SMITHTEK

PASS-PORT GATEWAY

USER GUIDEBOOK AND TECHNICAL SPECIFICATIONS

WWW.SMITHTEK.COM.AU
Version 1.1

TABLE OF CONTENTS

PASS-PORT DATA SHEET

Device Specs

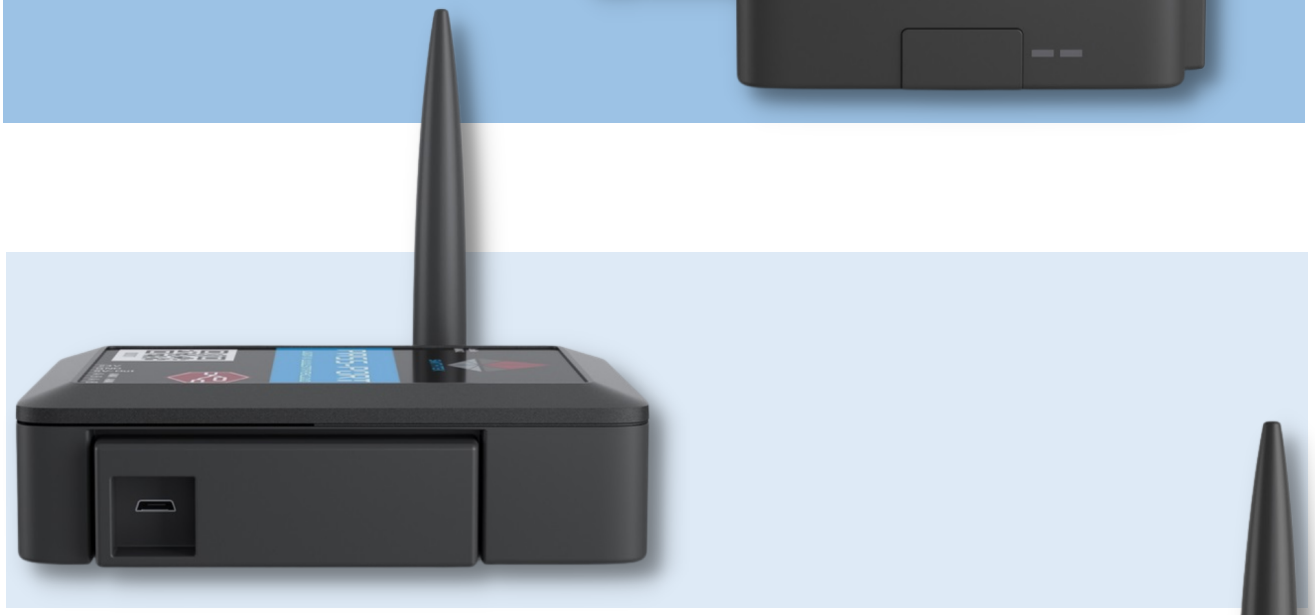
Supply Voltage	8-24VDC
Supply Voltage I Micro USB	5.1V
Operating Current Max	300mA at 12VDC
Operating Temperatures	-40 to +85C
Humidity	0-95% RH (NC)
Dimensions	160/98/34 mm
Enclosure type	ABS (ROHS)
Communications	USB Type A x 4, Ethernet RJ45 Wifi LoRa Serial RS485 x 2
Terminal Type	3.51mm pluggable screw terminal Max wire size 1.5mm
Mounting Options	Spring load (35mm Din-rail clips
Mounting Options	Desktop
RF Type	LoRa Semtech SX1276
RF BW	125Khz
RF Frequency	472.0625 Mhz
Compliance	ACMA (Australia) AS/NZS CISPR 32 AS/NZS 4268 ARPANSA 2002
Transmit Power	9dBm – 0.008 (w)

CPU

Processor	1.5GHz quad-core ARM Cortex-A72 CPU
RAM size	2GB LPDDR4 RAM
Integrated Wi-Fi	2.4GHz and 5GHz
Ethernet speed	300Mbps
PoE	Yes
SSD Disk Storage	Up to 10GB

Programming Software	IBM Node-Red V1.2 - {Locked}
Store and forward DataBase	SQlite
Node modules library	ST Preset bank 2018
Firmware	ST2019PP

ENCLOSURE TERMINAL PORTS



TERMINAL & INTERFACE CONNECTION CHART

Terminal Number	IO Type	Methods of connection
24V	DC Power Supply	3.51 Terminal
GND	DC Power Ground	3.51 Terminal
5V-out	5VDC Output, max 250mA	3.51 Terminal
A AMA1	RS485	3.51 Terminal
B AMA1	RS485	3.51 Terminal
A AMA0	RS485	3.51 Terminal
Reset Button	Device Reset	
USB-A 1		
USB-A 2		
USB-A 3		
USB-A 4		
Ethernet		
USB Micro B	5VDC Power Supply Desktop Supply	USB Micro B

NOTE:

The LoRa RF radio is locked to Buadrate:96008N1. Modbus settings on the Mako and any other device connected; must match these parameters to successfully transmit through the LoRa antenna.

Introduction

The **Pass-Port** is an industrial IIoT internet gateway designed to communicate with hardware devices/sensors locally or wireless up to 15kms using its LoRa (Long Range) Antenna.

It is designed to be used off-grid (no Internet), or it can be connected to the internet using 3G/4G -LTE, Wifi, or Ethernet. The driver behind the Pass-Port is IBM's NodeRED, a flow-based development tool for visual programming developed for wiring together hardware devices and sensors. The Pass-Port Gateway can connect multiple devices and communicate with thousands of sensors in real-time. The passport is a standalone gateway controller designed to act as a central site controller distributing logical and event-driven commands to its connected devices.

Application use:
Agricultural, mining, remote communities, survey- (data logging), environmental, power generation, security, mobile plant and machines, water treatment, pump control, irrigation, farming (general use), marine, parks, recreational, and public area assets.

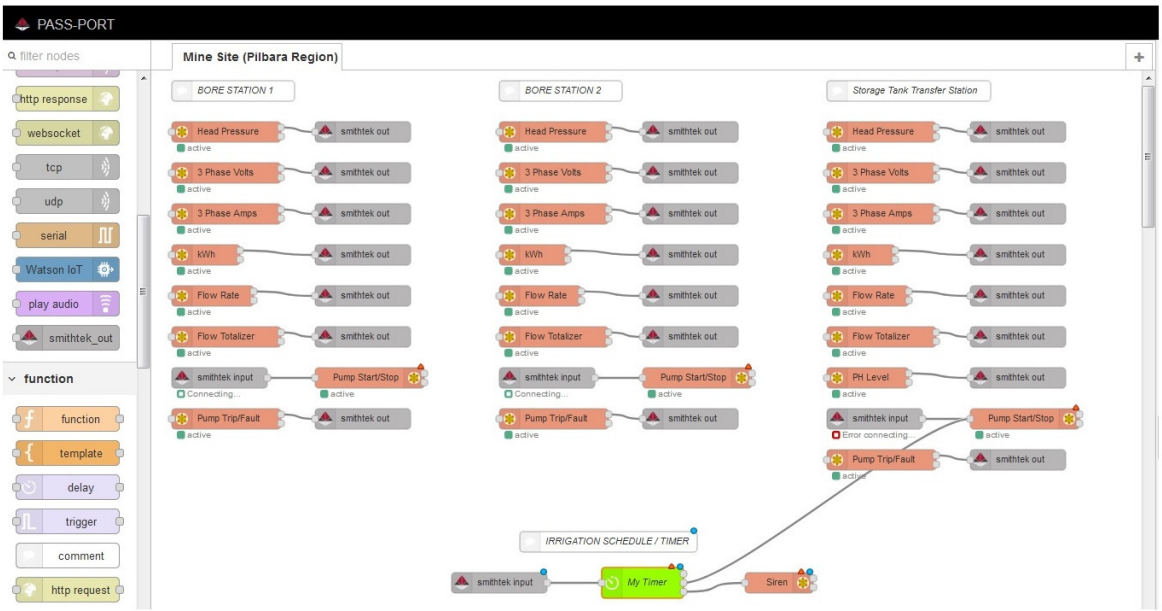
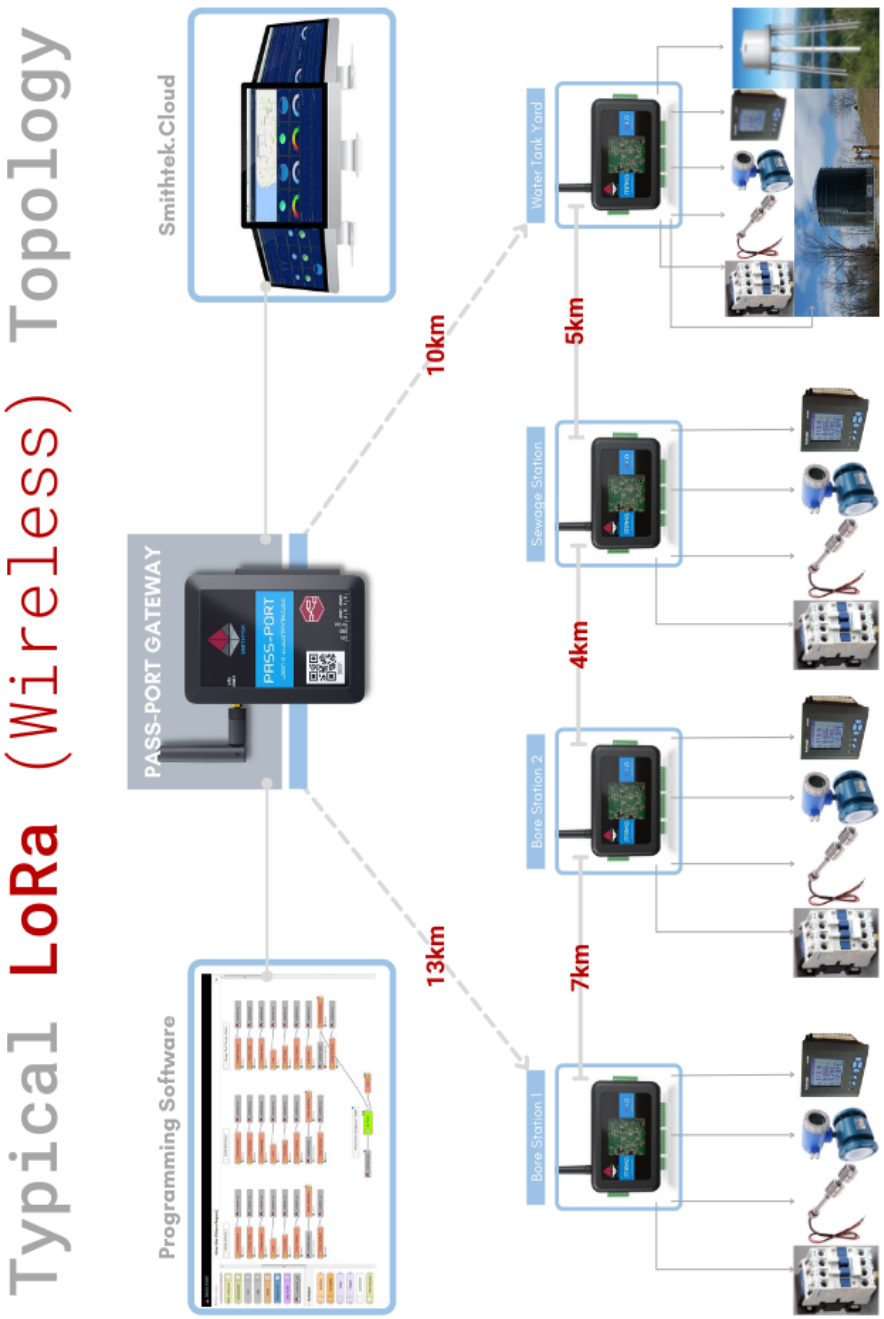


FIGURE ILLUSTRATION



Setup Guide

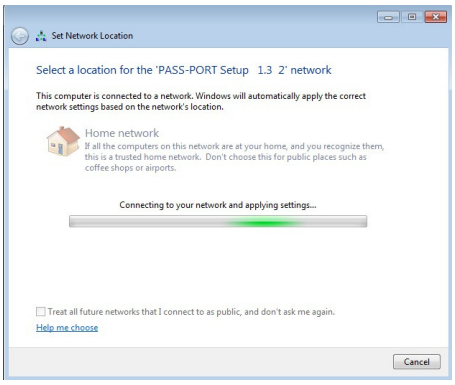
Connecting through Wifi Network

1. Connect a suitable 24VDC supply to the front connector terminals or a USB supply to the 5V micro USB on the side of the Pass-Port.

2. Have a suitable Computer, Tablet, Phone with either Internet Explorer, FireFox, Chrome, and Safari. Power the suitable device up and have it ready on standby.

3. Power the Pass-Port device and wait a couple of minutes for it to boot up. A solid red LED power light means it has loaded up.

4. Using your Computer, Tablet, Phone, etc., search the local Wi-Fi networks for a hotspot. Connect and allow a couple of minutes for it to resolve its connection.



Setup Guide

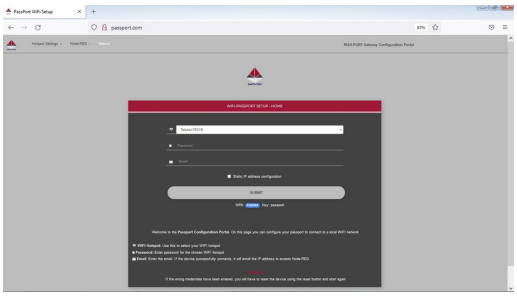
Connecting through Wifi Network

5.

Once connected navigate to your web browser and type in the address bar **10.0.0.1 or passport.com** then hit ENTER.

6.

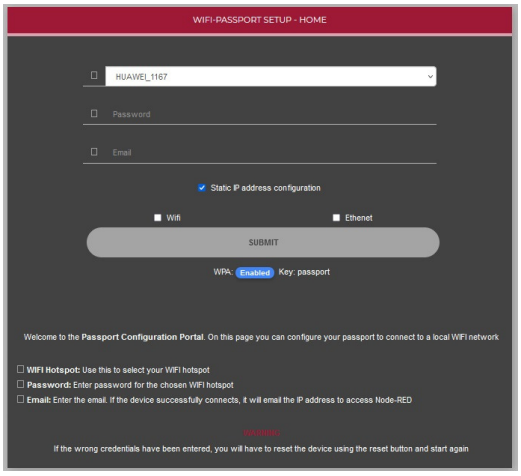
If nothing loads, wait a couple more minutes and refresh the page. You should now be presented with the following web page "WiFi-PassPort Setup-Home".



7.

Please select your local Wifi network using the drop-down arrow. Next, input the Wifi Password and your Email Address then, click Submit. If the device successfully connects, you will receive an email containing the IP address to access the Node-Red.

REMINDER:
Make sure to input the correct credentials, so you will not have to reset the device and restart again.

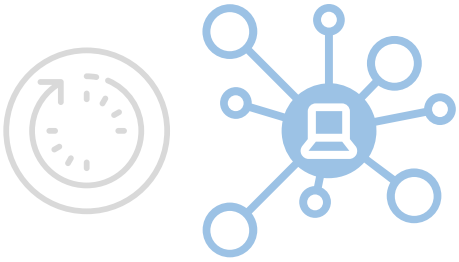


Setup Guide

Connecting through Wifi Network

9.

After submitting, your Pass-Port will automatically restart and connect to your chosen network. Allow a couple of minutes for it to resolve its new connection and set up the Programming Server.

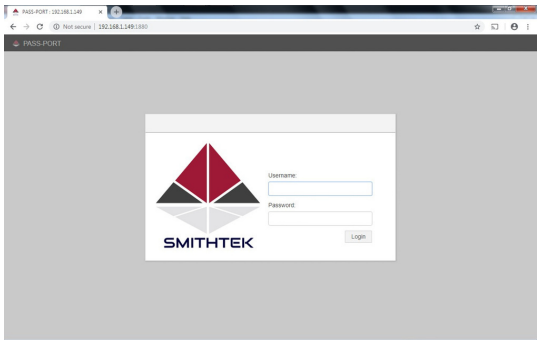


NOTE:
All future connections to the Pass-Port flow programming server will need to be through the same network. To ascertain the Pass-Port's IP address, you will need to log onto the network router (e.g., 192.168.1.1 or 192.168.0.1.). Once you gain access to your router, you must navigate to the DCHP network client list page and check for the Pass-Port listed. Directly next to the Pass-Port will be the IP address you require to log onto it. It will resemble something like "**192.168.1.100.**"

Additional: Refer to your IT manager or your Modem router manual for detailed instructions. Remember to write the IP address down! Moreover, to program flows in the Pass-Port, using a suitable computer/laptop or tablet is recommended.

10

Once you receive the emailed IP address to access the Node-Red, you can now log in using any internet browser. Type in the IP address and ensure you add the port address, ***:1880*** to the IP. It should look like this --> (192.168.1.100***:1880***), click Enter, and you will now be directed to your flow programming screen "***Pass-Port***".



Enter the default username and password below.

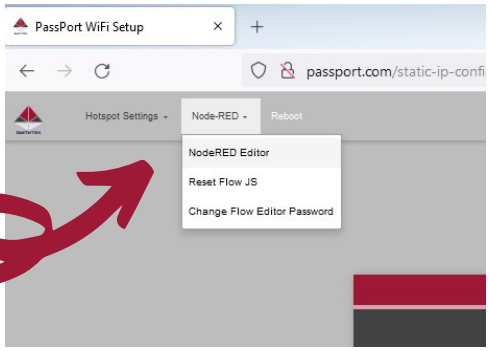
Username: SMITHTEK
Password: SMITHTEK

Setup Guide

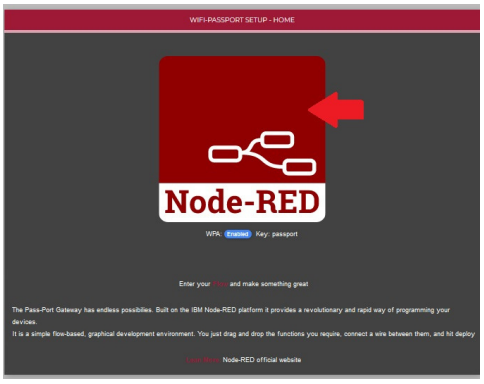
Connecting through Wifi Network

TIPS:

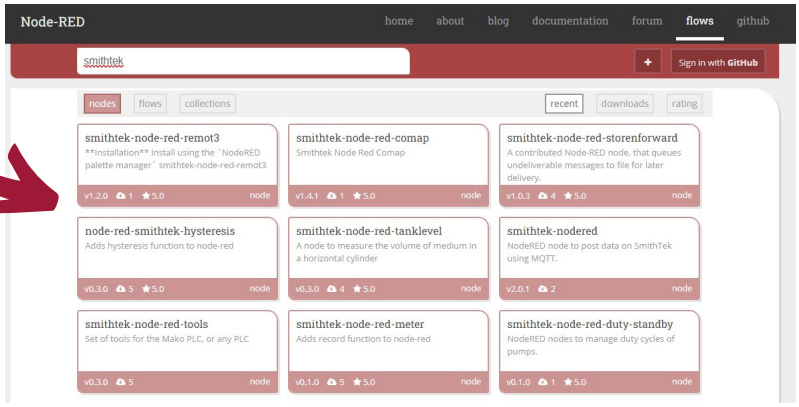
- If you don't want to connect the Pass-Port to the internet, you can access the **Node-RED Editor** from the **Wifi-PassPort-Setup-Home** web page.



- The Pass-Port Gateway has endless possibilities. Built on the IBM Node-Red platform (**a simple flow-based drag-and-drop function, connect wires between them and hit deploy**), it provides a revolutionary and rapid way of programming your devices.



- To learn more on how to configure your Pass-Port device, you can visit: **https://flows.nodered.org/search?term=smithtek**

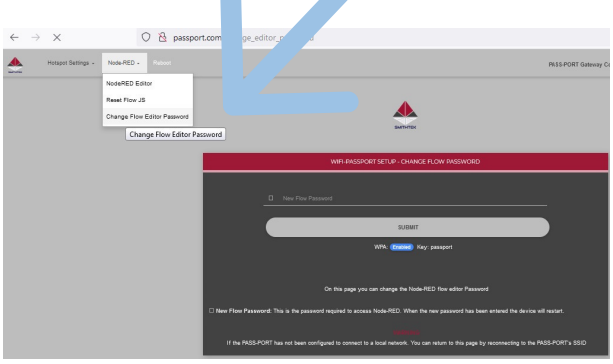


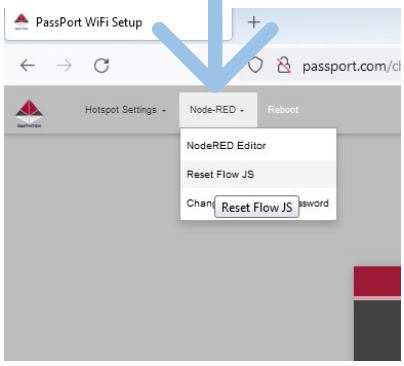
Setup Guide

Connecting through Wifi Network

TRICKS:

- You can change your **Flow Editor Password** or **Reset your Flow File** through the Node-Red dropdown menu at the **Wifi-PassPort-Setup-Home** web page.





Setup Guide

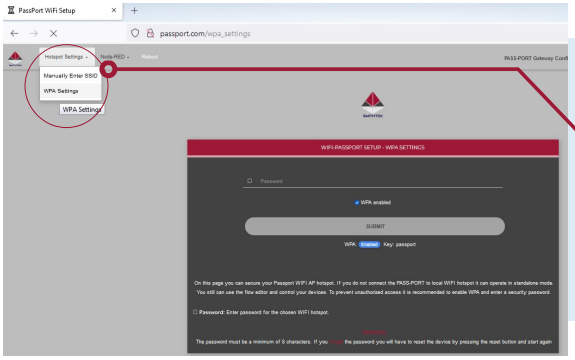
Connecting through the Ethernet

1.

It is possible to connect the Pass-Port directly to your network through its **Ethernet RJ45 Port** on the top of the device. Simply plug it into your local modem, router, or network switch. Then, locate your **Pass-Port's IP Address** through the same process noted above.

Secure, Navigate and Configure

Securing your Pass-Port Wifi Hotspot {AP Mode}



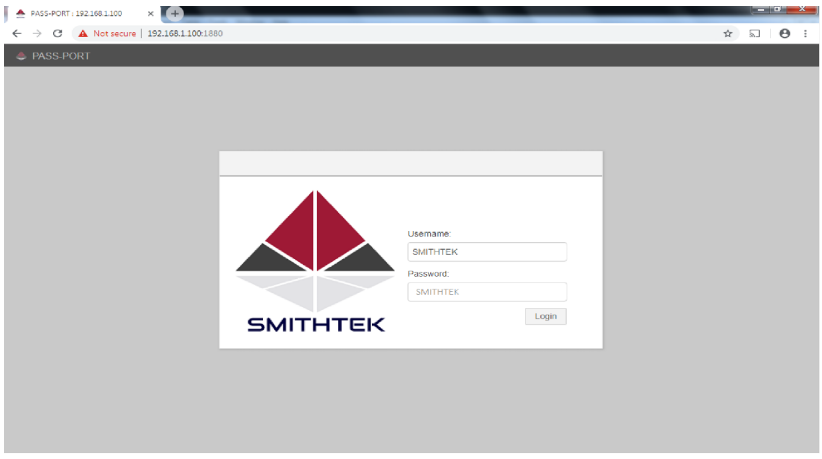
To secure your Pass-Port Wifi AP hotspot, you need to set up the **SSID Password** to prevent unauthorized access to your Pass- Port. On the Wifi-PassPort-Setup-Home page, click the Hotspot Settings dropdown menu and go to **WPA Settings**. Enter the new user password into the AP password field, then **Save and Restart.** Next time you connect to your Pass-Port, you will need to use your unique SSID password.

Suppose you forget your SSID password. Click the **Reboot Tab** on the Wifi-PassPort-Setup-Home page.

Navigating the Pass-Port Flow Editor

The opening page should be the user login page.
Default User name: **SMITHTEK** - User name is static and can not be changed.
Default Password: **SMITHTEK** - Password can be changed in the flow editor using a pre-saved flow. Enter your credentials and press "**Login**"

Pass-Port Flow Editor

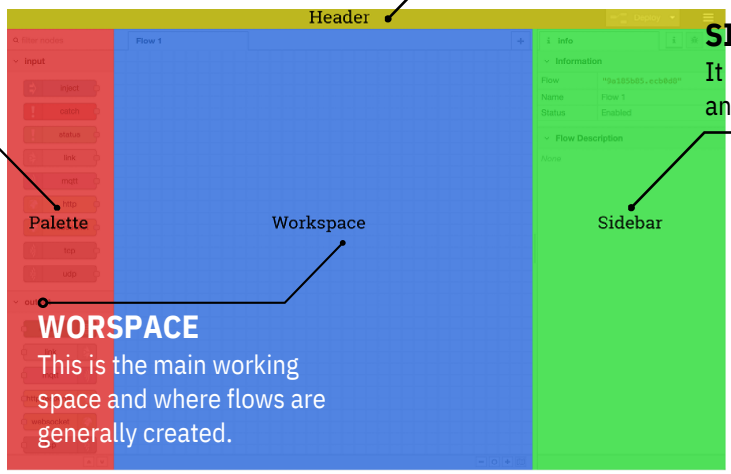


The Work Space

The Editor Window are consists of four major components:

HEADER
It contains the deploy button, main menu, and, if user authentication is enabled, the user menu.

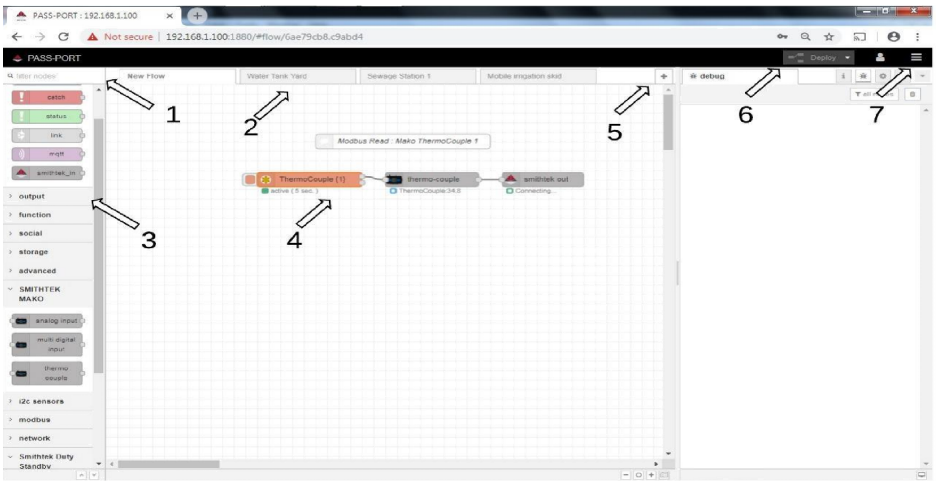
PALETTE
It contain Nodes that are available to use.



SIDEBAR
It contains the information and flow descriptions.

WORSPACE
This is the main working space and where flows are generally created.

- The main workspace is where flows are developed by dragging nodes from the palette and wiring them together.
- The workspace has a row of tabs along the top; one for each flow and any subflows that have been opened.



LEGENDS:

1.**FILTER MODULES** - allows you to search for modules by name.
2.**FLOW TABS** - allows you to add/delete flows and rename them by double-clicking.
3.**PALETTE MANAGER** - this is the list of your installed nodes.
4.**NODES DEPLOYED** - drag-and-drop nodes in the workspace and create flow.
5.**ADD FLOW**
6.**DEPLOYED BUTTON**
7.**MENU TAB**

Secure, Navigate and Configure

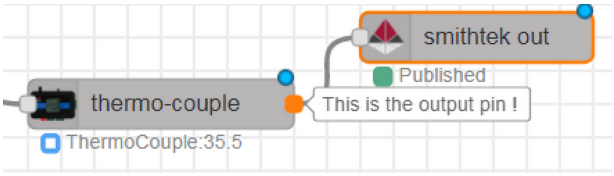
Nodes

Nodes can be added to the workspace by either:

Drag-and-Drop

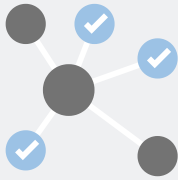
Quick Add

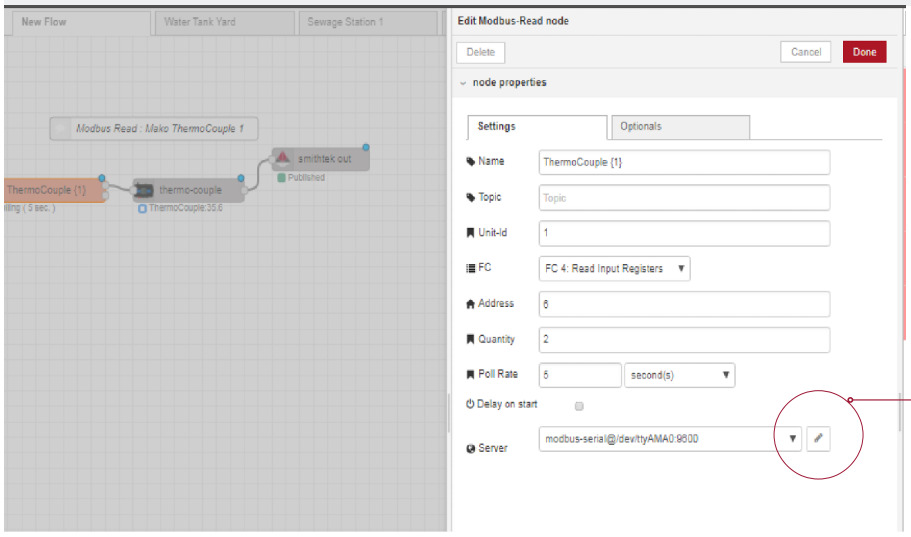
Import



Node Port Labels

Wires connect nodes via their ports. Nodes will typically have one input port and numerous output ports. When the mouse hovers over a port, the port's label is displayed. Nodes may specify tags; for example, the Switch node shows which rule corresponds to a particular port. Moreover, users can customize the labels through the node edit dialog.





Configuration nodes are edited within the edit dialog of that node. It will have a field to select from the available config nodes of the required type or to add a new instance.

Node Configuration

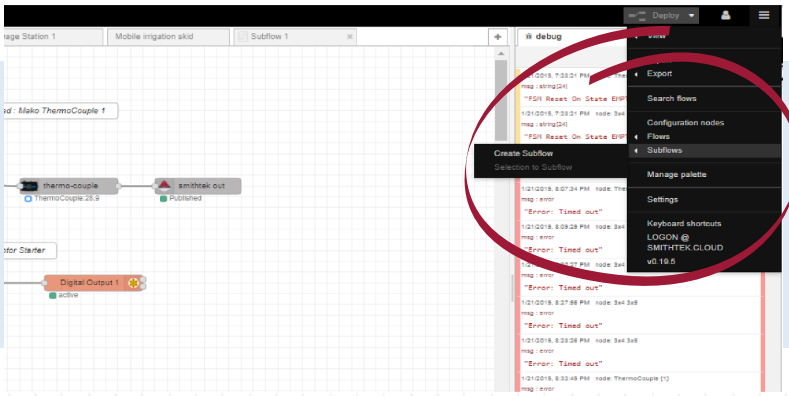
Double-click the node or press Enter to edit the Node Configuration. Suppose you selected multiple nodes; you can only edit the first node you selected.

The Configuration (config) Node is a special type of node that holds reusable configuration that regular nodes can share in a flow. The configuration tab is located next to a selectable field and looks like a little pencil.

The Subflows

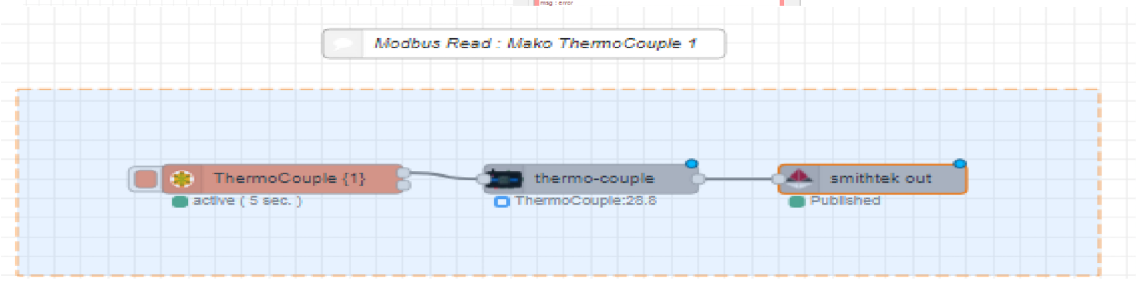
The subflows are the collection of nodes compressed into a single node in the workspace. You can use it to reduce some visual complexity of a flow or organize a bunch of nodes into a reusable flow that may be used in various places. Once created, you can add the subflow to the palette of available nodes. Just like any other node, you can add individual instances of the subflow.

Note: Either directly or indirectly, a subflow cannot contain an instance of itself.



CREATE EMPTY SUBFLOW

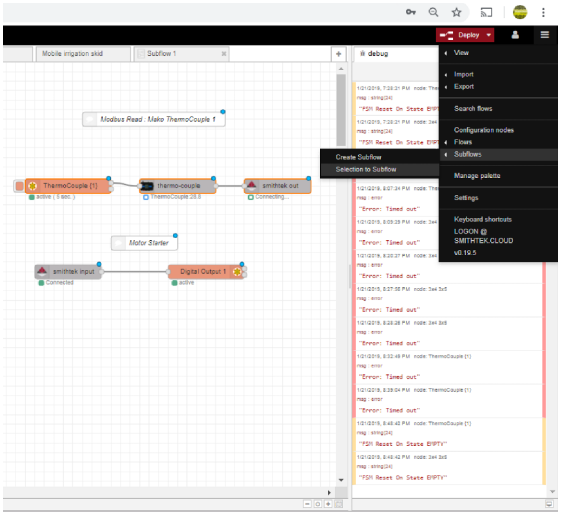
Click '**Subflows -> Create subflow**' option in the menu. This will open a blank subflow that you can now use in the workspace.



CONVERTING NODES TO SUBFLOW

To convert the current selection of nodes to a subflow, Select the '**Subflow -> Selection to Subflow**' option in the menu.

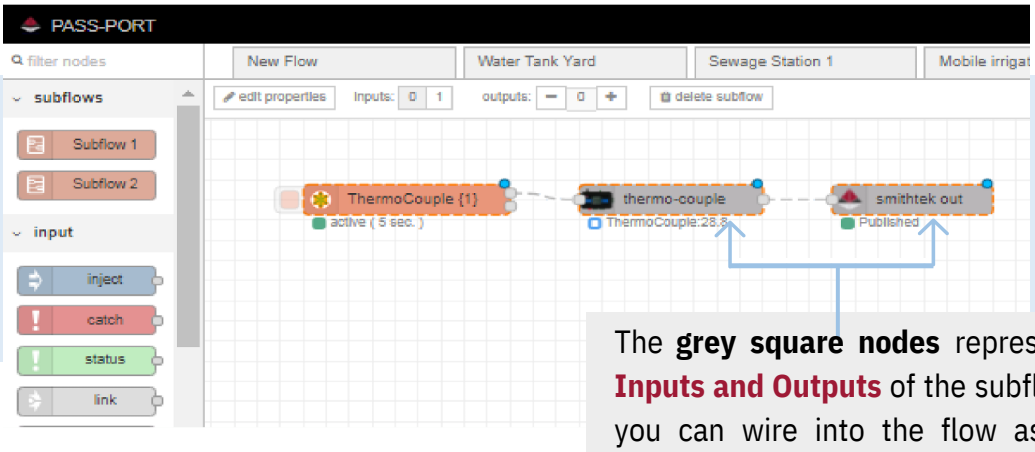
Within the flow, the nodes will be moved to a new subflow and replaced by a subflow instance node.



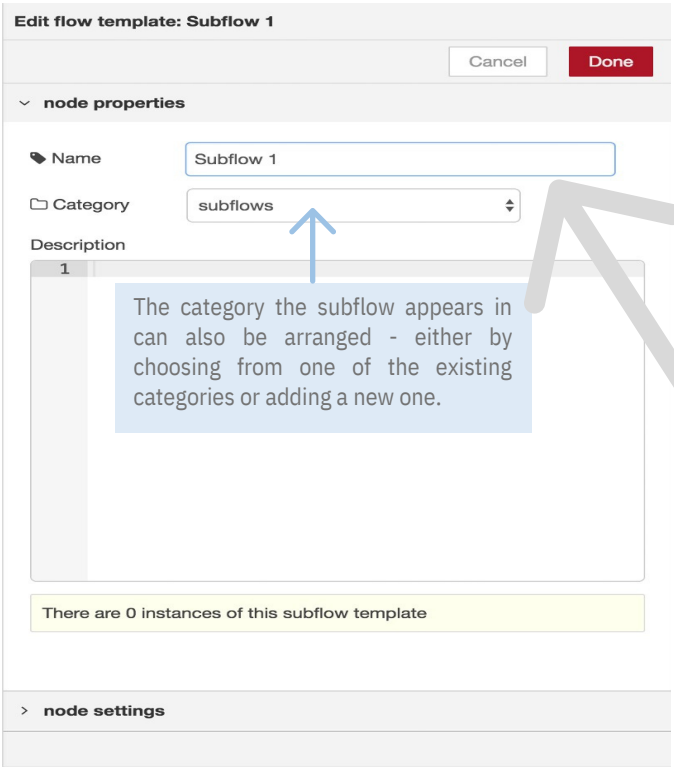
The Subflows

EDITING A SUBFLOW

To open a subflow and edit its contents, you can **double-click** its node in the palette or click the '**Edit flow template**' button of a subflow instance node in the edit dialog. In the new tab, you can see the subflow is now open in the workspace. In addition, subflow tabs can be closed to hide them, unlike regular flow tabs.



The **grey square nodes** represent the **Inputs and Outputs** of the subflow that you can wire into the flow as usual. Whereas, to add and remove these nodes, the toolbar provides options. As with normal flows nodes, there can be one input and as many outputs as needed.



The category the subflow appears in can also be arranged - either by choosing from one of the existing categories or adding a new one.

SUBFLOW PROPERTIES

Click the '**Edit Properties**' button to open the subflow properties dialog. Change the name and description of the subflow through the flow properties dialog.

DELETING A SUBFLOW

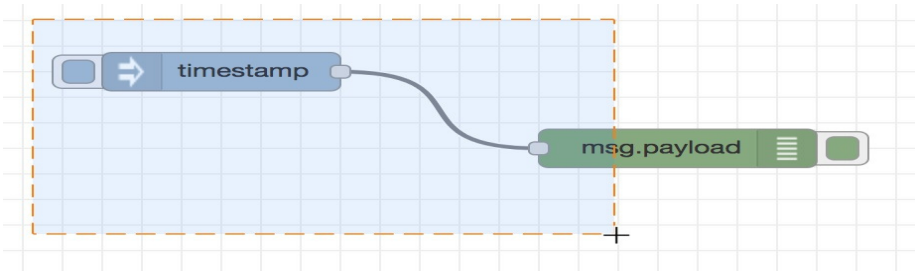
In the subflow toolbar, you can see a '**Delete Subflow**' button. You can use it to remove the subflow and all instances of it.

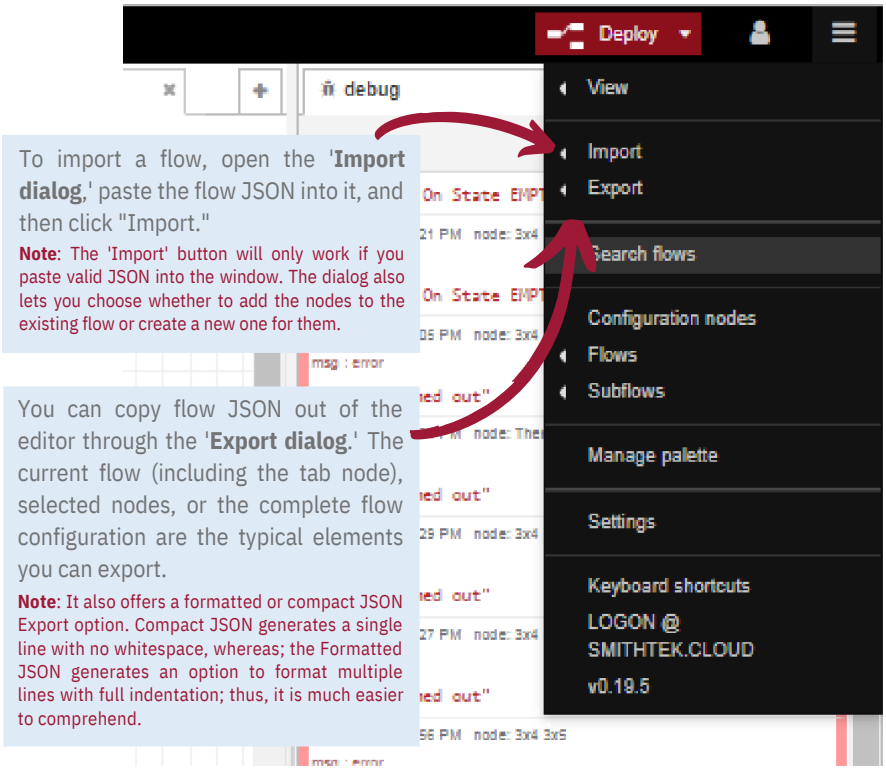
Tools and Commands

SELECTION

Click the node to select it; consequently, it will deselect anything that is currently selected. The Information Sidebar will show you the updated node's properties and help text for its type.

- Hold the **Ctrl or Command Key** when clicking on the node so that you can add to the current selection (or remove it).
- To select the node and all other nodes connected to it, hold the **Shift Key** when clicking on the node.
- Click the wire to select it. Please note that you can only pick one wire at a time.





THE LASSO TOOL

To select multiple nodes, use the lasso tool. To use, click and drag it to the various nodes you want to choose; however, you can't use this tool to select a wire.

SELECTING ALL NODES

Make sure the workspace is focused before using Ctrl/Command-A to select all nodes on the current flow.

IMPORTING AND EXPORTING FLOWS

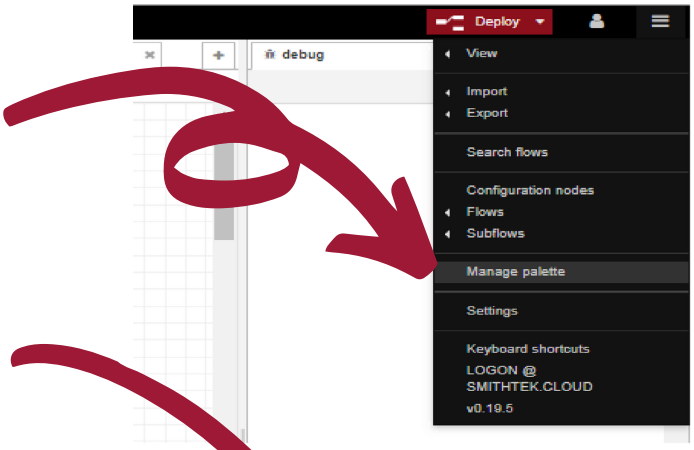
Using the JSON format, you can import and export the flows from the editor, making it convenient to share flows with others.

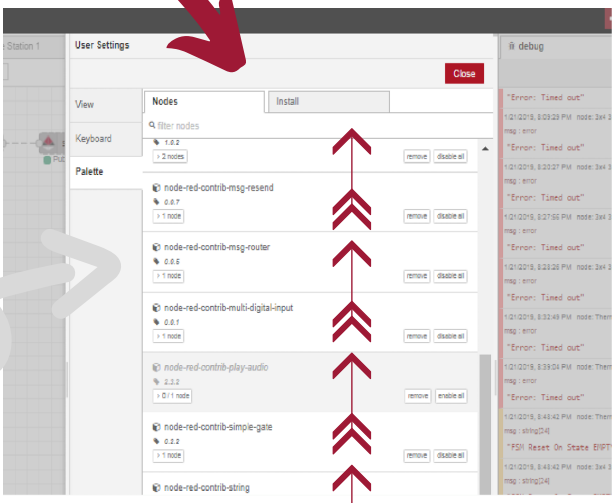
Tools and Commands

PALETTE MANAGER

To install new nodes into the palette, click '**Palette Manager**' under the Palette tab of the User Settings dialog. The Palette Manager has two tabs:

- **Nodes list** - the currently installed modules that are in the runtime;
- **Install list**- the list of modules available to install.





MANAGING NODES

Each entry in the node list shows the name and version of the module and a list of individual node types that the module provides. You will be given the option to uninstall, disable or update each module. If a node is currently in use by a stream, it cannot be removed or disabled.

INSTALLING NODES

Palette Manager -> Install Tab

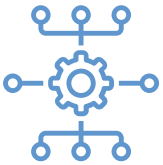
You can use the Install tab to search for and install available modules. To find the module, type the module name in the search bar. The search results show detailed information about the module, including when it was last updated and a link to its documentation. You can install it by clicking the "Install" button.

The Side Bar

The sidebar has the following panel that provides some useful tools in the editor:

Information 

Debug 

Configuration Nodes 

Context Data 

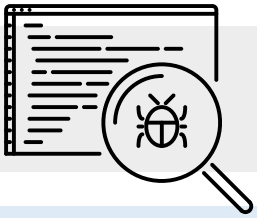
TIPS:

- Some nodes add their sidebars like **node-red-dashboard**.
- A panel is opened by clicking its icon in the sidebar header or selecting a panel from the drop-down list that appears when clicking a button.
- The sidebar can be resized by dragging its edges in the work area. Drag the edge closer to the right edge to hide the sidebar.
- You can show it again by selecting the Show Sidebar option from the View menu or using the **Ctrl / Space key** combination.

The **Information Sidebar** shows more information about the currently selected node, including:

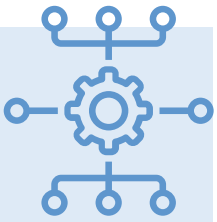
- a summary of its properties
- a user-provided definition of flow
- help text for the node

It displays the demonstration of the current flow if nothing is selected, which can be edited in the '**Flow Properties Edit**' dialog.



The **Debug Sidebar** displays messages passed to Debug nodes within the flow, as well as certain log messages from the runtime.

The **Configuration Nodes Sidebar** provides the all-organized list of config nodes and their scope. Each node displays its type and label and how many regular flow nodes currently use that config node. It will show a dotted line if the config node is unused; click the 'unused' filter in the header if you want to view the unuse nodes. Double-click on the node to show the config node edit dialog.



The **Context Data Sidebar** displays the contents of the context data store. The panel has three sections: **node, flow, and global** for each context scope. To load the context contents, you must click the 'refresh' button.

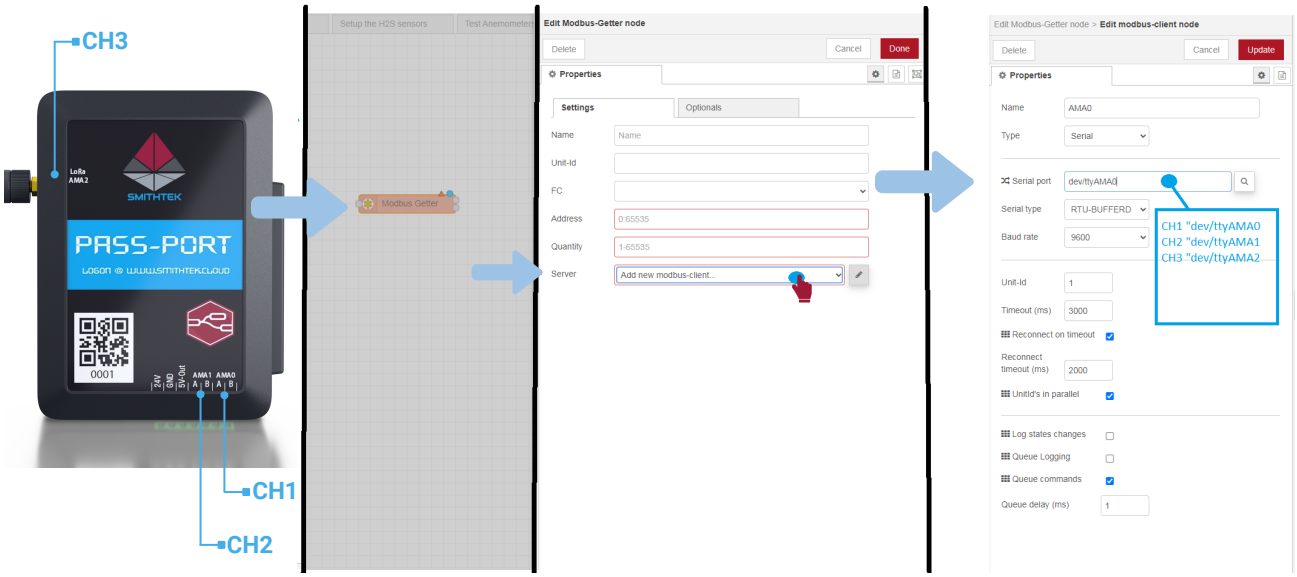
Pass-Port Connection Guides

How to connect Pass-Port RS485 interface to NodeRed

Setup Guide

1. In the NodeRed, drag-and-drop the **Modbus Getter** node to the Pass-Port flow editor.
2. Configure the Modbus' settings so that the serial port should match the physical connections on the device. For example:

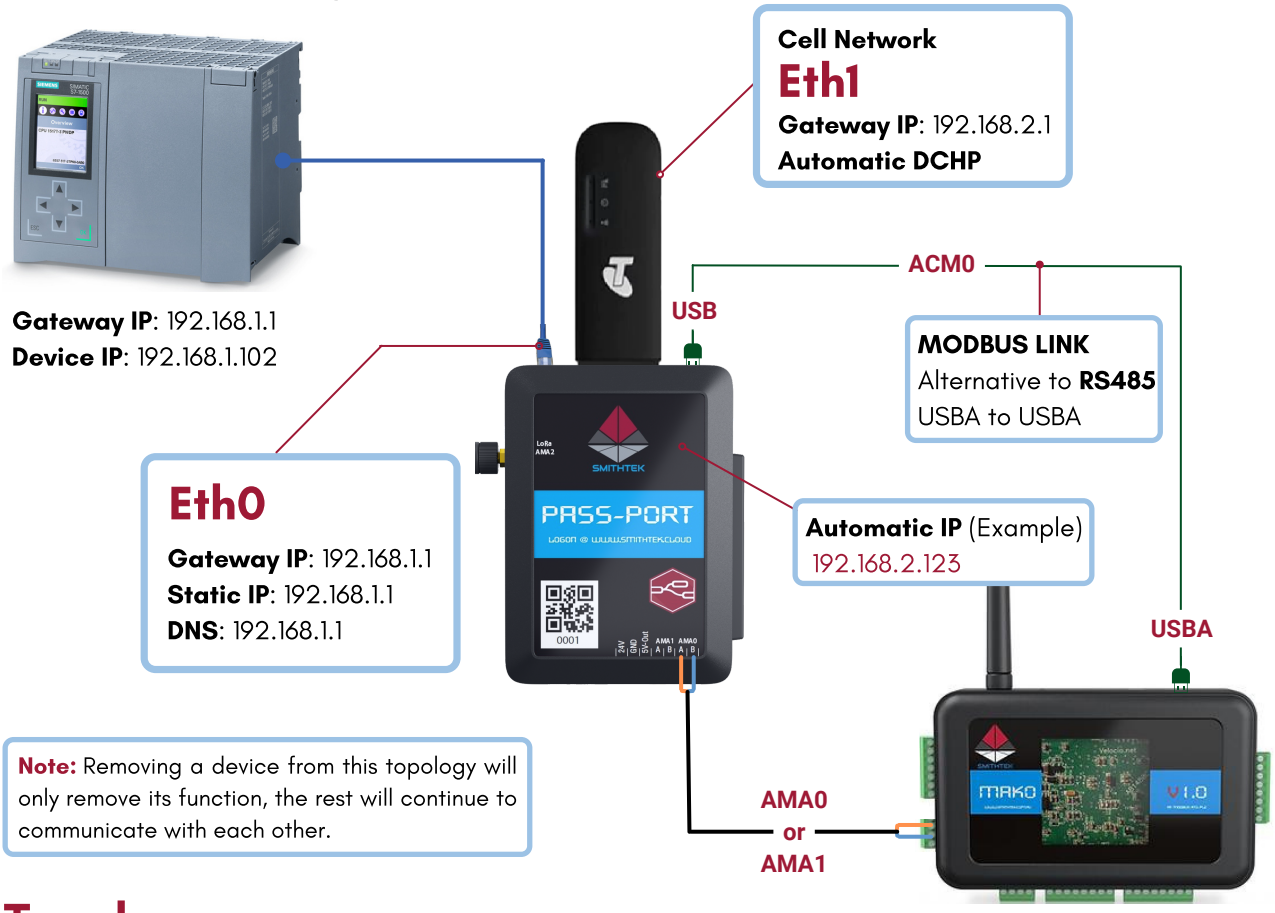
- To read the Modbus channel 1, type in **dev/ttyAMA0**
- To read the LoRa antenna you will use **dev/ttyAMA2**



Pass-Port Connection Guides

CONFIGURATION 1

PLC - Modbus Slave



Topology

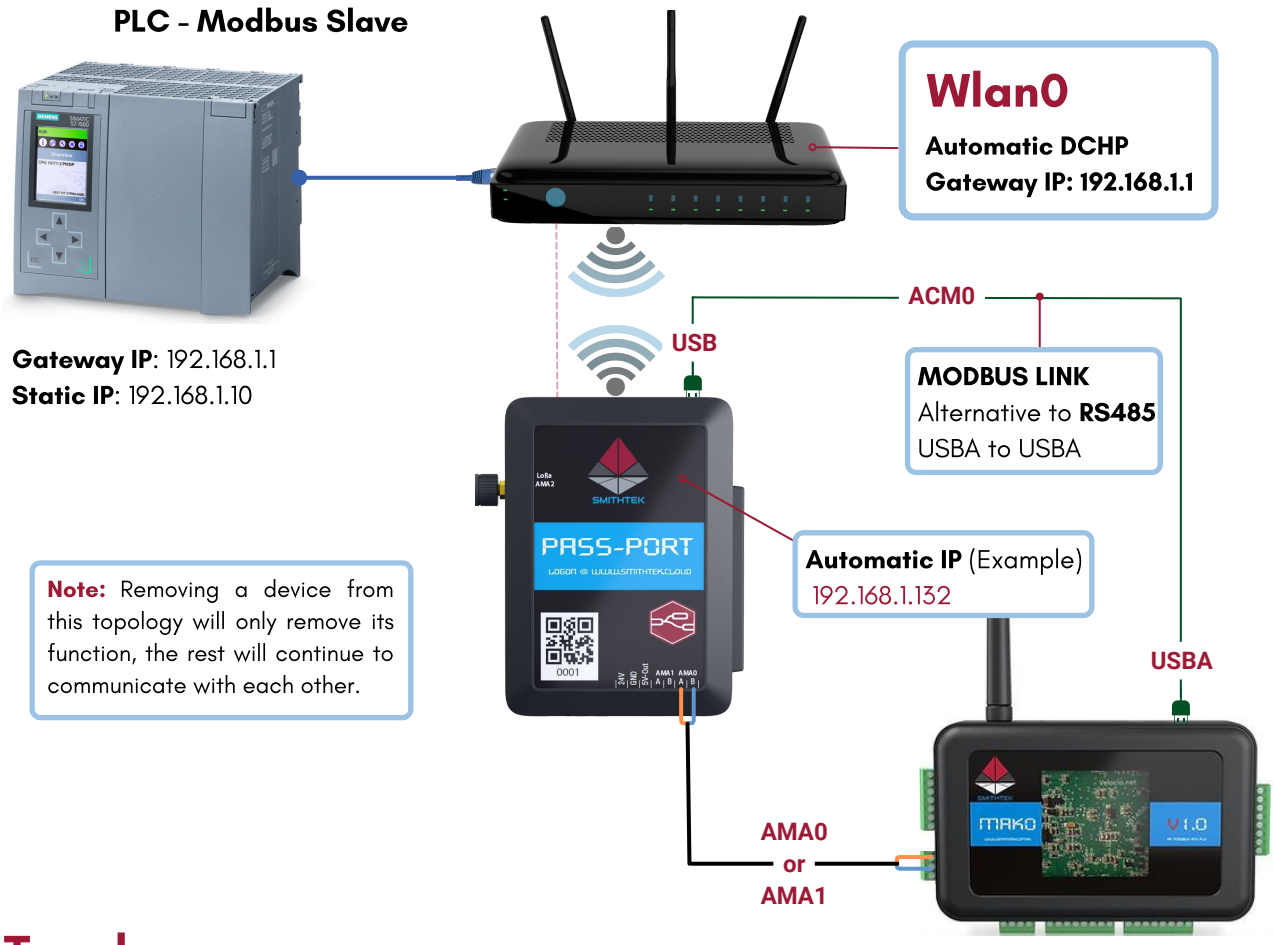
1. The Pass-Port connects to the internet using the **USB Cell Dongle**. This is the WAN Gateway. The local network settings in the dongle are **192.168.2.1**. IT serves IP's between **192.168.2.100 - 192.168.2.250**.
2. The **Pass-Port Eth0** is configured so it acts as a gateway with an IP of **192.168.1.1**.
3. The **PLC** is configured to connect to a network with a gateway 192.168.1.1. The PLC has a static IP configured at **192.168.1.102 port 11502**.

The Mako can connect in Two ways.

1. Hardwired twisted pair RS485; choose between AMA0 or AMA1.
2. It can directly link using a USBA to USBA on any USB port on the Pass-Port. Alternatively, you can use RS485 method on any Modbus Slave device.

Pass-Port Connection Guides

CONFIGURATION 2



Topology

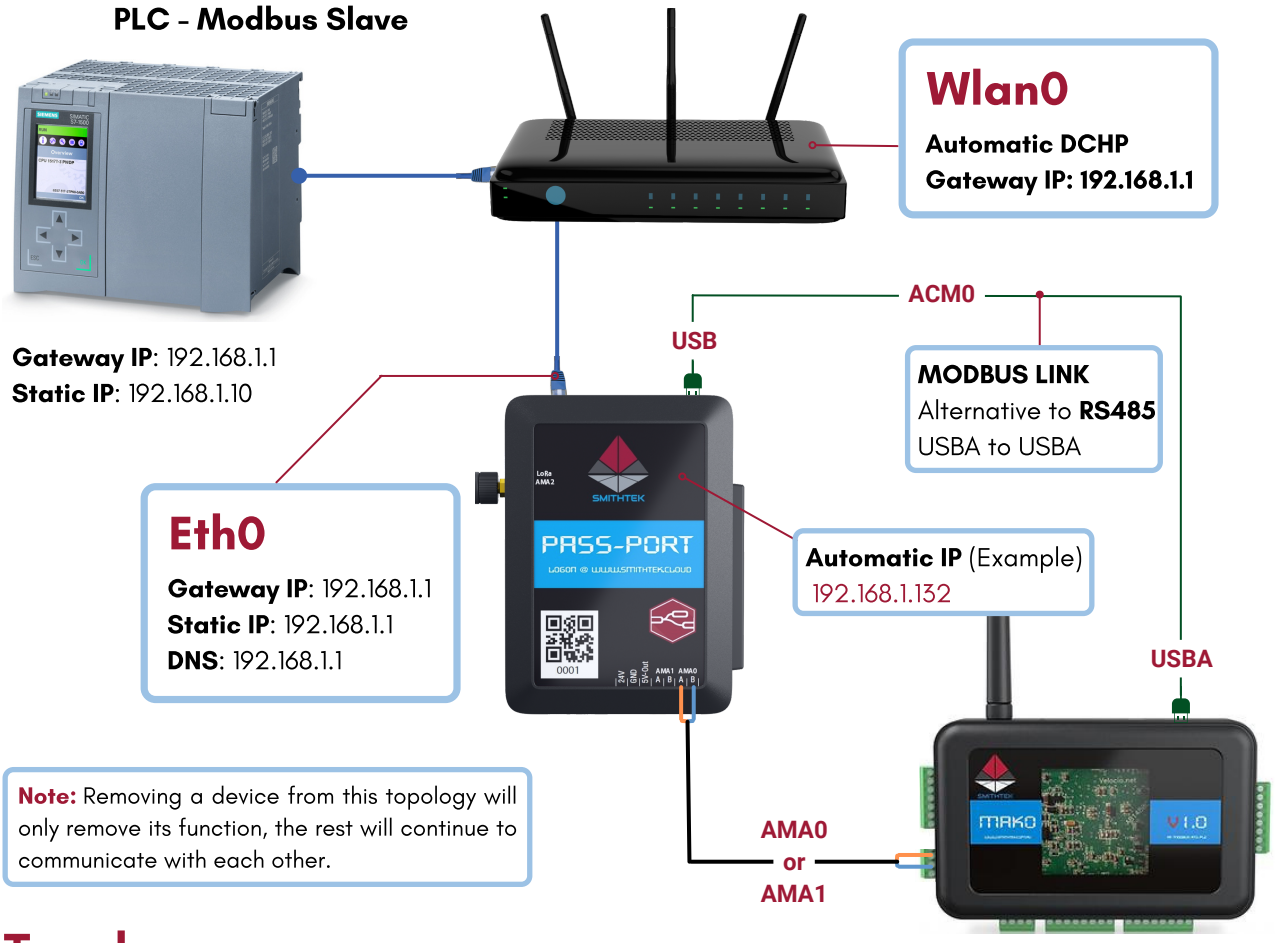
1. The Pass-Port connects to the **WIFI Router** via **WIFI**. The Router is set to **DCHP** mode. The WIFI address is automatic. The Pass-Port is set to WIFI Gateway in the Pass-Port Configuration Page.
2. The **PLC** is connected to the **WIFI Router** via **Ethernet**. The PLC has Static IP **192.168.1.10** port 11502.
3. In Node-Red, the TCP Modbus nodes will be configured using the Mako.

The Mako can connect in Two ways.

1. Hardwired twisted pair RS485; choose between AMA0 or AMA1.
2. It can directly link using a USBA to USBA on any USB port on the Pass-Port. Alternatively, you can use RS485 method on any Modbus Slave device.

Pass-Port Connection Guides

CONFIGURATION 3



Topology

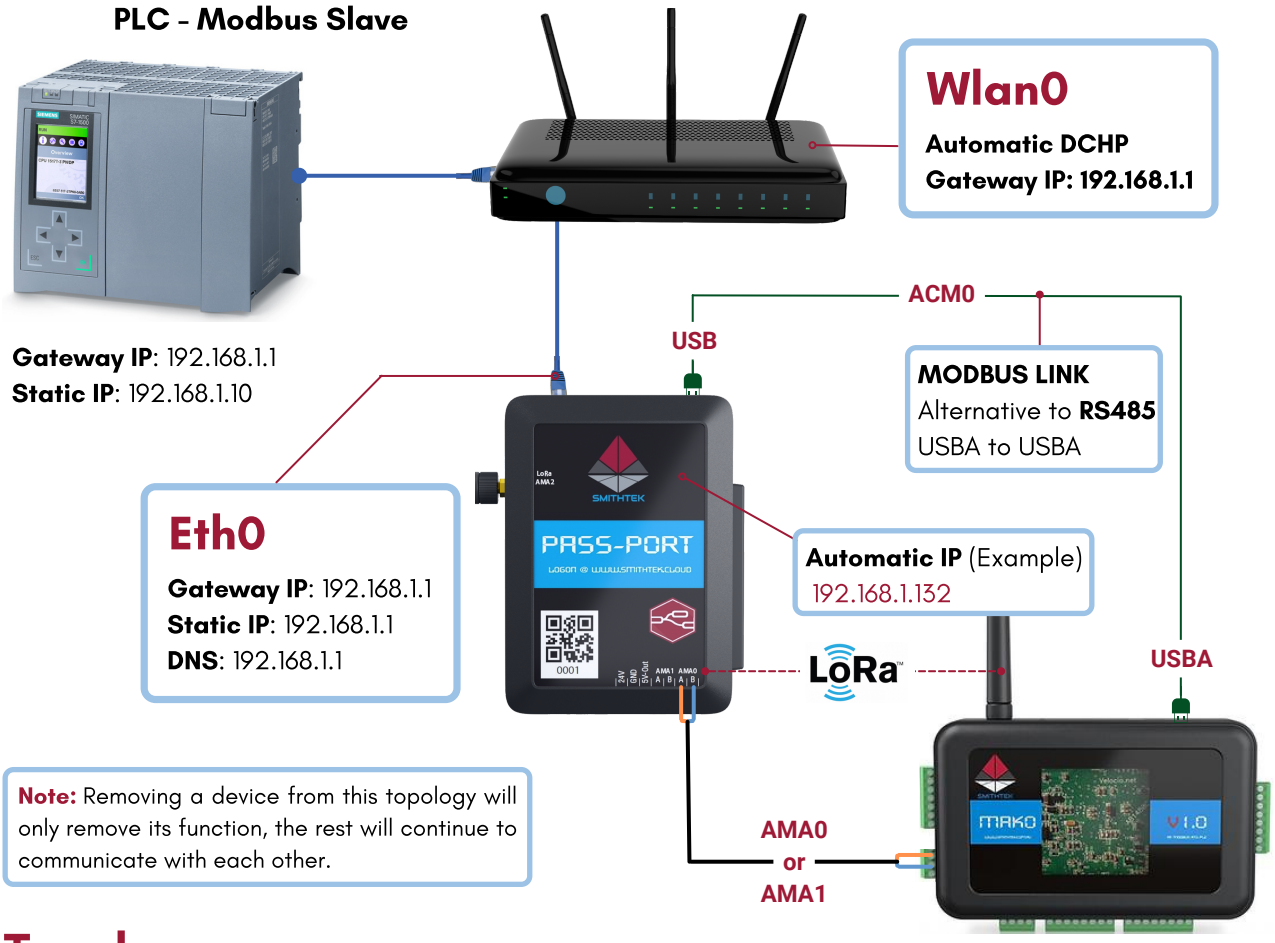
1. The Pass-Port connects to the **WIFI Router** via **LAN**. The Router is set to **DCHP** mode. The LAN address is automatic. The Pass-Port is set to LAN Gateway in the Pass-Port Configuration Page.
2. The **PLC** is connected to the **WIFI Router** via **Ethernet**. The PLC has Static IP **192.168.1.10** port 11502.
3. In Node-Red, the TCP Modbus nodes will be configured using the Mako.

The Mako can connect in Two ways.

1. Hardwired twisted pair RS485; choose between AMA0 or AMA1.
2. It can directly link using a USBA to USBA on any USB port on the Pass-Port. Alternatively, you can use RS485 method on any Modbus Slave device.

Pass-Port Connection Guides

CONFIGURATION 4



Topology

1. The Pass-Port connects to the **WIFI Router** via **LAN**. The Router is set to **DCHP** mode. The LAN address is automatic. The Pass-Port is set to LAN Gateway in the Pass-Port Configuration Page.
2. The **PLC** is connected to the **WIFI Router** via **Ethernet**. The PLC has Static IP **192.168.1.10** port 11502.
3. In Node-Red, the TCP Modbus nodes will be configured using the Mako.

The Mako can connect in Two ways.

1. Hardwired twisted pair RS485; choose between AMA0 or AMA1.
2. It can directly link using a USBA to USBA on any USB port on the Pass-Port. Alternatively, you can use RS485 method on any Modbus Slave device.
3. Or AMA0 can communicate through the LoRa Antenna.

Pass-Port Manual Versions

Version Number	Date	By
1.6	May 10, 2022	Juniela Bautista

OUR MISSION

"Simplifying telemetry, enabling real-time data monitoring and control"

With simplicity in mind, we specialise in delivering IoT solutions tailored to your requirements. SCADA, Telemetry, PLC's, Data loggers. Along with many other services we offer, Smithtek creates customised hardware devices that challenge any industry.

Made in Australia

CONTACT US

Based in Western Australia

(08) 6118 9176

info@smithtek.com.au

www.smithtek.com.au

CONNECT WITH US

LinkedIn