Distributed FlexRay System Development

TTX Universal Control Unit – Modular FlexRay Development Board

Test Board for Distributed FlexRay Systems

The TTX Universal Control Unit is a high-performance, stacked-board expansion system for distributed FlexRay™ systems. It enables developers to evaluate distributed automotive applications on targets configured with the same host CPU, communication controller and physical layer as implemented in the car. Therefore the evaluation system uses the same topology, cable types and lengths, termination, common mode filter, protective circuit and transceivers. Board parameters such as termination resistors, split grounding values, capacitive load, or ESD protection can be configured effortlessly.

The modular design of the FlexRay Control Unit enables easy adaptations by exchanging the physical layer board, the host CPU board or the FlexRay controller board, and allows the introduction of future devices such as host CPUs with integrated FlexRay controller.

The TTX Universal Control Unit conforms to the FlexRay specifications and also has a rich set of integrated peripheral devices. An integrated CAN controller facilitates the design of gateway units for coupling the CAN field bus with the FlexRay protocol bus.

Hardware Basics

All components of the TTX Universal Control Unit such as host CPU, network controller and physical layer can be exchanged and combined as required for a specific test application.

The integrated Infineon TC1796 CPU board is stacked on a base board and includes 512 Kbyte of SRAM and 2 Mbyte of FLASH memory. In addition, the network board can be equipped with a Freescale MFR4310 or Infineon CIC310 FlexRay controller, as well as FPGA-based communication controllers. This adds more flexibility to the control unit.

Terminal blocks for FlexRay, CAN and battery power supply can be connected to the same cable types as used in cars. This allows a flexible choice of the physical layer, such as NXP TJA1080A or austriamicrosystems AS8221.

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Host CPU

- Infineon TC1796 running at 150 MHz
- 512 Kbyte SRAM
- 2 Mbyte Flash
- Alternative CPU boards: Infineon TC1766, Texas Instruments TMS570, Fujitsu MB91F5465XA

FlexRay Interface

- Freescale MFR4310 FlexRay communication controller
- Infineon CIC310 FlexRay communication controller

Physical Layer Boards

- FlexRay physical layer (10 Mbit/s) using NXP TJA1080A (2 channels)
- FlexRay physical layer (10 Mbit/s) using austriamicrosystems AS8221
- ISO 11898 physical layer for CAN (2 channels, NXP 82C250, RJ-11 connector)

Additional Interfaces

- Serial communication interface (PCB-mounted connectors)
- Supply status LEDs
- User-programmable LEDs
- I/O reset button
- Wake up button
- Buttons for user-defined functions
- On-line debug interface for the CPU

Physical Specifications

- Dimensions (mm): 230 x 100 x 30
- Operating temperature: 0°C to +70°C

Power Supply

- Directly connected to 12 V battery system, nominal 14 V supply
- Reverse polarity protection
- Wake up control is supported
- Operation from 6 to 30 V (short time)
- Operation from 6 to 16 V (continuous)

Please note: 6 V is the minimum supply voltage for the control unit (5.3 V for configuration without reverse protection diode). Cranking pulse test is supported.

For further information, including price and availability, contact products@tttech-automotive.com