

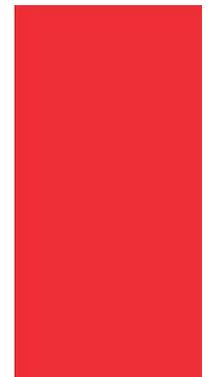
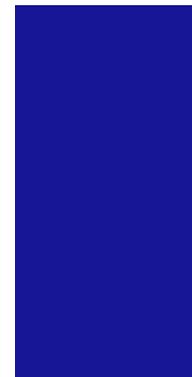
# The Modbus RTU Protocol

IIOT Group 4

# The Team

# BRIEUC PESNEL

- Age: 21 Years
- Engineering school in Computer Science at Telecom Saint-Etienne
- Specialization: Computer Engineering
- Hobbies
  - Sport
  - Bridge
- Technical strengths:
  - Programming in python / java / javascript
  - Network and information system
  - Linux distribution
  - Project management
- Future internship in Naval Group (project management in information system)



# DEVRAJ AJAYKUMAR SOLANKI

- CCCE- Control Engineering.
- I am from Surat, Gujarat , India.
- I am 21 year old.
- I have completed Diploma and BE in Electrical engineering.
  
- Project : Smart leakage current indication & protection system
  
- Hobbies : Gym, Trekking, Sport, Travelling



# MARY SUTHARSHINI THEVATHAS

- Country : Sri Lanka
- Bachelor in Electrical Power generation Engineering
- Completed training in Hydro powerplants.
- Current study : CCCE, Communication Engineering
- Hobbies : Travelling, Music

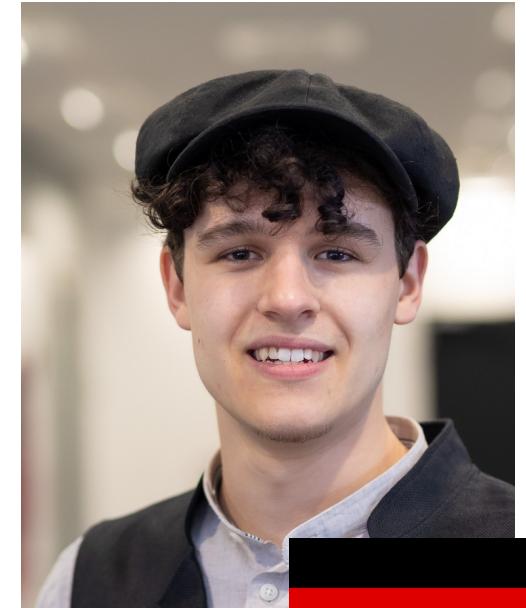
# AXIT KAKADIYA

- Age: 24 Years.
- I am from India. I live in Dhoraji which is a city in Gujarat state.
- Bachelor of Engineering – Instrumentation and Control Engineering
- Bachelor Project – Automatic Chemical Mixing and Filling using PLC
- Hobbies – Sports (Cricket, Football, and badminton), Reading books and Cooking



# ROBIN DIETZEL

- Age: 23 Years
- Bachelor in Computer Science
- Specialization: Computer Engineering
- Hobbies
  - PV offgrid system, Smart-Home
  - Server administration
  - Home brewing
- Technical strengths:
  - Programming in C++/C
  - Git
  - Network and server administration
  - Linux
- Employee at ZES ZIMMER Electronic Systems GmbH



# RS485

## Introduction to RS485

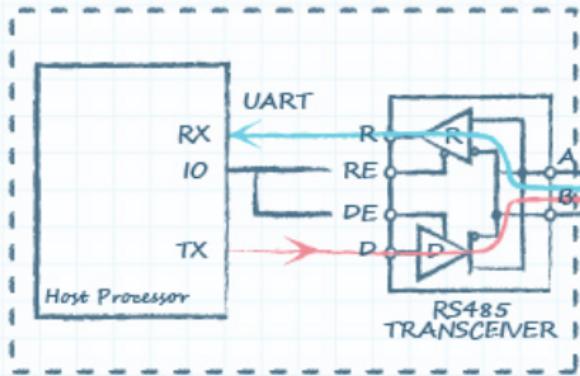
- A Brief Overview of RS-485 Communication Protocol
- It was created for improvement of RS-232
- It was created by the Telecommunications Industry Association and Electronic Industries Alliance (TIA/EIA)
- It is also referred as RS-485, TIA/EIA-485, TIA - 485
- It works as a Master slave module protocol

## Advantage of RS-485

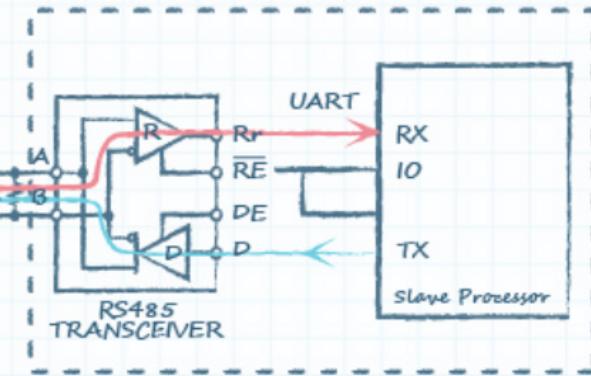
- Allows reliable serial communication on a 2-wire network
- Distance up to 1200m
- Data rate up to 10Mbps
- Up to 32-line device
- Allow good communication in Noisy Environment
- Worked in Half duplex mode but can work Full duplex mode also(with 4 Pin)

# Communication Diagram

Host

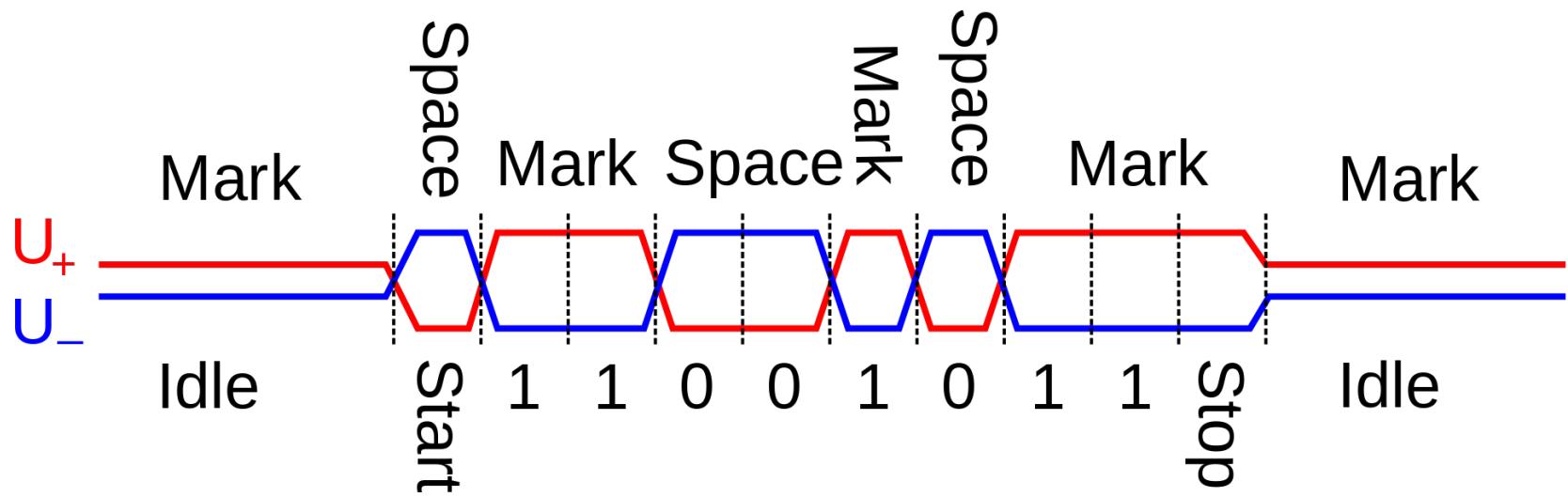


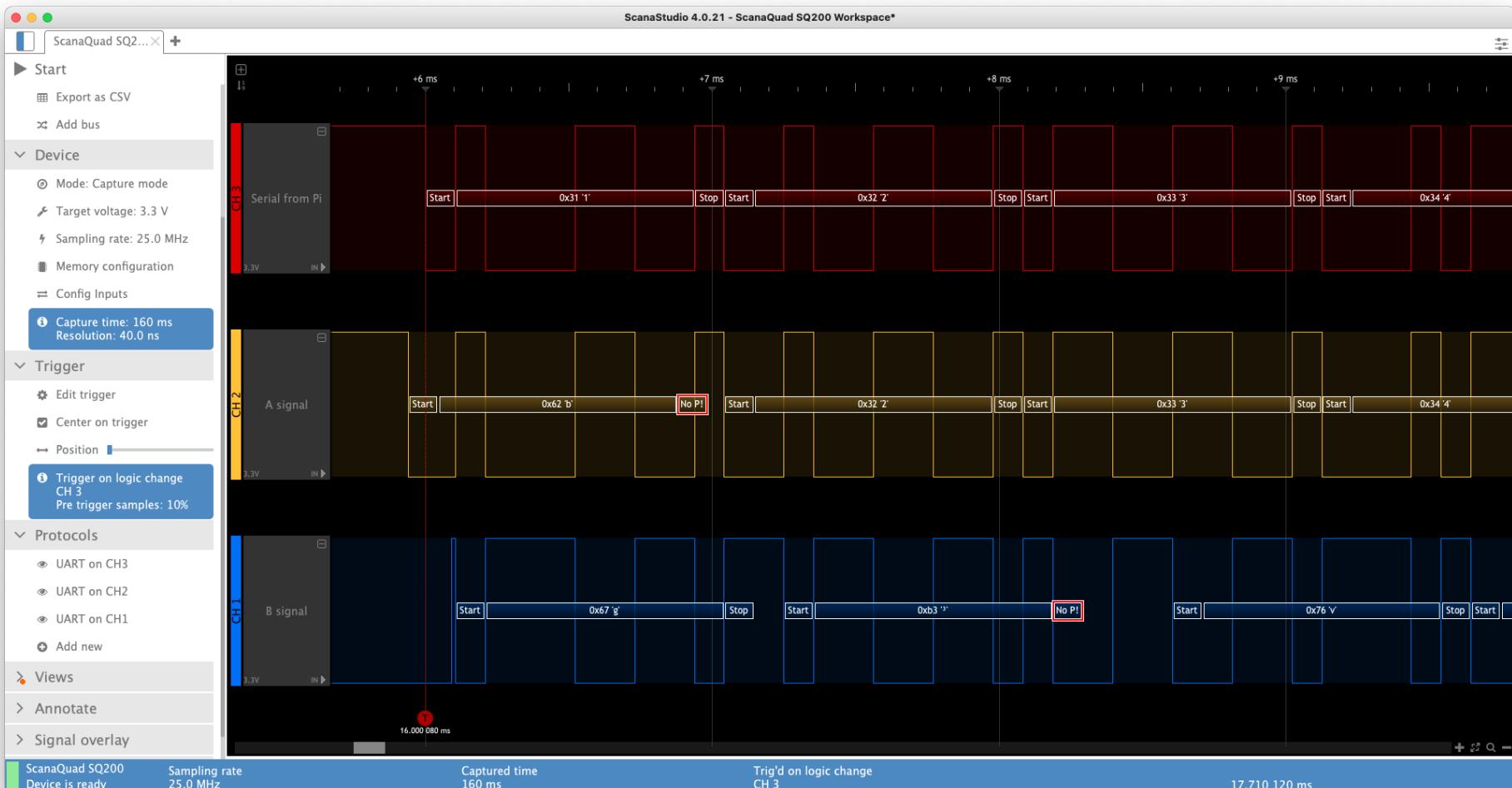
Slave



USB to RS485 Converter in the R414A01 Module

## Signal Transmission



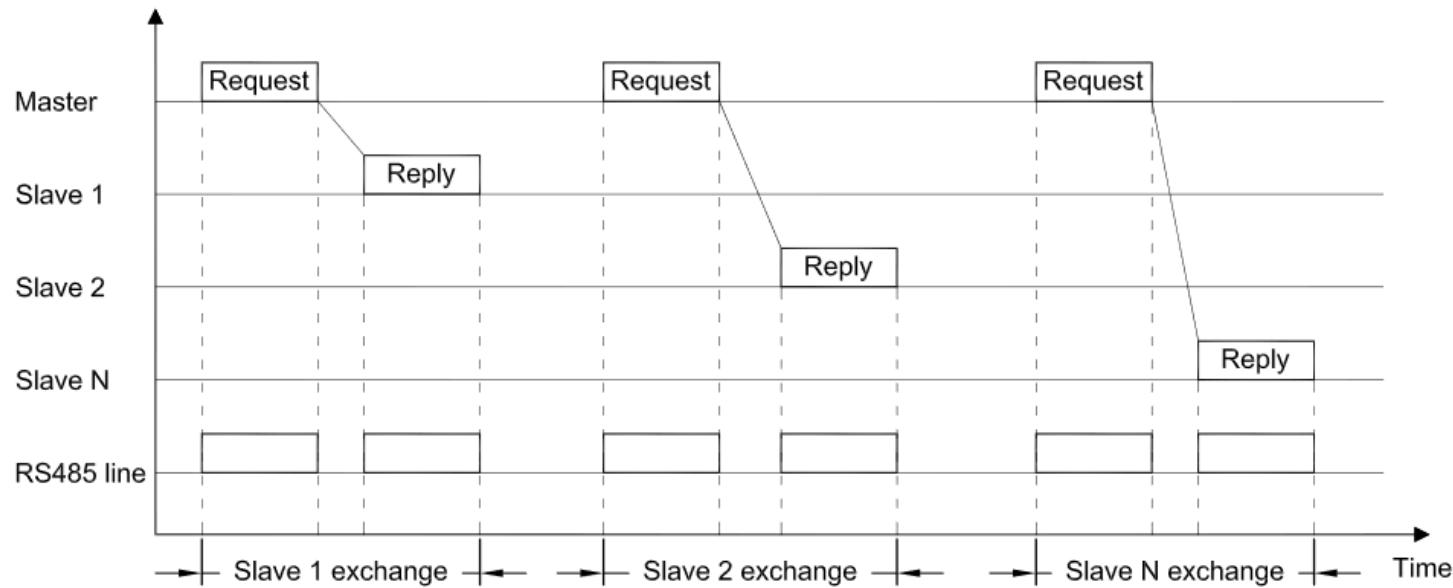


# Modbus Data Link Layer

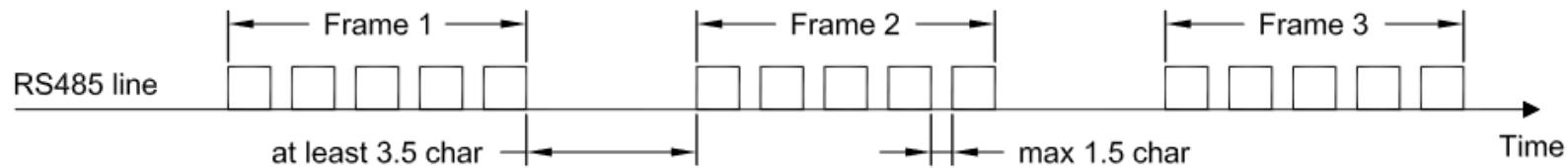
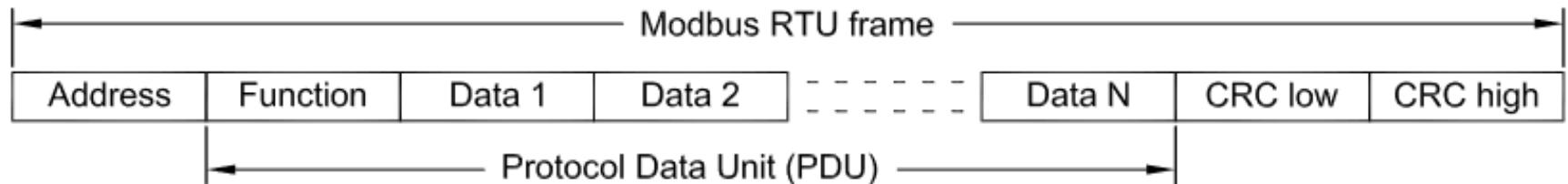
# Modbus RTU

Layer	ISO/OSI Model	
7	Application	Modbus Application Protocol
6	Presentation	Not used
5	Session	Not used
4	Transport	Not used
3	Network	Not used
2	Data Link	Modbus Serial Line Protocol
1	Physical	EIA/TIA-485 standard

# Modbus RTU (Data Link Layer) : A master / slave communication



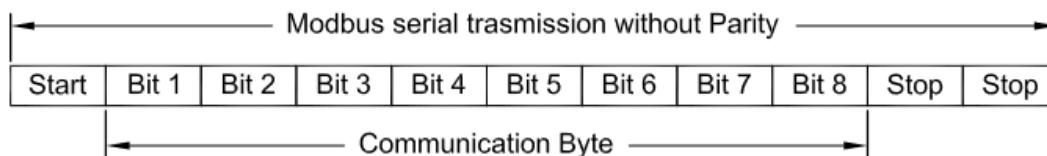
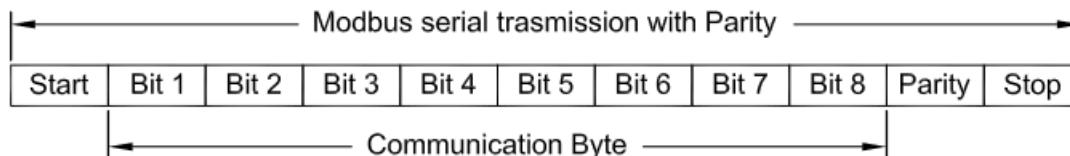
# Modbus RTU (Data Link Layer) : Frame



1 Byte for address :

- |           |                     |
|-----------|---------------------|
| 0         | broadcast for slave |
| 1 - 247   | unicast             |
| 248 - 255 | unpossible          |

# Modbus RTU (Data Link Layer) : Each byte of Frame



Parity	Rule for define the parity bit
No	Fixed to 1
Even	Total of bits (data + parity) equal to 1 is even
Odd	Total of bits (data + parity) equal to 1 is odd