TapNPass, TnP-NSR103

Quick Start Guide

Portable Serial to Bluetooth Low energy (BLE)
adapter for deported HMI apps on mobile devices

August - 2019

Package Contents

TapNPass Nomad NFC-BLE to Serial fieldbus adapter includes:

- 1x **TnP-NSR103**

- 2x **Rechargeable Li-Ion Batteries**

- 1x **RS-232 cord** (RJ45-DB9)

- 1x **RS-485 cord** (RJ45-DB9, blue marker)

- 1x **Modbus adapter** (RJ45-RJ45)

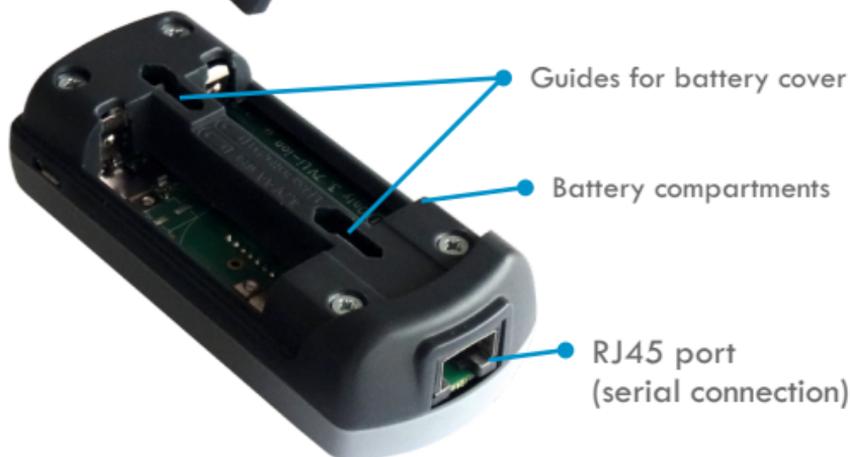- 1 x **Micro USB cord** (connect for battery charging)

Use an off-the-shelf **USB (A) cord** when connecting to a target's USB connecter. This cord is not provided with TapNPass.

Note: For Modbus connections, plug the provided Modbus adapter into the TapNPass RJ45 port and use an off-the-shelf network cord to connect to the target. The network cord is not provided with TapNPass.

LED descriptions

	LED	Condition	Description
⏻	**Power**	Flashing Green Off	Power on, BLE emitting. Power off.
▭	**Battery** During recharging	Steady Green Off	Battery is charging. Battery is charged.
	Not recharging	Flashing Red Off	<25% charge. <10%, Auto shut off.
↔	**Communication**	Flashing Orange Flashing Blue Off	Receiving data from target. Sending data to target. No communication.

Hardware Description

Wireless channel indicator

Communication LED

Battery LED

Power LED

Power button

Micro USB port
(battery charging)

USB (A) port
(target connection)

Battery cover
(Magnets inside fix TapNPass to a
metal surface to free the user's
hands during use.)

Guides for battery cover

Battery compartments

RJ45 port
(serial connection)

Install & charge batteries

1. Press, then slide and lift to remove the back cover.

2. Insert the provided Li-Ion batteries.

3. Connect TapNPass micro USB port to a PC and fully charge the batteries before use.

Typical charging time is 1 hour.

The charge indicator LED turns off when the batteries are fully charged.

⚠ CAUTION

BATTERY REPLACEMENT
If battery replacement is necessary, replace both batteries.
Use only 800mAh AA (14500) Soshine Li-Ion, protected, rechargeable batteries:
- *Nominal Voltage: 3.7V Max charge current: 1.5C*
- *Dimensions: 14 x 51 mm Max discharge current: 2.0C*

FIRE HAZARD
- Do not use other un-protected Li-Ion batteries
- Do not use other types of rechargeable or non-rechargeable AA size batteries

Failure to follow these instructions can result in injury or equipment damage.

EXPLOSION HAZARD
- Do not store the battery in hot environment (e.g. in direct sunlight or in a vehicle in direct sunlight)
- Do not dispose the battery in a fire or oven
- Do not crush or cut or other blunt force damage on the battery

Failure to follow these instructions can result in injury or equipment damage.

1. Connect to a Target

Connect TapNPass to the target system. Available connections are:

Connection Type	Cord	TapNPass Connector	Target Connector
Serial RS-232	RS-232 cord[1]	RJ45	DB9
Serial RS485	RS-485 cord[1]	RJ45	DB9
Serial USB (host)	USB (A)[2]	USB (A)	USB
Serial w/Modbus-RTU	*Modbus adapter[1] + network cable[2]*	*RJ45*	*RJ45*

Notes:
  1. Provided with TapNPass.
  2. Not provided. Use any off-the-shelf cord of this type.

2. Connect to your Mobile

TapNPass connects to Android and iOS mobiles via Bluetooth Low Energy (BLE) and Near Field Communication (NFC).

It is pre-configured for serial or Modbus communication with target systems using the **Tap Toolbox** app.

Note: TapNPass can also be reconfigured. See section 4.

Get Tap Toolbox

Go to **Google Play Store** or to the **App Store**. Download and install IoTize **Tap Toolbox**.

NFC

Note: For Android mobiles (with NFC) and iOS (iPhone XR/XS). Activate NFC and a data connexion, then hold the mobile to the NFC indicator on TapNPass. Tap Toolbox will be proposed automatically for installation.

## Connect to mobile to TapNPass

1. Activate the mobile's Bluetooth and data connections.
2. Press TapNPass's Power button to start its Bluetooth.
3. Launch **Tap Toolbox** and select *Scan* to find your TapNPass.
4. Select your TapNPass from the list of Bluetooth devices.

After you are connected, **Tap Toolbox** provides the utilities:

- **Terminal:** sends/receives characters via RS-232, RS-485 or USB interfaces.
- **Modbus:** drive one or more Modbus (slave) devices. Only Modbus-RTU is supported.

3a. Terminal utility

Selecting **Terminal** opens this utility for sending text commands and visualizing responses.
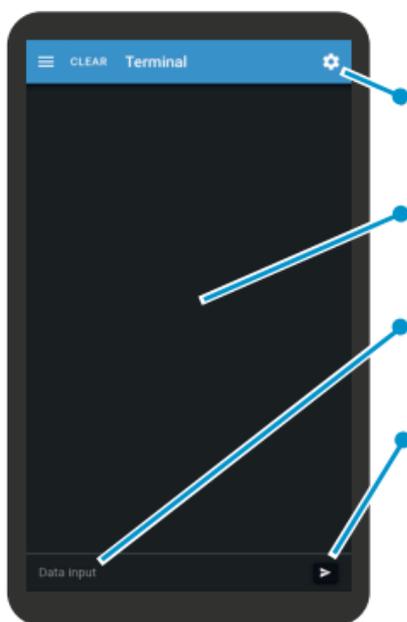
Settings: set input format and visualization parameters

Display: visualization area for commands and responses.

Data input: click to access keyboard and type text commands.
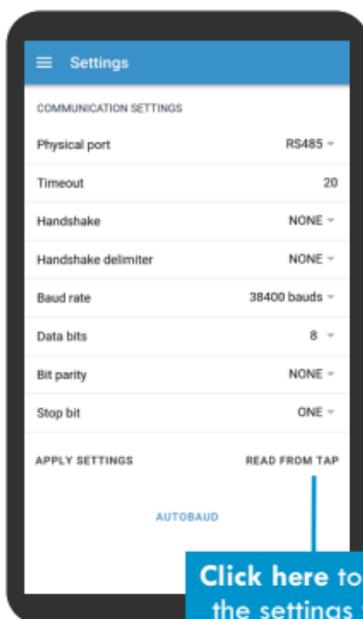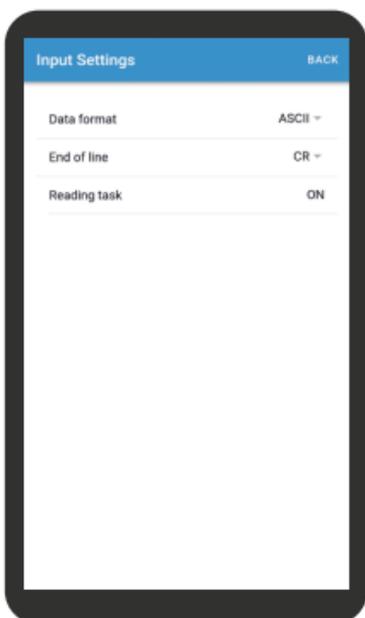
Send button

UART settings

Click the menu icon on the left, and select **Settings**.

These settings are common to **Terminal** and **Modbus** utilities.

Input Settings

Click ⚙ in the **Terminal** display.

These settings are specific to the **Terminal** utility.

Input Settings panel

Input Settings	BACK
Data format	ASCII ▾
End of line	CR ▾
Reading task	ON

Settings panel

☰ Settings	
COMMUNICATION SETTINGS	
Physical port	RS485 ▾
Timeout	20
Handshake	NONE ▾
Handshake delimiter	NONE ▾
Baud rate	38400 bauds ▾
Data bits	8 ▾
Bit parity	NONE ▾
Stop bit	ONE ▾
APPLY SETTINGS	READ FROM TAP
AUTOBAUD	

Click here to read the settings from TapNPass

3b. Modbus utility

Selecting **Modbus** opens this utility for reading and writing Modbus (slave) registers.
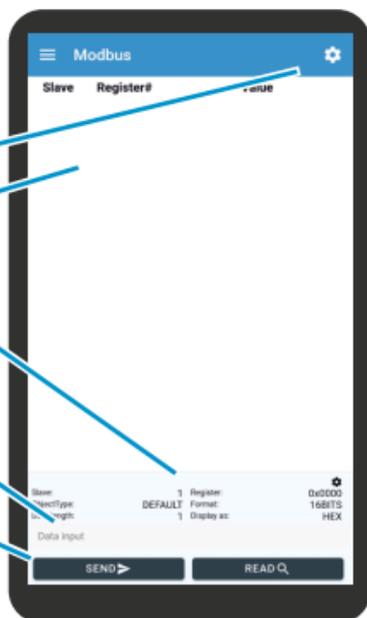
Settings: Set parameters that are specific to the Modbus communication with the target.

Registers: List of registers to monitor.

Register definition: Displays values of parameters of the selected register.

Input field: Enter the value to be written when using the write register command.

Command buttons: Execute the read or write commands.

Define a register to monitor

Click in the **Registers** area, then enter:

- **Slave id** (8-bit value)
- **Register address** (16-bit value)
- **Type** (default is 'holding register')
- **Format**: registers are 16-bit. They are truncated for 8-bit values. 32-bit values use 2 consecutive registers.
- **Length**: the number of consecutive registers to be accessed
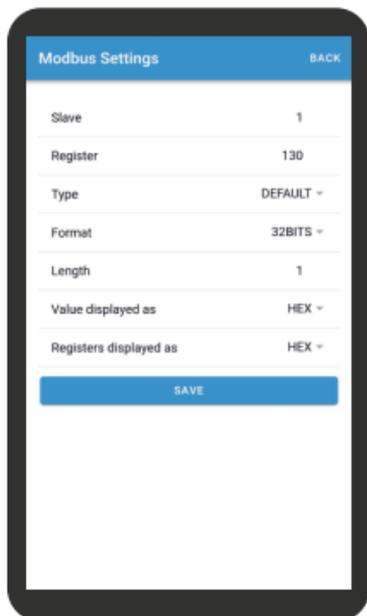- **Display mode** (HEX of DEC)

Click on **Save** and then **Read**.

The register is listed in the **Register** display and the values are in the **Register definition** field.

Save a register for later use

- Click on the register in the **Registers** area
- Swipe to the left
- Click on the **Save** button

This saves the register and related settings to a list of registers.

4. Advanced Configuration

Your TapNPass can be configured to:

- Require login for access to features or data
- Open an HMI app that you created for your systems or your user

The **IoTize Studio** configuration envronment, detailed documentation, application notes and app development resources are available online at:

http://docs.iotize.com/GettingStarted/TapNPass/

5. Troubleshooting

App won't display any register values

If Tap Toolbox Modbus utility does not display <u>any values</u> from your Modbus slave, verify that:

- Connection cord is plugged into TapNPass and the target.
- Connection cord pin out is correct for your target. The problem may be caused by inverted D0 and D1 signals.

  To comply with the Modbus specification, TapNPass uses an RJ45-RJ45 cord with a specific pin specification. Try this cord first.

  If the provided cord does not work, you can also try an Ethernet cord with the standard pin out.

  If neither cord works, you will have to verify the pin connections on the target and may have to adapt a cord to your target's pin out.

- The UART settings are appropriate for the target.
- The slave address is correct for the target.
- You have access to the Modbus features in the current TapNPass configuration. For a new TapNPass, the initial configuration allows access without login for Modbus and Terminal features. If the configuration has been changed, you will have to obtain the login from the configuration project or the user who configure the TapNPass.