ISO 23316-5:2023-10 (E)

Tractors and machinery for agriculture and forestry - Electrical high-power interface 700 V DC / 480 V AC - Part 5: DC operation mode

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms, definitions and symbols ... **1**
3.1 Terms and definitions ... 1
3.2 Symbols ... 2

4 System overview ... **3**
4.1 General ... 3
4.2 Operation with single CS ... 4
4.3 Operation with MCS ... 5

5 DC specification ... **8**
5.1 Voltage form and quality ... 8
5.1.1 System voltage: values and ranges ... 8
5.1.2 Voltage ripple ... 8
5.1.3 Continuous DC current ... 9
5.1.4 Peak current ... 9
5.1.5 Current specific communication parameters ... 10
5.1.6 Voltage dips and recovery time ... 10
5.1.7 Overvoltage protection ... 10
5.1.8 Overcurrent protection ... 10
5.1.9 System inductance ... 12
5.1.10 DC link capacitance ... 12
5.1.11 Y-capacitors, parasitic capacitances ... 13
5.1.12 DC Link pre-charging ... 13
5.2 DC link discharging procedure ... 15
5.2.1 General ... 15
5.2.2 Connection of MCS ... 15
5.3 Compatibility criteria for PS, HPI and load ... 16
5.3.1 Block diagram ... 16
5.3.2 Value ranges for system components: ... 17
5.3.3 Limitations on ripple current ... 17
5.3.4 Test methods ... 18
5.3.5 Ripple current in case of MCS ... 19
5.3.6 Limited operation of source-load(s) combinations with respect to ripple currents ... 20
5.3.7 Energy feedback ... 20
5.3.8 Functional requirements — Energy feedback over time ... 21
5.4 Overload protection ... 21

Annex A (informative) **Estimation methods for DC link film capacitors** ... **22**

Annex B (informative) **Technical details** ... **24**

Bibliography ... **36**