

Appendix Sensor and Telematic data

In accordance with ITSS Standard V 1.2, the following messages and data are provided:

Nachricht	Daten
lastPosition	• GNSS_Position • ITSS_LocationInfo
movementState	• GNSS_Position • ITSS_MovementState: "moving" / "standing" / "parking" / "unknown"
sensorValues	• ITSS_SensorValueList: Temperatur inclusive Measurement time
shockDetected	• GNSS_Position • ITSS_LocationInfo • X-Axis_triggered: boolean (true, if axis triggered the shock detection) • Y-Axis_triggered: boolean (true, if axis triggered the shock detection) • Z-Axis_triggered: boolean (true, if axis triggered the shock detection) • X-Axis: number in milli g ($g = 9.81 \text{ m} / \text{s}^2$) • Y-Axis: number in milli g ($g = 9.81 \text{ m} / \text{s}^2$) • Z-Axis: number in milli g ($g = 9.81 \text{ m} / \text{s}^2$) • X-Duration in milliseconds • Y-Duration in milliseconds • Z-Duration in milliseconds

GNSS_Position consists of the following individual values::

- Latitude
- Longitude
- Altitude (Höhe)
- Heading (Orientierung)
- Speed in km/h
- UTC Timestamp

Only telematics devices from Savvy's "CargoTrac" model series and "SenseGate" sensor hubs for connecting sensors are used.

Recording is not the same as transmission. The corresponding parameters can be found in the following table:

Recording parameters	Recording parameters: • Start-up and stop processes • Shocks above a threshold value • direction of travel (x): 1 G sideways (y): 0.5 G up/down (z): 1 G • every 30 minutes during transport • once a day when stationary ("heartbeat")
Transmission parameters	Immediate transmission – even of information that has only been logged in the meantime: • when the movestate changes from stop → parked • when the movestate changes from stop → transport • when shocks exceed a threshold value → product of amplitude (g) and duration (ms) > 0.05

	Hourly during movestate transport
	Daily during movestate parked ("heartbeat")

Telematics data from PJM Waggontracker is excluded.