

# AT-ANY DESIGN 900-1 Development Kit



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Based on the high-performance AT-ANY900-1 Sub-1 GHz RF module with a ceramic chip antenna, the AT-ANY DESIGN 900-1 Development Kit provides the developers with:

- Easy way to learn how to use the AT-ANY RF modules and design unique wireless networking applications for sensing and control.
- Ability to try out different network topologies and determine the best match for the application requirements.
- Simplified prototyping of a wireless sensor network, thanks to the sensors, integrated in the BRICK board.



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## AT-ANY DESIGN 900-1 Development Kit (Cont.)

- AT-ANY DESIGN platform supports all IEEE 802.15.4 Sub-1-GHz frequencies.
- Typical applications include smart buildings, industrial automation, and other mission-critical use cases requiring a superior signal penetration as well as power-optimized, self-sufficient performance.
- The kit features support of third-party applications, reference implementations, and example applications utilizing a wide variety of digital and analog interfaces.
- The kit supports the intuitive development environment from Microchip®.
- Using the kit, the developers can create a wide range of standards-based wireless solutions fully compliant with IEEE 802.15.4 and Zigbee, and supporting various network topologies, from P2P to Tree to Mesh \*.
- Customizable AT-ANY Smart MAC Suite ("SMS") Base software offers easy control and parametrization of AT-ANY platform's functionality via AT commands supporting all IEEE 802.15.4-based functions.
- Optional SMS Pro software provides extended functionality and features for sophisticated professional solutions. See slide 10 for details.
- Extended customization such as integration of third-party devices or implementation of dedicated interfaces and system requirements can be provided on request via tailored professional services.

\* - Implementation of tree and mesh topologies requires SMS Pro version.



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# AT-ANY DESIGN 900-1: Features and Benefits

- Fully programmable AT-ANY USB dongle and AT-ANY BRICK boards.
- Reference implementations and example applications utilizing various interfaces.
- Easy implementation of various sensors using AT-ANY BRICK boards.
- Compatibility with the third-party embedded software applications such as Microchip BitCloud® stack and associated ANSI C API programmability, as well as 6LoWPAN references.
- Compatibility with the third-party applications, including wireless sensor networking demo application, range measurement, and more.
- Software adjustable support of European, US, Japanese and Chinese Sub-1 GHz ISM bands.
- Full compliance with IEEE 802.15.4-2006, Zigbee and more.
- AT-ANY900-1 RF modules feature fully matched on-board ceramic chip antenna.

# Supported Sensors and Features



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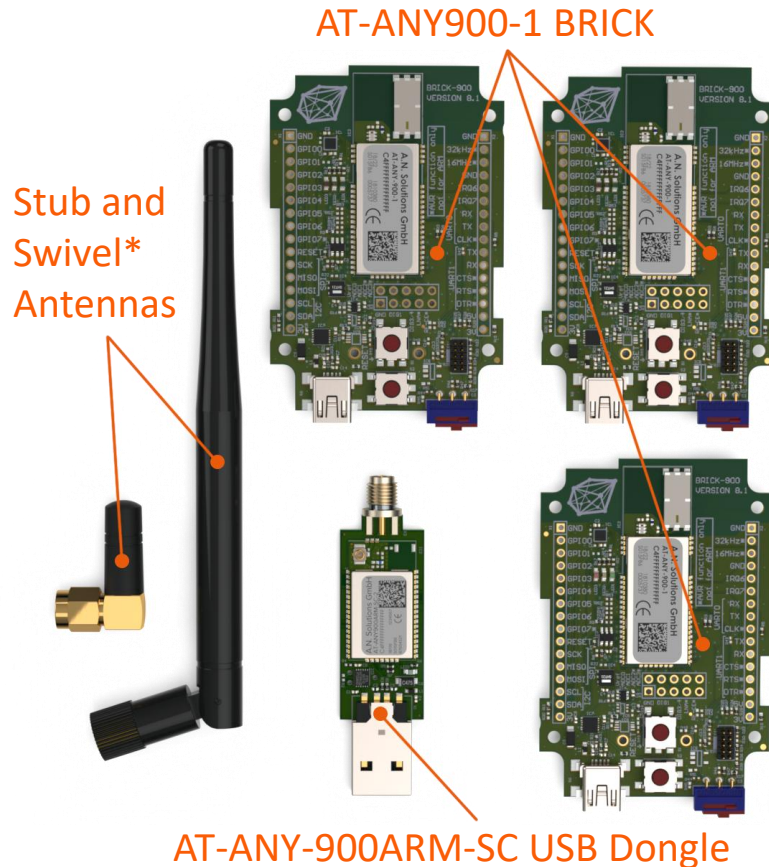
BRICK Part No.:	Sensors and Features on AT-ANY BRICK Boards						Supported Features by AT-ANY Modules		
	LM73 Temp. Sensor	SI7006 Humidity & Temp. Sensor	BMA222E Acceleration Sensor	Configurable LEDs	User Button	Reset Button	U.FL Connector	Integrated Antenna	On-Board Data-Flash
AT-ANY2400-SC-1 BRICK	yes	yes	yes	3	1	1	-	yes	-
AT-ANY2400-SC-2 BRICK	yes	yes	yes	3	1	1	yes	-	-
AT-ANY2400-SC3-1 BRICK	yes	-	-	3	1	1	yes	yes	2 Mbit SST25VF0202
AT-ANY2400-SC3-2 BRICK	yes	-	-	3	1	1	2	-	2 Mbit SST25VF0202
AT-ANY900-1 BRICK	yes	yes	yes	3	1	1	-	yes	2 Mbit SST25VF0202
AT-ANY900-2 BRICK	yes	yes	yes	3	1	1	yes	-	2 Mbit SST25VF0202
AT-ANY900ARM-SC BRICK	yes	yes	yes	3	1	1	yes	-	4 Mbit AT25XE04
Available AT-ANY USB Dongles:									
AT-ANY2400-SC-Pro USB	-	-	-	2	-	-	-	2	-
AT-ANY900ARM-SC USB	-	-	-	1	-	-	(SMA)	-	4 Mbit AT25XE04



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# AT-ANY DESIGN 900-1: What's In a Box?

- 1 x AT-ANY900ARM-SC USB Dongle
- 3 x AT-ANY900-1 BRICK development boards with battery holders
- 1 x Stub antenna (for USB Dongle)
- 1 x SMS Base Software (preloaded)
- 1 x User Information Pack (available via download)
- Additional components can be ordered separately



\* Optional Extensions

# AT-ANY900ARM-SC USB Dongle at a Glance



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- USB 2.0 compliant IEEE 802.15.4-2006-based hardware platform within a compact USB dongle format.
- Software adjustable support of European, US, Japanese, and Chinese Sub-1 GHz ISM bands.
- Commercially maintained FTDI Driver Suite ensures seamless OS integration and support.
- Focused design options tailored for target appliances.
- Network topology: P2P, P2MP, Star, Tree\*, Mesh\* (IEEE802.15.4 and Zigbee PRO).
- Extra 256 kB on-board DataFlash for storing firmware images, application data and OTAU support.
- Adjustable data rates depending on selected model up to 1 Mbps, e.g. Zigbee: 250 kbps gross.
- Upgradeable via on-board bootloader or integrated JTAG interface.
- Customized enclosures available as accessories.

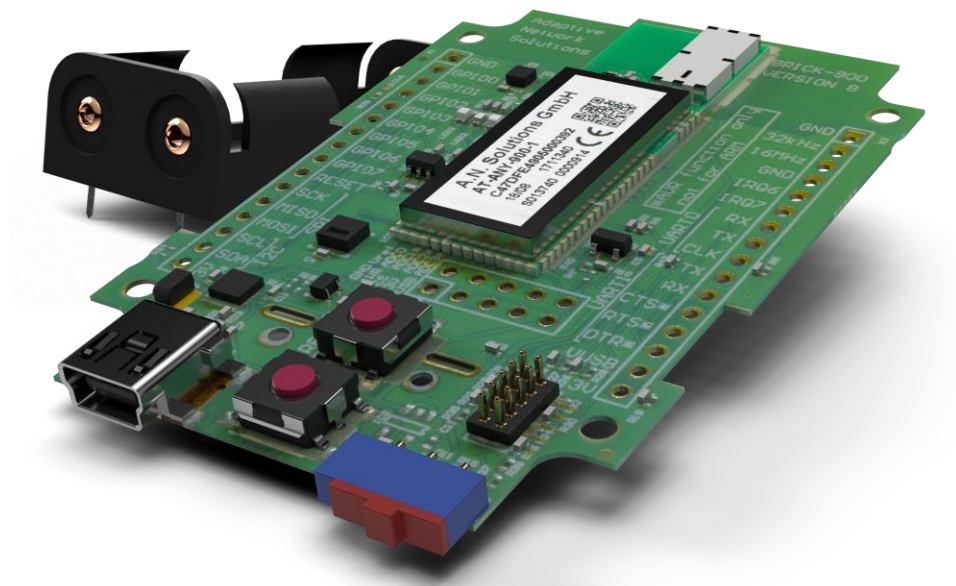
\* - Implementation of tree and mesh topologies requires SMS Pro version.



# AT-ANY900-1 BRICK at a Glance



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- USB 2.0 compliant IEEE 802.15.4-2006-based development hardware platform within compact design form factor.
- Software adjustable support of European, US, Japanese, and Chinese Sub-1 GHz ISM bands.
- Complete AT-ANY module interface accessible via 2.54 mm pin sockets for application development.
- Versatile integrated temperature, humidity, dewpoint, acceleration, and battery voltage sensors. See slide 4 for details.
- Power options include USB interface, battery holder (AAA) or pin socket.
- Programmable push-button and status LEDs.
- Commercially maintained FTDI Driver Suite ensures seamless OS integration and support.
- Integrated power supply monitoring for battery operation.

# AT-ANY SMS Base To Enable Quick-Start



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- AT-ANY modules can be connected directly to a host processor as communication extensions whereas the AT-ANY module's interfaces enhance the system's capabilities by adding additional sensors and actuators.
  - User can program and facilitate AT-ANY Platform without embedded programming knowledge by simply using S-Register mapping and AT-Commands.
  - Smart MAC Suite (SMS) provides IEEE 802.15.4 functionality to users.
  - Users can set up basic network topologies (Star, Peer-to-Peer) using static routing.
  - Data packages can be transmitted directly or indirectly, acknowledged or broadcasted.
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- Support of versatile temperature, humidity, and acceleration sensors that can be integrated with AT-ANY-BRICK platform. Sensors include Texas Instruments LM73, Silicon Labs Si7006, Bosch-Sensortec BMA2xxE Serie, as well as Maxim DS7505.
  - Extended support of up to 10 GPIO lines.
  - Functionality enhancements, including support of custom sensors, and implementation of external host intelligence directly into AT-ANY modules, are available on request.
  - Integrated serial bootloader simplifies firmware upgrades.
  - More hardware support, including additional sensors, more GPIO lines, AD/DA features or different UART baud rates can be provided on request.



# AT-ANY DESIGN Additional Components



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- AT-ANY900-1, AT-ANY900-2 and AT-ANY900ARM-SC BRICK Boards with battery holders
  - AT-ANY900ARM-SC USB Dongles\*
  - AT-ANY USB Dongle enclosure
  - Versatile internally qualified external antenna options
  - AT-ANY Smart Mac Suite (SMS) Pro
- \* Based on selected ISM frequency band

# AT-ANY SMS Pro: Value-Add Option

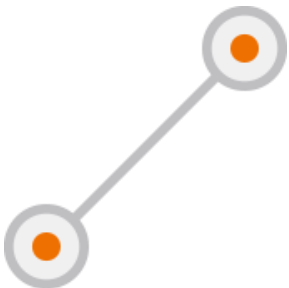


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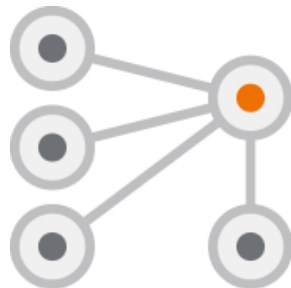


- "Free Devices" are supported, enabling tree network topology.
- Broadcasts (point-to-multipoint transmissions) supported.
- Direct data transmission (acknowledged or unacknowledged) supported.
- Indirect data transmission supported.
- Frame redirection supported.
- UART speed can be adjusted by customer.
- CW mode support for certification purposes and test cases.
- LWMesh routing algorithm support
- Direct transceiver register access.

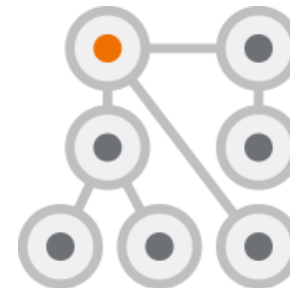
## Network Topologies



Point-to-Point



Star



Tree



Mesh

# AT-ANY DESIGN: Application Areas



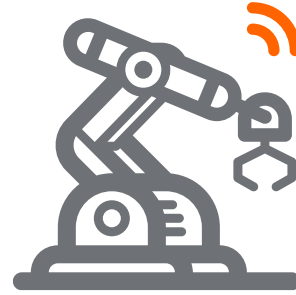
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Smart Buildings



Smart Energy & Metering



Industrial Automation



Automotive & Transport



Healthcare & Fitness



Agriculture



Smart Cities & Environment



Event Management



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# AT-ANY DESIGN: Unique Design Aspects

The following proprietary features make AT-ANY DESIGN Development Kits stand out among the competition:

- **Ultra-Low Latency:** Supported by A.N. Solutions Experts, developers will be able to create wireless network solutions with predictable low latencies. It is critical to have a predictably fast response in many application areas ranging from light switches to surveillance systems to remotely controlled construction equipment. Supporting the robust IEEE 802.15.4-based tree topologies, A.N. Solutions' proprietary software provides a reliable ultra-low latency solution for the mission-critical applications.
- **Optimized Power Consumption:** AT-ANY DESIGN kits offer developers an option to create power-optimized operation profiles for a wide range of applications. A number of different factors affect power consumption, including transmission rate, payload size, CPU clock speed, UART rate, modulation, signal-to-noise ratio, and more. A.N. Solutions' adaptive proprietary algorithms modify the physical (PHY) and the media access (MAC) layers of an IoT device's software stack and allow to find the right balance between power consumption and network performance. This feature can be activated on demand.

# AT-ANY DESIGN: General Ordering Information



Part #	Description
AT-ANY-DESIGN-900-1	Development Kit based on AT-ANY900-1 RF Module
AT-ANY-DESIGN-900-2	Development Kit based on AT-ANY900-2 RF Module
AT-ANY-DESIGN-900ARM-SC	Development Kit based on AT-ANY900ARM-SC RF Module
AT-ANY-DESIGN-2400-SC-1	Development Kit based on AT-ANY2400-SC-1 RF Module
AT-ANY-DESIGN-2400-SC-2	Development Kit based on AT-ANY2400-SC-2 RF Module
AT-ANY-DESIGN-2400-SC3-1	Development Kit based on AT-ANY2400-SC3-1 RF Module
AT-ANY-DESIGN-2400-SC3-2	Development Kit based on AT-ANY2400-SC3-2 RF Module

Please note that additional hardware components can be individually selected and requested for a customized AT-ANY DESIGN configuration.



# AT-ANY DESIGN: Contact Information



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