



BSI Standards Publication

Tractors and machinery for agriculture and forestry — Electrical high-power interface 700 V DC / 480 V AC

Part 4: AC operation mode

National foreword

This British Standard is the UK implementation of ISO 23316-4:2023.

The UK participation in its preparation was entrusted to Technical Committee AGE/6, Agricultural tractors and forestry machinery.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Foreword

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This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 19, *Agricultural electronics*.

This document is intended to be used in conjunction with ISO 23316-1, ISO 23316-2, ISO 23316-3, ISO 23316-5, ISO/FDIS 23316-6:— and ISO 23316-7.

A list of all parts in the ISO 23316 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The purpose of the ISO 23316 series is to provide design and application standards covering implementation of electrical high-power interface with a nominal voltage of 700 V DC/480 V AC for agricultural and forestry machinery. The ISO 23316 series specifies the physical and logical interface requirements that provide interoperability and cross compatibility for systems and equipment.

In order to state compliance to the ISO 23316 series, all applicable requirements from ISO 23316-1 to ISO 23316-7 shall be met.

It is permitted for partial systems or components to be compliant to the ISO 23316 series by applying all applicable requirements e.g. for the plug, receptacle or inverters, on a tractor or implement.

NOTE For example, if a DC-mode only HPI is provided, it is not necessary to comply with this document describing AC-mode, as it is not applicable. If an AC-mode only HPI is provided, it is not necessary to comply with ISO 23316-5 describing DC-mode, as it is not applicable.

The following are not within the scope of the ISO 23316 series:

- service, maintenance, and related diagnostics;
- functional safety;
- control strategies for high-power supplies and loads;
- application-specific strategies and operational modes;
- component design;
- energy storage systems, e. g. supercapacitors or batteries;
- multiple electrical power supplies to a common DC-link.

Tractors and machinery for agriculture and forestry — Electrical high-power interface 700 V DC / 480 V AC —

Part 4: AC operation mode

1 Scope

This document specifies required measures applicable to the HPI AC Interface between a supply system (typically located on an agricultural tractor) and detachable electrical consumer system (typically located on an agricultural implement).

This document covers the following:

- HPI system topologies;
- interface relevant characteristics of the HPI providing AC or combined AC and DC;
- interface relevant characteristics of the HPI AC load (for relevant characteristics of a DC load, see ISO 23316-5);
- logical, operational and electrical characteristics of the HPI:
 - operating mode aspects, and
 - communication parameters

NOTE This document contains simplified electrical diagrams showing specific aspects of the required functionality.

2 Normative references

The following documents refer to the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 23316-1:2022, *Tractors and machinery for agriculture and forestry — Electrical high-power interface 700 V DC / 480 V AC — Part 1: General*

ISO 23316-2:2023, *Tractors and machinery for agriculture and forestry — Electrical high-power interface 700VDC / 480-VAC — Part 2: Physical interface*

ISO 23316-5:2023, *Tractors and machinery for agriculture and forestry — Electrical high-power interface 700VDC / 480-VAC — Part 5: DC operation mode*

ISO//FDIS 23316-6:—¹⁾, *Tractors and machinery for agriculture and forestry — Electrical high-power interface 700VDC / 480-VAC — Part 6: Communication signals*

IEEE 802.3-2018, *Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 100BASE-T1 (100 Mb/s Ethernet full duplex local area network over a single balanced twisted pair)*

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