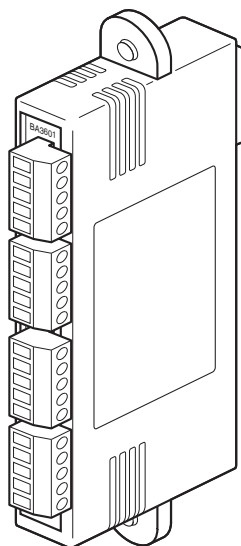


Instructions for BA3601 Pageant Digital Output Module 4 x Contact



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1. INTRODUCTION

The BA3601 plug-in digital output module has four galvanically isolated, unipolar solid state contact outputs. Separate IECEx, ATEX and UKEX intrinsic safety apparatus certification allows it to be safely plugged into any one of the seven slots on a Pageant BA3101 Operator Display.

The output safety parameters of each switch are below those specified for simple apparatus and may be ignored for some applications. This, together with the switches low contact resistance and voltage drop, enable the switch to control almost any intrinsically safe load in any gas or dust hazardous Zone.

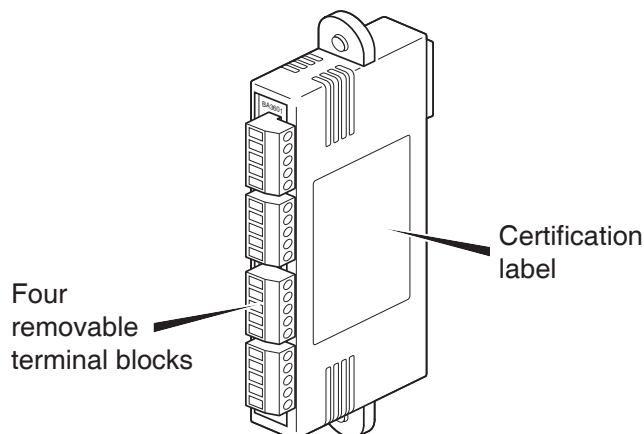


Fig 1 BA3601 Pageant Digital Output Module 4 x Contact

2. INTRINSIC SAFETY CERTIFICATION

Notified Body CML B.V. and UK Approved Body Eurofins CML have issued the plug-in BA3601 Pageant Digital Output module with the following apparatus certificates:

IECEx	IECEx CML 21.0124X
ATEX	CML 21ATEX21097X
UKEX	CML 21UKEX21098X

The ATEX certificate has been used to confirm compliance with the European ATEX Directive for Group II, Category 1GD equipment, similarly the UKEX certificate has been used to confirm compliance with UK statutory requirements. All BA3601 modules carry both the CE and UKCA marks, therefore subject to local codes of practice, they may be installed in any of the European Economic Area (EEA) member countries and in the UK. ATEX certificates are also acceptable for installations in some non EU countries.

These instructions describe IECEx, ATEX and UKEX installations which conform with IEC / EN60079-14 *Electrical installations design, selection and erection*. When designing systems the local code of practice should be consulted.

2.1 Zones, gas groups and T rating

All of the BA3601 certificates specify the same certification codes:

Ex ia IIC T4 Ga
Ex ia IIIC T135°C Da*
-40°C ≤ Ta ≤ 65°C

** Dust certification requires the Pageant Operator Panel and the BA3601 module to have a minimum additional IP54 rear protection - see 2.2 ii.*

Plug-in BA3601 Pageant Digital Output Modules are CE marked to show compliance with the European Explosive Atmospheres Directive 2014/34/EU and the European EMC Directive 2014/30/EU.

The modules are also UKCA marked to show compliance with UK statutory requirements Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations UKSI 2016:1107 (as amended) and with the Electromagnetic Compatibility Regulations UKSI 2016:1091.

2.2 Special conditions for safe use

- 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 to an enclosure which provides a minimum degree of protection of IP5X and which meets the requirements of IEC / EN60079-0 Clause 8.4 (material composition requirements for metallic enclosures for Group III) and/or IEC / EN60079-0 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 provided a minimum degree of protection of IP5X.
- iii. The BA3601 plug-in module shall only be used as part of a BEKA Pageant system.

2.3 Certification label information

The certification information label is fitted to the side of the plug-in BA3601 module. It shows the model number, certification information, BEKA associates address and year of manufacture together with the serial number.



Certification Information Label

3. INSTALLATION

The BA3601 plug-in module should be fitted into one of the seven sockets at the rear of a BA3101 Pageant Operator Panel as shown in Fig 2.

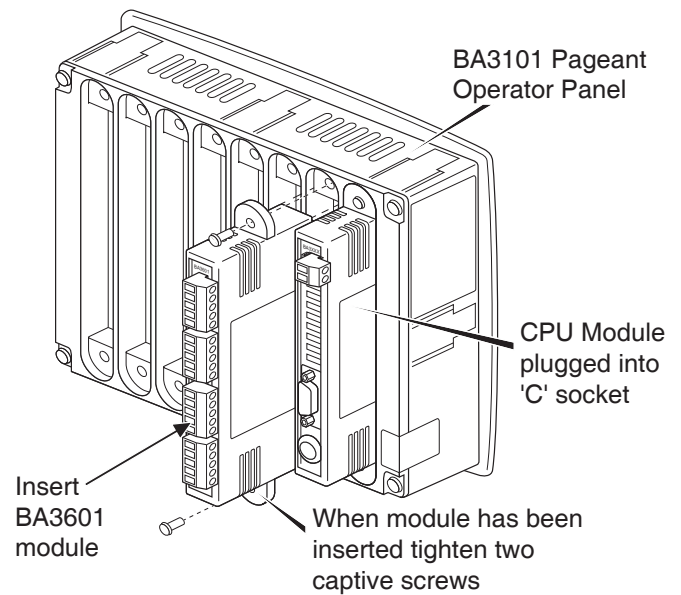


Fig 2 Inserting BA3601 AI module into one of seven sockets

For a hazardous area installation the plug-in module must be manufactured by BEKA and have certification that specifies that it shall be used as part of a BEKA Pageant system.

3.1 Power consumption

The intrinsic safety certification of the BA3601 plug-in module permits any combination to be installed in a Pageant BA3101 display, but there are power limitations.

The percentage of the total available power that the BA3601 consumes is:

BA3601	4 x Contact outputs	4%
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The sum of the percentage power consumption's of all the plug-in modules installed in a BA3101 display must not exceed 100%.

3.2 Plug-in BA3601 module Installation

1. The module may be fitted before or after the Operator Panel is installed. The Operator Panel should not be powered while the module is being fitted.
2. Carefully insert the module into the selected slot at the rear of the BA3101 Pageant Operator Panel. When correctly positioned secure the module by tightening the two captive module fixing screws.
3. Connect field wiring to each of the four removable output terminal blocks. All the outputs are identical as shown in Fig 3. Each of the four outputs is a separate intrinsically safe circuit and field wiring should comply with segregation requirements specified in IEC / EN 60079-14. If a multicore cable is used for the outputs, it should have Type A or B construction as specified in Clause 16.2.2.7 of IEC / EN 60079-14. Wiring should be supported to avoid damaging the module's terminals.

4. OUTPUTS

The Pageant BA3601 module has four galvanically isolated solid state unipolar contact outputs. Each output is certified as a separate intrinsically safe circuit with the following safety parameters.

U_i	=	30V
I_i	=	200mA
P_i	=	0.66W

U_o	=	1.38V
I_o	=	0
P_o	=	0

C_i	=	0
L_i	=	4 μ H

The output safety parameters of each switch are below those specified for simple apparatus and therefore they may be ignored for many applications. This simplification, together with the low switch voltage drop and low switch on resistance, allow almost any certified intrinsically safe powered device such as a sounder, beacon or valve to be easily turned on and off. Controlled devices may be in a flammable gas located in Zone 0, 1, or 2, or in a combustible dust atmosphere located in Zone 20, 21 or 22.

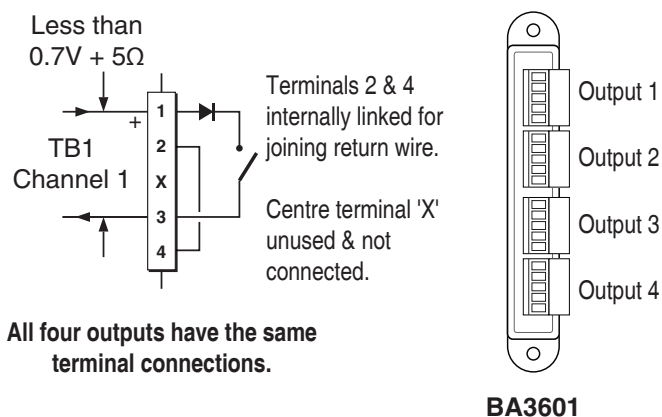


Fig 3 Output terminals

4.1 Controlling powered intrinsically safe devices

Certified intrinsically safe devices such as beacons, sounders and valves are usually powered from a galvanic isolator or Zener barrier in a safe area having output safety parameters compatible with the devices intrinsic safety input parameters. A BA3601 switch output may be safely connected in series with the powered device providing the output parameters of the barrier or isolator are equal to or less than the input safety parameters of the BA3601 switch. It is not normally necessary to consider the output safety parameters of the BA3601 switch when assessing the loops safety.

Inclusion of the BA3601 switch will slightly reduce the supply voltage to the hazardous area device when the switch is closed, the reduction depending upon the loop current. The performance of most sounders and beacons will not be affected.

When the BA3601 switch is open a leakage current up to 30 μ A will continue to flow depending upon the voltage being switched. This is unlikely to cause difficulties unless very low current panel lamps are being controlled when a faint glow may be observed.

Terminals 2 and 4 of each BA3601 output are internally linked for joining the return wire as shown in Fig 4.

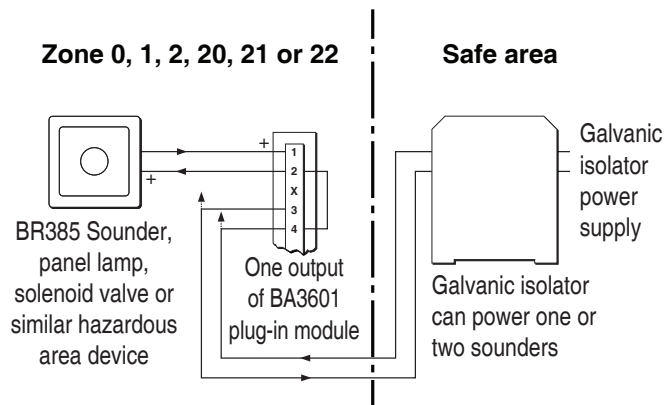


Fig 4 Connection for controlling a BR385 sounder

4.2 Instruments requiring a contact input

Hazardous area instruments requiring a contact input, such as for resetting a totaliser or timer, may be directly connected to a BA3601 contact output as shown in Fig 5.

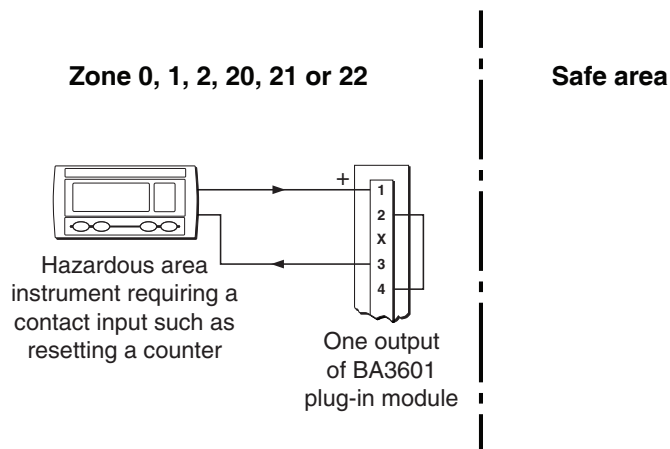


Fig 5 Connection of an instrument requiring a contact input

4.3 Output switching times

The delay between each output being polled and the output state changing will be:

Turn on delay	30ms
Turn off delay	75ms

5. MAINTENANCE

A BA3601 contact output module should be regularly inspected to ensure that it has not been damaged. The frequency of inspection depends upon environmental conditions.

No attempt should be made to repair a faulty plug-in module. Suspect modules should be returned to BEKA associates or your local BEKA agent.

6. GUARANTEE

Modules which fail within the guarantee period should be returned to BEKA associates or your local BEKA agent. It is helpful if a brief description of the fault symptoms is provided.

7. CUSTOMER COMMENTS

BEKA associates are always pleased to receive comments from customers about our products and services. All communications are acknowledged and whenever possible, suggestions are implemented.

APPENDIX 1

BA3601 Pageant Digital Output Module 4 x Contacts Codesys Mapping and Parameters

The Pageant Codesys Quick Start Guide which can be downloaded from the BEKA website https://www.beka.co.uk/manuals/pageant_codesys_quick_start_guide.pdf explains how to setup the CODESYS v3 environment to work with a BEKA Pageant Operator Panel and to start developing PLC applications.

The BEKA Quick Start Guide is not a programming manual, for detailed documentation about the CODESYS v3 development system please refer to <https://www.codesys.com> and to the on-line help.

The following table lists the BA3601 Pageant Digital Output Module Codesys parameters that can be set and mapped during the initialisation of the PLC application which is described in the BEKA Quick Start Guide. If the values are not set in the Codesys project, the default values will be used.

BA3601 Digital Output Module Codesys Mapping and Parameters

Channel or Parameter Name	Type	Default	Variable Type	Range	Description
Output State	Output	N/A	BYTE	0..15	Bit Field: Bit3...Bit0 represent the State for Output 4 to 1 0: Output OFF 1: Output ON



All associated manuals, certificates, and datasheets can be downloaded from https://www.beka.co.uk/qr-ba3601_1

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