MULTITECH®

arm MBED

MultiTech Dragonfly™ Nano

Embedded Cellular Modem & SoM (System-on-Module)

MultiTech Dragonfly™ Nano embedded cellular modems and SoMs are one of the industry's smallest form factor, end device approved, devices that can support a complete IoT operating system. The Dragonfly Nano is over 50% smaller, maintains plug compatibility and uses the same 40-pin board to board connector or USB connector found in the standard sized Dragonfly family; providing a full range of connectivity and carrier options.

The SoM models, with its integrated Cortex®-M4 processor, can host applications and have access to a full suite of interfaces for connecting sensors or other remote assets. These fully certified and MNO approved, ready-to-integrate LTE Cat M1 & NB-IoT modules offer developers the functionality of a programmable computing platform with the convenience of an onboard cellular radio all in one very compact design. Dragonfly Nano SoM models are programmable using Arm® Mbed™ allowing for rapid prototyping, development and deployment.

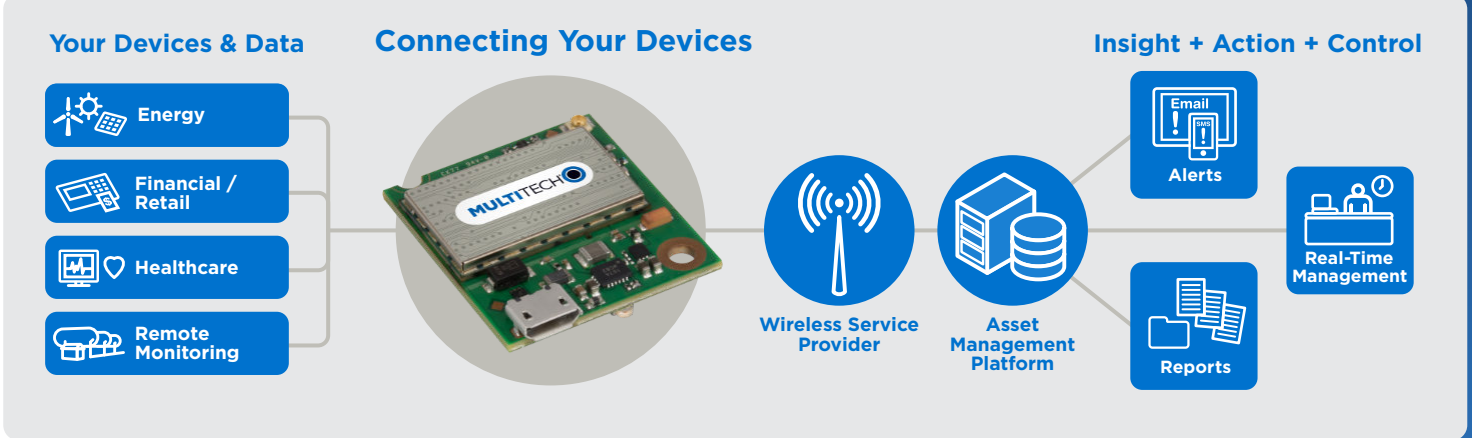
Dragonfly Nano can be used as an embedded cellular SoM providing the maximum in design and application flexibility or it can be used as an embedded cellular modem requiring little or no modification to your existing design.

BENEFITS

- End device certified by leading carriers
- Low power modes extend life of battery powered devices
- Extended coverage means assets deep inside buildings are now reachable
- Long solution lifecycle reduces redesign time and cost
- Family of cellular options including several 4G, 3G and 2G models (includes standard Dragonfly)

FEATURES

- 3GPP Release 13 Extended Discontinuous Reception (eDRX)
- 3GPP Release 13 Extended Coverage
- 3GPP Release 12 Power Saving Mode (PSM)
- Arm® Mbed™ OS enabled
- Multiple I/O interfaces for connecting almost any "Thing"



multitech.com/dragonflynano

HIGHLIGHTS

Host Your Applications

As the first and only Arm® Mbed™ cellular SoM family listed on mbed.org that is industry certified and deployment ready, applications can be written and compiled quickly online using developer friendly libraries, downloaded and hosted within the MultiTech Dragonfly™ Nano. Decision making and control is distributed to the edge, enabling data to be more actionable without the heavy lift required to implement complex IoT middleware and security protocols needed to deploy a low touch install.

Design in or Retrofit

The Dragonfly Nano can be used as an embedded cellular SoM providing the maximum in design and application flexibility or it can be used as an embedded cellular modem controlled through AT commands requiring little or no modification to your design. Connecting to the Dragonfly Nano through its 40-pin board-to-board connector gives you access to all the programmable I/O interfaces. You can also connect to the Dragonfly Nano using the industry standard micro USB port affording you the quickest time to market when your application only requires basic cellular connectivity.

Power Saving Modes

Extended Discontinuous Reception (eDRX) mode increases the length of time the end device can sleep before it has to check in with the network which saves power. Power Saving Mode (PSM) allows the device to notify the network that it is going to sleep or dormant indefinitely only waking up based on user defined timer. Once the device wakes up and transmits it will stay awake for a few frames of time in case the network needs to reach that device. A device using PSM transmitting a small amount of data once per day could last many years using 2 AA batteries. (Note: Some power saving modes will be available in a future firmware release.)

SPECIFICATIONS

Models	MTQN-MNG1-B01 / MTQN-MNG1-B02	MTQN-MNG3-B01 / MTQN-MNG3-B02
Performance	3GPP Release 13 Cat M1 Half Duplex (Up to 300K bps downlink and 375K bps uplink)*	3GPP Release 13 LTE Cat M1 Half Duplex (Up to 300K bps downlink and 375K bps uplink)* 3GPP Release 13 LTE Cat NB1 Half Duplex (Up to 27.2K bps downlink and 62.5K bps uplink)* 3GPP Release 13 GPRS Half Duplex (Up to 107K bps downlink and 85.6K bps uplink)* 3GPP Release 13 EGPRS Half Duplex (Up to 296.0K bps downlink and 236.8K bps uplink)*
Frequency Band (MHz)	North American LTE Bands: 700 MHz (B12), 850 MHz (B5), AWS1700 MHz (B4) and 1900 MHz (B2) Verizon LTE Bands: 700 MHz (B13)	Multi Region LTE Bands: 800 MHz (B20), 750 MHz (B13), 700 MHz (B12), 900 MHz (B8), 850 MHz (B5), 1700 MHz (B4), 1800 MHz (B3), 1900 MHz (B2) 2G: 850 MHz (GSM) , 900 MHz (E-GSM), 1800 MHz (DCS), 1900 MHz (PCS)
TCP/IP Functions	TCP, UDP, FTP, HTTP, HTTPS, FTPS, TLS	TCP, UDP, FTP, HTTP, HTTPS, FTPS, SSL/TLS
Connectors	1 UFL (Cellular), 1xMicro USB, 1x Micro SIM (3FF), 1x 40-Pin Board-to-Board	
Host Processor	(B01) Cortex-M4 (STM32L471QG) 1 Mbyte Flash and 128 Kbyte SRAM	
I/O	(B01) 1 x UART, 1 x HS USB, 1 x I2C, 2 x SPI, up to 9 analog inputs and up to 29 digital input/output (B02) 1 x UART, 1 x HS USB	
SMS	Mobile Terminate/Mobile Originate PDU / Text mode	
Dimensions	1.14 x 1.28 inches (28.96 x 32.51 mm)	
Power Requirements		
Power Draw†	(B01) 4.7µA PSM, 155mA average @ max power (B02) 15µA PSM, 172mA average @ max power	(B01) 8.5 µA low Power Mode, 201 mA average @ max power (B02) 16.2µA PSM, 168mA average @ max power
Input Voltage (using micro-USB connector)	5.0 VDC	
Input Voltage (using 40-pin connector)	3.3 VDC or 5.0 VDC	
Environmental		
Operating Temperature	Operating Temperature -40° to +85° C	
Storage Temperature	Storage Temperature -40° to +85° C	
Relative Humidity	20% to 90% RH, non-condensing	
Certifications		
EMC Compliance	FCC Part 15 Class B	
Radio Compliance	FCC Part 22, 24, 27	
Safety	UL/cUL 60950-1 2nd ED, IEC 60950-1 2nd ED +Am.2	UL/cUL 60950-1 2nd ED, IEC 60950-1 2nd ED
Network	PTCRB	EU Carriers
Carrier	AT&T / Verizon	EU Carriers
Warranty	2-Years / www.multitech.com/legal/warranty	

* Actual performance speeds may be affected by a variety of attributes such as cell tower distance, data loads, packet sizes, etc.
† See device guide for more information.

ORDERING INFORMATION

MultiTech Dragonfly™ Nano

Model	Description	Region
MTQN-MNG1-B01	Embedded LTE Cat M1 Cellular SoM (AT&T / Verizon)	North America
MTQN-MNG1-B02	Embedded LTE Cat M1 Cellular Modem (AT&T / Verizon)	North America
MTQN-MNG3-B01	Embedded LTE Cat M1 Cellular SoM	Europe
MTQN-MNG3-B02	Embedded LTE Cat M1 Cellular Modem	Europe

Note: Model numbers as shown come packaged as 50-pack masters. For ordering samples or low volume production quantities we also make single packs available. Add a –SP to the end of the models above to order single packs (MTQN-Mxx-B0x-SP).

Developer Kit

Model	Description	Region
MTUDK2-ST-CELL.R1	SocketModem® & Dragonfly Developer Kit (DB9 RS-232 Connector and USB)	Global
MTUDK2-ST-CELL	SocketModem® & Dragonfly Developer Kit	Global

Go to www.multitech.com for detailed product model numbers.

Produced in the U.S. of U.S. and non-U.S. components. Features and specifications are subject to change without notice.

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Services & Warranty

MultiTech's comprehensive Support Services programs offer a full array of options to suit your specific needs. These services are aimed at protecting your investment, extending the life of your solution or product, and reducing total cost of ownership. Our seasoned technical experts, with an average tenure of more than 10 years, can walk you through smooth installations, troubleshoot issues and help you with configurations.

Technical Support Services

At MultiTech, we're committed to providing you personalized attention and quality service while providing you a quick response to your product support needs. We have several options of support for you to choose from.

For additional information on Support Services as well as other service offerings, please contact your MultiTech representative or visit www.multitech.com/support.go

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