BA489 Modbus RTU Display certificates which comprise, BA3101 or BA3102 Operator Display and BA3202 CPU module.

UK Type Examination Certificate CML 21UKEX2003X Issue 2

United Kingdom Conformity Assessment

1 Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

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

3 Manufacturer **BEKA associates Ltd.**

4 Address **Old Charlton Road,**
Hitchin, Herts.
SG5 2DA, UK

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom, Approved Body Number 2503, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.

The examination and test results are recorded in the confidential reports listed in Section 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to specific conditions of use (affecting correct installation or safe use). These are specified in Section 14.

8 This UK Type Examination certificate relates only to the design and construction of the specified equipment. Further requirements of the Regulations apply to the manufacturing process and supply of the product. These are not covered by this certificate.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

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

10 The equipment shall be marked with the following:

II 1 G D

Ex ia IIC T4 Ga

Ex ia IIIC T135°C Da

Ta = -40°C ≤ Ta ≤ +65°C

11 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.

Variation 1
This variation introduces the following modifications:

i. Minor change to PCB layout.
ii. Component value changes.
iii. Other minor documentation updates.

Variation 1
This variation introduces the following modifications:

i. Introduction of a new type of display with a polycarbonate window, type BA3102.
ii. Introduction of a new type of display with no viewing window, type BA3103.
iii. Introduction of IP66 rating to the three types.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	25 Jun 2021	R13600A/00	Issue of prime certificate.
1	22 Mar 2023	R16296A/00	The introduction of variation 1.
2	14 May 2024	R16895A/00	The introduction of variation 2.

Note: Drawings that describe the equipment are listed in the Annex.

13 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.

14 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.

Certificate Annex

Certificate Number	**CML 21ATEX2003X**
Equipment	**BA3101 and BA3102: Pageant Operator Display.**
	BA3103: Pageant Backplane
Manufacturer	**BEKA associates Ltd.**

The following documents describe the equipment defined in this certificate:

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
CI3101-01	1 to 33	1	25 Jun 2021	ATEX & IECEx Certification Information for BEKA BA3101 Display Unit

Issue 1

Drawing No	Sheets	Rev	Approved date	Title
CI3101-01	1 to 33	2	21 Mar 2023	ATEX & IECEx Certification Information for BEKA BA3101 Display Unit

Issue 2

Drawing No.	Sheets	Rev	Approved date	Title
CI3101-01	1 to 33	3	14 May 2024	ATEX & IECEx Certification Information for BEKA BA3101, BA3102 and BA3103

UK Type Examination Certificate CML 21UKEX2005X Issue 0

United Kingdom Conformity Assessment

1 Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

2 Equipment **BA320x CPU Module**

3 Manufacturer **BEKA associates Ltd.**

4 Address **Old Charlton Road, Hitchin, Herts. SG5 2DA, UK**

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom, Approved Body Number 2503, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.

The examination and test results are recorded in the confidential reports listed in Section 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to specific conditions of use (affecting correct installation or safe use). These are specified in Section 14.

8 This UK Type Examination certificate relates only to the design and construction of the specified equipment. Further requirements of the Regulations apply to the manufacturing process and supply of the product. These are not covered by this certificate.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

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

10 The equipment shall be marked with the following:

II 1 G D

Ex ia IIC T4 Ga

Ex ia IIIC T120°C Da

-40°C ≤ Ta ≤ +65°C

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11 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:

<table>
<tr><th>Barrier Power in
TB1
Terminals 1-2</th><th colspan="3">Barrier Power out
PL1 Terminals 39, 40</th><th>3V3_CPU supply
PL1 Terminals 29, 31</th><th>Data Buses
PL1 Terminals 1-14, 17-22, 24, 26, 28, 30, 32</th><th>Comms Port SK100
Terminals 1-9</th></tr>
<tr><td>Ui = 12.4V</td><td colspan="3"></td><td>Ui = 4.1V</td><td>Ui = 4.1V</td><td>Ui = 4.2V</td></tr>
<tr><td>Ii = 2.68A</td><td colspan="3"></td><td>Ii = 2.30A</td><td></td><td></td></tr>
<tr><td>Pi = 5.44W</td><td colspan="3"></td><td>Pi = 1.09W</td><td></td><td></td></tr>
<tr><td></td><td colspan="3">Uo = 12.4V</td><td></td><td>Uo = 4.1V</td><td>Uo = 3.8V</td></tr>
<tr><td></td><td colspan="3">Io = 2.68A</td><td></td><td>Io = 203mA</td><td>Io = 132mA</td></tr>
<tr><td></td><td colspan="3">Po = 5.44W</td><td></td><td>Po = 208mW</td><td>Po = 126mW</td></tr>
<tr><td>Ci = 0</td><td colspan="3">Ci = 0</td><td>Ci = 498µF</td><td>Ci = 0</td><td>Ci = 0</td></tr>
<tr><td>Li = 0</td><td colspan="3">Li = 4µH</td><td>Li = 0</td><td>Li = 0</td><td>Li = 0</td></tr>
<tr><td></td><td>SEE NOTE 1</td><td>Co =</td><td>Lo =</td><td></td><td></td><td></td></tr>
<tr><td></td><td>IIA</td><td>30µF</td><td>35.6µH</td><td></td><td></td><td></td></tr>
<tr><td></td><td>IIB</td><td>7.9µF</td><td>15.8µH</td><td></td><td></td><td></td></tr>
<tr><td></td><td>IIC</td><td>1.24µF</td><td>0.95µH</td><td></td><td></td><td></td></tr>
<tr><td></td><td>III</td><td>7.9µF</td><td>15.8µH</td><td></td><td></td><td></td></tr>
</table>

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.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	25 Jun 2021	R13616A/00	Issue of prime certificate

Note: Drawings that describe the equipment are listed in the Annex.

13 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.

14 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 EN 60079-0 Clause 8.4 (material composition requirements for metallic enclosures for Group III) and/or EN 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.

Certificate Annex

Certificate Number	**CML 21UKEX2005X**
Equipment	**BA320x CPU Module**
Manufacturer	**BEKA associates Ltd.**

The following documents describe the equipment defined in this certificate:

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
CI3201-01	1 to 22	1	25 Jun 2021	ATEX & IECEx Certification Information for BEKA BA320x CPU Module