manufacturer shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.

ii. The manufacturer shall ensure that sufficient documentation is provided with the equipment pertaining to the architecture and design of the BEKA Pageant System, to permit the user to make the necessary intrinsically safe system calculations and documentation.

Unit 1, Newport Business Park
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Ellesmere Port
CH65 4LZ

T +44 (0) 151 559 1160
E info@cmlex.com

www.cmlex.com

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Specific Conditions of Use

The following conditions relate to safe installation and/or use of the equipment:

i. Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with a damp cloth.

ii. In installations requiring EPL Da, Db, or Dc, the equipment shall be within an enclosure which provides a minimum degree of protection of IP5X and which meets the requirements of IEC60079-0 Clause 8.4 (material composition requirements for metallic enclosures for Group III) and/or IEC60079-0 Clause 7.4.3 (Avoidance of a build-up of electrostatic charge for Group III) as appropriate.

All cable entries into the equipment shall be made via cable glands which provide a minimum degree of protection of IP5X.

iii. This equipment shall only be used as part of a BEKA Pageant System.