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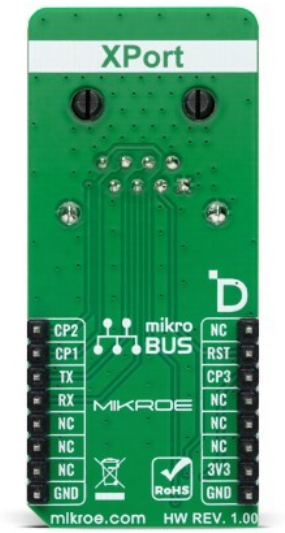
XPort ETH Click - SE



PID: MIKROE-6539

XPort ETH Click - SE is a secure networking solution designed to provide encrypted Ethernet connectivity to embedded systems. It is based on the XP100200S-05R XPort module from Lantronix, which supports 256-bit AES encryption for secure data transfer. The module features a 10/100BASE-TX Ethernet interface, embedded web server, full TCP/IP stack, and UART communication - all integrated in a compact RJ45 form factor. It runs on 3.3V, includes 512KB of flash memory for firmware and custom web pages, and uses bi-color LEDs to indicate network link and data activity. XPort ETH Click - SE is the ideal choice for applications that demand secure Ethernet communication, such as remote monitoring, medical systems, or data-sensitive IoT deployments.

For more information about **XPort ETH Click - SE** visit the official product page.

How does it work?

XPort ETH Click - SE is based on the XP100200S-05R XPort module from Lantronix, made for embedded systems requiring encrypted data transfer. The XP100200S-05R module extends the standard feature set with 256-bit AES encryption, enabling secure networking in sensitive applications. Compact and powerful, this module provides 10BASE-T/100BASE-TX Ethernet, embedded web server functionality, a complete TCP/IP protocol stack, and serial communication - all packed into an RJ45 Ethernet connector ideal for adding reliable Ethernet communication to a wide range of embedded applications.

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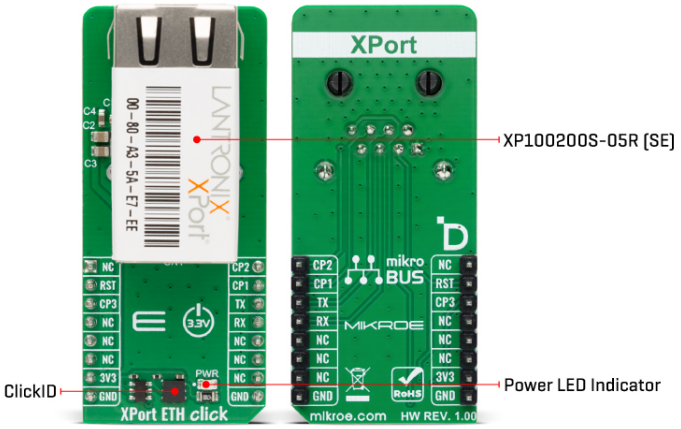

The XPort module is powered by the DSTni EX controller, which includes 256KB of SRAM, 16KB of boot ROM, and a built-in MAC with an integrated 10/100BASE-TX PHY. The processing core operates on 1.8V supplied by an internal regulator, while the entire solution runs on a 3.3V power supply. A built-in voltage supervisory circuit ensures reliable operation by resetting the module if the supply voltage drops below 2.7V. Communication with the host device is achieved via UART interface and three configurable general-purpose I/O pins (CP1, CP2, and CP3), which can function as flow/modem control lines or general-purpose signals. In addition, the XPort includes 512KB of flash memory for storing firmware and web content, enabling full customization and remote management of connected devices.

As mentioned, the module connects directly to an Ethernet network through the RJ45 port. Two bi-color LEDs integrated into the front of the connector provide real-time status indication. When both LEDs are off, there is no link or activity. The left LED (Link LED) glows amber for a 10Mbps connection and green for 100Mbps. The right LED (Activity LED) indicates half-duplex mode with an amber light and full-duplex mode with green.

XPort ETH Click - SE also benefits from simple electromechanical integration thanks to its compliance with Class B emissions standards. For configuration and control, it comes with Windows-based Device Installer software and a Com Port Redirector, supporting both x86 and x64 Windows platforms, including XP, Vista, Windows 7, Windows 8, 2003 Server, and 2008 Server.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. It also comes equipped with a library containing functions and example code that can be used as a reference for further development.

Specifications

Type	Ethernet
Applications	Ideal choice for applications that demand secure Ethernet communication, such as remote monitoring, medical systems, or data-sensitive IoT deployments
On-board modules	XP100200S-05R - XPort module with 256-bit AES encryption from Lantronix

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Key Features	10BASE-T/100BASE-TX interface, integrated web server, TCP/IP protocol stack, UART serial communication interface with configurable CP1, CP2, and CP3 I/O pins, 512KB flash memory for firmware, web content 256KB SRAM, 16KB boot ROM, integrated MAC with 10/100BASE-TX PHY, two bi-color LEDs for link and activity indication, RJ45 connector form factor compliant with Class B emission standards, compatible with Windows-based configuration tools, and more
Interface	UART
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

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

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	**CP2**	General-Purpose I/O
ID SEL	**RST**	2	RST	INT	15	**CP1**	General-Purpose I/O
General-Purpose I/O / ID COMM	**CP3**	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	NC	
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator

XPort ETH Click - SE electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Ethernet Speed	10	-	100	Mbps

Software Support

XPort ETH Click - SE 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

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mikromedia boards featuring a mikroBUS™ socket.

Example Description

This example demonstrates the use of the XPort ETH Click - SE board for Ethernet communication. The application initializes the XPort ETH SE module, retrieves essential information such as firmware version, MAC address, and network status, and demonstrates sending a ping command. It also allows for bidirectional UART communication between the USB UART and the XPort ETH SE UART.

Key Functions

- xportethse_cfg_setup This function initializes Click configuration structure to initial values.
- xportethse_init This function initializes all necessary pins and peripherals used for this Click board.
- xportethse_reset_device This function resets device by toggling the RST pin state.
- xportethse_send_cmd This function sends a command string by using UART serial interface.
- xportethse_send_enter This function sends enter (new line) by using UART serial interface.

Application Init

Initializes the UART communication, logs essential information, configures the XPort ETH SE module, and retrieves the firmware version, MAC address, and network status. It also demonstrates basic command operations such as pinging the specific IP address (8.8.8.8).

Application Task

Continuously reads data from the USB UART and forwards it to the XPort ETH SE module, while also capturing responses from the module and forwarding them back to the USB UART. This allows real-time interaction with the device through the UART Terminal for configuration and diagnostics.

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™

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XPort datasheet