eDNP/8331

Virtual System-on-Module as Intellectual Property

The eDNP/8331 is a 32-bit arm-based "virtual" system-on-module (SoM) including Debian Linux operating system and firmware functions for headless embedded gateways. It is available as intellectual property under a licensing model.

The complete SoM circuit is available as a schematic and PCB snippet for the widely used "Altium Designer" electronic design automation (EDA) tool. The eDNP/8331 snippet can be imported into custom Altium projects in just a few steps, extended to include the required add-on and I/O functions, and fully integrated onto a single cost-optimized base board.

The package includes a backend function library with a Docker-based update server, digital twin and PKI security modules. In addition, the DNP/8331 is also deliverable as a real system-on-module for evaluation, fast prototyping and low-volume productions.

✔ *Integrate with your own Altium projects in just a few steps*

✔ *Cost reduction by shortening the supply chain*

✔ *Reduced EMV issues by eliminating connectors*

✔ *Components for remote OTA updates, PKI, digital twin, etc.*

Specifications

Processor	
Manufacturer / Type	Sochip S3 with ARM Cortex-A7 CPU
Clock speed	1008 MHz
Memory	
RAM	128 MB DDR3 SDRAM
Storage media	1x internal microSD card holder (with pre-installed microSD)
Interfaces	
Ethernet	1x 10/100 Mbps (RJ45)
USB	1x USB 2.0 host port with max. 480 Mbps
UART	3x UART (COM1 with all hardware handshake signals, COM2 TX/RX only, COM3 TX/RX/RTS/CTS - functional OR with 4 GPIO signals)
SPI	1x SPI master controller, functional OR with 4 GPIO signals
I2C	1x I2C master controller, functional OR with 2 GPIO signals
GPIO	20 pin GPIO (General Purpose Input Output)
Special Functions	
RTC	1x Real time clock
Watchdog	1x Timer watchdog (hardware-based, software-configurable) 1x Power supervisor (hardware-based)
Electrical Characteristics	
Power supply	3.3 VDC ±5%
Current consumption	300 mA typ. / 500 mA max.
Mechanical Characteristics (DNP/8331 only)	
Socket	40 pin JEDEC DIL 40 connector, 2.54 mm centers (Pin-compatible to other SSV DIL 40 devices)
Mass	< 150 g
Dimensions	55 mm x 23 mm
Operating temp.	0 .. 70 °C
Firmware Components	
Boot loader	U-Boot with A/B dual boot partitions
Operating system	Debian Linux (protected APT server access)
Runtime environment	Python 3, C/C++
Machine learning	TensorFlow Lite interpreter for deep learning
Miscellaneous	C/C++ build environment (compiler etc.), I2C tools

eDNP/8331
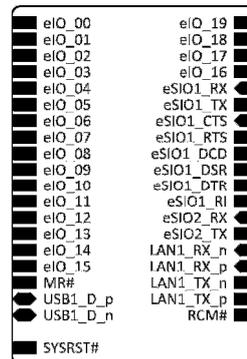
The eDNP/8331 is a "virtual" system-on-module, which can be integrated as an Altium snippet into own schematics and PCB layouts.

DNP/8331

The DNP/8331 is the real system-on-module, which is available for evaluation, fast prototyping and low-volume productions.

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