

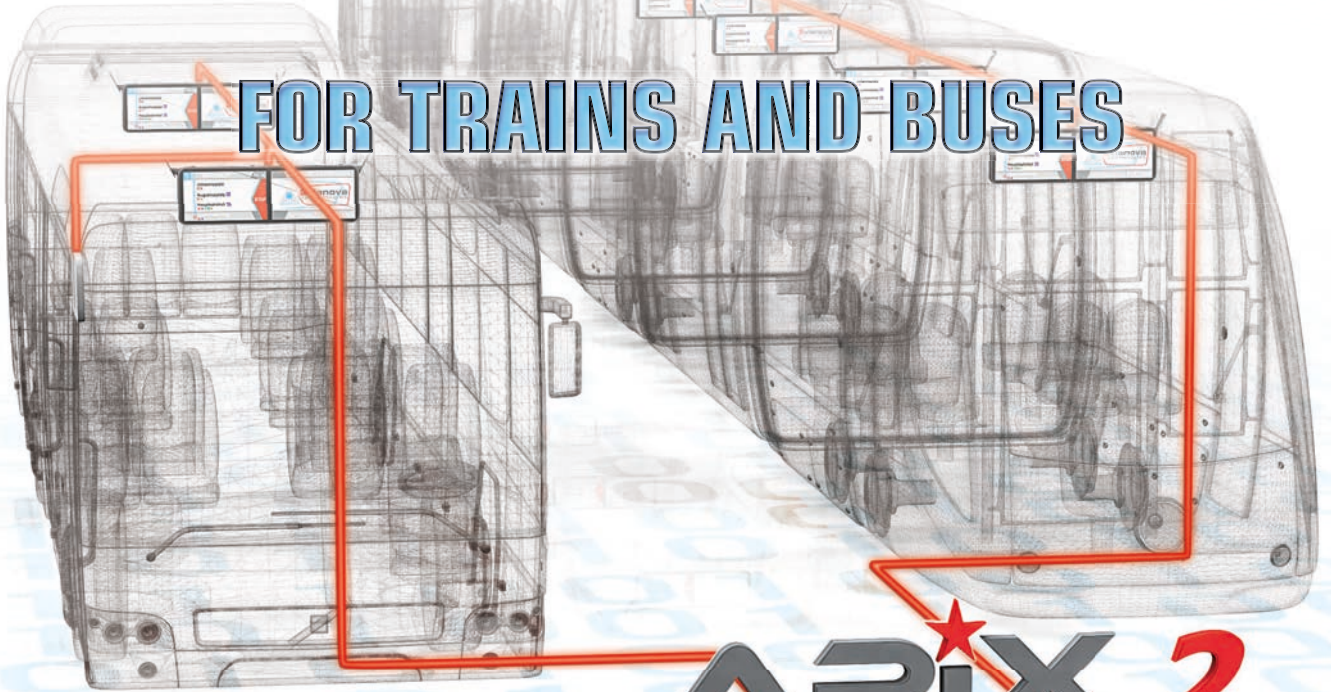
Nahverkehrs- praxis

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DATA - HIGHWAY

FOR TRAINS AND BUSES



Experience Dynamic Passenger
Infotainment Live:



InnoTrans
in Berlin from
20.-23.09.2016
Hall 2.1, Booth 409

VT vianova
Technologies

Reprint from Nahverkehrs-praxis 5/6-2016

APIX-Data Highway for Trains and Buses



Image 1 displays APIX as copper backbone to interconnect all video systems in an automobile (image courtesy of INOVA Semiconductors).

Within the space of just a few years, the APIX (Automotive-Pixel-Link) Gigabit data highway has set new video transfer standards in the automobile industry. To date, more than 50 million implemented connections speak for themselves. VIANOVA Technologies uses the performance capacity and robustness of APIX as the core component for video transmission in trains and buses and, accordingly, offers modular infotainment systems for universal use to Public Transport Authorities (PTAs).

APIX – the copper-fed robust nerve system

In 2006, APIX shot data at 1 Gbit/s though a single copper wire pair, today 3 Gbit/s are the norm and 12 Gbit/s

Andreas Kreidl,
Managing Director,
VIANOVA Technologies

are planned for the next up-coming APIX release. Image 1 clearly shows how an APIX nerve system connects the onboard computer to the car's cockpit and all video enabled devices including the displays built into the rear seats.

Galvanic isolation between transmitter and receiver, low emission values, durability, robust interfacing and resilience to harsh environmental conditions are obligatory features for mobile applications and are the key reasons for the success of APIX in this sector.

APIX – in Trains and Buses

The previously described ruggedness of APIX predestines it for use



Image 2 shows the modular VIANOVA display family, all equipped with integrated server and/or APIX Gigabit data highway. (Images 2 und 3 : Vianova Technologies).

in trains and busses where even harsher conditions exist as in cars, particularly where video systems, dynamic passenger information and infotainment are concerned. When considering data transfer, for example, between detachable vehicle parts or robust couplings (even in articulated buses!) as well as the galvanic separation of individual display and computer units in often very long multi-carriage vehicles, the APIX solution comes out top.

In addition to possessing high emission and immunity values, such systems must endure grueling conditions and satisfy stringent standards if being considered for rail and bus applications, which instantly disqualify semi-parallel video bus solutions such as DVI, LVDS and HDMI. Even the required transmission distances (up to 30 m) speak favorably for the APIX solution.

Modular infotainment system family with APIX or Ethernet connection

In order to adapt optimally to the versatile PTA vehicle fleet, VIANOVA offers a modular display format (refer to image 2) which covers a range of display sizes, formats and mounting possibilities. All display units can be equipped with either an inbuilt computer complete with a range of interfaces such as Ethernet, cellular radio, WLAN, DAB etc. or with an APIX interface for connection to a distributed server. Several display units within an articulated bus or long vehicle compartment can then be daisy-chained together using just two copper wires of a single cable and controlled by an onboard vehicle server ensuring that content is displayed across all screens 100% synchronously.

The cable most used for mobile applications in the rail sector consists of just two pairs of copper wires. One pair is used for APIX video transfers (two HD images simultaneously) while the second is reserved for diagnostics. Naturally, high-grade Ethernet cable can also be used for APIX transfers – two pairs of wires within the CATx cable would then remain unused.

Long-term availability > 15-30 years

It was with great pride that at the beginning of 2016 VIANOVA Technologies was able to upgrade the world's largest infotainment installation in Berlin's underground with the latest APIX-based display units and servers. The existing GigaStar cable in use for the last 15 years could be used, practically unchanged, for a further 15 years – a huge cost saving factor with 30-year continuity.

Because of the vast numbers of APIX chips in use in the automotive industry, the cost effectiveness of the data highway is assured, and the conservative production and maintenance cycles yield very high availability (greater than 15 years).

The Munich-based semiconductor manufacturer, INOVA Semiconductors, fabricates the APIX chips, which are also made under license by the Japanese (Sozionext) and American semiconductor producers, making it available from more than one source.

Besides the Berlin underground, many large and mid-sized PTAs in Germany and Austria are already reaping the benefits from APIX-enabled dynamic passenger information and entertainment systems. Many more projects within Europe and the Americas are currently in the negotiation stage, and the success APIX is enjoying within the automotive sector is the door opener to many of these new international rail and bus projects.

Future APIX developments by VIANOVA Technologies

The first quarter of 2016 saw the launch of the 21.5" VIANOVA 16:9 display unit (refer to image 3) which is available with either the APIX data highway or Ethernet (integrated computer). The display unit comes in two flavors – either with

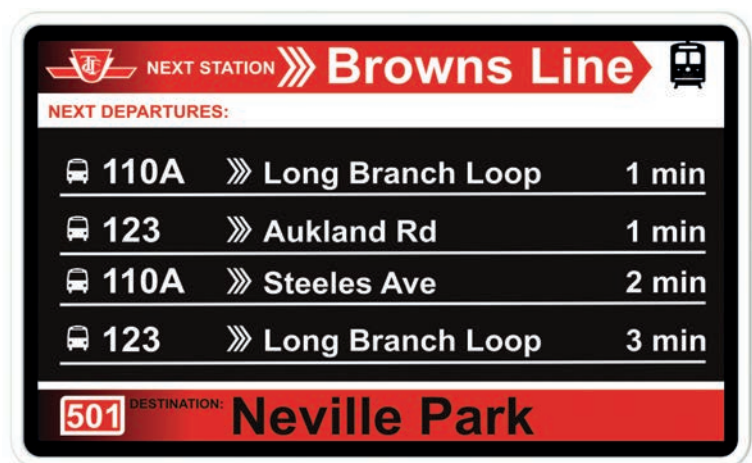


Image 3: The 21,5" display is available with brightness levels ranging from 300 cd/m² to 1000 cd/m² and can be equipped with integrated server and/or APIX interface.

300 cd/m² brightness values or as a „High-Bright“ version with up to 1000 cd/m² for applications in direct sunlight. To meet the ever-growing demands placed on dynamic passenger information and entertainment systems, VIANOVA is continually extending its product portfolio. In fact, all its new products are fully backwards compatible with its existing range and are fully certified (EN50155, E1 etc.) to satisfy stringent rail and bus requirements.

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VIANOVA onboard infotainment product portfolio

Modular onboard components combined with the flexible bitcontrol® LISA software platform create the VIANOVA Technologies turnkey infotainment solutions for use in rail or bus applications. With a choice of distributed server and intelligent display units, these units are suited for installation in all conventional vehicle types.



MS-700
Passively cooled vehicle server with 3rd generation GigaStar (≤ 3 Gbit/s) video outputs.



ID-29-S-R / MD-29-S-R
29" single display unit with a 32:9 format available with a variety of installation options



ID-18-S-U / MD-18-S-U
18.5" single display unit for entry-level passenger information.



ID-18-S-W / MD-18-S-W
18.5" back-to-back display unit for wall mounting in vehicles with limited headroom.



ID-18-T-R / MD-18-T-R
Dual 18.5" display unit for bus installation. Vehicle mounting via stanchion.



ID-18-Q-R / MD-18-Q-R
18.5" quad display unit for trams. Vehicle mounting via the enclosure.

ID = GigaStar enabled displays

MD=Intelligent Display with TCP/IP transfer

Excerpt of customers successfully implementing the robust VIANOVA display systems

Infotainment in Berlin (BF)

Refurbishing and maintenance of 1156 BVG metro cars.

Infotainment in Leipzig (LVB)

Retrofitting and re-equipping buses and trams.

Infotainment in Potsdam (ViP)

Refurbishing and retrofitting existing tram systems.

Infotainment Dresden (DVB)

Refurbishment of existing tram systems

Solaris Bus & Coach S.A.

Equipment for a variety of vehicle types

WestfalenBahn GmbH

Installation in new Stadler Rail trains

Bombardier Transportation

Flexity-Classie, Flexity-XXL, NGT-8

Hamburger Hochbahn AG

New installations in vehicles of the innovation route

Chemnitzer Verkehrs AG (CVAG)

Retrofitting in existing trams

MAN Utility Vehicles

LineCityHybrid

New York City Transit (NYCT)

Retrofitting in articulated buses including audio announcements



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