

Power supply unit NG3-16ib

Ordering Data

Designation	Type	Item no.
Power supply unit	NG3-16ib (42 V _{AC} / 50 Hz)	371 008 31 AX
Power supply unit	NG3-16ib (230 V _{AC} / 50 Hz)	371 008 32 AX
Power supply unit	NG3-16ib (100 V _{AC} / 50 Hz)	371 008 34 AX
Power supply unit	NG3-16ib (240 V _{AC} / 60 Hz)	371 008 35 AX
Power supply unit	NG3-16ib (167 V _{AC} / 50 Hz)	371 008 36 AX
Power supply unit	NG3-16ib (36 V _{AC} / 50 Hz)	371 008 38 AX
Power supply unit	NG3-16ib (24 V _{AC} / 50 Hz)	371 008 39 AX



- **Universal power supply unit in different input voltage versions for the power supply of intrinsically safe installations which are protected against firedamp with 16 V direct voltage.**
- **Versions for AC input (50 Hz) at 24 V_{AC} 36 V_{AC} 42 V_{AC} 100 V_{AC} 167 V_{AC} 230 V_{AC} and 240 V_{AC} / (60 Hz)**
- **Constant DC output voltage 16 V_{DC} / 0.4 A (limited current and voltage values)**
- **Output voltage indication through LED**
- **Output as per protection type “Intrinsically safe”, cat. Ib**
- **For use in type “e” (increased safety) terminal boxes with PG29 screw-in thread**

Application

The power supply unit NG3-16ib enables the power supply of electrical equipment items operated in intrinsically safe systems within hazardous locations which are susceptible to firedamp.

The power supply unit NG3-16ib provides protection as per I M 2 EEx m [ib] I.

Based on a non-intrinsically safe AC input voltage, a regulated, current-limited and intrinsically safe of 16 V_{DC} / 0.4 A is generated in the output circuit.

For details of the non-intrinsically safe mains voltage and of the of the intrinsically safe DC output voltage, refer to the nameplate of the power supply unit.

Configuration

The power supply unit NG3-16ib is mounted into an enamel gray cast iron housing. The housing consists of a tub-like bottom section and a vaulted cover. The cover is pressed onto the bottom section by means of two screws, with a sealing as intermediate layer, and constitutes the intrinsically safe terminal box.

The main compartment of the housing's bottom section combines the mains transformer and the electronics module which are completely embedded in sealing compound.

Only the 2-pole terminal strip for the connection of the intrinsically safe output circuit and the LED for the function indicating jut out of the compound. This LED is on, if the intrinsically safe output voltage is applied and no short-circuit has occurred on the output side.

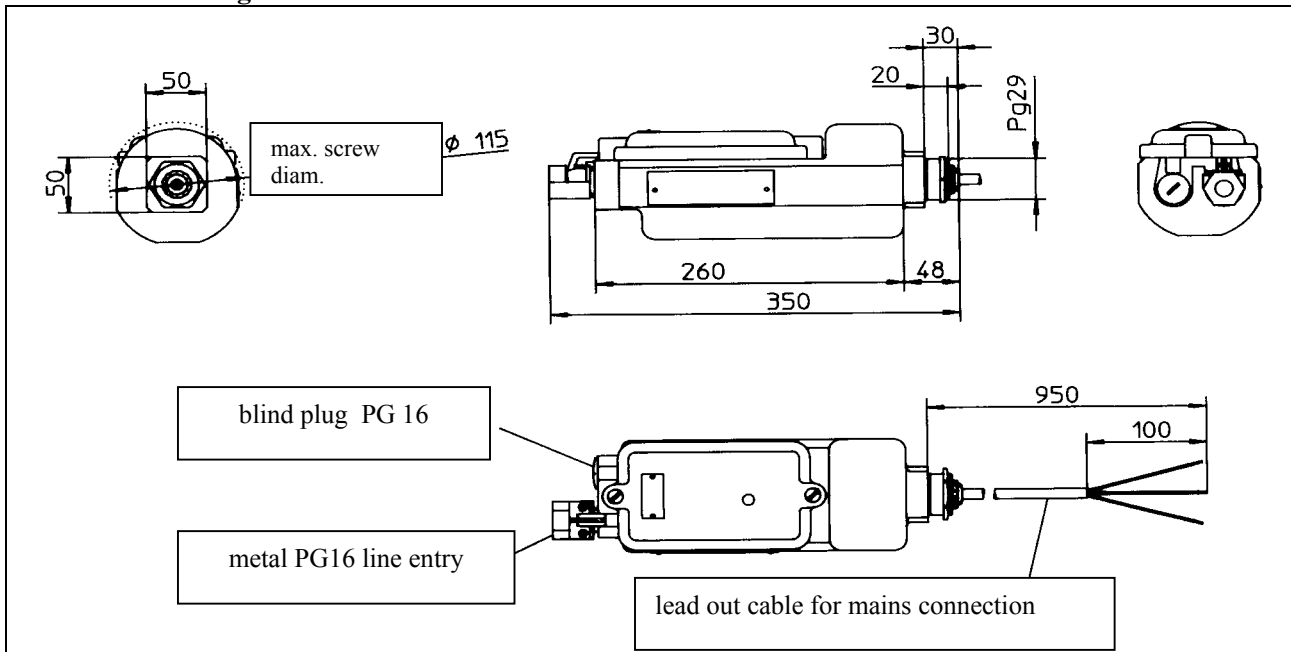
The LED is visible from the outside through a sight glass in the housing cover.

The electronics module consists of a mains transformer serving as isolation between the non-intrinsically safe supply net and the downstream electronic voltage and current regulation. A voltage transformer and two electronic current / voltage-limiting stages connected in series ensure a stabilized output voltage (within the limits of the non-intrinsically safe input voltage). Two electronic overload stages which act independently from one another, switch off the intrinsically safe output voltage in case of an overload or a short-circuit on the output side. The switch-off or on again of the intrinsically safe output circuit due to overload is repeated in intervals until the short-circuit or the overload has been eliminated. The LED for indicating

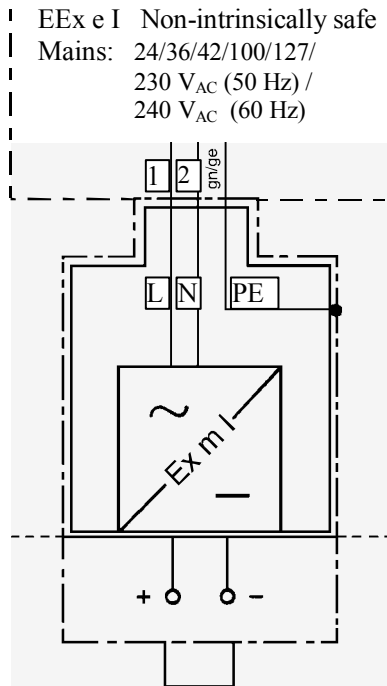
the function flashes in the cycle of the switch-off and on of the intrinsically safe output voltage.

On one of the housing sides, the power supply unit NG3-16ib has a PG29-threaded bush for leading out a 3-wire connecting cable used for the connection with the non-intrinsically safe supply net. By means of threaded bush, the power supply unit is screwed in appropriate bores of housings offering protection type "increased safety" and at the same time fixed and secured. The opposite housing side is equipped with a PG16 gland for line diameters from 9 to 14 mm and a PG16 blind plug. The PG16 line entry (incl. strain relief, protection against buckling and twisting) is used for leading through the connecting cables for the intrinsically safe output circuit.

Dimension drawing NG3-16ib



Wiring diagram



16 V_{DC} / 0.4 A

EEx ib I
intrinsically safe

Technical Data NG3-16ib

Designation	Power supply unit
Type	NG3-16ib
Item no. 371 008 31 AX	
Nominal input voltage U_n	42 V _{AC}
Nominal input current I_n	0.5 A
Frequency	50 Hz
Voltage tolerance	+ 20%; -30%
Nominal output voltage U_n	16 V _{DC}
Nominal output current I_n	0.4 A
Intrinsically safe output voltage: Control better than 0.5 % for mains voltage deviations (load and temperature being within the permitted range)	
Item no. 371 008 32 AX	
Nominal input voltage U_n	230 V _{AC}
Nominal input current I_n	0.1 A
Frequency	50 Hz
Voltage tolerance	+20%; -30%
Nominal output voltage U_n	16 V _{DC}
Nominal output current I_n	0.4 A
Intrinsically safe output voltage: Control better than 0.5 % for mains voltage deviations (load and temperature being within the permitted range)	
Item no. 371 008 34 AX	
Nominal input voltage U_n	100 V _{AC}
Nominal input current I_n	0.25 A
Frequency	50 Hz
Voltage tolerance	+20%; -30%
Nominal output voltage U_n	16 V _{DC}
Nominal output current I_n	0.4 A
Intrinsically safe output voltage: Control better than 0.5 % for mains voltage deviations (load and temperature being within the permitted range)	
Item no. 371 008 35 AX	
Nominal input voltage U_n	240 V _{AC}
Nominal input current I_n	0.1 A
Frequency	60 Hz
Voltage tolerance	+20%; -30%
Nominal output voltage U_n	16 V _{DC}
Nominal output current I_n	0.4 A
Intrinsically safe output voltage: Control better than 0.5 % for mains voltage deviations (load and temperature being within the permitted range)	
Item no. 371 008 36 AX	
Nominal input voltage U_n	167 V _{AC}
Nominal input current I_n	0.2 A
Frequency	50 Hz
Voltage tolerance	+20%; -30%
Nominal output voltage U_n	16 V _{DC}
Nominal output current I_n	0.4 A
Intrinsically safe output voltage: Control better than 0.5 % for mains voltage deviations (load and temperature being within the permitted range)	

Technical Data NG3-16ib**Item no. 371 008 38 AX**

Nominal input voltage U_n	36 V _{AC}
Nominal input current I_n	0.7 A
Frequency	50 Hz
Voltage tolerance	+20%; -30%
Nominal output voltage U_n	16 V _{DC}
Nominal output current I_n	0.4 A
Intrinsically safe output voltage: Control better than 0.5 % for mains voltage deviations (load and temperature being within the permitted range)	

Item no. 371 008 39 AX

Nominal input voltage U_n	24 V _{AC}
Nominal input current I_n	0.9 A
Frequency	50 Hz
Voltage tolerance	+20%; -30%
Nominal output voltage U_n	16 V _{DC}
Nominal output current I_n	0.4 A
Intrinsically safe output voltage: Control better than 0.5 % for mains voltage deviations (load and temperature being within the permitted range)	

Parameters:

Output (supply) circuit:	
Nominal output voltage U_n	16 V _{DC}
Max. output voltage U_0	≤ 16.2 V _{DC}
Nominal output current I_n	0.4 A
Max. output current I_0	≤ 0.46 A
Capacitance (bei $L_0 = 0$) C_0	≤ 4 μ F
Inductance (bei $C_0 = 0$) L_0	≤ 130 μ H



Indications

LED output voltage indication	ON, if output voltage is applied OFF, if output voltage is not applied or short-circuited.
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Connections

Non-intrinsically safe supply voltage:	securely fixed plastic-sheated flexible cord YSLÖ-J, 3 x 1mm ² , length: 1 m which is led out through the PG29 threaded bush (optionally connection with single cores available)
Intrinsically safe output voltage:	2 terminals with pressure plates (wire protection) connecting capability 2 x 1.5 mm ² finely stranded each
Cable entry:	1 x PG16 (line diameters 9 - 14 mm) 1 x PG16 blind plug

Technical Data NG3-16ib**Further parameters**

Enclosure	Gray cast iron, colour: dark grey
Enclosure protection degree	IP 54 as per IEC 529
Operating mode	100 % ED / continuous operation
Operating conditions	preferably in firedamp environments
Operating position	at choice (preferably in vertical position, with the cable entries facing downwards)
Temperature range	
- operation	- 20 to + 40°C
- storage	- 20 to + 60°C
- transport	- 20 to + 60°C
Dimensions	see dimension sheet
Weight	ca. 6.8 kg
Test and approval	
- type of protection	I M 2 EEx m [ib] I
- approval no.	DMT 02 ATEX E041 X
Marking	
The nameplate is marked as follows:	
Company	FHF Bergbautechnik GmbH D-42551 Velbert
Type	NG3-16ib  I M 2 EEx m [ib] I DMT 02 ATEX E041 X  0158
Non-intrinsically safe circuit	U / I (as per table "Technical data")
Intrinsically safe circuit	U = 16V / I = 0.4 A L _{ext.} = 130µH C _{ext.} = 4µF F. No.... test....(initials, month/year)

Installation and Assembly

The threaded bush of the power supply unit NG3-16ib has to be screwed into an appropriate bore of an approved housing of protection type "increased safety", and the unit has to be fixed and secured. An appropriate sealing is to be used in order to ensure that the housing protection type of at least IP54 will still be ensured after mounting of the power supply unit.

If possible, the device should be installed vertically (with the cable entries facing downwards).

The device may only be connected to the appropriate supply voltage. Prior to working on the mains connection, the feed lines are to be de-energized.

All wires of the connecting line (optionally single cores) must be connected to appropriate terminals or insulated in compliance with the regulations of installation.

To connect the intrinsically safe output circuit, remove the housing cover, lead the connecting line into the corresponding cable entry (designed for lines with diameters of 9-14mm) and connect it to the two terminals in the intrinsically safe terminal housing.

In case of a fixed installation of this connecting cable, possibly, an appropriate gland fitting can be used instead of the cable entries.

Maintenance

The device does not contain any parts requiring maintenance.

Waste Disposal

The disposal of the packaging material and of used parts must be realised in compliance with the regulations of the country in which the device is installed.

Warning and Safety Advice

<p>The apparatus is a flameproof device of safety-class group I. Please pay particular attention to the following warning and safety advice:</p>
<p>The apparatus is to be connected and installed in accordance with the specified installation instructions by qualified personnel, taking into account the protection type indicated.</p> <p>Only connect the device to the specified, appropriate supply voltage. Prior to working on the mains connection and on the connections of the connecting cables of protection type “e” (increased safety) , feed lines are to be de-energized. All wires of the connecting cables of protection type “e” (increased safety) have to be connected to appropriate terminals or insulated in compliance with the regulations of installation. If these lines may get into contact with metallic parts, they must be protected mechanically or be fixed in order to protect them against damages.</p>
<p>The interconnection with other electric equipment must be separately certified.</p>
<p>The device is intended for use in firedamp mining environments.</p>
<p>The device may only be connected and operated with the specified voltage. The polarity specifications are to be observed.</p> <p>Make sure the PE conductor is always properly connected as specified.</p>
<p>Make sure the housing is not damaged.</p>
<p>The device may only be operated under the specified ambient conditions. Unfavourable ambient conditions may damage the appliance, possibly jeopardising the user’s life as a result. Unfavourable ambient conditions may be:</p> <ul style="list-style-type: none"> • moisture, dust (observe type of protection) • air humidity too high (> 75% rel., condensing) • inflammable gases, vapours, solvents not covered by the protection class of the device. • ambient temperatures too high (>+40°C) • ambient temperatures too low (<-20°C).
<p>The ambient temperature specified for the device may not be exceeded or failed to be reached during operation (-20°C up to +40°C), storage and transport (-20°C up to +60°C).</p>
<p>Only use the cable glands/entries specified by the manufacturer.</p>
<p>Preferably, the device is mounted vertically, with the cable glands and plug connectors facing downwards at the bottom side. When mounting the device, it is to be ensured that the device will not be used as climbing aid and thus be damaged. If required, additional measures must be taken to protect the device against falling objects.</p>
<p>Any faulty connection lines on the devices shall be replaced.</p>
<p>Repair work may only be realised by the manufacturer or by a person authorized by the manufacturer. Subsequently, a new routine test for the device must be carried out.</p>
<p>Make sure the device is protected against damage during transport, storage and when not in use.</p>
<p>Attention:</p> <p>Disregarding the above points will nullify the explosion protection. The device then represents a danger to the life of the operator and may cause a hazardous atmosphere to explode.</p>

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