

The main gateway connects to the slave gateway via a pigtail



Overview

Modbus Gateway Implementation This chapter will guide you through the principles and practical aspects of implementing a Modbus gateway that allows Modbus.

Key Takeaways

A pigtail connection between a main gateway and a slave gateway typically uses a short RS-485 or serial cable to enable master-slave communication, allowing the main gateway to control or exchange data with the slave gateway.

Physical Connection

In industrial networks, a pigtail is a short cable that connects two devices, often used to bridge a main gateway (master) to a slave gateway or device. This connection usually involves twisted-pair RS-485 wiring, where the two lines (A and B) carry differential signals. Differential signaling ensures high noise immunity, stable communication in harsh environments, and reduced errors from ground potential differences, which is critical for reliable master-slave communication.

Role of the Gateways
Main Gateway (Master): Initiates communication, sends requests, and manages data flow to one or more slave gateways or devices. It may also handle protocol translation if connecting different network types, such as Modbus TCP/IP to Modbus RTU.
Slave Gateway: Responds to requests from the main gateway and may interface with additional slave devices.

It acts as a bridge to extend the network or integrate devices that use different protocols.

Communication Mechanics

The pigtail allows the main gateway to transmit Modbus RTU frames to the slave gateway. The slave interprets these frames and responds accordingly. If the slave gateway connects to other devices, it can forward requests or aggregate data, effectively acting as a secondary bridge.

The main gateway uses addressing logic to ensure that messages reach the correct slave device on the network.

Practical Considerations

Cable Type: Use twisted-pair cables with a characteristic impedance of ~120 ohms for RS-485 networks. **Termination:** Proper termination resistors at both ends of the RS-485 bus reduce signal reflections. **Length:** Pigtails are typically short to minimize signal degradation, but RS-485 supports long-distance communication if needed.

Protocol Translation: If the main gateway is on TCP/IP and the slave gateway is on serial RTU, the gateway handles conversion transparently. In summary, the pigtail provides a reliable physical link for master-slave communication, enabling the main gateway to control, monitor, or exchange data with the slave gateway while maintaining signal integrity and protocol compatibility.

Article Content

Modbus Gateway Implementation

This chapter will guide you through the principles and practical aspects of implementing a Modbus gateway that allows Modbus TCP/IP clients to access data from Modbus RTU slave devices

RS485 Modbus Master-Slave Communication Technical Guide

Learn RS485 Modbus master-slave communication, protocol flow, addressing, timing, and best practices for reliable Modbus gateway integration.

Data transfer from Modbus TCP to Modbus RTU Gateway

Summary
Configuring The Router TCP and RTU Application Setup
Testing The Configuration
A functionality that allows to forward data from Modbus TCP to Modbus RTU is called Modbus gateway. This configuration example will be based on RUT955. Modbus RTU means that the Modbus protocol is used on top of a serial RS232 or RS485 interface connection, meanwhile Modbus TCP is used over the network. In this configuration example we will show yo...
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and Schneider PLC Modbus TCP Connection Operating Manual

2.2 Schneider TM241 Hardware Connections This section details how to use the SoMachine program to connect TM241 and I. Modbus TCP connects with the gateway via the Ethernet cable going through

9 rules for correct cabling of the Modbus RS485 communication

A Modbus RS485 connects a Master device to one or more Slave devices. Henceforth, we shall consider Slave devices to be measuring instruments with serial communication, even if the

Introduction to Modbus Gateways

MB3000 gateways have been designed so that even with multiple masters across different Modbus networks, communication remains compliant with each Modbus protocol

DGW Fieldbus Gateway for Robot Control | DAINCUBE

DGW is a fieldbus gateway that connects robot motion controllers with main PLCs via CC-Link and Ethernet/IP.

Data Sheet Template

The ProLinx Modbus TCP/IP to Modbus Master/Slave Gateway creates a powerful connection between devices on a Modbus TCP/IP network and Modbus serial devices. This stand-alone DIN-rail mounted

A Complete Guide to Modbus Slave Principle

The main characteristics of the master-slave principle are as follows: Only one master is connected to the network at a time: In the master-slave principle, only one Modbus TCP master is

Difference between master and slave devices in communication network

I am a rookie in network engineering and what I don't understand is the master-slave communication. According to Wikipedia, "Master/slave is a model of asymmetric communication or

Gateway RevPi Gate Ethernet/IP Slave

Gateway Ethernet/IP - AdapterModul The RevPi Gate EtherNet/IP integrates the Revolution Pi system into an existing EtherNet/IP network. The EtherNet/IP gateway is connected to the respective base

Network bridge

For some reason, the bridge slave connection (it is not listed in network applet) is not activated, even when the auto connect checkbox is enabled. The workaround is to activate it

IoT Gateway Guide: What Is It, Key Features & Use Cases

Understanding IoT Gateways An Internet of Things gateway is a hardware or software solution, usually both, that connects various IoT devices to the cloud and each other. It acts as a

What Is a Pigtail Connector? Types and Applications | CZT

What Is a Pigtail Connector? Types and Applications Learn what a pigtail connector is, explore electrical and fiber optic pigtail types, pigtailing outlets, pigtail splicing techniques, and how to

Matrix to Matrix bridge for connect to slave accounts from master via ...

So I can talk via my main private account mylogin@jabber with people of all companies together, and they see me as corporate account (mylogin@companyname instead of

and Schneider PLC Modbus TCP Connection Operating Manual

IX. Gateway Module Operational Modes Note: Set Group 1 as Slave and set the gateway to use the first set of RS485 port to connect to the main controller (GFMS-RM01N)

What Is a Pigtail Connector: Types, Uses & Guide

Learn what a pigtail connector is, its types, uses, and benefits. Explore industries, installation tips, and how to choose the right solution.

1747-UM076E-EN-E SLC 500 EtherNet/IP Adapter User Manual

As a gateway between the SLC backplane and EtherNet/IP, the 1747-AENTR module serves as a CIP server (for both Explicit Messaging and I/O) on the Ethernet port, and an SLC host on the 1746

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

