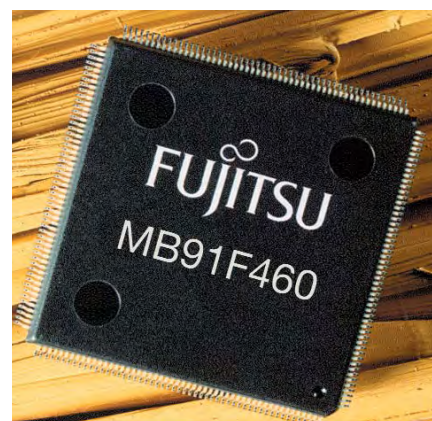
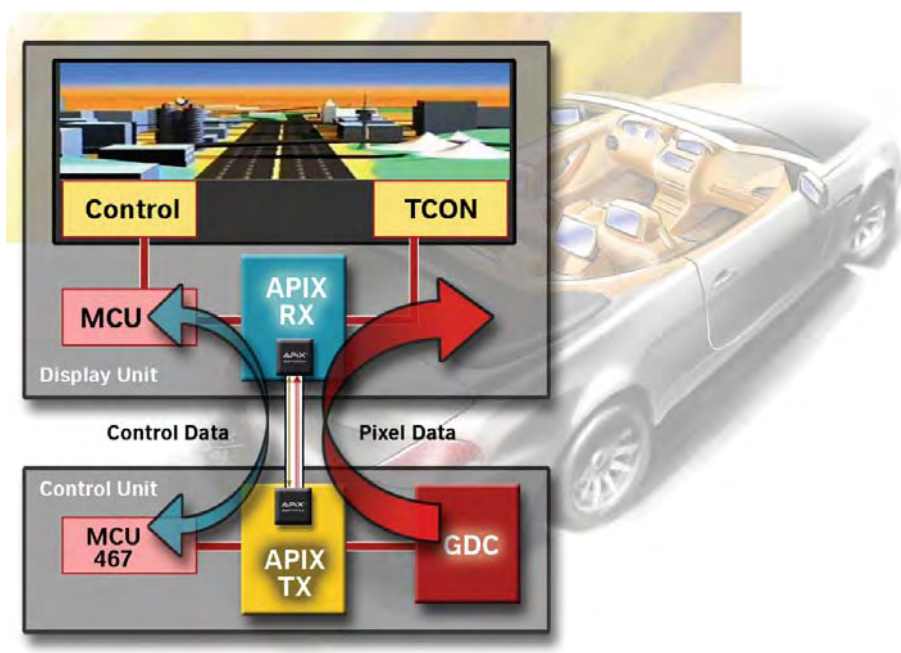


APIX – Fujitsu integrates Automotive Pixel Link on its Graphics Controller & Microcontroller Portfolio



32-bit Fujitsu RISC MCU series.

Display system architecture.

Description

In driving new standards for automotive applications in the driver information sector, Fujitsu will introduce APIX as a new interface. APIX is licensed from Inova in order to add an innovative serial interface for driver displays to Fujitsu’s product portfolio of graphics controllers and microcontrollers (MCUs). Among the first implementations with APIX is Fujitsu’s 32-bit FR series, MB91460. This series is already established in automotive applications such as dashboard, body control, gateway and infotainment.

The typical architecture for driver information systems requires distributed components. There is an MCU controlling the system functions and there is a display together with a graphics controller for the image data. The two data streams, control and image (pixel) data, need a suitable link between these components. In the past, image data was provided via a parallel output, which meant that two obstacles had to be overcome – high device cost due to high pin-count and limited topology options, as display and graphics controller needed to be positioned in close proximity.

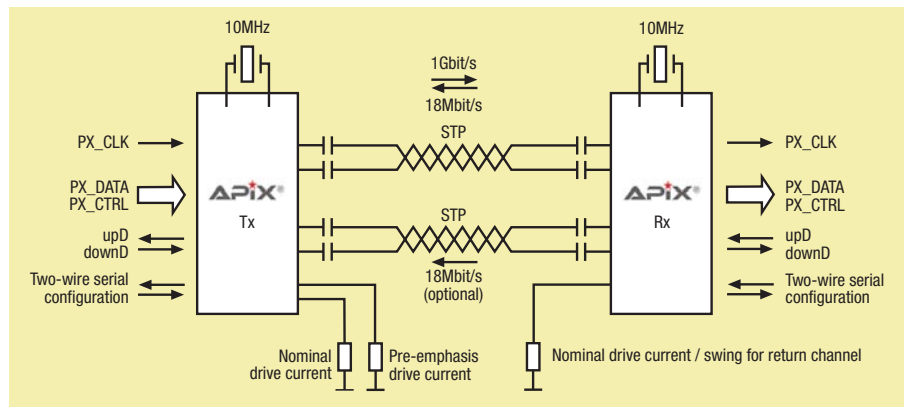
Moreover, additional resources were necessary to pass the control data. APIX can not only overcome these obstacles but help reduce the overall system costs.

The basic layout of a display system architecture using APIX technology has the MCU or graphics controller equipped with an APIX Tx unit, and a freely positioned display unit with an embedded APIX Rx unit. Both data streams, pixel and control data are routed via one serial interface. The pixel data is transmitted via the APIX main-band link, which provides a maximum speed of 1Gbit/sec. Embedded to the same wire harness is a side-band link with scalable bandwidth that takes care of the bi-directional exchange of control data.



APIX Features & Benefits

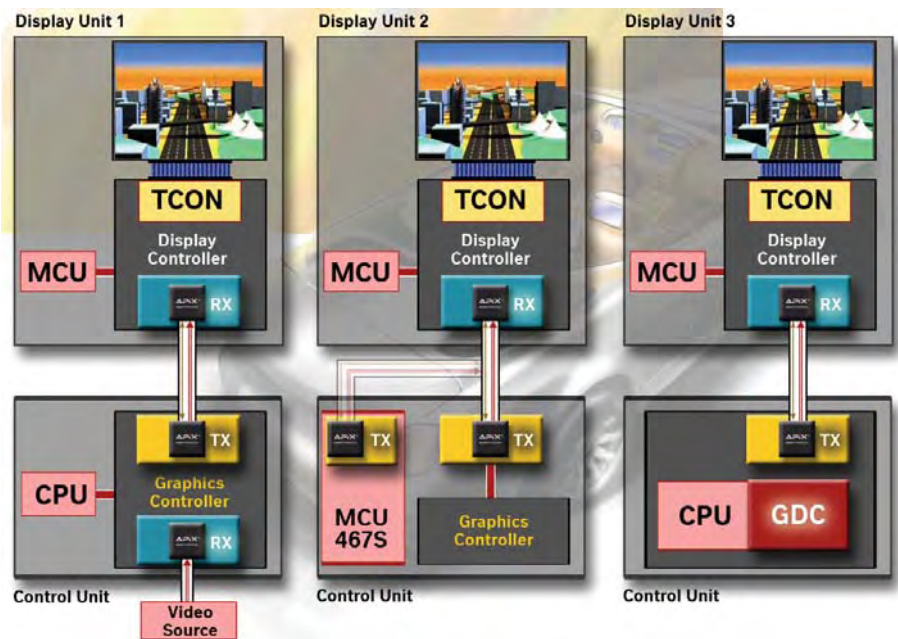
- Single serial interface for pixel and control data
- Low EMI, two- or four-wire full duplex link
- 1 Gbit/sec pixel data uplink
- Full duplex control data channel embedded in APIX side-band
- 15m distance with small profile STP/UTP cables
- Significant system cost reduction



APIX-interface.

Beyond the basic system layout, APIX opens opportunities for different system partitioning for driver information systems. The function of a graphics controller can be split into a pure display driver and a graphics controller as shown in the examples Display Unit 1 and 2 opposite.

When operating with an MCU and graphics controller as separate devices, the control data flow can be relayed via the graphics controller or it can be directly picked up by the MCU. The third example outlines a high-end solution where the control unit is a single device comprising MCU and graphics controller functions.



Integration options for APIX-equipped microcontrollers and graphics controllers.

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