

DIN EN 15969-1:2015-11 (E)

Tanks for transport of dangerous goods - Digital interface for the data transfer between tank vehicle and with stationary facilities - Part 1: Protocol specification - Control, measurement and event data

Contents		Page
European foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions, abbreviations and conventions	6
3.1	Abbreviations	6
3.2	Terms and definitions	7
3.3	Conventions	8
4	Hardware interface	9
5	Basic protocol layer	9
5.1	FTL-frame (frame)	9
5.2	Frame flow (handshake)	10
5.3	Delay and timeout	15
5.4	CRC16 Checksum	16
6	Data protocol layer (FTL-data protocol)	16
6.1	Client (OBC) and server (TVE)	16
6.2	Syntax of data in datagrams	16
6.3	Nodes, subnodes, variables	16
6.4	Format identifiers	17
6.5	Types of variable values	19
6.6	Kinds of nodes	20
7	FTL-Data	21
7.1	General	21
7.2	Record and field types	21
7.3	Systemwide variables (subnode SYSTEM)	22
7.4	Variables related to global positioning system (subnode GPS)	25
7.5	Accessing a printer on TVE-side (subnode PRN)	25
7.6	Compartment information (subnode COMP)	28
7.7	Notification about changes (subnode NOTIFY)	29
7.8	Information about driver (subnode DRIVER)	30
7.9	Information about the vehicle (variable VEHICLE_ID)	31
7.10	Access to filesystem on TVE (subnode FS)	31
7.11	Auxiliary (subnode AUX)	36
7.12	Order management (subnode ORDER)	36
7.13	Goods and service database	40
7.14	FTL--logfile (subnodes LOG)	42
7.15	Required variables	68
7.16	NAK ID	69
8	Routing for multiple TVE	70
8.1	Purpose	70

8.2	Routing solution	70
8.3	Routing example	70
9	Communication with office	71
9.1	General	71
9.2	Simple file transfer	72
9.3	FTL over TCP/IP	74
10	Communication Examples	76
10.1	Examples for Basic Protocol Layer level	76
10.2	Examples for data protocol layer	77
Annex A (normative) Node tree		80
Annex B (normative) Test FTL		82
B.1	Overview	82
B.2	Basic Protocol Layer	82
B.2.1	Frame Tests	82
B.2.2	CRC-error	83
B.2.3	Delay and Timeout	83
B.3	Data Protocol Layer	83
B.3.1	Test of Toggling	83
B.3.2	Test of the FTL data layer	84
B.3.3	Test of the required FTL nodes	85
B.3.4	Optional System Subnodes	88
B.3.5	Optional Node Prn	89
B.3.6	Node Comp	91
B.4	Application Layer	97
B.4.1	Test of the L-File	97
B.4.2	Test of the LH-File	97
B.4.3	Test for the Filling of the NodeList	98
B.4.4	Sequence Test	98
Bibliography		100