

# ISO 11992-2:2023-03 (E)

## Road vehicles - Interchange of digital information on electrical connections between towing and towed vehicles - Part 2: Application layer for brakes and running gear

---

Contents	Page
Foreword .....	vii
Introduction .....	viii
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 Symbols and abbreviated terms .....	4
4.1 Symbols .....	4
4.2 Abbreviated terms .....	4
5 Conventions .....	5
6 APP-Parameter specification .....	5
6.1 General definitions .....	5
6.2 APP - Identification parameter specification .....	6
6.2.1 APP - Axle/wheel identification .....	6
6.2.2 APP - Identification data index .....	8
6.2.3 APP - Identification data indexed content .....	9
6.3 APP - Braking systems parameter specification .....	10
6.3.1 APP - Park brake demand relative pressure .....	10
6.3.2 APP - Service brake demand pressure .....	10
6.3.3 APP - Vehicle service brake status .....	11
6.3.4 APP - Braking system wheel-based vehicle speed .....	11
6.3.5 APP - Vehicle retarder control status .....	11
6.3.6 APP - Retarder demand relative torque .....	12
6.3.7 APP - Retarder wheel torque reference .....	13
6.3.8 APP - Retarder relative peak torque .....	14
6.3.9 APP - Retarder actual maximum positive torque .....	14
6.3.10 APP - Retarder actual maximum negative torque .....	14
6.3.11 APP - Axle load sum .....	15
6.3.12 APP - Pneumatic supply pressure .....	15
6.3.13 APP - Brake lining .....	15
6.3.14 APP - Brake temperature .....	16
6.3.15 APP - Tyre pressure .....	16
6.3.16 APP - Automatic towed vehicle braking status .....	16
6.3.17 APP - Vehicle ABS status .....	17
6.3.18 APP - Vehicle electrical supply status .....	17
6.3.19 APP - Vehicle pneumatic supply status .....	18
6.3.20 APP - Spring brake installation status .....	18
6.3.21 APP - Electrical load proportional function installation status .....	18
6.3.22 APP - Load proportional function installation status .....	19
6.3.23 APP - ABS off-road request .....	19
6.3.24 APP - ASR brake control status .....	19
6.3.25 APP - ASR engine control status .....	20
6.3.26 APP - Pneumatic control line status .....	20
6.3.27 APP - Two electrical circuits brake demand status .....	20
6.3.28 APP - Tyre pressure status .....	21

6.3.29	APP - Brake lining status .....	21
6.3.30	APP - Brake temperature status .....	22
6.3.31	APP - Brake light switch .....	22
6.3.32	APP - Vehicle type .....	22
6.3.33	APP - Red warning signal request .....	23
6.3.34	APP - Amber warning signal request .....	23
6.3.35	APP - Electrical supply of non-braking systems status .....	23
6.3.36	APP - Loading ramp approach assistance status .....	24
6.3.37	APP - VDC active .....	24
6.3.38	APP - Road curvature .....	25
6.3.39	APP - Wheel speed difference main axle .....	25
6.3.40	APP - Supply line braking .....	25
6.3.41	APP - Spring brake status .....	26
6.3.42	APP - Relative brake demand for front or left vehicle side .....	26
6.3.43	APP - Relative brake demand for rear or right vehicle side .....	27
6.3.44	APP - Support of side- or axle-wise brake force distribution .....	27
6.3.45	APP - Lateral acceleration .....	27
6.3.46	APP - Stop lamps request .....	28
6.3.47	APP - Braking via electric control line support .....	28
6.3.48	APP - Geometric data index .....	28
6.3.49	APP - Geometric data indexed content .....	29
6.3.50	APP - Brake cylinder pressure first axle, left wheel .....	32
6.3.51	APP - Brake cylinder pressure first axle, right wheel .....	33
6.3.52	APP - Brake cylinder pressure second axle, left wheel .....	33
6.3.53	APP - Brake cylinder pressure second axle, right wheel .....	33
6.3.54	APP - Brake cylinder pressure third axle, left wheel .....	34
6.3.55	APP - Brake cylinder pressure third axle, right wheel .....	34
6.3.56	APP - Wheel speed first axle, left wheel .....	35
6.3.57	APP - Wheel speed first axle, right wheel .....	35
6.3.58	APP - ROP system status .....	35
6.3.59	APP - YC system status .....	36
6.3.60	APP - Towed vehicle ROP system request .....	36
6.3.61	APP - Towed vehicle YC system request .....	36
6.3.62	APP - Vehicle combination ABS status .....	37
6.3.63	APP - Towed vehicle detection status .....	37
6.3.64	APP - Reverse gear status .....	38
6.3.65	APP - External brake request status .....	38
6.3.66	APP - Emergency braking status .....	38
6.4	APP - Running gear equipment parameter specification .....	39
6.4.1	APP - Driven axle load .....	39
6.4.2	APP - Nominal vehicle body level, front axle .....	39
6.4.3	APP - Nominal vehicle body level, rear axle .....	40
6.4.4	APP - Relative vehicle body level, front axle .....	40
6.4.5	APP - Relative vehicle body level, rear axle .....	40
6.4.6	APP - Level control request .....	41
6.4.7	APP - Level control status .....	41
6.4.8	APP - Level change request, front axle .....	41
6.4.9	APP - Level change request, rear axle .....	42
6.4.10	APP - Level change status, front axle .....	42
6.4.11	APP - Level change status, rear axle .....	42
6.4.12	APP - Lift axle 1 position request .....	43
6.4.13	APP - Lift axle 2 position request .....	43
6.4.14	APP - Lift axle 3 position request .....	44
6.4.15	APP - Lift axle 4 position request .....	44
6.4.16	APP - Lift axle 5 position request .....	44
6.4.17	APP - Lift axle 1 position .....	45
6.4.18	APP - Lift axle 2 position .....	45
6.4.19	APP - Lift axle 3 position .....	45
6.4.20	APP - Lift axle 4 position .....	46
6.4.21	APP - Lift axle 5 position .....	46
6.4.22	APP - Steering axle locking request .....	46

6.4.23	APP - Steering axle locking status .....	47
6.4.24	APP - Traction help (load transfer) request .....	47
6.4.25	APP - Traction help (load transfer) status .....	48
6.4.26	APP - Ride height request .....	48
6.4.27	APP - Ride height level .....	48
6.4.28	APP - Normal level .....	49
6.4.29	APP - Ramp level request .....	49
6.4.30	APP - Ramp level .....	49
6.4.31	APP - Ramp level position .....	50
6.4.32	APP - Ramp level storage request .....	50
6.4.33	APP - Ramp level storage status .....	50
6.4.34	APP - Stop level change request .....	51
6.4.35	APP - Stop level change request acknowledge .....	51
6.4.36	APP - Parking and towed vehicle air pressure .....	51
6.4.37	APP - Auxiliary equipment supply pressure .....	52
6.4.38	APP - Tyre pressure threshold detection .....	52
6.4.39	APP - Air leakage detection .....	53
6.4.40	APP - Tyre temperature .....	53
6.4.41	APP - Tyre module power supply status .....	54
6.5	APP - Axle load parameter specification .....	54
6.5.1	APP - Axle load .....	54
6.5.2	APP - Axle load calibration data storage request .....	54
6.5.3	APP - Axle load calibration data storage status .....	55
6.5.4	APP - Axle load measured by external scale .....	55
6.5.5	APP - Axle load measured by towed vehicle .....	56
6.5.6	APP - Axle load calibration data load level .....	56
6.5.7	APP - Axle load calibration type .....	57
6.5.8	APP - Maximum driven axle load .....	57
6.6	Ride height parameter specification .....	58
6.6.1	APP - Extended ride height and ramp level storage .....	58
6.6.2	APP - Ride height and ramp level set request .....	58
6.6.3	APP - Ride height storage request .....	58
6.6.4	APP - Ride height storage .....	59
6.6.5	APP - Neutral gear request .....	59
6.6.6	APP - Rear obstacle distance .....	59
6.6.7	APP - Immobilizer status .....	60
6.6.8	APP - Fifth wheel load .....	60
6.6.9	APP - Ambient air temperature .....	61
6.6.10	APP - Parking brake status .....	61
6.6.11	APP - Neutral gear status .....	61
6.7	APP - Software update parameter specification .....	61
6.7.1	APP - Vehicle software update request .....	61
6.7.2	APP - Vehicle software update request acknowledgement .....	62
7	APP-PGspecification .....	62
7.1	APP - Overview of PGs .....	62
7.2	APP - Message transmission in case of multiple towed vehicles .....	64
7.3	APP - Towing vehicle .....	64
7.3.1	APP - General specification .....	64
7.3.2	APP - General PGs, transmitted from the towing to the towed vehicle .....	65
7.3.3	APP - Electronic brake system PGs, transmitted from the towing to the towed vehicle .....	65
7.3.4	APP - Running gear equipment PGs, transmitted from the towing to the towed vehicle .....	67
7.4	APP - Towed vehicle .....	70
7.4.1	APP - General PGs, transmitted from the towed to the towing vehicle .....	70
7.4.2	APP - Electronic brake system PGs, transmitted from the towed to the towing vehicle .....	70
7.4.3	APP - Running gear equipment PGs, transmitted from towed to towing vehicle .....	75
8	APP - Address assignment .....	78
8.1	APP - General requirements .....	78
8.2	APP - Road train configuration .....	79

8.3	<b>APP - Address assignment method of a towing and towed vehicle .....</b>	79
8.4	<b>APP - Vehicle node capabilities .....</b>	80
9	<b>SI-ServiceinterfacedefinitionbetweenapplicationandOSIlayers .....</b>	82
9.1	<b>SI - A_Data.req, A_Data.ind, and A_Data.con service interface .....</b>	82
9.2	<b>SI - A_Data.req, A_Data.ind, and A_Data.con service interface parameter mapping .....</b>	82
9.3	<b>SIP - Service interface data type definitions .....</b>	83
10	<b>AL - Application layer .....</b>	83
10.1	<b>AL - Message PDU format .....</b>	83
10.2	<b>AL - A_PDU specification .....</b>	83
11	<b>PL - Presentation layer .....</b>	83
<b>Annex A (normative) Geometric dimensions .....</b>		84
<b>Annex B (normative) Software update request and acknowledge interaction between towing and towed vehicles .....</b>		90
<b>Annex C (informative)Messageflow .....</b>		99
<b>Bibliography .....</b>		103