ISO 11783-2:2012-03 (E)

Tractors and machinery for agriculture and forestry - Serial control and communications data network - Part 2: Physical layer

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 General description 1
4.1 Network physical layer 1
4.2 Physical media 1
4.3 Differential voltage 2
4.4 Bus 2
4.4.1 Levels 2
4.4.2 Voltage range 2
4.4.3 Termination 2
4.5 Resistance and capacitance 3
4.5.1 Internal resistance (Rin), capacitance (Cin) 3
4.5.2 Differential internal resistance (Rdiff), capacitance (Cdiff) 4
4.6 Bit time 5
4.7 AC parameters 5

5 Functional description 6

6 Electrical specifications 7
6.1 Electrical data 7
6.1.1 General 7
6.1.2 Absolute maximum ratings 7
6.1.3 DC parameters 7
6.1.4 Bus voltages (operational) 9
6.1.5 Electrostatic discharge (ESD) 9
6.2 Physical media parameters 9
6.2.1 Twisted quad cable 9
6.2.2 Topology 10
6.2.3 ECU connection to TBC_PWR and TBC_RTN 11
6.2.4 Power For TBC_PWR and TBC_RTN 11
6.3 TBC parameters 12
6.4 Connectors 13
6.4.1 General 13
6.4.2 Bus extension connector 14
6.4.3 Implement bus breakaway connector 16
6.4.4 In-cab connector 21
6.4.5 Diagnostic connector 24

7 Conformance tests 29
7.1 General requirements 29
7.2 Internal resistance 29
7.3 Internal differential resistance 30
7.4 ECU recessive input threshold 30

7.5 ECU dominant input threshold 31
7.6 ECU dominant output 31
7.7 ECU internal delay time 32

8 Bus failure and fault confinement 33
8.1 General 33
8.2 Loss of network connection 33
8.3 Node power or ground loss 33
8.4 Open and short failures 33

Annex A (informative) Protocol controller timing and naming 37

Annex B (informative) Examples of physical layer circuits 41

Bibliography 50