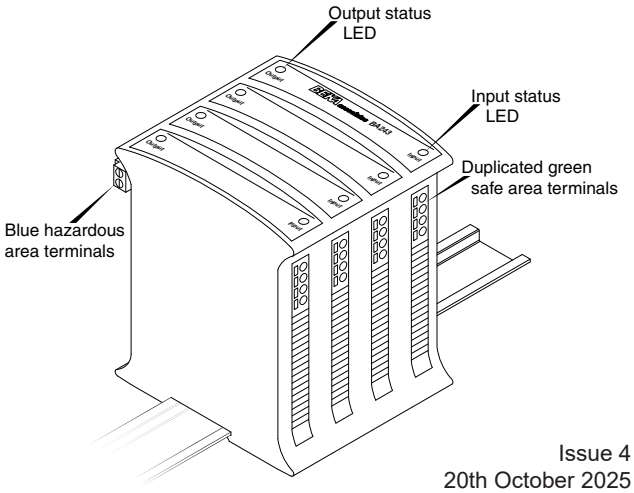
BA243 Four Channel Power Isolator Instructions



Issue 4
20th October 2025

The BA243 Power Isolator is CE marked to show compliance with the *European Explosive Atmospheres Directive 2014/34/EU and the European EMC Directive 2014/30/EU.*

The BA243 Power Isolator is 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.*

1. INTRODUCTION

These instructions describe the function, certification, installation, safe use and maintenance of the BEKA BA243 Four Channel Power Isolator. This isolator is primarily intended for powering BEKA intrinsically safe Pageant equipment, but may be used to power other intrinsically safe hazardous area apparatus having compatible intrinsic safety input parameters.

2. DESCRIPTION

The BA243 Power Isolator has four identical, totally independent, galvanically isolated intrinsically safe outputs with associated apparatus certification. It may be installed in a safe area or with additional mechanical protection in Zone 2.

The BA243 clips onto a standard 35mm DIN rail and may be powered by any 20 to 30V dc, SELV or PELV supply, or from a supply with double or reinforced insulation. No earth connection is required. The status of each channel is indicated by two green LEDs adjacent to the input and the output terminals.

3. CERTIFICATION

The BA243 Power Isolator has IECEx, ATEX and UKCA [Ex ia Ga] IIC intrinsic safety associated apparatus certification for installation in a safe area. It also has increased safety Ex ec component certification permitting installation in Zone 2 when housed in an Ex e enclosure.

3.1 Associated apparatus Ex i certification

The BA243 has IECEx, ATEX and UKCA associated apparatus intrinsic safety Ex ia IIC certification:

IECEx	IECEx CML 20.0080X
ATEX	CML 20 ATEX 2122X
UKCA	CML 21 UKEX 2278X

Copies of these certificates may be downloaded from the BEKA associates website www.beka.co.uk.

The certificates ‘X’ suffix indicates that the BA243 must be powered from a 30V maximum SELV, PELV or supply providing double or reinforced insulation as explained in section 5.1.

The IECEx, ATEX and UKCA approvals specify the same certification code and output safety parameters.

Location

Safe area

Certification code

IECEx	[Ex ia Ga] IIC	-40ºC ≤ Ta ≤ +70ºC
ATEX	II(1) G [Ex ia Ga] IIC	-40ºC ≤ Ta ≤ +70ºC
UKCA	II(1) G [Ex ia Ga] IIC	-40ºC ≤ Ta ≤ +70ºC

Output parameters of each channel

Each channel is a separate galvanically isolated circuit

		Gas group IIC	IIB	IIA
Uo	=	12.4V	12.4V	12.4V
Io	=	0.67A	0.67A	0.67A
		Maximum output current 130mA		
Po	=	1.36W	1.36W	1.36W
Co	=	1.24µF	7.9µF	30.0µF
Lo	=	79µH	317µH	634µH
Lo/Ro	=	17µH/Ω	68µH/Ω	137µH/Ω

3.2 Increased safety Ex ec certification

To allow the BA243 to be mounted in Zone 2, it has been issued with IECEx, ATEX and UKCA Ex ec increased safety component certification:

IECEx	IECEx CML 20.0081U
ATEX	CML 20 ATEX 2123U
UKCA	CML 21 UKCA 3279U

Location

Zone 2

Certification code

IECEx	Ex ec [ia Ga] IIC Gc	-40ºC ≤ Ta ≤ +70ºC
ATEX	II 3(1) G Ex ec [ia Ga] IIC Gc	-40ºC ≤ Ta ≤ +70ºC
UKCA	II 3(1) G Ex ec [ia Ga] IIC Gc	-40ºC ≤ Ta ≤ +70ºC

Output parameters

As associated apparatus Ex ia certification – see 3.1 above.

Copies of these certificates may be downloaded from the BEKA associates website www.beka.co.uk.

The ‘U’ suffix indicates that these are component certificates. They specify that the BA243 must be installed in an enclosure providing a minimum of IP54 protection which complies with IEC60079-0 and IEC60079-7, such as an Ex e component approved enclosure.

3.3 Certification information label

BA243 Power isolators have a label on the side of the enclosure showing a summary of certification information together with a serial number and year of manufacture.

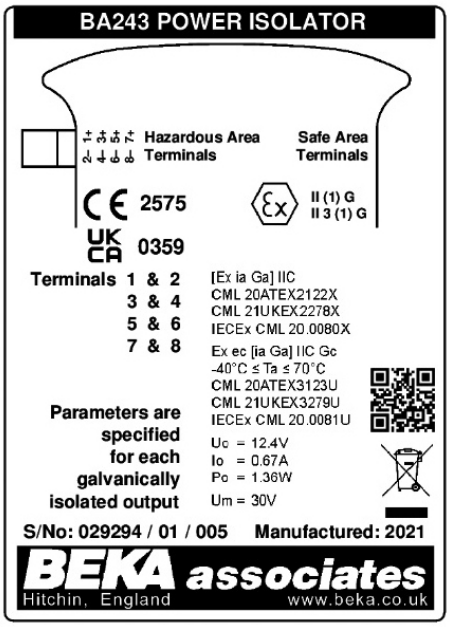


Fig 1 Certification information label

4. INSTALLATION

The BA243 should only be installed by trained competent personnel.

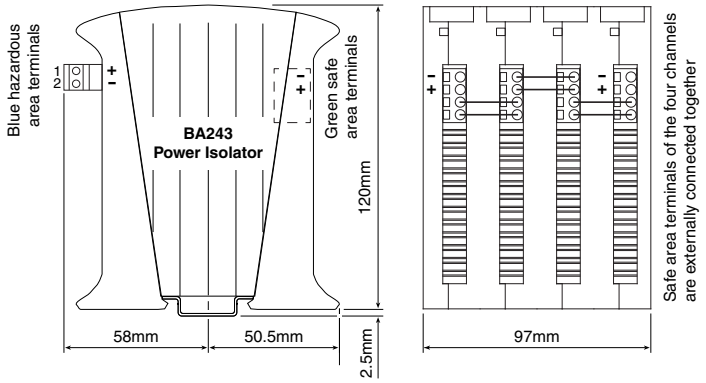


Fig 2 BA243 dimensions & terminals

4.1 Mounting

The BA243 is DIN rail mounting and may be clipped onto any low or high profile 35mm wide *'top hat'* rail complying with DIN46277, EN50022 or BS5584. A horizontal or vertical rail may be used, but if the ambient temperature is likely to exceed 30°C a horizontal rail with an unrestricted layout that permits air to be convected through the BA243's ventilation slots is recommended. The gap between adjacent BA243 isolators should be increased to 5mm if the ambient temperature is likely to exceed 40°C.

Each channel has duplicated green Ex e approved safe area terminals. When delivered the safe area terminals of all four channels will be externally connected together as shown in Fig 2, therefore supplying power to channel 1 or 4 will power all the channels. If required these exterior links may be removed allowing each channel to be connected to a separate power supply.

To fit a wire into a safe area terminal, insert an instrument screwdriver into the slot at the side of the wire entry and gently push the screwdriver towards the entry as shown in Fig 3. This will open the gripping spring and allow a wire to be inserted into the terminal. When the screwdriver is withdrawn the wire will be secured. Only one wire should be inserted into each terminal.

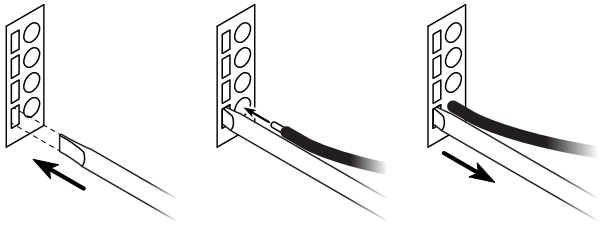


Fig 3 Inserting a wire into a safe area terminal

Each BA243 intrinsically safe output has a separate removable blue terminal block.

To remove a BA243 isolator from the DIN rail, use a screwdriver to gently slide the two red securing clips outwards as shown in Fig 4.

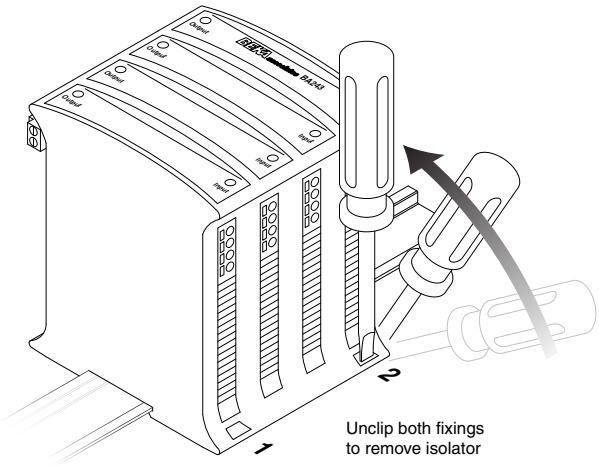


Fig 4 Removing BA243 from the DIN rail

4.2 Installation in safe area

The BA243 Power Isolator is intrinsically safe associated apparatus and should be installed in a safe area. The BA243 enclosure provides IP20 protection, therefore for most industrial installations additional protection will be required.

4.3 Installation in Zone 2

The BA243 isolator has IECEx, ATEX and UKCA Ex ec increased safety component certification. When mounted inside an enclosure complying with the requirements specified by EN/IEC 60079-0 Clause 1 and providing at least IP54 protection required by IEC 60079-7, the assembly may be located in Zone 2. An Ex e component certified enclosure satisfies these requirements.

Component certificates are only intended to be used as part of a certified assembly, the Power Isolator and the enclosure should therefore be be assessed to ensure they are compatible.

4.4 Installation in Zone 22

The IECEx, ATEX and UKCA Ex ec certificates for the BA243 isolator specify that it is suitable for use in Ex tb applications when installed inside a suitable enclosure.

5. ELECTRICAL SYSTEM DESIGN

The BA243 is primarily intended for powering BEKA intrinsically safe Pageant displays for applications in IIC gases, but it may be used to power other certified hazardous apparatus having compatible intrinsic safety input parameters.

The isolator is designed to output the maximum permissible power into a IIC gas (hydrogen) hazardous area. Although the four BA243 outputs are safe when connected in parallel, the resulting cable parameters are prohibitive small. This limitation has been overcome by combining the four channels via a diode network at the remote point of use as shown in Fig 5.

The four cables connecting the BA243 Power Isolator to the remote load may be part of a multicore cable complying with Type A or B requirements defined in clause 16.2.2.8 of IEC60079-14 *Electrical installation design, selection and erection*.

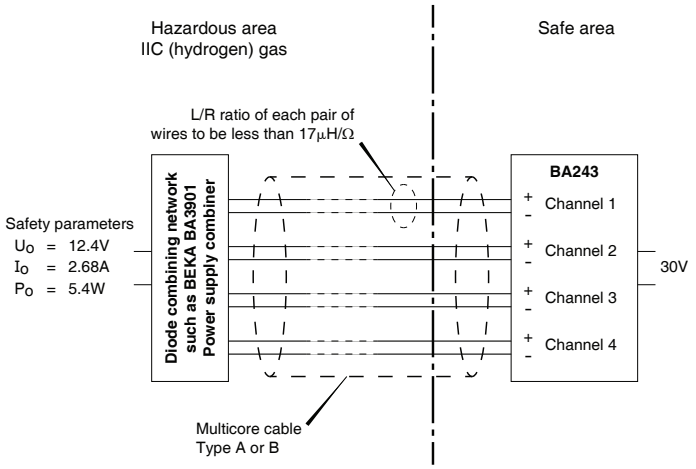


Fig 5 Combining 5 channel outputs at point of use

5.1 Power supply

The BA243 has a Um of 30V dc and should be powered from a 20 to 30V dc supply complying with one of the following:

- SELV (separated or safety extra low voltage)
- PELV (protected extra low voltage supply)
- Employing a safety isolating transformer with double or reinforced insulation.
- Complying with IEC60950 series, IEC81010-1 or technically equivalent standard..
- Directly from cells or batteries

Most low voltage instrument supplies satisfy this requirement. Compliance with the European or UK Low Voltage Directive confirms the supplies suitability.

5.2 Intrinsically safe output

The BA243 output safety parameters are shown in section 3. The isolator employs active voltage and current limits and each channel has the typical output characteristic shown in Fig 6.

When the output load exceeds the current limit the output voltage falls to zero. When the load is reduced the output voltage is automatically restored.

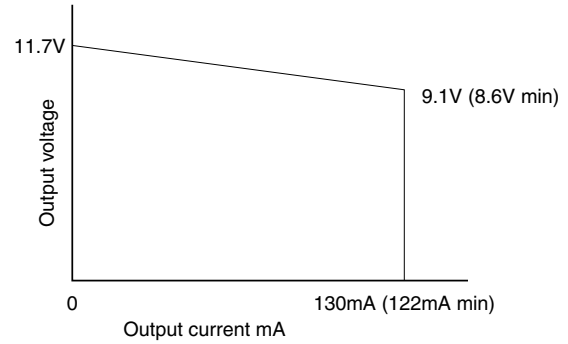


Fig 6 BA243 typical output characteristic for each channel

5.3 Operation

Immediately power is applied the BA243 will start to function. The status of each channel is shown by two green LED indicators adjacent to the input and output terminals. The LED by the green input terminals is illuminated when this channel of the BA243 is receiving power. The LED adjacent to the blue output terminals indicates the output status as shown below.

CAUTION

When the BA243 is mounted in Zone 2, live maintenance should only be performed when it is permitted by risk analysis, or when there is no risk of a flammable atmosphere being present.

Input LED	Output LED	Meaning	Cause / Action
On	On	This channel of the BA243 is functioning correctly.	
On	Flashing	Output current limit of this channel has been activated.	The load is too large and is trying to draw more than 130mA from this channel. Reduce load to resume normal operation.
On	Off	The output hazardous area wiring connected to this channel is faulty. or The BA243 is faulty.	Remove the load for this channel by unplugging the channel's blue terminal block. If the output LED is then illuminated check the field wiring. If the output LED is not illuminated when the blue terminal block is unplugged, replace the BA243 Power Isolator with another BA243.

5.4 Application Guide

Application Guide AG210, which contains additional information about the BA243 Power Isolator, may be downloaded from the BEKA website www.beka.co.uk.

6. ACCESSORIES

6.1 Tag number

The BA243 isolator can be supplied with each channel identified by a tag number thermally printed onto the label between the two status LEDs. Alternatively, a tag number may be added on-site in this space using a self-adhesive label.

7. ROUTINE MAINTENANCE

The mechanical condition of the isolator and terminations should be regularly checked. Inspections frequency should be adjusted to suit the environmental conditions.

8. SERVICING

No attempt should be made to repair a faulty BA243 Power Isolator. Suspect isolators should be returned for repair to BEKA associates or to your local BEKA agent.

9. GUARANTEE

Power Isolators 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.

10. CUSTOMER COMMENTS

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

EU Declaration of Conformity

This certificate is issued for electrical apparatus BA212 and BA2x3 Power Isolators

Description
The BA212 and BA2x3 Power Isolators are single and multichannel associated apparatus with intrinsically safe galvanically isolated output(s).

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 (1)G [Ex ia Ga] IIC – 40°C ≤ Ta ≤ +70°C
Group II Category 3(1)G Ex ec [ia Ga]IIC Gc – 40°C ≤ Ta ≤ +70°C

Notified Body for EU-Type Examination
CML B.V. NB No. 2776 Hoogoorddreef 15, Amsterdam. 1101 BA, The Netherlands

Notified Body for production
INTERTEK ITALIA SPA NB No. .2575 Via Guido Miglioli, 2/A 20063 Cernusco sul Naviglio (MI) Italy

EU-Type Examination Certificate
CML20ATEX2122X issue 0 dated 12/06/2020

Type Examination Certificate
CML20ATEX3123U issue 0 dated 11/06/2020

Standards used:
EN IEC 60079-0:2018; EN 60079-11:2012 and EN 60079-7:2015+A1:2018

2014/30/EU (EMC Directive)

Standards used:
EN 61326-1:2021

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

CE **mark first affixed in 2021**

Authorised Signatory:

Olivier Lebreton CEng MIET
Managing Director

Issue 1	1st April 2021
Issue 2	19th Jan 2023

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-ba243_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