

ISO/TS 21815-2:2021 (E)

Earth-moving machinery — Collision warning and avoidance — Part 2: On-board J1939 communication interface

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Symbols and abbreviated terms
5	Logical interface
5.1	Logical groups
5.2	Negotiation
5.3	Initialisation
5.4	Operation
6	Physical interface
6.1	General
6.2	Machine connector
6.3	CxD connector
6.4	Override switch
6.5	Physical layer
7	J1939 communication protocol
7.1	General
7.2	PGN:CxD»machine status
7.2.1	General
7.2.2	PGN description
7.2.3	SPN structure
7.2.3.1	SPN:Status
7.2.3.1.1	General
7.2.3.1.2	SUB_SYSTEM: PROTOCOL
7.2.3.1.3	SUB_SYSTEM: PROPULSION
7.2.3.2	SPN:RegisterIndex
7.2.3.1.4	General
7.2.3.1.5	SUB_SYSTEM: PROTOCOL
7.2.3.1.6	SUB_SYSTEM: PROPULSION
7.2.3.3	SPN:RegisterSelect
7.2.3.4	SPN:RegisterValue0
7.2.3.5	SPN:RegisterValue1
7.2.3.6	SPN:RegisterValue2
7.2.3.7	SPN:RegisterValue3
7.2.3.8	SPN:MessageIdentifier
7.3	PGN:CxD»MachineCommand
7.3.1	General
7.3.2	PGN description
7.3.3	SPN structure
7.3.3.1	SPN:Command
7.3.3.1.1	General
7.3.3.1.2	SUB_SYSTEM: PROPULSION
7.3.3.2	SPN:RegisterIndex

7.3.3.3	SPN:RegisterSelect
7.3.3.4	SPN:RegisterValue0
7.3.3.5	SPN:RegisterValue1
7.3.3.6	SPN:RegisterValue2
7.3.3.7	SPN:RegisterValue3
7.3.3.8	SPN:MessageIdentifier
7.4	PGN:Machine»CxDreply
7.4.1	General
7.4.2	PGN description
7.4.3	SPN structure
7.4.3.1	SPN:Status/Command
7.4.3.1.1	General
7.4.3.1.2	SUB_SYSTEM: PROTOCOL
7.4.3.1.3	SUB_SYSTEM: PROPULSION
7.4.3.2	SPN:RegisterIndex
7.4.3.3	SPN:RegisterFormat
7.4.3.4	SPN:RegisterValue0
7.4.3.5	SPN:RegisterValue1
7.4.3.6	SPN:RegisterValue2
7.4.3.7	SPN:RegisterValue3
7.4.3.8	SPN:MessageIdentifier
7.5	PGN:Machine»CxData (PROPULSION)
7.5.1	General
7.5.2	PGN description
7.5.3	SPN structure
7.5.3.1	SPN:Subsystem Header
7.5.3.2	SPN:SubsystemData
7.5.3.3	SPN:UserConfigurable
7.5.3.4	SPN:MessageIdentifier
7.5.4	PROPULSION subsystem
7.5.4.1	Propulsion Header
7.5.4.2	Propulsion Data
7.6	PGN:Machine»CxDstatus
7.7	PGN:Machine»CxDcommand
7.8	PGN:CxD»MachineReply
7.9	PGN:CxD»MachineData
7.10	PGN:Time/Date
8	Documentation
8.1	Machine documentation
8.2	System documentation
Annex A	(informative) Communication sequences
A.1	Instruction sequences
A.2	Message sequences
A.2.1	General
A.2.2	Negotiation
A.2.3	Initialisation
A.2.4	Operation
Annex B	(informative) Trust mechanisms
B.1	General
B.2	Security goals
B.3	Secure connection requirements
B.4	Process steps
B.5	Establish authority
B.6	Enrolment
B.7	Pairing CxD to a machine
B.8	Secure session
B.9	Interaction diagram
B.10	Diagnostics, conformance tests and audits
Annex C	(informative) Implementation examples for override and standby modes
C.1	Interconnection of override switch

- C.2** Implementation examples for override and standby modes
- C.2.1** Both on CxD-side of interface
- C.2.2** Override on machine-side of interface

Page count: 82