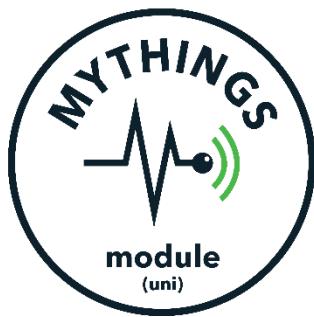


Data Sheet

MYTHINGS™ Rapid Prototyping Module



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MYTHINGS Rapid Prototyping Module

Datasheet

Overview

The MYTHINGS Module (UNI) is a pre-configured rapid prototyping RF module featuring sub-GHz communication according to the ETSI TS 103 357 (TS UNB) specification by BehrTech for robust and scalable Low Power Wide Area Networks (LPWAN). The module features a small footprint breakout board based on the TDNEXT module that enables rapidly prototyping for your IoT project design, integrating with the MYTHINGS network.

The TS-UNB standard is a Low Power Wide Area Network (LPWAN) solution designed for large-scale Industrial Internet of Things (IIoT) environments with large numbers of battery-operated sensors. TS-UNB uses Telegram Splitting Multiple Access (TSMA) technology with a very narrow signal bandwidth, enabling long distance data communication for thousands of IoT devices.

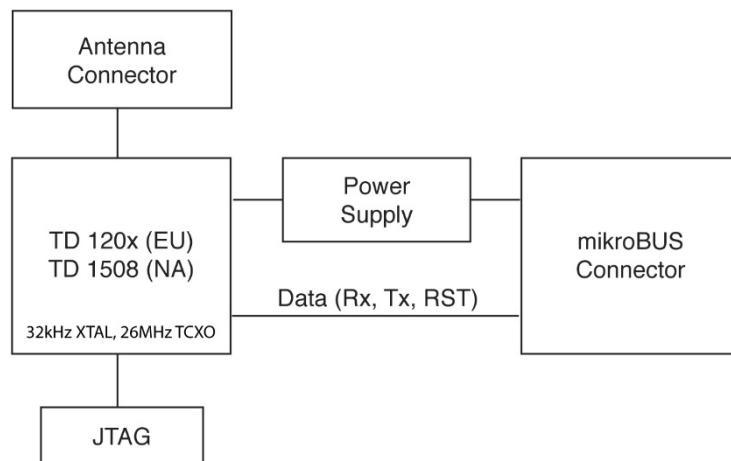


Product Features

Features	
Radio Technology	TS-UNB Sub-GHz
Key Features	The click board™ features robust TS-UNB-based RF wireless networking technology, an easy to use UART interface and low power consumption.

Features	
Applications	Industrial, manufacturing, smart buildings, mining, and similar applications that require simple and reliable networking solutions.
On-board Modules	TD Next TD1207 (Europe) / TD1508 (North America)
Interface	UART (AT Command Set)
Input Voltage	5V
Module Size	50 mm x 25.22 mm (1.97 in x 0.99 in)
Antenna Connector Type	SMA

Functional Block Diagram



Environmental Conditions

Environmental Conditions	
Operating Temperature Range	-30°C – 75 °C
Storage Temperature Range	-40°C – 85 °C

Electronic Characteristics

Electronic Characteristics				
Parameter	Min	Typ	Max	Unit
Power Supply Voltage (DC)	3.6	5	6	V
Average Power Consumption (868 MHz)		75		mA
Average Power Consumption (915 MHz)		250		mA

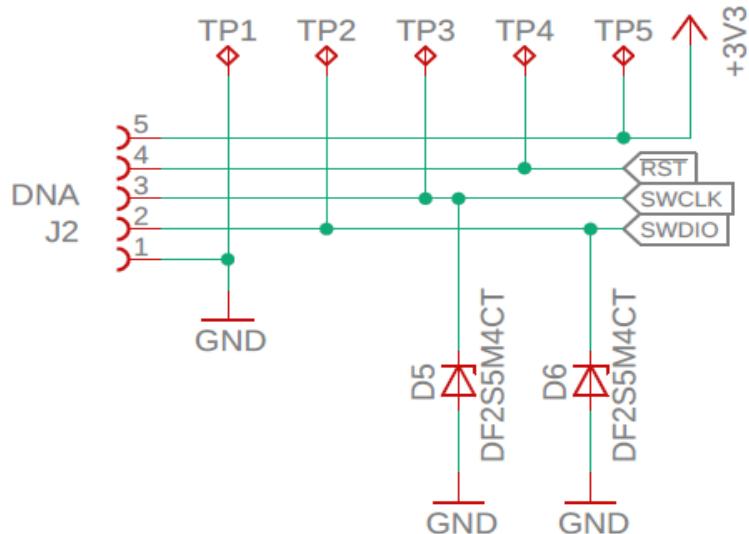
Pinout Diagram

This table displays the pinouts on the MYTHINGS Rapid Prototyping Module and how they correspond to the pinout on the mikroBUS™ socket (the latter in bold in the two middle columns).

Pin-out Descriptions								
Notes		Pin	mikro BUS				Pin	Notes
		NC	1	AN	PWM	16	NC	
Reset		RST	2	RST	INT	15	NC	
		NC	3	NC	RX	14	TX	UART transmit
		NC	4	SCK	TX	13	RX	UART receive
		NC	5	MISO	SCL	12	NC	
		NC	6	MOSI	RDA	11	NC	
		NC	7	NC	5V	10	+5V	Power supply
Ground		GND	8	GND	GND	9	GND	Ground

Flashing the Firmware

The JTAG interface offers a convenient way to upgrade the module firmware. The latest firmware version is provided through BehrTech. This figure from the BehrTech MYTHINGS Schematic displays the pin configuration of the JTAG interface.



Radio Specifications

The radio specification, Telegram Splitting Ultra Narrow Band (TS-UNB) is based on the ETSI TS 103 357 standard.

Radio Specifications		
Region	Parameters	Values
Europe	Tx Power	14 dBm
	Operating Frequency Range	863-870 MHz
	Channels	Dual Channel
	Channel Bandwidth	750 KHz
	Channel Centre Frequency (Channel A)	867.825 MHz
	Channel Centre Frequency (Channel A)	866.9 MHz
North America	Tx Power	24 dBm
	Operating Frequency Range	915.2–916.8 MHz
	Channels	Dual Channel
	Channel Bandwidth	750 KHz
	Channel Centre Frequency (Channel A)	916.4 MHz
	Channel Centre Frequency (Channel A)	915.6 MHz

Antenna

While an antenna is required for transmitting messages, the antenna models listed in the following table are optional. For more information, contact support@behrtech.com.

Antenna	
Europe	Linx Technologies Inc.
Model	ANT-868-CW-HWR-SMA-ND
Antenna Gain	-2.3 dBi
North America	Linx Technologies Inc
Model	ANT-916-CW-HWR-SMA-ND
Antenna Gain	1.2 dBi

How to Connect to a MYTHINGS Network

Every MYTHINGS Module includes a unique EUI (a 64-bit IEEE unique identifier) and a 128-bit Network Session key. Both values are stored on a QR tag located on the label on the front of the module. You can extract this information using a QR reader. Once obtained, you can then copy the identifier and key when provisioning a sensor in to MYTHINGS Central.

Note: the EUI information in the QR tag includes \r\n to indicate a new line. When adding a new node into MYTHINGS Central, do not copy the \r\n as part of the EUI. Also, be aware that the QR tag does not include the Node Type. You must add this separately.

RF Exposure Requirements

To comply with FCC RF exposure compliance requirements, the device must be installed to provide a separation distance of at least 20 cm from all persons.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Safety Instructions

The MYTHINGS Module (uni) is a low power circuit board operating at 5V DC. The board is equipped with a mikroBUS interface and connector and is designed to be used in combination with an additional base board that is equipped with a mikroBUS host socket. This socket provides power supply and data connectivity to interface directly with the module.

To connect and disconnect the module to the base board using the mikroBUS interface:

1. Disconnect the base board from power supply.
2. Connect the MYTHINGS Module (uni) via the mikroBUS interface.
3. Ensure the correct orientation of both boards.
4. Reconnect the power supply.

Additional Notes and Information

This radio transmitter 25059-MY-UNIMODNA has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

BehrTech provides a mikroSDK-compliant code library to help you build and compile your own application on the MYTHINGS Rapid Prototyping Module. For more information, contact support@behrtech.com.

You can learn more about [MikroE starter boards](#) and [MikroE compilers](#).

Regulatory Notes

This device complies with part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Statement for Modular Approval

This product is sold to OEM integrators only. The manual for the OEM integrators must include some instructions to be followed by the end users in the user manual. For example: the OEM integrators must be instructed to ensure that the end user has no manual instructions to remove or install the device.

The OEM integrators must be instructed about the end product labeling ("Contains FCC ID: 2ATF6-MY-UNIMODNA") for the United States of America and ("Contains IC: 25059-MYUNIMODNA") for Canada.

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as the 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example, access points, routers, wireless ADSL modems, wireless media adapter, wireless media gateway, and similar equipment). The final end product must be labeled in a visible area with the following: (" Contains

FCC ID:2ATF6-MY-UNIMODNA") for the United States of America and ("Contains IC: 25059-MYUNIMODNA") for Canada.

Manual Information for OEM integrator

The following RF exposure info shall be supplied in end-users manual depends on the application.

For mobile configuration of RF Exposure Information:

IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Obtaining Updates

Behr Technologies Inc. (BehrTech) continuously develops new functionality and enhancements for its solutions. BehrTech regularly releases updates that include changes to the products. Provided a customer's products are under an active maintenance services, contract with BehrTech Customer Care, the customer will be entitled to these releases.

Related Documents

You can find details about AT commands in the *MYTHINGS Endpoint AT Protocol Guide*. Contact support@behrtech.com to obtain the guide.

Versions

The MYTHINGS module (uni) for rapid prototyping is available in a 915 MHz version for North America and an 868 MHz version for use in Europe.

To order, reference the following SKUs:

MYTHINGS Module Uni for European Frequency (868 MHz)	MY-UNIMODEU
MYTHINGS Module Uni for North American Frequency (915 MHz)	MY-UNIMODNA



by BehrTech

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MYTHINGS Rapid Prototyping Module
Published in Canada
April, 2020