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# WINK BMU / WINK ZERO EMISSION

## Arriva Netherlands, Noordelijke Lijnen franchise - Preliminary datasheet

In December 2017, Arriva ordered eighteen two-car WINK low-floor multiple units from Stadler. The bimodal trains (diesel / HVO hydrotreated vegetable oil and 1.5 kV DC) are going operational in the Noordelijke Lijnen concession as of the end of 2020. In a later stage, the combustion engines will be replaced by batteries which makes the WINK to zero emission* units on partly electrified lines. The trains feature air suspension, WiFi, electric sockets, a passenger counting system. Level entrance with sliding steps offer excellent access for wheelchairs, prams and bicycles. The Stadler WINK with 18t axleload and its multifunctional powermodule is the perfect concept for state of the art and future drive propulsion systems: As classic Diesel multiple unit (fossil fuel or HVO), as bimodal multiple unit (combustion engine for non-electrified lines, with pantograph for electrified lines), as electric multiple unit (with pantograph and with batteries) or as independelty powered units with batteies or with fuel cells. The vehicles are designed for a maximum running speed of 140 km/h.

* Exclusive $CO_2$ emissions from the provision of electricity

**www.stadlerrail.com**

**Stadler Rail Group**

Ernst-Stadler-Strasse 1
CH-9565 Bussnang
Phone +41 71 626 21 20
stadler.rail@stadlerrail.com

**Stadler Bussnang AG**

Ernst-Stadler-Strasse 4
CH-9565 Bussnang
Phone +41 71 626 20 20
stadler.bussnang@stadlerrail.com

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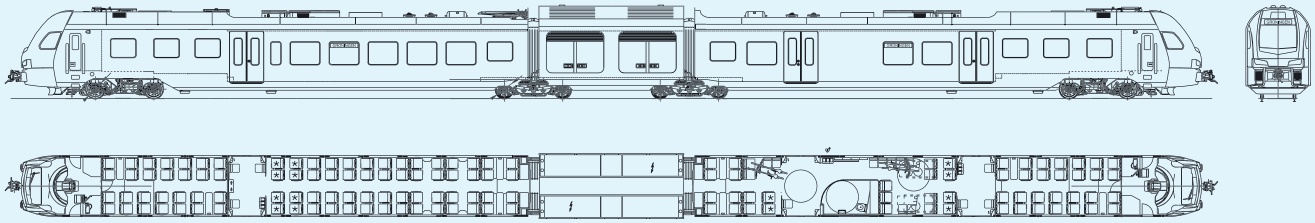

## Technical features

### Technology

- Welded extruded aluminium superstructure
- Body structure fulfils the EN standard for energy absorption in the event of collision (EN 15227)
- Air-suspended power and trailer bogies
- Fully TSI compliant
- Start of operation as bimodal unit (1.5kV DC and combustion engines for diesel / HVO)
- Later replacement of combustion engines by batteries and operation as zero emission units (1.5kV DC and batteries)
- Recuperation battery for the storage of brake energy to be used for operation of the auxilary systems while in standstill

### Comfort

- Bright, friendly interior with large window areas
- Extra wide seat pitch
- Interior and exterior design according to TSI PRM
- Air-conditioned passenger compartments
- Closed toilet system
- 3 entrance doors per side
- Multiple-traction for up to three vehicles
- Elektric sockets
- Place for bicycle / wheelchair
- Ethernet based passenger information system with wide TFT screens
- WLAN access

### Personnel

- Ergonomically designed driver's cab
- Easy access for maintenance
- Air conditioned driver's cab

### Reliability/Availability/Maintainability/Safety

- Redundant traction chain with water-cooled IGBT power converter and asynchronous drive motor
- Vehicle control system with train bus and diagnostics computer

## Vehicle data

| | WINK 2-car |
|---|---|
| **Customer** | Arriva Personenvervoer |
| **Lines operated** | Noordelijke Lijnen |
| **Gauge** | 1435 mm |
| **Axle arrangement** | Bo'2'2'Bo' |
| **Catenary supply voltage** | 1.5 kVDC |
| **Propulsion systems** | |
| Electric / Diesel | 1000 kW / 748 kW |
| Electric / Battery (capacity) | 1000 kW / 748 kW (2 x 90 kWh) |
| Recuperation battery | 2 x 30.5 kWh |
| **Number of vehicles** | 18 |
| **Service start-up** | 2020 |
| **Seats (inkl. tip-up seats)** | 137 (153) |
| **Floor height** | |
| Low-floor | 780 mm |
| High-floor | 1145 mm |
| **Door width** | 1300 mm |
| **Longitudinal strength** | 1500 kN |
| **Overall length** | 55 500 mm |
| **Vehicle width (power module)** | 2820 mm (2980 mm) |
| **Vehicle height** | 4120 mm |
| **Bogie wheelbase** | 2700 mm |
| **Powered wheel diameter, new** | 870 mm |
| **Trailer wheel diameter, new** | 760 mm |
| **Maximum speed** | 140 km/h |