

A public transit operation's success depends on the availability of accurate figures reflecting the company's activities. DILAX' automatic passenger counting and trip analysis system provides transit agencies, cities and regions with reliable performance indicators and usage data. This data can serve as the basis for accurate operational assessments and resulting sound business plan definition. Usage of data:

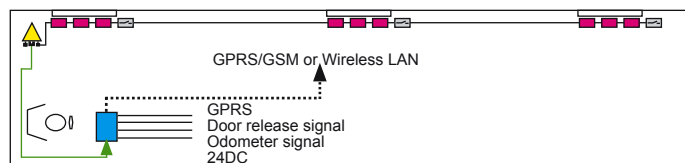
- As proof of performance within regional transit authorities
- To optimize the services offered to the customer
- To optimise the use of resources (vehicles, personnel, funding)
- During service planning (new routes, lines, increased passenger loads)
- To optimize the schedule and network

The complete system includes technologically mature solutions for data acquisition, as well as transmission and management of acquired data. It can run autonomously, or can be used in an integrated approach. A variety of interfaces permit connection to other on-board systems.

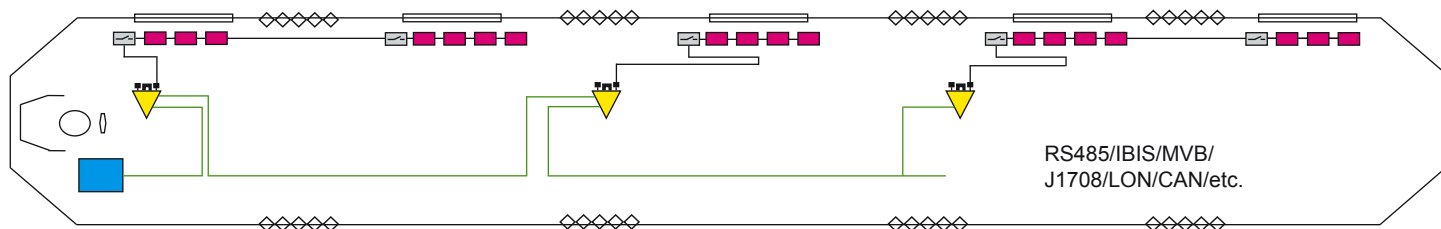
Data Acquisition

Sensors, door slaves, and, optionally, the BBM Web Server are installed on board the vehicle to acquire data. These components are connected via the DILAX local area network (LAN) and the serial sensor link (SSL). The LAN can connect as many as 32 door slaves, which, in turn, each link up to 12 sensors or digital inputs via the SSL.

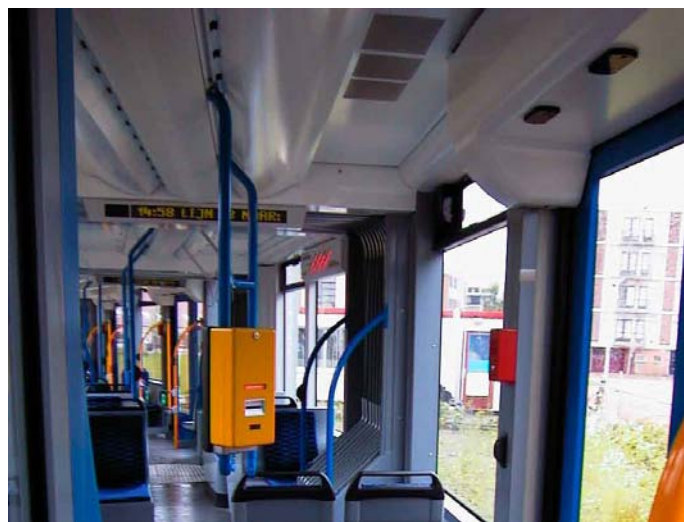
Specialized active infrared sensors are installed above the doorways inside the vehicle. These recognize boarding and alighting passengers. Any type of door can be equipped with DILAX active infrared sensors. Even in dense passenger traffic and multiple simultaneous boardings / alightings, the measurements are performed correctly.



Bus configuration example.



Rail configuration example.



Sensors installed in a vehicle.

A digital input, typically connected to a limit switch, is used to detect whether the door is open or closed. This ensures that the door slave only counts passengers when the door is open.

The door slave receives the signals from up to 12 sensors and digital inputs via the SSL.

The door slaves transfer their data to the BBM Web Server, which stores it along with other information such as time stamps, the vehicle's position and the status of up to three inputs such as the wheelchair ramp or bicycle rack. The BBM Web Server is also typically connected to the vehicle's odometer, which is used in conjunction with the built-in GPS receiver to ensure accurate position and distance measurements.

The integration of DILAX' hardware with third-party on-board equipment, thereby excluding the BBM Web Server, is also possible using one of the interfaces described below.

Legend:

- BBM-WEB-Server or on-board computer
- ▲ Door slave
- Sensor
- Digital input

Data Transfer

The measured data can be transferred by TCP/IP using common Internet technology. A fully automatic data transfer using a variety of technologies is possible, such as:

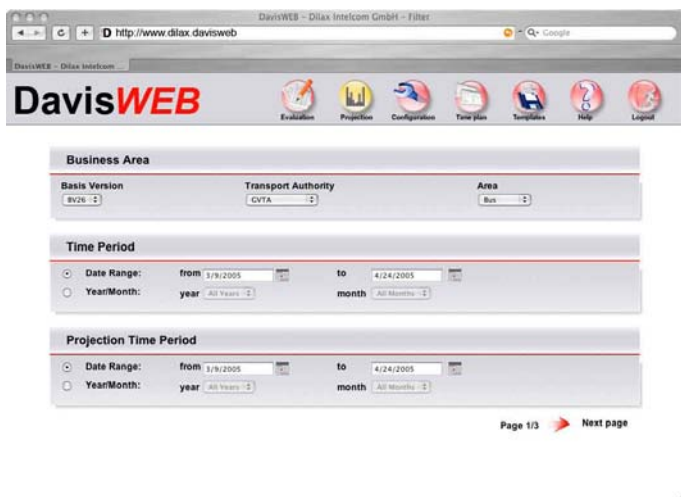
- GSM / GPRS
- WLAN
- Point-to-point connections (RS232/RS485)
- Ethernet

Other connections, such as IBIS, MVB, J1708, CAN or LON can also be used. Finally, a manual data transfer on board the vehicle using a laptop computer is always possible.

When using DILAX' BBM Web Server with a suitable GSM/GPRS connection, the following tasks can be accomplished remotely:

- Directly call any given vehicle (via CSD or on a custom APN)
- View vehicle data in real time
- Initiate data transfer
- Perform maintenance work

In addition to daily data transfers initiated by the BBM Web Server, it can also automatically send status reports by email.

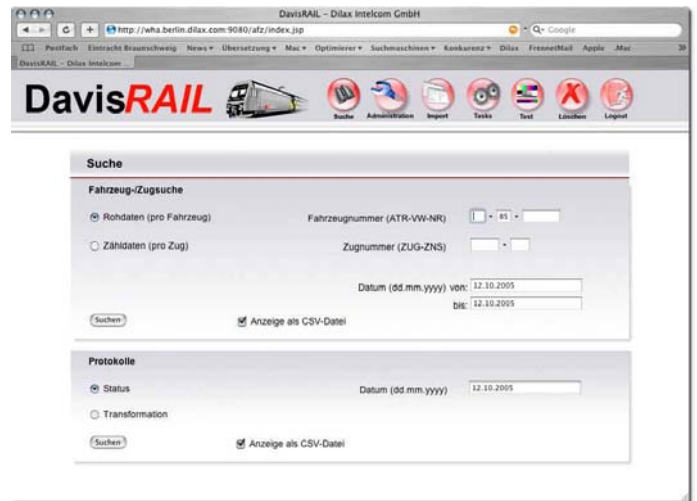


The screenshot shows the DavisWEB web interface. It has a navigation bar with icons for Evaluation, Projection, Configuration, Time plan, Templates, Help, and Logout. The main content area is titled 'Business Area' and contains three sections: 'Basis Version' (BV26), 'Transport Authority' (CVTA), and 'Area' (Bus). Below these are 'Time Period' and 'Projection Time Period' sections, each with 'Date Range' and 'Year/Month' filters. The 'Date Range' filters show 'from' and 'to' dates (1/9/2005 to 4/24/2005). The 'Year/Month' filters show 'year' and 'month' options. At the bottom right, it says 'Page 1/3' and 'Next page'.

Draft evaluations with web forms.

Data Management

State of the art applications are available for processing and managing the collected data, namely DavisWEB and DavisRAIL. System data, raw data as well as validated measured data are stored in a relational database such as SQL Server or Oracle. Comprehensive reporting and forecasting tools are part of the software package.



The screenshot shows the DavisRAIL web interface. It has a navigation bar with icons for Suche, Administration, Import, Tools, Test, Logout, and Login. The main content area is titled 'Suche' and contains two sections: 'Fahrzeug-/Zugsuche' and 'Protokolle'. The 'Fahrzeug-/Zugsuche' section has radio buttons for 'Rohdaten (pro Fahrzeug)' and 'Zähdaten (pro Zug)', input fields for 'Fahrzeugnummer (ATR-VW-NR)' and 'Zugnummer (ZUG-ZNS)', and date range filters for 'Datum (dd.mm.yyyy)' from 12.10.2005 to 12.10.2005. The 'Protokolle' section has radio buttons for 'Status' and 'Transformation', and a date filter for 'Datum (dd.mm.yyyy)' set to 12.10.2005. Both sections have 'Suchen' and 'Anzeige als CSV-Datei' buttons.

DavisRAIL – data administration system for rail applications.

Basic functionality of the data management system includes:

- Automatic control of the data transfer
- Data plausibility check
- System data administration (network, schedule)
- Automatic assignment of measured data to actual trips or blocks
- Statistical verification of measured data
- System calibration
- Processing ride check data
- Report generation, forecasting, trip analysis

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