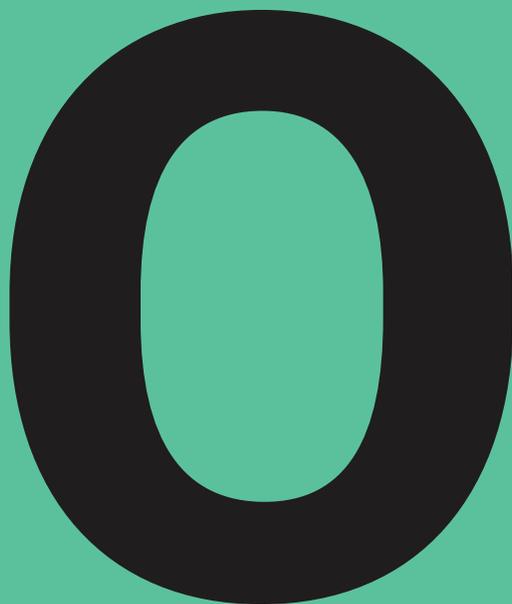Samsung
ARTIK™ Modules

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030 Product Brief

Samsung ARTIK™ Modules

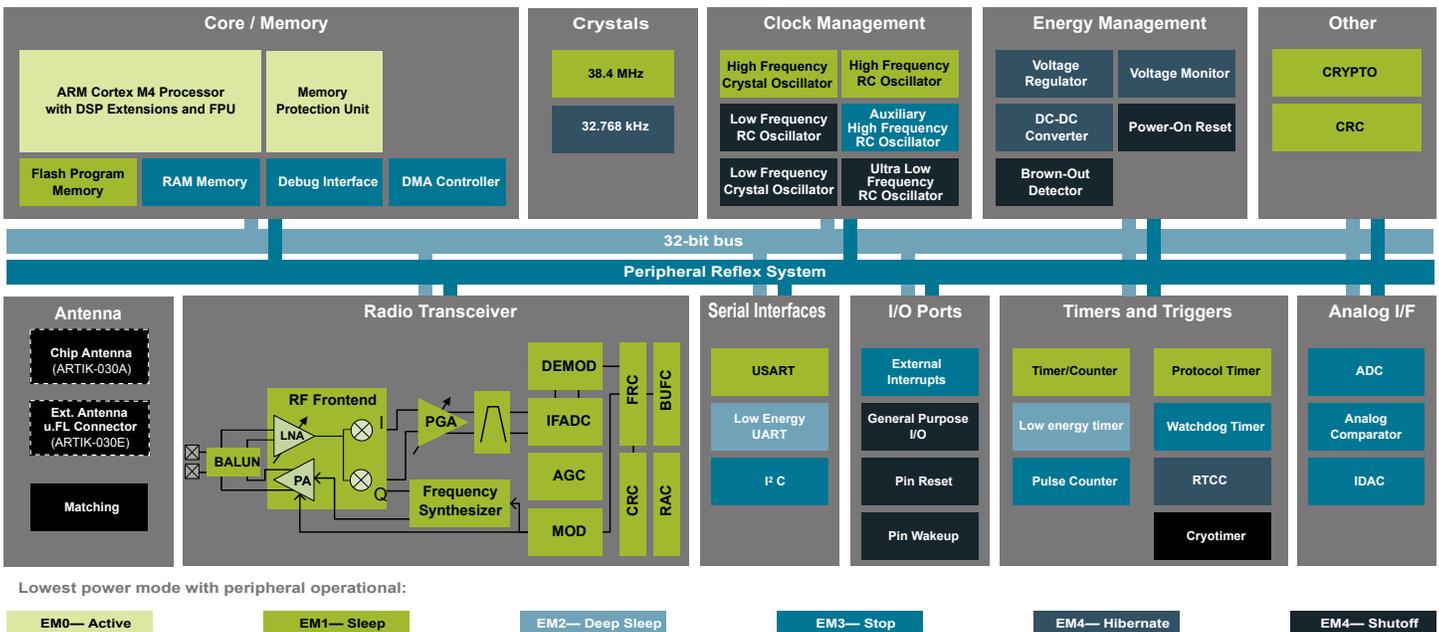# ARTIK 030 Mesh Networking Module Product Brief

The ARTIK 030 is a fully-integrated, pre-certified module, enabling rapid development of wireless mesh networking solutions. The ARTIK 030 combines an energy-efficient, multi-protocol wireless SoC with a proven RF/antenna design and industry-leading wireless software stacks. This integration accelerates time-to-market and saves months of engineering effort and development costs.

ARTIK 030 can be used in a wide variety of applications:

- Connected Home
- Building Automation
- Lighting
- Security and Monitoring
- Smart Grid / Metering
- Industrial Automation
- Others

KEY FEATURES

- Industry-leading mesh networking (ZigBee/Thread) software and development tools
- Antenna: internal chip and U.FL variants
- TX power: up to +10 dBm
- RX sensitivity: down to -99 dBm
- 32-bit ARM® Cortex®-M4 at 40 MHz
- Flash memory: 256 kB
- RAM: 32 kB
- Autonomous Hardware Crypto Accelerator and Random Number Generator
- Integrated DC-DC Converter

Core / Memory

ARM Cortex M4 Processor with DSP Extensions and FPU	Memory Protection Unit
Flash Program Memory	RAM Memory
Debug Interface	DMA Controller

Crystals

- 38.4 MHz
- 32.768 kHz

Clock Management

High Frequency Crystal Oscillator	High Frequency RC Oscillator
Low Frequency RC Oscillator	Auxiliary High Frequency RC Oscillator
Low Frequency Crystal Oscillator	Ultra Low Frequency RC Oscillator

Energy Management

Voltage Regulator	Voltage Monitor
DC-DC Converter	Power-On Reset
Brown-Out Detector	

Other

- CRYPTO
- CRC

32-bit bus

Peripheral Reflex System

Antenna

- Chip Antenna (ARTIK-030A)
- Ext. Antenna u.FL Connector (ARTIK-030E)
- Matching

Radio Transceiver

RF Frontend — LNA — PA — BALUN — PGA — Frequency Synthesizer

DEMOD — IFADC — AGC — MOD

FRC — BUFC — CRC — RAC

Serial Interfaces

- USART
- Low Energy UART
- I² C

I/O Ports

- External Interrupts
- General Purpose I/O
- Pin Reset
- Pin Wakeup

Timers and Triggers

Timer/Counter	Protocol Timer
Low energy timer	Watchdog Timer
Pulse Counter	RTCC
	Cryotimer

Analog I/F

- ADC
- Analog Comparator
- IDAC

Lowest power mode with peripheral operational:

- EM0— Active
- EM1— Sleep
- EM2— Deep Sleep
- EM3— Stop
- EM4— Hibernate
- EM4— Shutoff

1. Feature List

MCU Features

- ARM Cortex®-M4 + Floating Point Unit
- Up to 40 MHz Clock Speed
- Low Active Mode Current: 63 µA/MHz
- 256 kB flash, 32 kB SRAM
- Advanced hardware cryptographic engine with support for AES-128/-256, ECC, SHA-1, SHA-256, and a Random Number Generator
- 8 Channel DMA Controller

Digital Peripherals

- 2 x USART (UART, SPI, IrDA, I^{2}S)
- Low Energy UART (LEUART™)
- I^{2}C peripheral interface (address recognition down to EM3)
- Timers: RTCC, Low Energy Timer, Pulse Counter
- 12-channel Peripheral Reflex System (PRS)
- Up to 25 GPIO with interrupts

Analog Peripherals

- ADC (12-bit, 1 Msps, 326 µA)
- Current-mode Digital to Analog Converter (IDAC)
- 2 x Analog Comparator (ACMP)

Energy Efficient Low Power Modes

- Energy Mode 2 (Deep Sleep) Current: 2.5 µA

  (Full RAM retention and RTCC running from LXFO)
- Ultra-fast wake up: 3 µS down to EM3
- Wide Supply Voltage range of 1.85 to 3.8 V

Environmental & Regulatory

- Operating Temperature: -40 to +85°C
- FCC, IC, CE, Aus/NZ, Korea certifications (pending)

Dimensions

- W x L x H: 12.9 x 15.0 x 2.2 mm

Radio Features

- 2.4 GHz with integrated balun
- Support for wireless mesh networking (ZigBee/Thread)
- Integrated PA (up to +10 dBm TX power)
- Packet Trace Interface (PTI) for non-intrusive packet trace with Simplicity Studio development tools
- Antenna interface: integrated high-performance chip antenna or u.FL variant for external antenna

ZigBee and Thread Features

- IEEE 802.15.4
- Data Rate / Modulation: 250 kbps DSSS-OQPSK
- +10 dBm Programmable TX Power
- -99 dBm RX Sensitivity
- 9.8 mA RX current
- 8.2 mA TX current (at +0 dBm)
- Support for SoC and Network Co-Processor (NCP) architectures with SPI/UART host support
- Serial and Over-The-Air (OTA) bootloaders

2. Ordering Information

Ordering Code	Description	Max TX Power	Antenna	Packaging	Production Status
ARTIK-030-AV1	ARTIK 030 Mesh Networking Module	+10 dBm	Integrated chip antenna	Cut Reel (100 pcs)	Initial Production / Engineering Samples (non-certified)
ARTIK-030-AV1R	ARTIK 030 Mesh Networking Module	+10 dBm	Integrated chip antenna	Reel (1000 pcs)	Initial Production / Engineering Samples (non-certified)
ARTIK-030-EV1	ARTIK 030 Mesh Networking Module	+10 dBm	External (U.FL)	Cut Reel (100 pcs)	Initial Production / Engineering Samples (non-certified) [1]
ARTIK-030-EV1R	ARTIK 030 Mesh Networking Module	+10 dBm	External (U.FL)	Reel (1000 pcs)	Initial Production / Engineering Samples (non-certified) [1]
ARTIK-030-AV2	ARTIK 030 Mesh Networking Module	+10 dBm	Integrated chip antenna	Cut Reel (100 pcs)	Full Production (certified) [1]
ARTIK-030-AV2R	ARTIK 030 Mesh Networking Module	+10 dBm	Integrated chip antenna	Reel (1000 pcs)	Full Production (certified) [1]
ARTIK-030-EV2	ARTIK 030 Mesh Networking Module	+10 dBm	External (U.FL)	Cut Reel (100 pcs)	Full Production (certified) [1]
ARTIK-030-EV2R	ARTIK 030 Mesh Networking Module	+10 dBm	External (U.FL)	Reel (1000 pcs)	Full Production (certified) [1]
SIP-KITSZG001	ARTIK 030 Mesh Networking Kit (includes 3 x ARTIK-030-A development boards)	—	—	Development Kit	—

Note:

1. Contact sales@artik.io for availability and certification timelines.
2. ARTIK 030 development kit and IAR license required for ZigBee® and Thread software development.

Legal Information

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ARTIK™
Modules

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