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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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IEC 60079-11

Edition 7.0 2023-01

EXPLOSIVE ATMOSPHERES –

Part 11: Equipment protection by intrinsic safety “i”

INTERPRETATION SHEET 3

This interpretation sheet has been prepared by subcommittee 31G: Intrinsically-safe apparatus, of IEC technical committee 31: Explosive atmospheres.

The text of this interpretation sheet is based on the following documents:

DISH	Report on voting
31G/400/DISH	31G/403/RVDISH

Full information on the voting for the approval of this interpretation sheet can be found in the report on voting indicated in the above table.

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IEC 60079-11 Edition 7.0 2023

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Background

Devices which read from memory during operation are clearly programmable components and need to be considered according to 7.7.8. IEC 60079-11 is not clear whether a component which only reads from memory or internal registers during initialisation – such as a digital potentiometer – is a programmable component according to 7.7.8 or a simpler semiconductor which can be considered according to 7.7.2.

Question

Can a digital potentiometer (or other similar device) which relies on reading from memory or an internal register only during initialization to set the resistance value be used as a component on which intrinsic safety depends for Levels of Protection “ia” and “ib”?

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Documents
Document Sharing Hub
Full document details: IEC 60079-11 2023 ISH3 2024

Answer

No. Such a device is considered a programmable component according to 7.7.8 and its failure modes should be considered accordingly. Memory is fundamental to the main function of the component.

Digital potentiometers (or other similar devices) which can be used as components on which intrinsic safety depends according to 7.7.2 include those which:

1) have their resistance (or other value) set during manufacture of the equipment or component (for example configuration fuse bits or laser trimming),
2) do not rely on reading from memory or internal registers which are designed to be reprogrammable to set the resistance, and;
3) cannot be modified by the end user of the equipment.

NOTE Requirements for components which read from memory during initialization are under consideration for the next edition of IEC 60079-11.

Documents
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Full document details: IEC 60079-11 2023 ISH3 2024