

# Managed Machine Network

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Integration with  
TeSys Island



**MMN**  
MANAGED MACHINE NETWORK

## Preface

In this document we will be talking about what Managed Machine Network implies, the Schneider Electric's TeSys island Digital Load Management System and the Node-RED integration of this system followed by a conclusion.

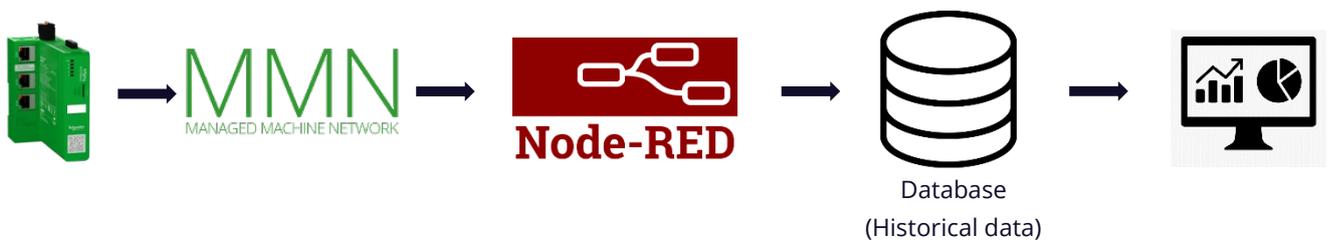


# Managed Machine Network

## What is Managed Machine Network (MMN)?

Managed Machine Network (MMN) is a network of sites with connected machines through Virtual Private Networks (VPN). This network makes it easy to collect and manage data at a distance. You don't need intricate IT knowledge to install or configure a modem. The modem is automatically provisioned and secured from the Cloud and doesn't have a configuration interface. The only thing you have to do is connect the modem to power and internet.

MMN provides simple and efficient solutions for control without the need of a programmable logic controller. MMN enables you to store and show historical data of any device connected.



# MANAGED MACHINE NETWORK

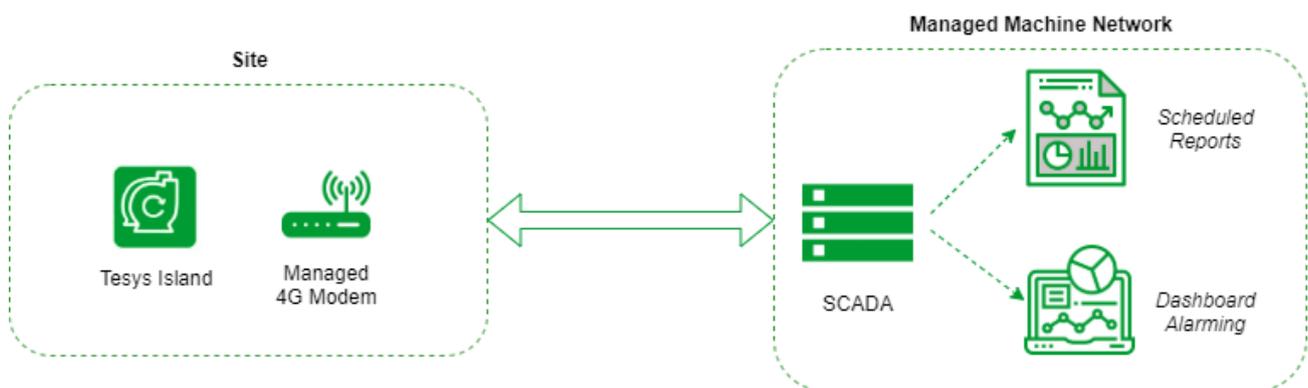
## How is Managed Machine Network included in TeSys?

The Managed Machine Network is able to securely connect with every SCADA solution available. There are many solutions where data can be gathered to start with preventive maintenance. This could be a local SCADA installation as well as a Hosted SCADA solution. We can set up a Hosted SCADA environment which has access to the Managed Machine Network.

The Managed Machine Network is always active and available for Scada and IoT solutions to gather and send data via Modbus, OPC/UA, Profinet, Json, MQTT and various other protocols.

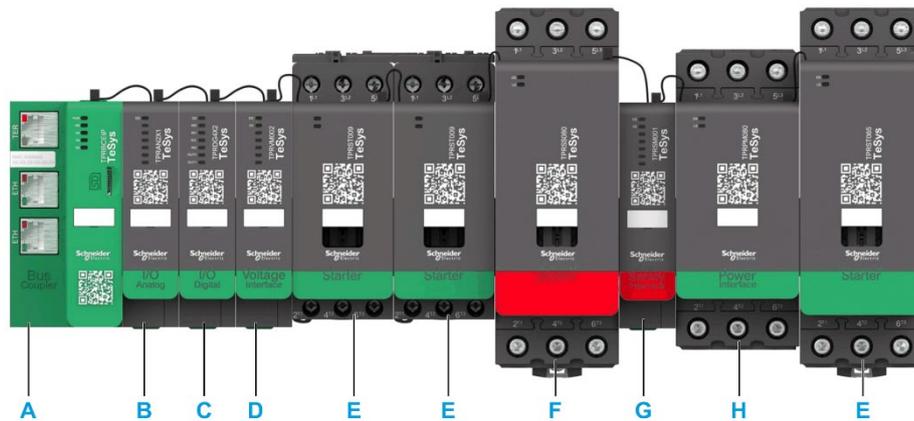
Because MMN has access to all devices at once, a central configuration solution is possible. This means that you don't have to travel to locations where these devices are located.

In conclusion the TeSys Island requires a stable and secure internet connection in order for you to connect to a Node-RED server using the Modbus communication protocol. Managed Machine Network provides this stable and secure internet connection.



## Island Concept

TeSys island is an innovative digital load management solution, providing data for higher machine efficiency and ease of servicing, and allowing faster time to market. The entire TeSys island acts as a node in a fieldbus network. The bus coupler is the core module that provides internal communication with the TeSys island modules via ribbon cables and external communication via Ethernet/IP or Modbus TCP.

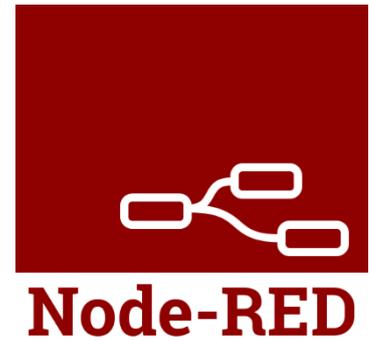


TeSys island is a modular, multifunctional system providing integrated functions inside an automation architecture, primarily for the direct control and management of low-voltage loads. After commissioning, TeSys island can switch, help protect, and manage motors and other electrical loads up to 37 kW installed in an electrical control panel.

Overview of the TeSys island Concept:

- A. Bus coupler
- B. Analog input / output module
- C. Digital input / output module
- D. Voltage interface module
- E. Standard starter
- F. SIL (Safety Integrity Level) starter
- G. SIL interface module
- H. Power interface module

# Node-RED integration



## What is Node-RED?

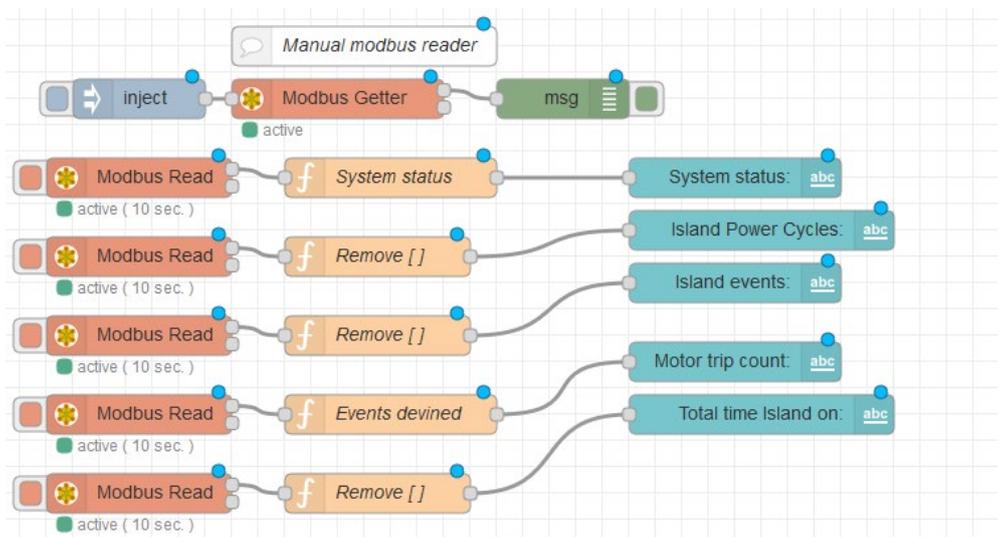
Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.

It provides a browser-based editor that makes it easy to wire together flows using the wide range of nodes in the palette that can be deployed to its runtime in a single-click.

## Configure Modbus connection

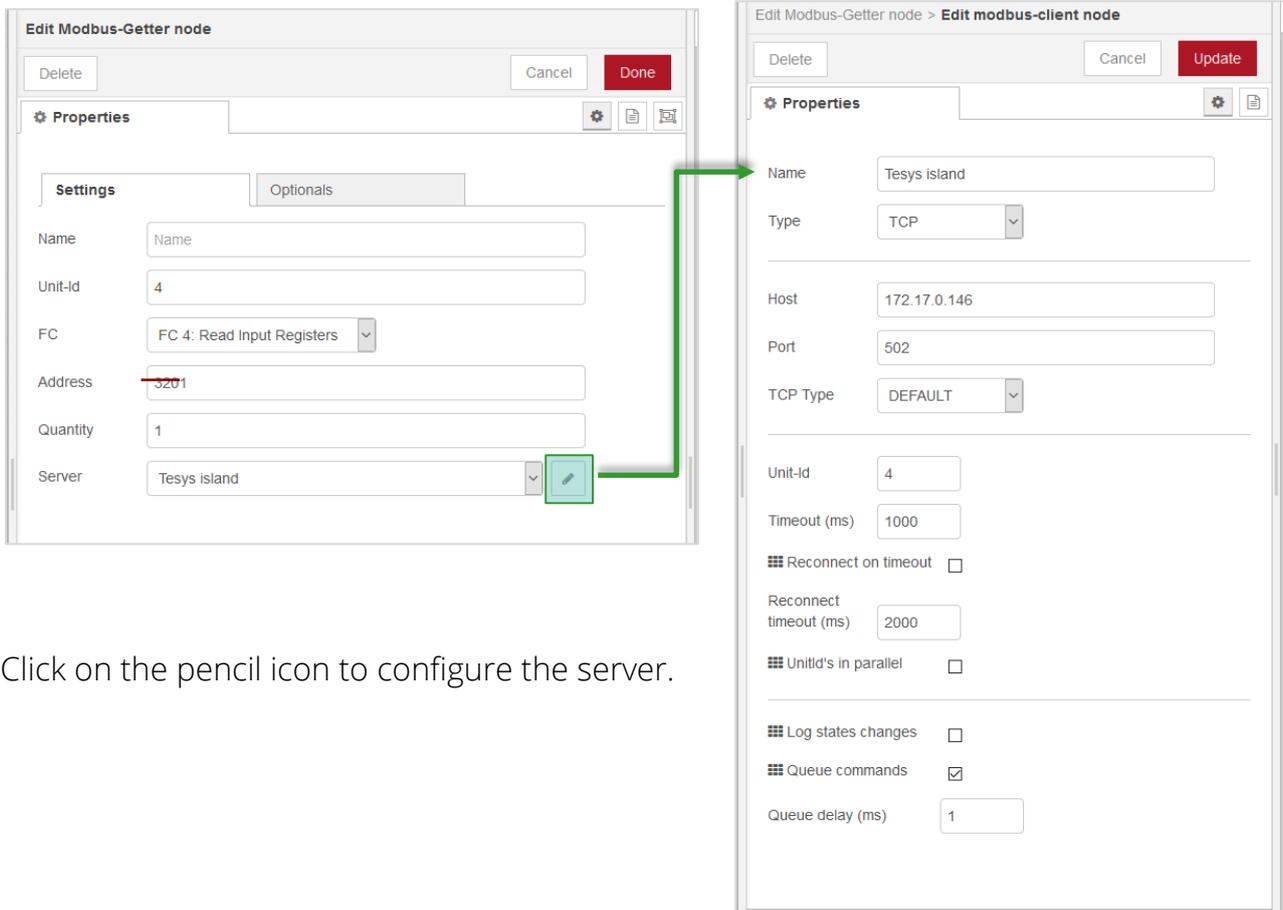
Once the TeSys island Modbus connection is properly configured using Machine Expert, a couple of steps are needed to configure a connection with the TeSys island in Node-RED. The “node-red-contrib-modbus” palette is needed in order for you to use the Modbus communication protocol in Node-RED.

An example of a TeSys Modbus reader flow:



# MANAGED MACHINE NETWORK

The Modbus-getter node and server configuration shown below:



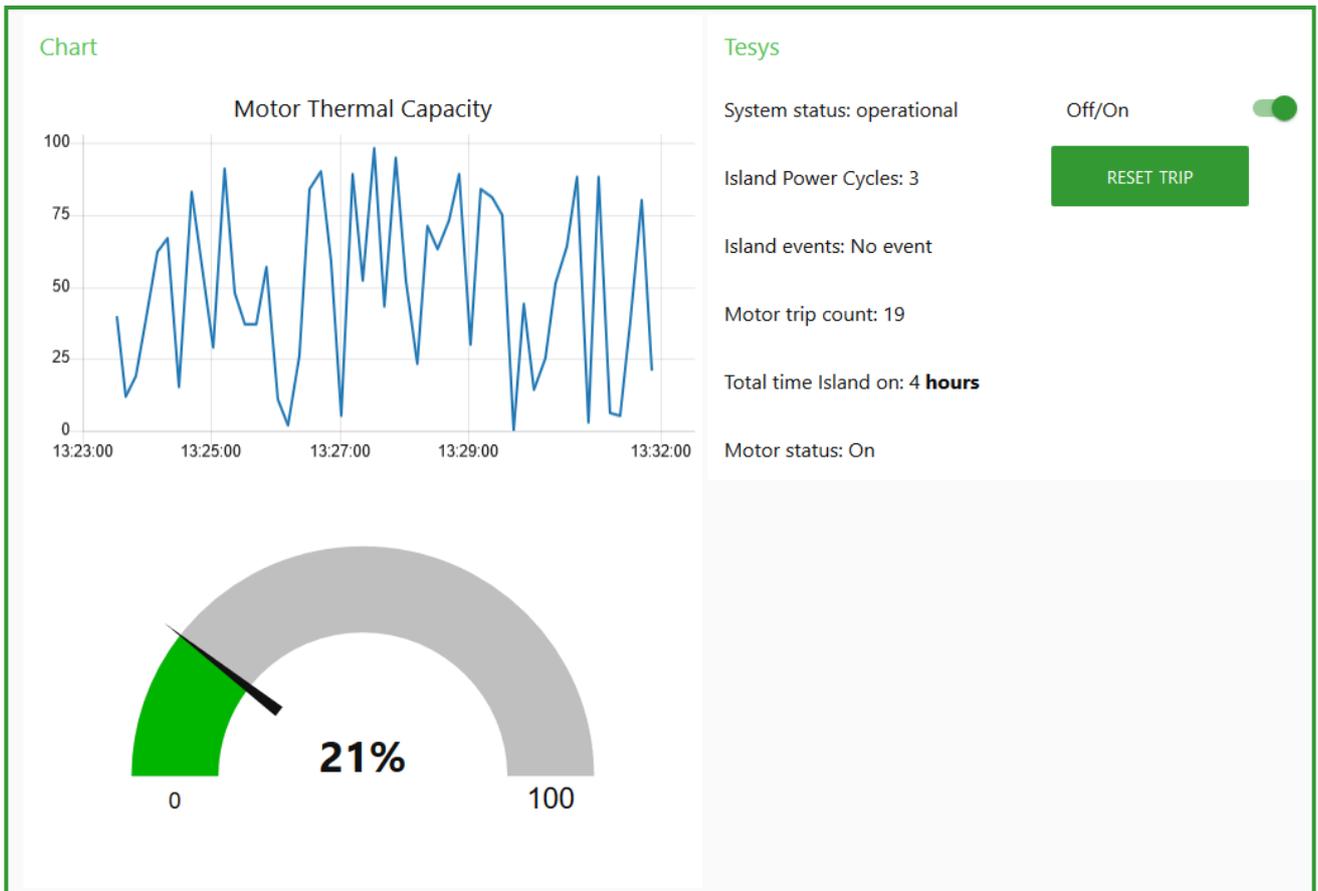
Click on the pencil icon to configure the server.

The TeSys Island Modbus addresses are documented [here](#)

For example, Modbus address **3201** as shown in the above image, means “System Operational” with values 0, 1 or 3 meaning Tripped, On or Off.

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An example of a Node-RED dashboard made for TeSys would look like this. This is possible with the use of the Modbus Protocol and a dashboard palette. Both are installed via the webinterface of Node-RED.



## Conclusion

A major complication with collecting data is to securely transfer this data over the internet. MMN uses a secure routed VPN to every connected machine.

TeSys Island web-interface enables you to get active status information. However, there is no historic data and no advanced alarming capabilities. Modbus TCP can be routed over a network but is not encrypted. MMN in combination with Node-Red fill's these gaps.

We have successfully connected the TeSys Island and started gathering information via Modbus TCP over the secure VPN connection. Node-Red acts as the aggregator and is able to connect to multiple TeSys Islands at the same time to gather data and monitor system performance. This data can be sent to any SCADA dashboard easily. Advanced Alarming is possible in Node-Red and any SCADA solution.

### Sources

Managed Machine Network	<a href="https://machinenetwork.io/">https://machinenetwork.io/</a>
Schneider Electric	<a href="https://www.se.com/us/en/">https://www.se.com/us/en/</a>
TeSys Island Product Sheet	<a href="https://www.se.com/us/en/work/products/product-launch/tesys/tesys-island/">https://www.se.com/us/en/work/products/product-launch/tesys/tesys-island/</a>
TeSys Island user Guide	<a href="https://download.schneider-electric.com/files?p_enDocType=User+guide&amp;p_File_Name=8536IB1905EN.pdf&amp;p_Doc_Ref=8536IB1905EN">https://download.schneider-electric.com/files?p_enDocType=User+guide&amp;p_File_Name=8536IB1905EN.pdf&amp;p_Doc_Ref=8536IB1905EN</a>
Node-Red Website	<a href="https://nodered.org/">https://nodered.org/</a>