ŠKODA | ŠKODA DIGITAL s.r.o.

Timetable Live Transport Data Advertisement Data CCTV Records APC Statistics Diagnostic & Statistic Data GCG

Ground-side infrastructure

Onboard systems

EBN

UIC 558

ECN

Control Display

ETB node

MCG T2G Wi-Fi/GSM/GPS

PIS control CCTV NVR

PAS control APC control

APC sensors

LED ext.
LED ext.
LED int.
LED int.

LCD
LCD
LCD
LCD

RS485 CAN

Res. LCD

cam
cam
cam
cam
cam
cam

apc
apc
apc
apc

Legend:

HYPEX platform:

Example for integration of functions:

PIS CCTV PAS+PEC APC

MACS
Multimedia Adaptable Centralized System for OMTS

Key features

- An on-board multimedia solution with an emphasis on remote management and control.
- Targeting railway vehicles such as train units, coaches, trams and metros.
- Easy extensibility of information presented without the need to change on-board software.
- Stationary applications for:
  - data creation, modification and automatic distribution
  - fleet management and monitoring (vehicle position, application and system status)
  - data acquisition, collecting and reporting (CCTV video records, passenger counting statistics)

- Adaptable to existing stationary solution (modification of communication protocols and the provision of data import/export modules).
- Ethernet interface between all components.
- Communication protocols based on modern open standards (HTTP/MQTT/JSON) with support for public transport and railway specifics (VDV 301, ITxPT, TRDP).
- On-board components benefit from a modular ŠDIG Hypex platform
- Simple integration with other subsystems such as ticket validators and passenger infotainment

EN ISO 9001 with TÜV NORD certification

Description

MACS – Multimedia Adaptable Centralized System is part of On-board Multimedia and Telemetry Systems solutions (OMTS). The main functions of the system target passengers i.e. to provide passengers with information, extending their safety and security and allowing the operator to adjust services according to the number and types of passengers transported.

An important part of the multimedia systems is a ground infrastructure for data preparation, distribution and status reporting. A Mobile Communication Gateway (MCG) provides wireless connection to the Ground Communication Gateway (GCG) over Wi-Fi, LTE or GSM technologies.

Components

- **PIS – Passenger Information System**
  - Public transport information
  - Seat reservation information
  - Additional information not connected with transportation – advertising, entertainment and guiding presentations
- **PAS – Public Address System**
  - Automatic audio announcements from PIS
  - Allows the crew to announce extra or emergency information
- **PEC – Passenger Emergency Communication**
  - Allows emergency audio communication between passengers and the train crew or dispatcher
- **APC – Automatic Passenger Counting**
  - Basic function is to count passengers boarding and leaving in stations
  - In cooperation with cameras or other sensors it has the ability to check free seats and direct passengers to the appropriate train sections
- **CCTV – Camera Surveillance System**
  - Allows the driver, train crew or dispatchers visual and audio awareness regarding the situation in and around the train
  - Can provide advanced image and sound analysis for indication of uncommon situations (malfunctions, violations of safe operation)
  - Stores video and audio records for post-analysis for evidence of the events.
- **Server applications**
  - Timetable and multimedia content data preparation
  - Live distribution of public transport related data (connections, delays, platforms used)
  - Live vehicle position and data reporting (on maps)
  - Passenger counting statistics acquisition and reporting (based on journey stations)
  - CCTV records archiving, searching and viewing
  - Applications status reporting (data & versions, actual state, problems)
  - Automatic data and software distribution to vehicles

Standards

EN 61375, EN 50126, EN 50128, EN 50155, VDV 301