

Explosion protected electronic ballast



Amvaje Abi company

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Application

This product is electronic ballast for start and operation of fluorescent lamps. it has been designed for explosion proof application and used in hazardous area due to presence of flammable and explosive gases and vapors in Zone 1 and 2 in accordance with ATEX EN 60079-0 EN 60079-1 EN 60079-7 & EN 60529.

Feature

- A newly developed generation of electronic ballast with two "End of Life" (EoL) protection circuits according to IEC 60079-7

EoL test 1: Asymmetric pulse test

EoL test 2: Asymmetric power test

- Enhanced plant safety due to 2-channel electronic ballast, only the defective lamp is switched off
- An integrated DC switching relay makes it easy to incorporate in the emergency lighting system (automatic switch over to DC power)
- Increased life time
- Simple and versatile installation
- Significant savings are achieved through the usage of ballasts with energy classification EEI=A2

End of Life

During the operation of fluorescent light fixtures, the electron-emitting material on the electrodes is consumed. This has the consequence that the energy to release the electrons is increased, and this, in turn, can lead to a higher voltage drop at the electrodes of the fluorescent lamps.

Since the electronic ballast functions as a constant current source, a higher voltage drop results in a power consumption increase. This produces a rise in the surface temperature at the lamp tube ends. The temperatures may exceed the limit values specified for explosion proof apparatus and thereby effect the overall explosion protection.

EoL switch-off test

- **EoL – Asymmetric pulse test**
If an increased voltage drop is detected (as in the case of an old fluorescent lamp), the effected lamp power circuit is switched off
- **EoL – Asymmetric power test**
In this testing circuit, the increased power consumption loss of the used fluorescent lighting element is measured. The lamp power circuit is switched off before the limit value for power loss (< 10 W) is reached.

The following applies to both of the test methods:

If the old lamp is replaced with a new one after electronic ballast switch-off, then the ballast functions properly once again.

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Technical data

Electronic ballast Model	AB72/1-ED
Electronic ballast Type	2 x 36/40 W used for single-lamp or two-lamp applications
Explosion protection	II 2G de IIC
Lamp start-up	Cold start within 300ms
Mains voltage	AC: 198 V ... 264 V 50/60 Hz DC: 176 V ... 254 V
Temperature range	-20°C ... +60°C
Energy classification	EEL = A2
Lamp wattage	2 x 36/40 W
Rated current at 220 V/240 V	0.32 A/0,30 A
Lamp power consumption	64 W
System power rating	69 W
Power factor $\cos \phi$	0,97
Protection rating Housing	\geq IP54
Terminal	IP20
Terminal	max 2 x 2.5 mm ² Fine/Single Wire Torque: 1.2Nm
Life Time	80.000 hours at 60°C ambient temperature

Operating instruction

Removing the old Electronic Ballast:

1. Detach conductors from terminals L and N of the electronic ballast.
2. Use a small screwdriver to release the conductors out of the terminal
3. Remove the electronic ballast from the case by releasing the screws.

Fitting the new Electronic Ballast:

1. Screw in the new electronic ballast.
2. Connect the electronic ballast due to the connection by means of the delivered conductors.
3. Connect the PE (terminal 5) conductor.

Installation:

The electronic ballast is to be wired due to the following connecting scheme. Two 2.5 mm² Fine/Single Wire can be clamped per clamping point. Please observe maximum clamping possibilities of binding posts.

Torque at binding posts: 1.2Nm

Attention!

1. Clamping at the EX "e" binding post must be executed carefully.
2. Strip the insulation generously.
3. No insulation of conductor with under clamping.
4. Two conductor can be clamped per clamping point.

Wiring notice "Hot potential":

Hot ends (High potential /clamps 9+13) are the lamp lines, which have the highest potential compared to the circuit earth. so the other lamp lines (clamp 11) have a lower potential compared to earth.

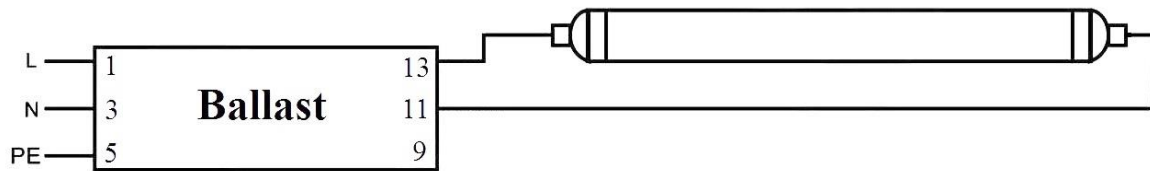
Lamp lines having a high potential should be designed as short as possible.

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Connection scheme:

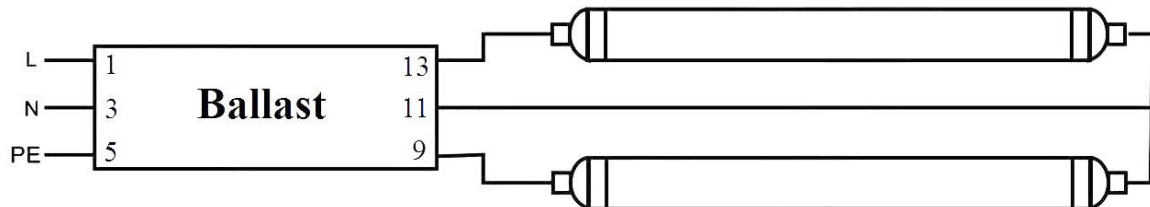
One-lamps wiring:

The lamp can be also wired on clamps 9/11 instead of clamps 13/11



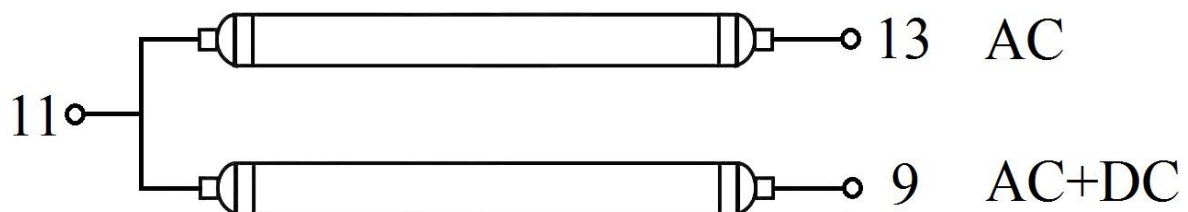
Two-lamps wiring:

The lamps wired on clamps 9/11 and 13/11. In case of one defective lamp only this one will be disconnected and the other one will be operated on.



Connection method:

in case of one defective lamp only this one will be disconnected and the other one will be operated on.



AC operation: both lamps lights

DC operation: 1 lamp light

Safety disconnection:

- a) In case of false start > 0.3sec
- b) defective lamps

Restart: only by network reset

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Maintenance:

The electronic ballast is compound-filled and cannot be repaired by operator and due to protection level of the electronic ballast, damaged ballast must replace with a new electronic ballast.

- Vision check of Ballast case for discoloration possible hot points? → Replace the appliance
- Tighten the binding posts.
- Check the fastening screws.

Notices for the operation of electronics ballast:

Power input

Electronic control gears are checked in the network input area for impulse strength and protected by a special suppressor circuit. In practice the system is frequently subjected to extreme, sustained overvoltage due to lighting strikes, switching operations or unbalanced load conditions etc. Such overvoltage may lead to the suppresser circuit in the electronic control gear being destroyed.

This means that the electronic ballast must be replaced.

We recommend that the mains supply should be protected from impermissible overvoltage by suitable measures to prevent any failure of the electronic ballast.