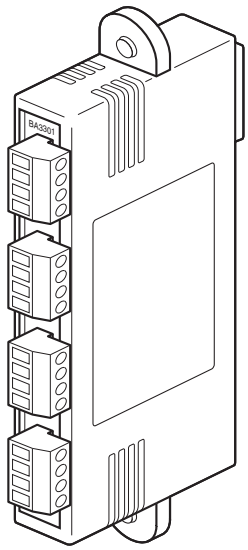
Instructions for BA3301 Pageant Analogue Input Module 4 x 4/20mA



Issue 4
21st October 2025

BEKA associates Ltd. Old Charlton Rd, Hitchin, Hertfordshire, SG5 2DA, UK Tel: +44(0)1462 438301 e-mail: sales@beka.co.uk
web: www.beka.co.uk

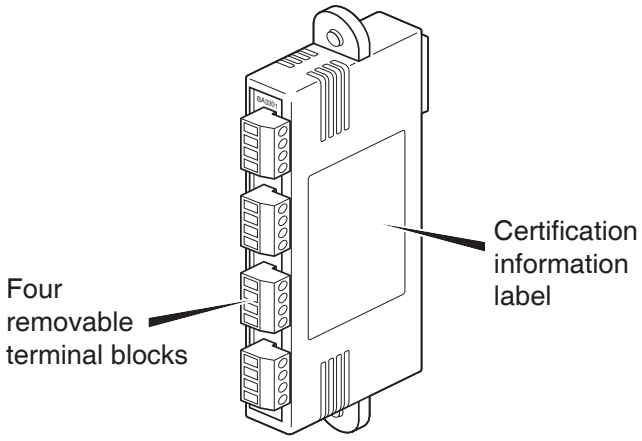


Fig 1 BA3301 Pageant Analogue Input module 4 x 4/20mA

1. INTRODUCTION

The BA3301 plug-in analogue input module has four galvanically isolated unpowered 4/20mA passive inputs. 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 input are zero which, together with the low input voltage drop, allow connection in series with almost any intrinsically safe 4/20mA loop in any gas or dust atmosphere.

2. INTRINSIC SAFETY CERTIFICATION

Notified Body CML B.V. and UK Approved Body Eurofins CML have issued plug-in BA3301 Pageant Analogue Input modules with the following apparatus certificates:

IECEx	IECEx CML 21.0101X
ATEX	CML 21ATEX2830X
UKEX	CML 21UKEX2831X

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 BA3301 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 / EN 60079-14 *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 BA3301 certificates specify the same certification codes and safety parameters:

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

** Dust certification requires the Pageant Operator Display and the BA3301 module to have a minimum additional IP54 rear protection - see 2.2 ii below.*

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.

Plug-in BA3301 Pageant Analogue Input 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.

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 EN60079-0 Clause 8.4 (material composition requirements for metallic enclosures for Group III) and/or 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 BA3301 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 BA3301 module. It shows the model number, certification information, BEKA associates address and year of manufacture together with the serial number.

Certification Information Label

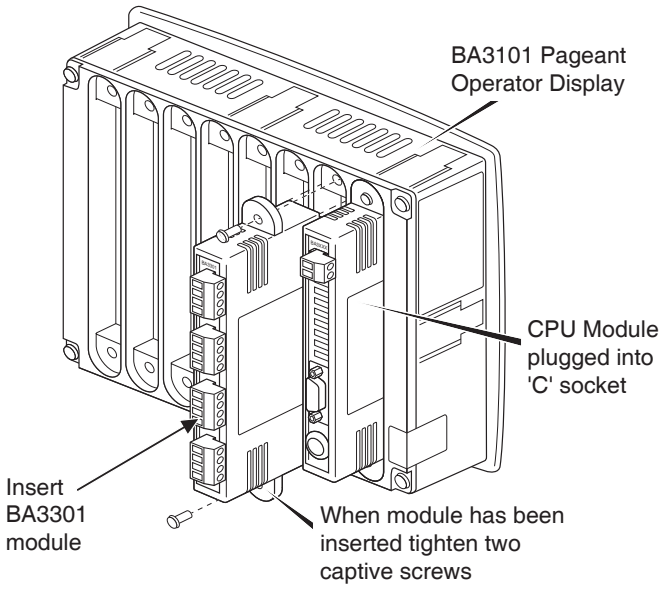


Fig 2 Inserting BA3301 AI module into one of seven sockets

3. INSTALLATION

The BA3301 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.

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 BA3301 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 BA3301 consumes is:

BA3301	4 x 4/2mA inputs	4%

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 BA3301 module Installation

1. The module may be fitted before or after the Operator Display is installed. The Operator Display should not be powered while the module is being fitted or removed.

2. Carefully insert the module into the selected slot at the rear of the BA3101 Pageant Operator Display. When correctly positioned secure the module by tightening the two captive module fixing screws.

3. Connect field wiring to each of the four removable input terminal blocks. All the inputs are identical as shown in Fig 3. Each of the four inputs 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 inputs, 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. INPUTS

The Pageant BA3301 module has four galvanically isolated unpowered 4/20mA passive inputs. Each input is certified as a separate intrinsically safe circuit with the following safety code and parameters.

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

Ui	=	30V
Ii	=	200mA
Pi	=	0.84W
Uo	=	0
Io	=	0
Po	=	0
Ci	=	0
Li	=	4µH

The output safety parameter of each input are zero which, together with the low input voltage drop, allow connection in series with almost any intrinsically safe 4/20mA loop in any gas or dust in Zone 0, 1, 2, 20, 21 or 22.

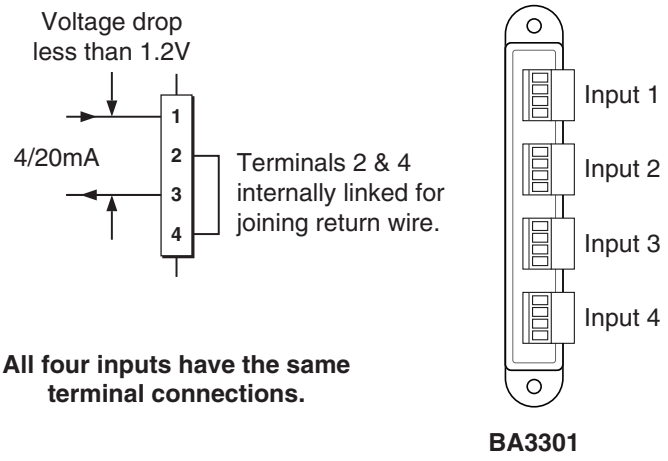


Fig 3 4/20mA input terminals

4.1 Loop powered 4/20mA transmitters

Loop powered transmitters should be powered from a galvanic isolator or Zener barrier with output safety parameters compatible with the transmitter's and the BA3301's intrinsic safety input parameters. The output parameters of each BA3301 4/20mA loop are zero and the internal inductance is very small and can be ignored when determining the loops safety.

Terminals 2 and 4 of each BA3301 input are internally linked for joining the return 4/20mA wire as shown in Fig 4.

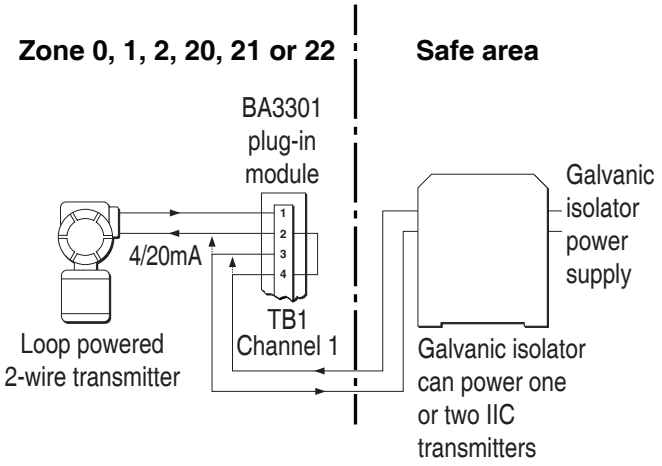


Fig 4 Connection of a loop powered 4/20mA transmitter

4.2 Separately and self powered 4/20mA transmitters

Separately powered transmitters and instruments with a 4/20mA output can be directly connected to a BA3301 input as shown in Fig 5.

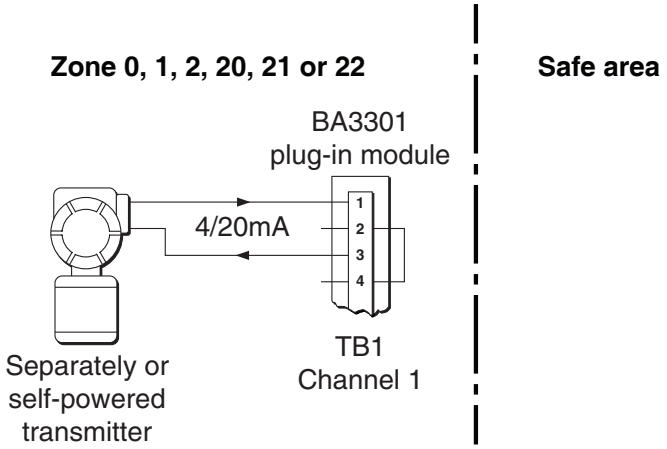


Fig 5 Connection of self powered transmitter

5. MAINTENANCE

A BA3301 4/20mA input 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

BA3301 Pageant Analogue Input Module 4 x 4/20mA 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 BA3301 Pageant Analogue Input 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.

BA3301 Input Module 4 x 4/20mA Codesys Mapping and Parameters

Channel or Parameter Name	Type	Default	Variable Type	Range	Description
Channel 1 Value	Input	N/A	WORD	3000...22000	Channel current value in µA
Channel 2 Value					
Channel 3 Value					
Channel 4 Value					
Loop Status	Input	N/A	BYTE	0...15	Bit Field: Bit7…Bit4 are always zero Bit3...Bit0 represent the status for Channel 4 to 1 0: No Fault 1: Loop Disconnected

EU Declaration of Conformity

This certificate is issued for electrical apparatus BA3301

Description
BA3301 is a Pageant intrinsically safe plug-in analogue input module. 4 x 4/20mA.

Manufactured by
BEKA associates Ltd, Old Charlton Road, Hitchin, Herts. UK. SG5 2DA

Council Directives this equipment complies with:

2014/34/EU (ATEX Directive)

Relating to equipment and protective systems intended for use in potentially explosive atmospheres.

Provisions of the Directive fulfilled by the equipment:

Group II Category 1G Ex ia IIC T4 Ga -40°C ≤ Ta ≤ +65°C
Group II Category 1D Ex ia IIIC T135ºC Da -40°C ≤ Ta ≤ +65°C

Notified Body for EU-Type Examination
CML B.V., Chamber of Commerce No 6738671, Koopvaardijweg 32, 4906CV Oosterhout, The Netherlands, Notified Body Number 2776
CML 21ATEX2830X Issue 0 30th July 2021

Notified Body for production
INTERTEK ITALIA SPA 2575 Via Guido Miglioli, 2/A 20063 Cernusco sul Naviglio (MI) Italy.

Standards used:
EN IEC 60079-0:2018 and EN 60079-11:2012

2014/30/EU (EMC Directive)

Standards used:
EN 61326-1:2013

2011/65/EU (RoHS Directive) relating to hazardous substances in electronic and electrical equipment.

2015/863/EU additional substances added by amending Annex II to Directive 2011/65/EU as regards the list of restricted substances.

CE **mark first affixed in 2021**

Authorised Signatory: Issue 1 1st November 2021

Olivier Lebreton CEng MIET
Managing Director

BEKA associates Ltd. Old Charlton Road, Hitchin, SG5 2DA UK
Telephone +44 (0) 1462 438301 Fax +44 (0) 1462 453971
e-mail sales@beka.co.uk www.beka.co.uk

All associated manuals, certificates, and datasheets can be downloaded from
https://www.beka.co.uk/qr-ba3301_1

BEKA associates
Old Charlton Rd, Hitchin, Hertfordshire, SG5 2DA, UK
Tel: +44(0)1462 438301 e-mail: sales@beka.co.uk
web: www.beka.co.uk