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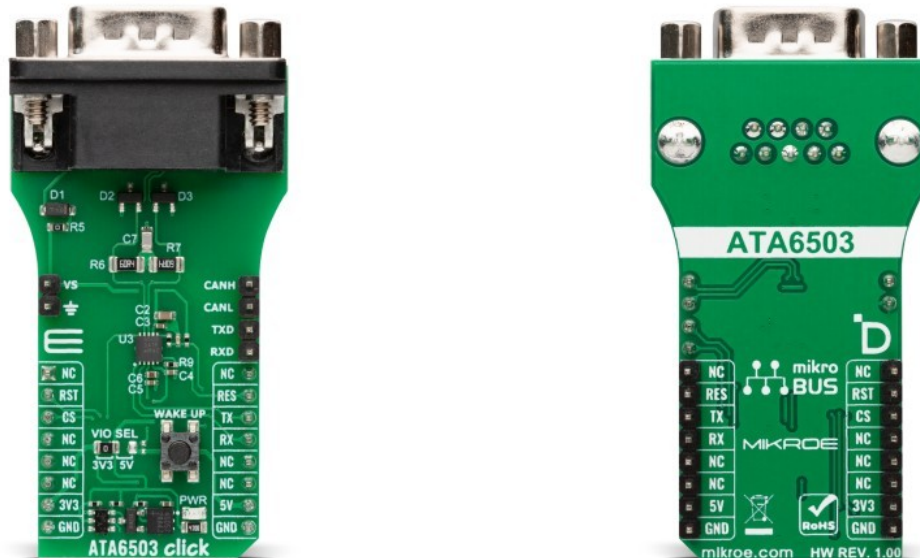www.mikroe.com

ATA6503 Click

PID: MIKROE-6462

ATA6503 Click is a compact add-on board for high-speed CAN FD communication in automotive and industrial applications. This board features the ATA6503, a fully integrated CAN FD System Basis Chip (SBC) from Microchip, meeting Grade 0 AEC-Q100 standards. It supports both Classical CAN and CAN FD protocols with data rates up to 8Mbit/s, features an integrated 5V/150mA voltage regulator, reverse battery protection, a button for waking the module from Sleep mode, and advanced fail-safe mechanisms. The ATA6503 communicates with the host MCU via a UART interface, including a standard DB-9 connector for CAN bus integration. Additional features include multiple operating modes, undervoltage detection, and compatibility with 3.3V or 5V logic levels, ensuring flexibility and reliability. ATA6503 Click is ideal for applications such as body electronics, infotainment systems, powertrains, ADAS, photovoltaic systems, and more, where robust and efficient CAN FD communication is essential.

For more information about **ATA6503 Click** visit the official product page.

How does it work?

ATA6503 Click is based on the ATA6503, a fully integrated high-speed CAN FD System Basis Chip (SBC) from Microchip. This automotive-qualified device, meeting Grade 0 AEC-Q100 standards, is a reliable interface between a Controller Area Network (CAN) protocol controller and the physical two-wire CAN bus. It supports both Classical CAN and CAN FD communication protocols, achieving data rates of up to 8Mbit/s. Its differential transmit and receive capabilities simplify communication with a CAN protocol controller, enabling the development of reliable CAN nodes. Fully compliant with ISO 11898-2:2024 and SAE J2284-1 to SAE J2284-5 specifications, the ATA6503 ensures compatibility with modern automotive and industrial CAN

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ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.

ISO 9001: 2015 certification of quality management system (QMS).

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applications like body electronics and lighting, automotive infotainment systems, powertrain systems, Advanced Driver Assistance Systems (ADAS), photovoltaic systems, and many other scenarios.
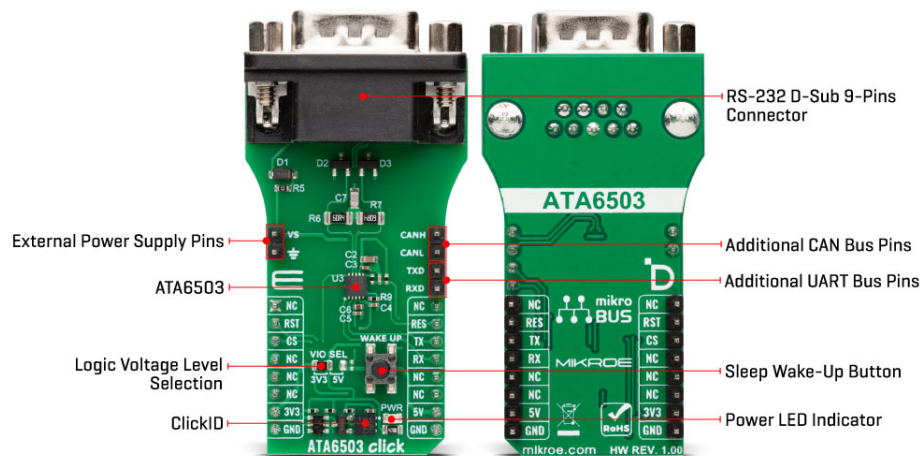
The ATA6503 communicates with the host MCU through a UART interface, with a default baud rate of 115200bps. This Click board™ features a standard DB-9 connector, allowing straightforward integration with the CAN bus. For added versatility, both CAN and UART signals are accessible through additional pins on the right side of the Click board™, allowing flexible control options such as monitoring data flow, configuring alternative communication paths, or integrating with auxiliary devices in complex systems. The high-speed CAN FD SBC ATA6503 supports multiple operating modes, advanced diagnostic features, and fail-safe mechanisms, contributing to system reliability and power management.

The control pins EN (muxed with ClickID control CS pin) and TXD (connected to the RX pin on the mikroBUS™ socket) select one of the five operating modes provided by the ATA6503 to suit various application requirements. The ATA6503 includes a RES pin (open-drain reset output (active low)) designed to allow a wired-OR connection to multiple independent reset sources. Furthermore, the board also has a dedicated WAKE UP button, which enables the ATA6503 to transition out of Sleep mode.

The ATA6503 also features an integrated 5V/150mA voltage regulator capable of powering the CAN FD transceiver, a 5V MCU, and other components or loads on the PCB. In cases where the entire system needs to be powered through the internal 5V regulator, the R11 resistor, left unsoldered by default, must be installed to enable this functionality. The regulator has protection mechanisms for reliable operation under varying conditions, including current limitations and overtemperature shutdown. Additionally, the output voltage is continuously monitored while the regulator is active, and in the event of an overvoltage condition, the regulator automatically shuts down to prevent potential damage to the system.

In addition to the CAN and TXD/RXD pins, the board includes a header with a VS pin, which serves as an external power supply input, supporting a voltage range from 4.5V to 28V. This pin is connected to the power source through a serial diode, providing reverse battery protection and ensuring reliable operation under standard automotive conditions. An integrated undervoltage detection circuit further enhances system reliability by preventing malfunctions or false bus messages caused by insufficient supply voltage. Upon powering the VS pin, the ATA6503 enters Reset mode, which activates the internal voltage regulator. Once the regulated voltage stabilizes, the device transitions to Standby mode, ready for further

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operation.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VIO SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

Specifications

Type	CAN,CAN FD
Applications	Ideal for applications such as body electronics, infotainment systems, powertrains, ADAS, photovoltaic systems, and more
On-board modules	ATA6503 - fully integrated CAN FD transceiver from Microchip
Key Features	High speed, Grade 0 AEC-Q100 qualified, fully compliant with ISO 11898-2:2024 and SAE J2284-1 to J2284-5 specifications, both Classical CAN and CAN FD protocols with speeds up to 5Mbit/s, integrated voltage regulator (5V/150mA), Sleep mode wake-up button, safety features, and more
Interface	CAN,UART
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V,External

Pinout diagram

This table shows how the pinout on ATA6503 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikro™ BUS			Pin	Notes
	NC	1	AN	PWM	16	NC	
ID SEL	**RST**	2	RST	INT	15	**RES**	Open-Drain Reset Output
Control Enable / ID COMM	**CS**	3	CS	RX	14	**TX**	UART TX
	NC	4	SCK	TX	13	**RX**	UART RX
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	**3.3V**	7	3.3V	5V	10	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description

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LD1	PWR	-	Power LED Indicator
T1	WAKE UP	-	Sleep Wake-Up Button
JP1	VIO SEL	Left	Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

ATA6503 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
External Power Supply	4.5	-	28	V
Data Rate	-	-	5	Mbit/s

Software Support

ATA6503 Click demo application is developed using the NECTO Studio, ensuring compatibility with mikroSDK's open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a mikroBUS™ socket.

Example Description

This example demonstrates the use of an ATA6503 Click board by showing the communication between the two Click boards.

Key Functions

- ata6503_cfg_setup Config Object Initialization function.
- ata6503_init Initialization function.
- ata6503_generic_write This function writes a desired number of data bytes by using UART serial interface.
- ata6503_generic_read This function reads a desired number of data bytes by using UART serial interface.
- ata6503_set_en_pin This function sets the EN pin logic state.

Application Init

Initializes the driver and logger.

Application Task

Depending on the selected application mode, it reads all the received data or sends the desired message every 3 seconds.

Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following this tutorial.
- UART Terminal - Monitor data via the UART Terminal using a USB to UART converter. For detailed instructions, check out this tutorial.

Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the NECTO Studio. The application code can also be found on the MIKROE GitHub account.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

ClickID

Downloads

ATA650x datasheet

ATA6503 click example package

ATA6503 click 2D and 3D files v100

ATA6503 click schematic v100

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