

INVENSOM-6UL

End-to-End Secure, High-Performance,
4G/2G, Wi-Fi, Bluetooth & GNSS Connectivity

Invensom-6UL System on Module (SOM) is an ultra compact embedded computer for applications that require security, connectivity and high performance. Most demanding technologies are integrated into one package. Embedded system security becomes a critical design aspect for all IoT applications. Low level hardware and software design needs specialization which extends the project timeline and requires experienced work force. Invensom-6UL hardware comes with a proven Board Support Package (BSP) including plug&play security, connectivity and device management drivers to complete your project on time and on budget.

Key Benefits of Using System-On-Module (SOM) :



Accelerate innovation and reduce time to market by using a production ready SOM and a proven BSP, get into the market in 3-6 months for mid-complexity products.



Focus on the product rather than low level hardware and software development.



Integrate end-to-end security to your product using provided board support package including cryptography, connectivity and device management libraries



Simplify the design by eliminating the risk and effort of designing high speed digital and RF circuits.



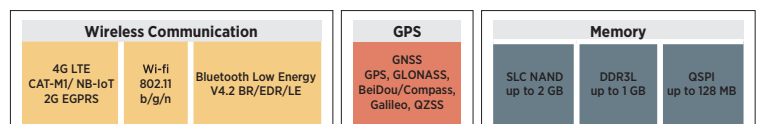
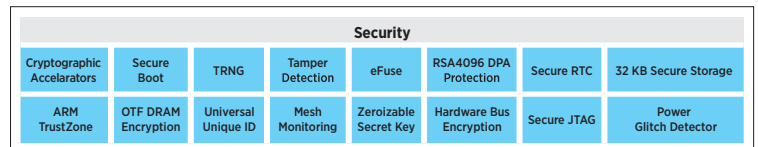
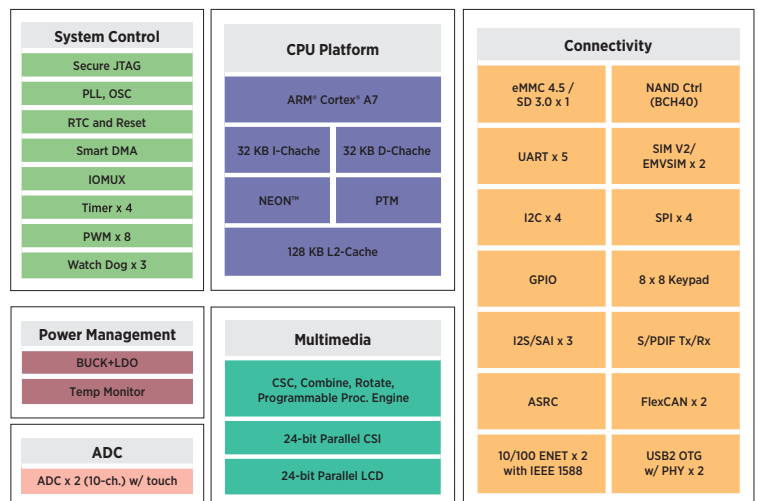
Decrease the cost by preventing recurring engineering efforts (pcb design, part selection, hardware/software verification) and procuring a single SOM unit rather than ordering 50-100 different components.

Invensom-6UL enables companies to develop their products in a fast, robust, modern, safer and cloud-ready way.

Product Highlights:

- Secure Processor NXP i.MX6UL ARM® Cortex®-A7 upto 900MHz
- Integrates Linux, security, NBloT, EGPRS, Wi-Fi, Bluetooth, GNSS and ethernet into one stamp size module
- Embedded Linux kernel with plug & play drivers
- Integrated API for security functions (cryptography, tamper detection, key management, OpenSSL Integration)
- Open source application support for fast software development (connectivity, firmware management, IoT protocols, sensor drivers)
- Future ready 4G LTE NBloT & CAT M1 communication with 2G EGPRS fallback for backup
- Different set of connectivity features can be ordered
- Directly solderable to carrier board using edge-castellated SMT pins
- Ultra low power consumption, suitable for battery powered devices
- Linux/Yocto Compatible Board Support Package (BSP)
- Small form factor: 40x40 mm

Block Diagram



Features



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APPLICATION PROCESSOR	NXP iMX6UL, ARM® Cortex®-A7 @ 528 MHz, 128 KB L2 cache with NEON™ MPE (Media Processor Engine) co-processor
MEMORY	up to 2 GB NAND flash (SLC)
	up to 1 GB DDR3
	up to 128 MB SPI NOR Flash (optional)
GRAPHICS	2D Pixel Processing Pipeline (PXP)
LCD	8/16/18/24-bit parallel LCD Display up to WXGA (1366x768)
CAMERA	8/10/16/24-bit Parallel CSI with BT.656 support
SECURITY	ARM TrustZone, Secure Boot (HAB), Hardware cryptographic accelerators (AES 128/256, DES/3DES, SHA-1/224/256, ARC4, RSA-1024/2048/3072/4096, MD5, HMAC, AES-CMAC, AESXCBC-MAC, AES-CCM), True Random Number Generator (TRNG), e-FUSE (OTP Memory), Secure JTAG, Secure RTC, Secure Non-Volatile Storage, Master Key Control and Violation, Zeroizable Secret Key, Secure Time and Monotonic Counter, Active & Passive Tamper Detection, Power Glitch Detectors, Mesh Monitoring, Universal Unique ID, Hardware Bus Encryption, TrustZone Watchdog, RSA4096 DPA Protection
ETHERNET	2x 10/100 Mbit Ethernet MAC + IEEE 1588
USB	2x high speed (HS) USB 2.0 OTG (Up to 480 Mbps), with integrated HS USB Phy
EXPANSION CARD:	1x SD/SDIO/MMC (eMMC)
SMART CARD	2x ISO/IEC 7816 (Compatible with EMV Version 4.3)
SERIAL	5x UART, 4x I2C, 3x SPI, 2x CAN
AUDIO	3x I2S, 1xS/PDIF
PWM	8x
ADC	2x 12-bit
KEYPAD	8x8
GPIO	up to 65 pins
JTAG	1x Secure
RTC	1x Secure
TAMPER PINS	5x Active or 10xPassive
WATCHDOG	3x
TOUCH SCREEN	1x 4-wire/5-wire touch controller
Wi-Fi (Optional)	802.11 b/g/n 65Mbps; Modulation: DSSS / CCK / OFDM, FCC/IC "Reference" Certified, ETSI Certified
BLUETOOTH (Optional)	v4.2 BR/EDR/LE, 3 Mbps
4G LTE Cat M1/ NB1 (NB-IoT) (Optional)	LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28 Cat M1: Max. 375Kbps (DL), Max. 375Kbps (UL) Cat NB1: Max. 32Kbps (DL), Max. 70Kbps (UL)
2G EGPRS (Optional)	850/900/1800/1900MHz EDGE: Max. 296Kbps (DL), Max. 236.8Kbps (UL) GPRS: Max. 107Kbps (DL), Max. 85.6Kbps (UL)
GNSS (Optional)	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS (with active antenna supply)
ANTENNA	3x IPX U.FL RF Connector (4G/2G, Wi-fi+Bluetooth, GNSS)
OPERATING VOLTAGE	3.4V-4.2V (typ. 3.8V)
OPERATING TEMPERATURE	-30° C to +70° C / -40° C to +85° C (No WiFi)
STORAGE TEMPERATURE	-40° C to +85° C / -50° C to +125° C (No WiFi)
MOUNTING / PIN COUNT	Surface mount footprint 1 mm pitch scalloped edge 152 pins
MECHANICAL DIMENSIONS	40 mm x 40 mm x 5.2 mm
SOFTWARE & TOOLS	Open Source Board Support Package (Linux 4.9.11, UBoot 2017.03), Proprietary Security Drivers, Security Library Integrations (Linux Crypto Dev, OpenSSL, TLS, DTLS), Connectivity Drivers (Ethernet, Wi-Fi, Bluetooth, 4G/2G, GNSS), Machine-to-Machine (M2M) and Internet of Things (IoT) Protocols Support (MQTT, AMQP, CoAP, OPCUA, LWM2M, oneM2M, SmartM2M), Software Update Management (OS and Applications), Cloud Connectivity (Microsoft Azure, AWS, Google Cloud etc.), Graphics Support with QT5, Wayland and XServer

DESIGN AND SUPPORT SERVICES

Inventron offers a full range of customization and support services to its customers including security consultancy (security risk assesment & management, Common Criteria documentation & preassessment, etc.), software development, Linux and Android support, carrier board pcb design & production. Customers with tight project schedules or limited resources can benefit from these professional services to save from time and cost.

