Original Operating Instructions
Power supply

Type: **3002**

Document: **BA 3002 EN Rev7**

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1 General aspects

1.1 Introduction

These operating instructions are a helpful guide for ensuring the successful and safe operation of the flame amplifier. They contain important information on how to operate the system safely, correctly and efficiently. Observing the operating instructions will help to prevent hazards, reduce costs of repair and downtimes and increase the reliability and life of the device.

All illustrations and drawings in these operating instructions are shown for illustration purposes and are not authoritative detailed designs.

The operating instructions always have to be accessible at the device. They have to be read and applied by each person who is required to work with/on the device.

This work may involve, for example:

- operation
- troubleshooting during operation
- servicing
- maintenance (upkeep, inspection, repair) and/or
- transport

This should be confirmed by the operating company in writing.

1.2 Warning notes

The following warning notes are used in these operating instructions:

⚠DANGER

This warning level indicates an imminent hazardous situation.

If the hazardous situation is not prevented, this will result in death or severe injury.

Follow the instructions that accompany this warning to prevent the risk of death and severe personal injury.

⚠WARNING

This warning level indicates an potentially hazardous situation.

If the hazardous situation is not prevented, this may result in death or severe injury.

Follow the instructions that accompany this warning to prevent the potential risk of death and severe personal injury.

⚠CAUTION

This warning level indicates an potentially hazardous situation.

If the hazardous situation is not prevented, this may result in slight or moderate injuries.

Follow the instructions that accompany this warning to prevent the injury of persons.

CAUTION

This warning level indicates potential damage to property.

If this situation is not prevented, it may result in damage to property.

Follow the instructions that accompany this warning to prevent damage to property.

NOTICE

A notice indicates additional information that will make the handling of the device easier.

1.3 Copyright protection

These operating instructions have to be treated as confidential. They may only be used by authorised staff. Access by third parties may only be granted upon written agreement of BFI Automation.

All documents are protected in keeping with the German copyright law.

The disclosure and reproduction of documentation, in whole or in part, as well as the exploitation and communication of its content shall not be permitted unless expressly stated otherwise. Offenders are liable for prosecution and the payment of damages.

We reserve all rights to exercise industrial property rights.

1.4 Disposal information

The flame detector is equipped with electrical and electronic components and must be disposed separate from household waste. Follow the local and actual regulations for waste disposal.

1.5 Warranty

Read these operating instructions carefully before operating the flame amplifier !

The manufacturer is not liable for damage or operating malfunctions that result from the operating instructions not being observed.

The operating company has to supplement the operating instructions with operating instructions on the basis of national regulations on accident prevention and environmental protection, including information on supervision and notification requirements with respect to special operating circumstances, e.g. regarding organisation of work, working processes and staff deployed.

The recognised technical rules for safe and professional working also have to be observed in addition to the operating instructions and the regulations on accident prevention applicable to the country and place of use.

The warranty shall become void, for example, in the event of:

- inappropriate use
- use of impermissible equipment
- incorrect connection
- prior works that are not part of the supplied product or service
- non-use of original spares and accessories
- conversion, if this has not been harmonised with BFI Automation
- non-performance of specified maintenance work

NOTICE

It is recommended that the operator of the device concludes a service contract with BFI Automation. This guarantees that the device is regularly checked by our service staff and ensures that any required wearing and spare parts are available without long delivery periods.

1.6 Obligation of the operating company

The power supply may cause hazards if it is operated inappropriately or in an improper condition.

The operating company is under the obligation to operate the machine in proper state only. The operating company has to secure hazardous areas that exist between BFI devices and the customer's own equipment.

The operating company has to appoint and instruct responsible staff:

- Only deploy trained or instructed staff.
- Clearly set out the responsibilities of the staff with regard to operation, set-up, maintenance and repair.
- Regularly check that staff are safety conscious and aware of hazards and are observing the operating instructions.
- Before starting work, staff who are assigned to work with/on the device have to have read and understood the operating instructions, in particular the chapter on "Safety", as well as the relevant regulations.
- The operating instructions and relevant regulations have to be stored in such a way that they are accessible to operating and maintenance staff.
- Set out who will have responsibility for device operation and ensure that this person has the authority to overrule any unsafe instructions of third parties.

NOTICE

Generally valid legal and other binding regulations on accident prevention and environmental protection have to be observed and instructed, in addition to the operating instructions.

1.7 Liability disclaimer

All technical information, data and guidance on device operation that are contained within these operating instructions are, to the best of our knowledge, correct at the time of printing, taking into account our present understanding and experience.

We reserve the right to make technical changes with respect to the further development of the flame amplifier outlined in these operating instructions. No claims can be made based on the specifications, illustrations and descriptions of these operating instructions.

We shall not be liable for damage or operating malfunctions that result from operating errors, inappropriate repairs or the non-observance of the operating instructions. We expressly state that only original spare parts and accessories approved by us may be used. This also applies to the components of other manufacturers that have been used.

The installation or use of non-approved spare and accessory parts and any unauthorized retrofits and modifications are not permitted for safety reasons and exclude any liability by BFI Automation for consequential damages.

BFI Automation is liable for possible errors or omissions with the exclusion of additional claims entered into in the framework of the warranty obligations conceded to in the contract. Claims for damages, on whatever legal basis they may be, shall be excluded.

Translations into foreign languages are carried out in good faith. We cannot accept any liability for translation errors; this also applies where the translation has been carried out or has been commissioned by us. The original text alone shall be binding.

Descriptions and illustrations do not necessarily depict the delivered product or a possible spare parts order. Drawings and graphics are not to scale.

1.8 Declaration of conformity

Flamonitec
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EU Konformitätserklärung
EC Declaration of Conformity

Produkt	**Flammenüberwachungssystem 3000/4000 (Einschübe)**
Product	*Flame monitoring system 3000/4000 (Insert modules)*
Typ	**3001, 3001D, 3001S, 3011, 3016, 3017, 3002, 3002A, 3003**
Type	*3001, 3001D, 3001S, 3011, 3016, 3017, 3002, 3002A, 3003*

Hiermit erklären wir, dass die bezeichnete Flammenwächter und Einschübe, in ihrer Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung, den grundlegenden Sicherheitsanforderungen folgender EU-Richtlinien entsprechen:

This is to confirm that the described flame amplifier and insert modules in there design and type of construction complies with the provisions of the Directive of the Council of the European Communities on the approximation of the laws of the member states relating to:

Anwendungsbereich *Field of application*	EU/2016/426		EU-Gasgeräteverordnung *EU Gas Appliances Regulation*
Richtlinien *Directives*	2014/35/EU		Niederspannungsrichtlinie *Low voltage directive*
	2014/30/EU		EMV Richtlinie *EMC directive*
Benannte Stelle *Notified body*	DVGW GmbH	0085	
CE-Zerifikat vom *CE certificate from*	19.02.2018	CE0085BS0478	Baumusterprüfbescheinigung *Type examination certificate*
Gültig bis *Valid until*	19.02.2028		
Normen *Standards*	EN 298:2012		

Ausgestellt durch
Issued by
BFI Automation Mindermann GmbH

Rechtsverbindliche Unterschrift
Legally binding signature

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Name	Funktion *Function*	Ort, Datum *Place, Date*
Michael Thomas	Prokurist *Authorized Officer*	Heiligenhaus, 13.06.2022

1.9 Address of the manufacturer

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2 Safety

2.1 Intended use

The electronically controlled power supply 3002 shall be used exclusively to supply components of the series 3000. It supplies the constant hum-free operating voltage in two seperatly protected circuits.The correct function of the module is indicated by the LED on the front panel.The controlled output voltage is 24V DC at a current of 2 x 2.5A.

⚠WARNING

Danger when improperly used !

The device may cause hazards if it is not used as intended and/or for any other purposes.

The device has to be used only for the purposes for which it is intended.

The procedures described in the operating instructions have to be observed.

The manufacturer/supplier shall not be liable for damage resulting from use for non-intended purposes. The user/operating company alone shall bear the risk.

2.2 Requirements on persons

NOTICE

Work on/with the device may only be performed by persons authorized to do so based on their training and qualification. Furthermore, such persons have to have been commissioned by the operating company.

Do not allow any persons who are being apprenticed, educated, instructed or on a general training programme to work on the device without the constant supervision of an experienced person.

Persons who are under the influence of drugs, alcohol or medication that affects reactivity shall not be permitted to carry out work on the device.

Connection, set-up, maintenance and repair work may only be carried out by qualified specialist staff.

This device may cause hazards if it is operated inappropriately by untrained staff or if it is not used for its intended purpose.

Generally valid legal and other binding regulations on accident prevention and environmental protection in addition to basic health and safety requirements have to be observed. The operating company has to instruct its staff accordingly.

2.3 Safety instructions

The following instructions on accident prevention have to be observed when operating the flame amplifier.

NOTICE

Only operate the device if it is in a proper state !

- Do not remove or disable safety devices.
- Check for externally noticeable damage and defects prior to using the device ! Immediately notify the appropriate authority/person of any changes that occur (including changes in operating performance). If necessary, stop and secure the device immediately.
- Allow only authorised specialist staff to carry out set-up and/or maintenance work.
- Operating staff have to be informed before maintenance or other special work is carried out.
- Replace worn or defective parts.
- Use suitable maintenance tools only.
- After repair work, refit all safety devices and carry out electrical and mechanical checks.
- Check the operating instructions for details of displays as well as switch-on and switch-off procedures.
- Prior to switching on the device, make sure that no-one can be endangered by the device !
- The operating instructions always have to be kept close to the device and be readily at hand.
- Any non-compliance with the safety instructions outlined in these operating instructions may lead to damage to property, personal injury or even death.

2.4 Safety devices

2.4.1 Fundamental aspects

Check the safety equipment and locking devices on the device for safe operational condition.

Only operate the device if all safety devices are present and enabled. The operating company or operator of the flame amplifier is responsible for the proper operation of the device.

NOTICE

The device has been fitted with warning and danger signs for the protection of operating staff. These signs have to be observed. Damaged or illegible signs have to be replaced immediately.

2.4.2 Safety devices on the power supply

The power supply 3002 has been fitted with the following safety devices:

- Input fuse
- 2 Output fuses
- Housing (optional)
- Flame-proof housing (optional)
- Earth connection of device housing (optional)
- Explosion protection barriers (optional)

2.5 Safety instructions in case of maintenance and troubleshooting

2.5.1 Fundamental aspects

- Deadlines set or indicated in the operating instructions for repetitive checks / inspections shall have to be observed !
- Appropriate workshop equipment is essential for performing maintenance work.
- In conformity with the electrical regulations, work on the electrical equipment of the system may only be carried out by an electrical specialist or by trained staff under the direction and supervision of an electrical specialist.
- The adjustment, maintenance and inspection activities and deadlines stipulated by BFI Automation, including information on the replacement of parts / assemblies, have to be observed! These tasks may only be carried out by authorised specialist staff.
- Operating staff have to be informed before maintenance or other special work is carried out. A supervisor has to be appointed.
- Screw connections which have been loosened during maintenance and servicing work, have to be tightened.
- If maintenance and repairs require safety devices to be dismantled, these devices have to be remounted and checked as soon as the maintenance and repair work has been completed.
- Operating and auxiliary materials as well as exchanged parts have to be disposed of in a safe and eco-friendly way.
- Spare parts supplied by BFI Automation or approved of by BFI Automation only may be used.

2.5.2 Electrical / electronic devices

⚠DANGER

Danger to life caused by electrical current!

Contact with live wires or components presents a danger to life !

Prior to any work on the electrical equipment, disconnect the flame monitoring system from the power supply network !

NOTICE

In keeping with the electrical regulations, work on electrical / electronic parts / components may only be carried out by electrical specialists.

Important rules of conduct

- Check the device in regular intervals. Any defects or faults ascertained have to be corrected immediately. Switch off the device until the defects have been corrected.
- Equipment parts undergoing inspection, maintenance or repair work have to be made de-energised, if required. First check that the disconnected parts are no longer live, then short to earth. Also isolate neighbouring live parts
- If work is required on live parts, a second person has to be assigned who can disconnect the power supply in case of an emergency. Only use insulated tools !
- Fuses must not be repaired or bridged. Only use original fuses with the specified current !

2.5.3 Testing in keeping with the German Workplace Safety Ordinance (BetrSichV)

In case of the coupling or installation of devices from various manufacturers or suppliers, the operating company has to carry out a precise test, prior to start-up, in keeping with the German Workplace Safety Ordinance (BetrSichV) in force and the applicable electrical regulations.

In case of queries, please get in touch with BFI Automation.

2.5.4 Safety test

⚠WARNING

In order to ensure a correct operation, the power supply has to be tested several times in case of all applications by switching on and off the system. After every switching on the LED in the front has to shine and all connected devices should operate perfect. This is an indispensable pre-requisite for a safe and correct operation of the device !

3 Technical data

3.1 General characteristic features

- Switchable between 115VAC and 230VAC
- Fully electronically controlled
- Constant hum-free supply
- Tested by the German Technical Inspection Association TÜV
- CE-0085BS0478

3.2 Electrical system, mechanical system, function

Input voltage	115 / 230 V AC ±15%, 45…60 Hz
Output voltage	24 V DC, ± 1%, max. 26 V electronically controlled
Output current	2 x 2.5 A , safeguarded
Output rating	2 x 60 VA in 2 circuits
Function readiness	Displayed via LED in the front
Operating temperature	-20…+70 °C

3.3 Weight

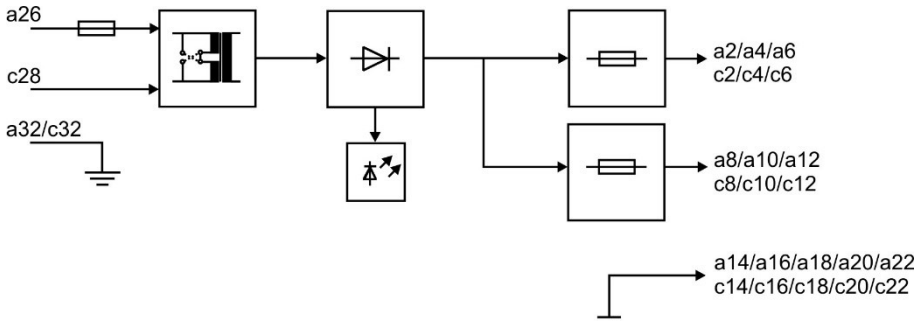
Weight	approx. 2.5	Kg

3.4 Dimensions

All slide-in modules of series 3000 completely pluggable for use in card magazines in keeping with German standard DIN 41494 (19" standard).

Width	70.78	mm = 14 HP
Height	128.70	mm = 3 U
Depth:	188.00	mm

3.5 Block diagram



a26	L1
c28	N
a32/c32	PE
a2/a4/a6 c2/c4/c6	24V DC channel 1
a8/a10/a12 c8/c10/c12	24V DC channel 2
a14/a16/a18 a20/a22 c14/c16/c18 c20/c22	Output ground (GND)

4 Transport, installation and connection

NOTICE

All installation and connection work may be carried out by qualified and approved specialist staff only !

Observe the legal stipulations and adjustment instructions of the plant operator !

4.1 Scope of delivery

- Power supply 3002
- Operating instructions
- Backpanel with screw terminal (optional)
- Pin connector (optional)
- Connection cable (optional)
- 19" rack (optional)
- Wall-mounted housing (optional)
- Flame-proof housing (optional)

Refer to the order papers for the exact scope of delivery and compare with the delivery note.

Checking for completeness

Check the entire delivery for completeness against the accompanying delivery note. Please refer to our terms of sale and delivery otherwise.

Report any damage

After arrival of the device and accessories, notify the shipping agent, the insurance company and BFI Automation immediately in case of any damage caused by transport or inadequate packaging.

Take steps to minimise and prevent further damage.

Report the insurance case to the insurance company without delay and transmit the full claim documents at once in order to expedite the claims settlement (at the latest in sufficient time before the expiry of any periods of preclusion and/or limitation relating to the compensation claims against third parties).

4.2 Packaging

The flame amplifier is shipped in different packagings.

The most frequently used packaging materials are cardboard and plastics (foils, foamed material). The packaging material also includes materials added to the packed goods as protection against moisture (e.g. bags with silicagel).

NOTICE

Packaging has to be disposed of in an environmentally friendly way and in accordance with the relevant provisions on disposal.

4.3 Forwarding instructions

NOTICE

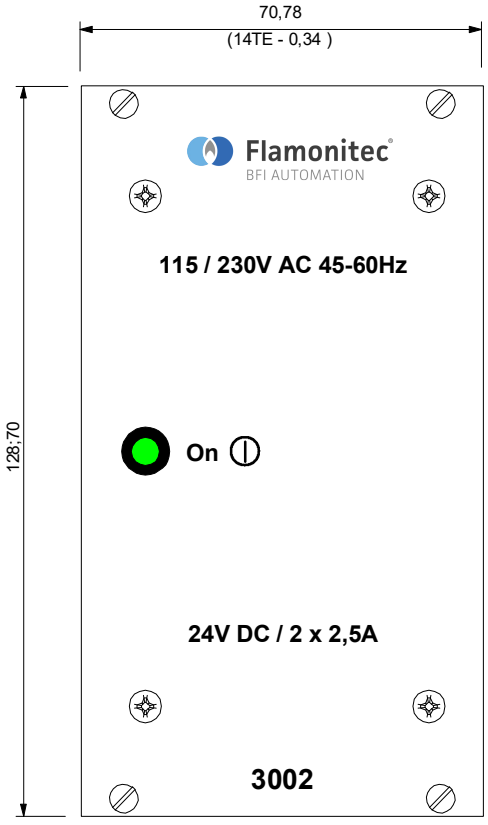
Do not drop the device during transport and do not subject to heavy impacts.

4.4 Weight - flame amplifier

approx. 2.5 kg

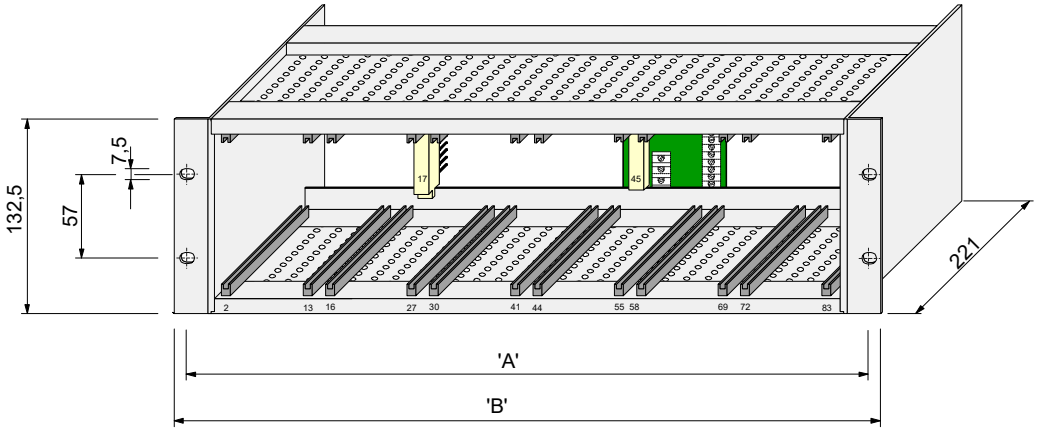
4.5 Space requirement

See following illustration, depth 188 mm.

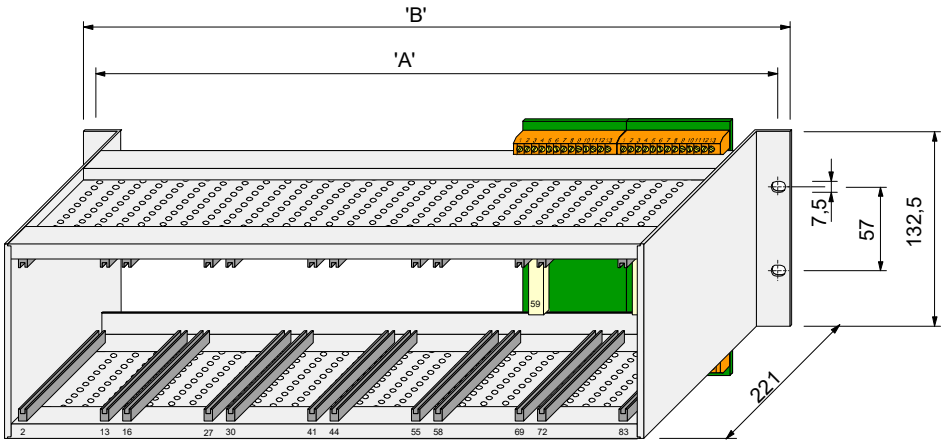


4.6 Installation

4.6.1 19”-built-in housing (rack mount installation)



4.6.2 19”-built-on housing (wall mount installation)



4.6.3 Dimensions for 19”-built in/on housing

All dimensions ± 0.4 mm	**14 HP** for 1 slide-in module	**28 HP** for 2 slide-in modules	**42 HP** for 3 slide-in modules	**56 HP** for 4 slide-in modules	**84 HP** for 6 slide-in modules
Dimension "A"	110.3	181.4	252.6	323.7	465.9
Dimension "B"	127.1	198.2	269.4	340.5	482.7

4.7 Connection

4.7.1 Electrical connection

⚠DANGER

Danger to life caused by electrical current !

The safety instructions and local safety regulations have to be observed during connection !

For connection data, please refer to the chapter titled "Technical data" as well as to the following terminal diagram.

Ensure that the available supply voltage complies with the voltage indicated on the type plate (230/115 V AC).

Prior to connection, check the device and the connecting cables for visible damage.

Push the flame amplifier into the 19" rack and connect the connecting cable up to the rack.

Various connection possibilities are available:

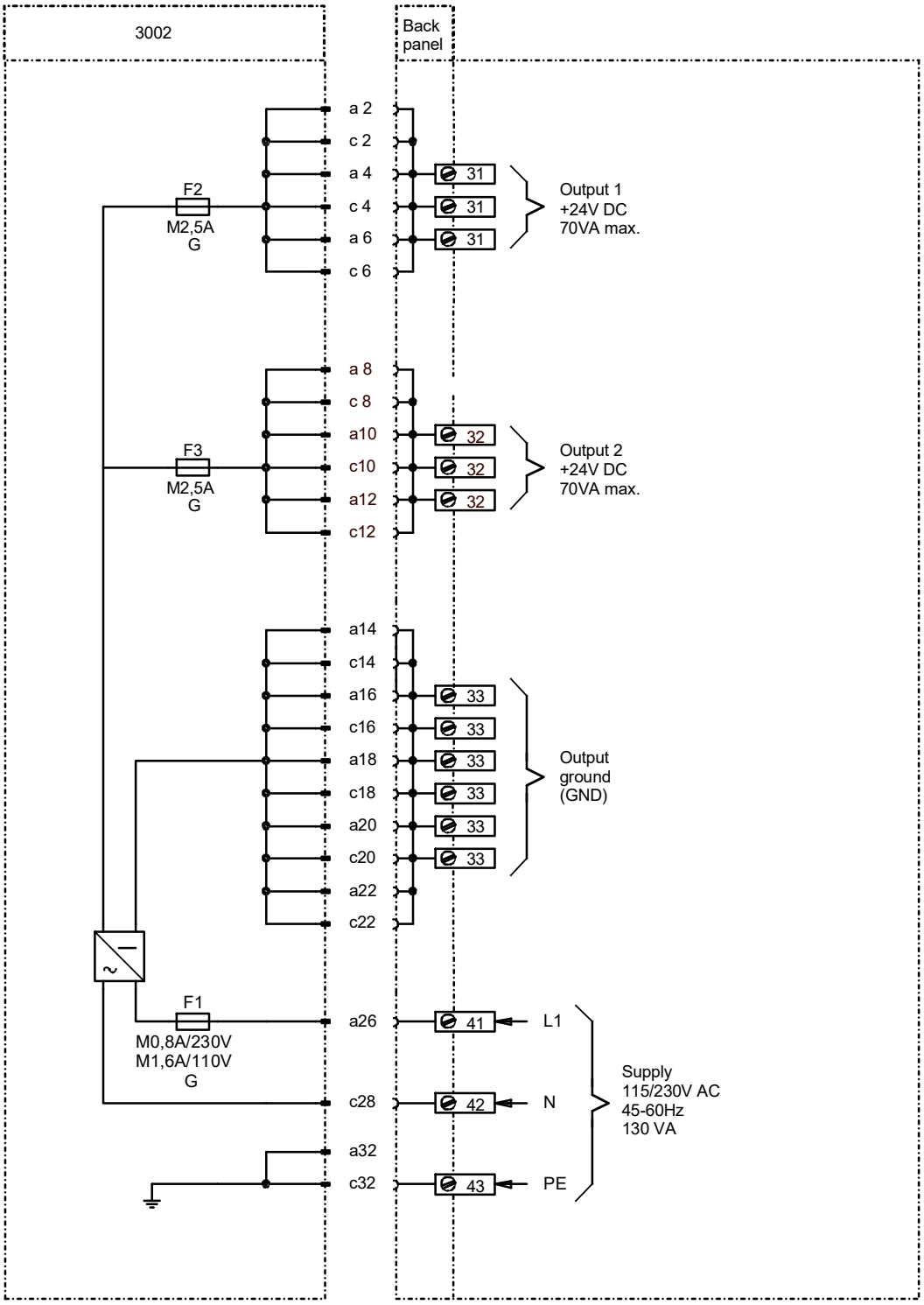
- Backpanel R (screw terminal on the rear)
- Backpanel F (screw terminal on the front)
- Pin connector

  - Flat-Pin 2.8 mm
  - wire wrap

NOTICE

Prior to the connection of the flame sensor to the flame amplifier, observe the separate operating instructions of the flame scanner !

4.7.2 Terminal diagram



4.8 Storage

Do not unpack the packed power supply and accessories.

The following conditions apply to storage:

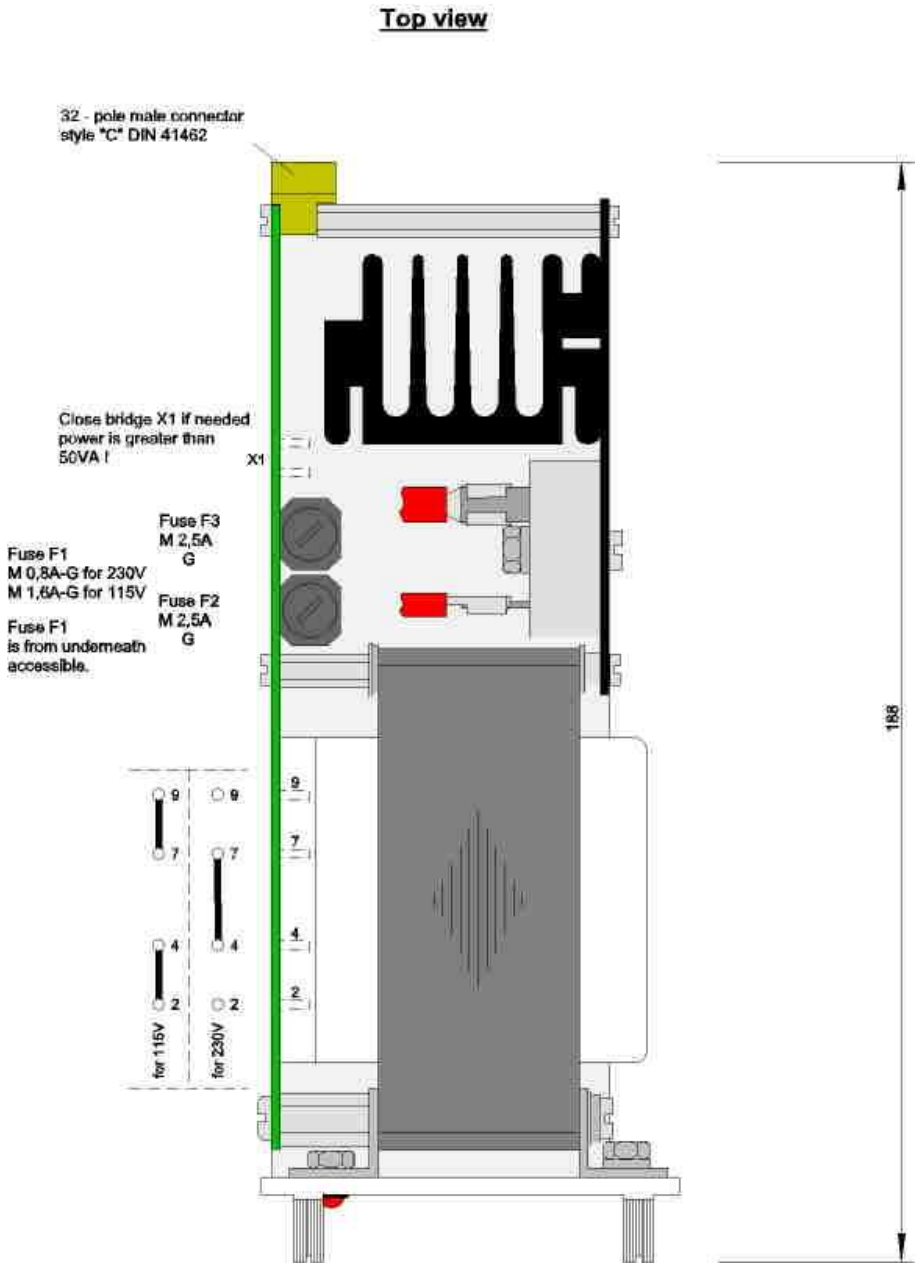
- Store in a dry place. Maximum relative humidity 60 %. Make sure that packages are not stored in the open. In addition, It has to be assured that the floor in the storage area will remain dry throughout the storage period.
- Protect from direct sunlight. Storage temperature: 15 degrees to 25 degrees C (59 degrees to 77 degrees F).
- Store in a dustfree location.
- Avoid mechanical vibrations and damage.

5 Description

5.1 Functional description

The electronically controlled power supply 3002 is designed for the power supply of modules of the 3000 line.

It supplies the constant hum-free operating voltage in two seperatly protected circuits.The correct function of the module is indicated by the LED on the front panel.The controlled output voltage is 24V DC at a current of 2 x 2.5A. The special transformer, which is distinguished by ist very small magnetic leakage field, is suitable for mains voltages of 230V and 115V.



5.2 Changing the mains voltage

The power plug-in 3002 can be operated with 230V AC or 115V AC. As it is shown at the picture 5.1, corresponds one bridge between connection point 4 and 7 to a mains voltage of 230V AC. If the connection points 2 with 4 and 7 with 9 are bridged the mains voltage is 115V AC.

5.3 Energy demands above 50VA

In case of energy demands above 50VA for both outputs the jumper X1 should be closed as shown in picture 5.1.

5.4 Fuses

The power supply plug-in 3002 has three fuses.

The primary circuit is protected by fuse F1. The dimensioning of the fuse depends on the chosen mains voltage:

Chosen mains voltage	Value of the Fuse F1
230 V AC	M 0.8 A-G
115 V AC	M 1.6 A-G

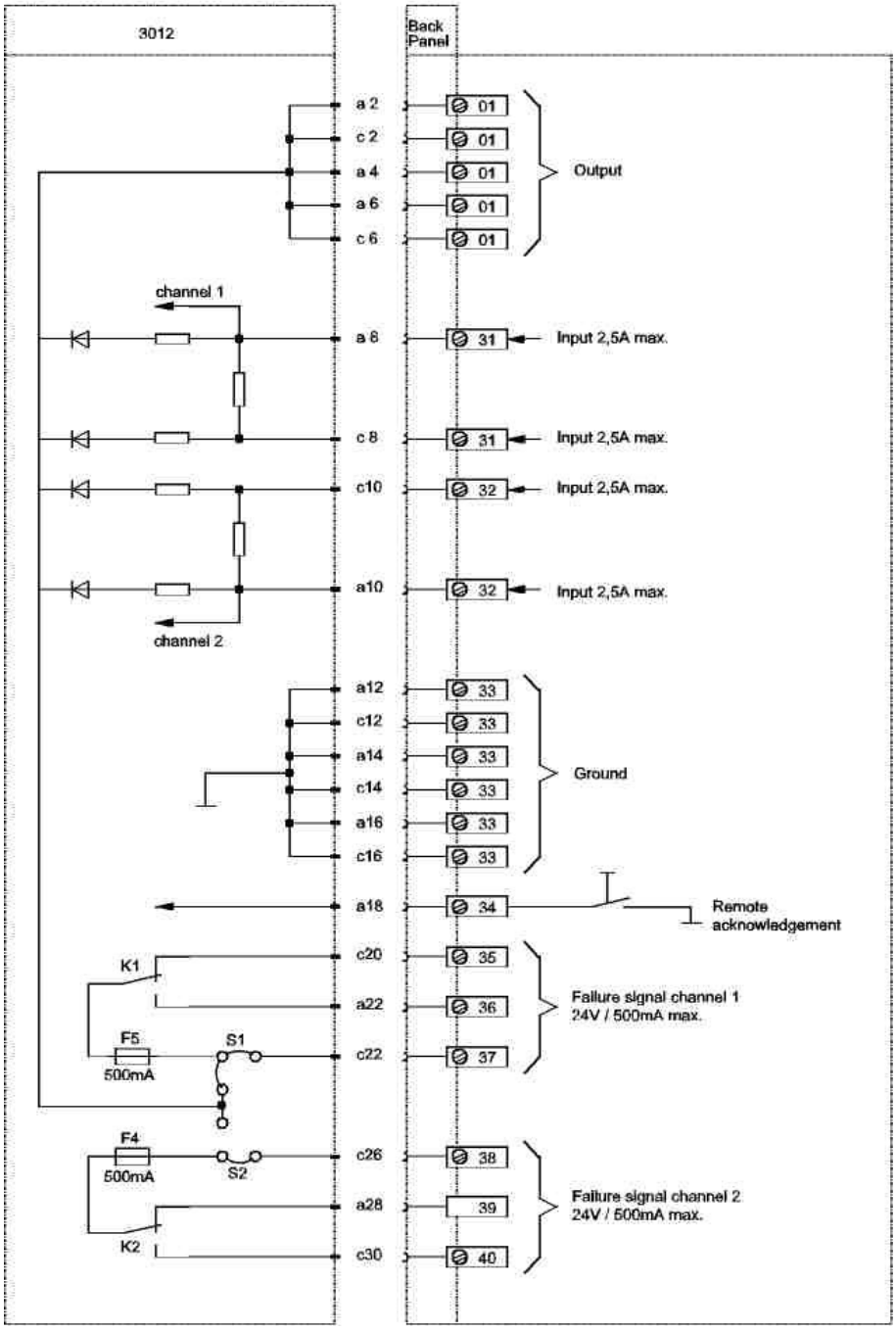
The both output are protected by the fuses F2 and F3:

Fuse	Value of the fuse
F2	M 2.5 A-G
F3	M 2.5 A-G

5.5 Multiple use of power supplies parallel

If necessary there can be used multiple power supplies parallel but they must be interconnected with the decoupling unit 3012.

Connection diagram



6 Operation of the power supply

NOTICE

All installation and connection work may be carried out by qualified and approved specialist staff only !

Prior to initial operation, all regulations and adjustment parameters set up by the operating company of the burner have to be observed !

For the operation of the power supply, please observe the separate operating instructions of the flame scanner and flame amplifier!

6.1 Connection of the power supply

NOTICE

Prior to the connection of the power, observe the separate operating instructions of the flame scanner and of the flame amplifier !

6.2 Testing the flame amplifier

In order to ensure a correct operation, the power supply has to be tested several times in case of all applications by switching on and off the system. After every switching on the LED in the front has to shine and all connected devices should operate perfect. This is an indispensable pre-requisite for a safe and correct operation of the device !

7 Maintenance and servicing

The power supply requires no maintenance.

For cleaning, use a moist cloth to wipe the front panel from the outside only.

8 Failures

Problem:	Display:	Cause:	Remedy:
No connected device works	LED *OFF*	Power supply doesn't work	Check mains voltage Check fuse F1 (F0,8 A for 230 V AC or 1,6 A for 115 V AC) Replace power supply Check electrically connec-tion
Devices on channel 1 or 2 doensn't work	LED *ON*	Channel 1 or 2 do-esn't work	Check fuse F2 or F3 (M2,5A G) Check connected devices Check power supply cords
Connected devices are getting to high supply voltage	LED *ON (very bright)*	Stabilisation of the power supply is faulty	Replace power supply

9 Order data

The power supply 3002 is available from BFI Automation under the following order data:

Type	Order-No.
Power supply 3002/230	6020-3002-00
Power supply 3002/115	6020-3002-01

10 Accessories

BFI Automation offers the following accessories:

Type	Order-No.
19“-built-on housing, one-part, 14TE, IP 20 with back panel 3000F	6830-0701-00
19“-built-in housing one-part, 14TE, IP 20 with back panel 3000R	6830-0701-01
19“-built-in housing, one-part, 14TE, 32-pole female connector style „D“	6830-0701-02
19“-built-on housing, two-parts, 28TE, IP 20 with back panel 3000F	6830-0702-00
19“-built-in housing, two-parts, 28TE, IP 20 with back panel 3000R	6830-0702-01
19“-built-in housing, two-parts, 28TE, 32-pole female connector style „D“	6830-0702-02
19“-built-on housing, three-parts, 42TE, IP 20 with back panel 3000F	6830-0703-00
19“-built-in housing, three-parts, 42TE, IP 20 with back panel 3000R	6830-0703-01
19“-built-in housing, three-parts, 42TE, 32-pole female connector style „D“	6830-0703-02
19“-built-on housing, four-parts, 56TE, IP 20 with back panel 3000F	6830-0704-00
19“-built-in housing, four-parts, 56TE, IP 20 with back panel 3000R	6830-0704-01
19“-built-in housing, four-parts, 56TE, 32-pole female connector style „D“	6830-0704-02

19“-built-on housing, six-parts, 84TE, IP 20 with back panel 3000F	6830-0706-00
19“-built-in housing, six-parts, 84TE, IP 20 with back panel 3000R	6830-0706-01
19“-built-in housing, six-parts, 84TE, 32-pole female connector style „D“	6830-0706-02
19“-built-on housing, six-parts, 84TE, IP 20 with back panel 3000F	6830-0706-07
Housing with terminal compartment, 20TE, IP66, shock-resistant ABS	6830-0601-00
Housing with terminal compartment, 30TE, IP66, shock-resistant ABS	6830-0602-00
Housing with terminal compartment, 49TE, IP66 shock-resistant ABS	6830-0603-00
Ex-proofed built-on housing, 42TE with terminal compartment and viewing window	1830-5313-01
Rack 84TE, 3HE, with 6 x 32-pole female connector	6830-0706-12
Rack 84TE, 3HE, with 6 x back panel 3000R	6830-0706-11
Rack 84TE, 3HE, with 6 x back panel 3000F	6830-0706-10
back panel 3002F	5020-3002-91
back panel 3002R	5020-3002-92
Decoupling unit 3012	6020-3012-00

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