

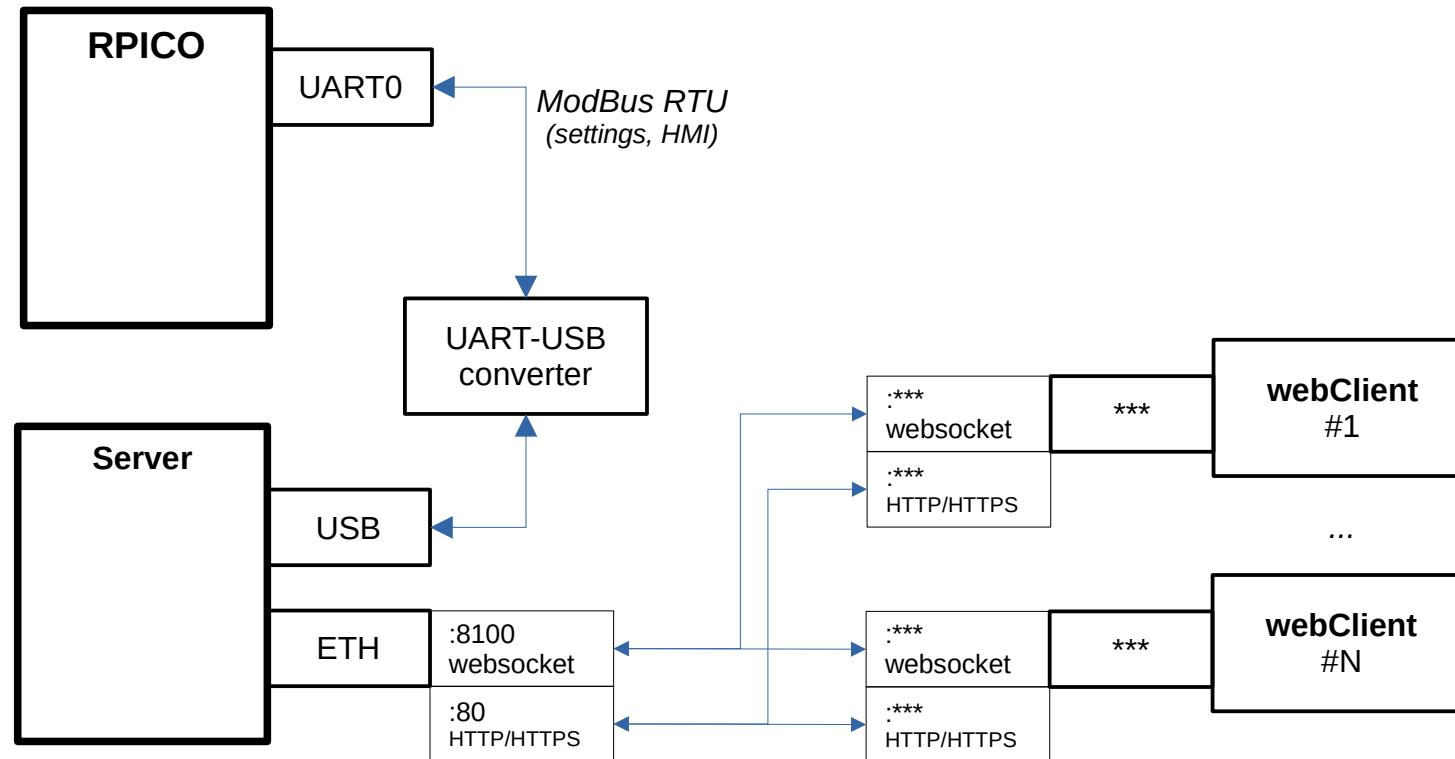
Raspberry Pico

MicroPython

project

- + ModBus RTU Slave Server (umodbus)
- + Internal Temperature Sensor (RPico.ADC.4)
- + Timers (RPico.TIMx)
- + ByteArray (float coder/decoder)

COMMUNICATION SCHEME

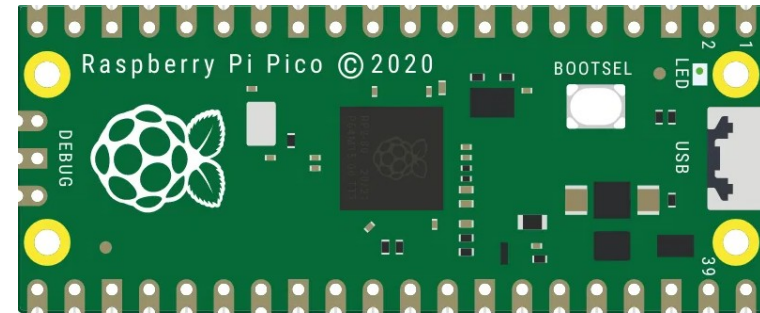


RPICO

PLATFORM SPECIFICATION

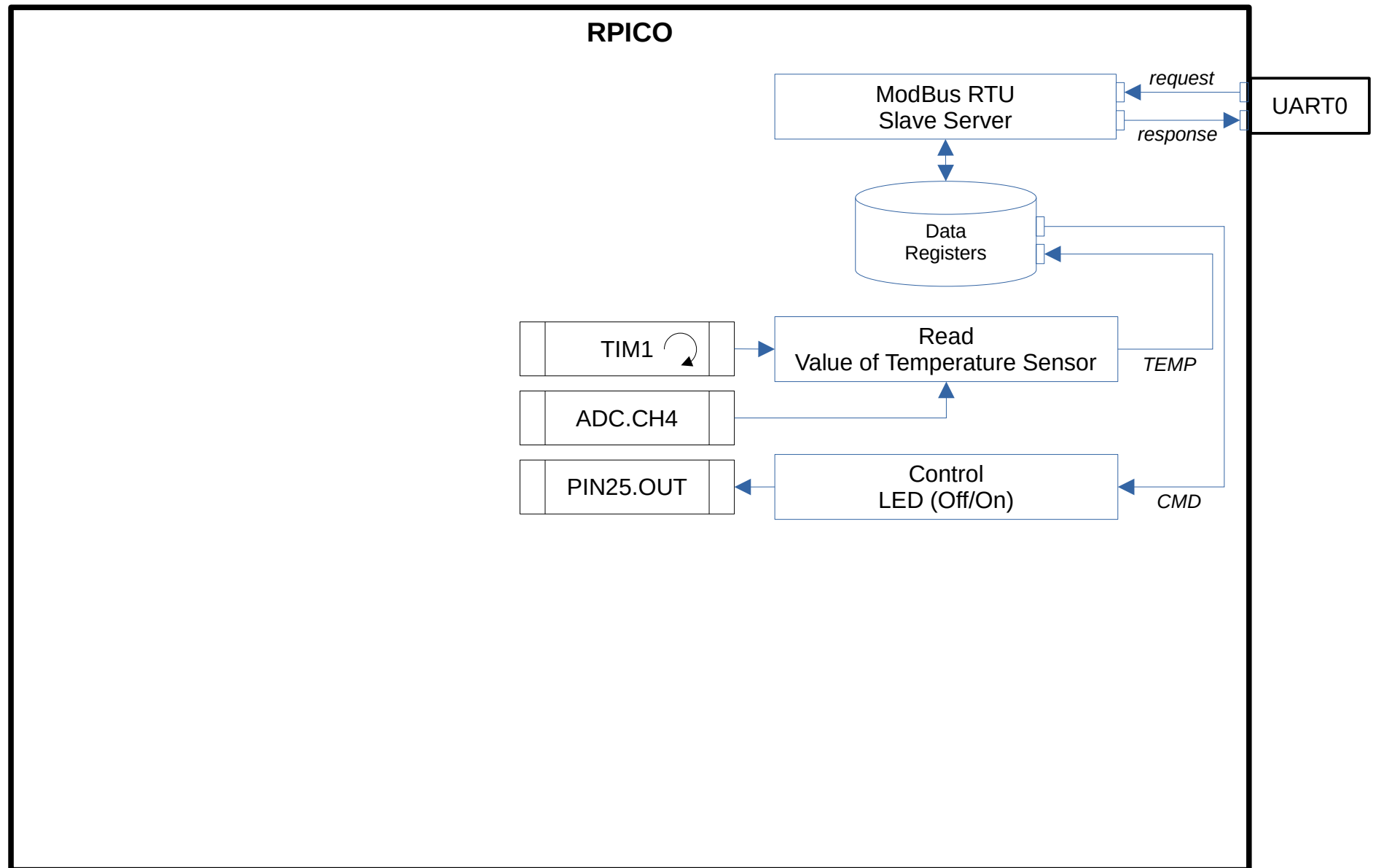
MCU	SoC RP2040
Core	ARM Cortex-M0+ 32-bit RISC Dual-core
Frequency	133 MHz
Power	3,3 V DC
SRAM	264 kB
FLASH	2MB
GPIO	x26
ADC	1x 12-bit (4 channels)
DAC	none
Timers	1x
RTC	1x
Network interfaces	2x UART 2x SPI 2x I2C 1x USB1.1 Device/Host 1x SWD

Embedded Target System	MicroPython rp2-pico-20230426-v1.20.0.uf2
IDE	Thonny 3.3.13



RPICO

MULTITASK SCHEME



RPICO

MODBUS SPECIFICATION

network interface

UART ID	0
GPIO	0 1 TX RX
Settings	115200 8 N 1 baudrate databits parity stopbits
Device Address	10

data registers

Description	Data type	Address	Byte order	Table
LED_STATUS	BOOL	1		INPUT STATUS
LED_CMD	BOOL	1		COILS
TEMP	REAL	1	1-0 3-2	INPUT
USER_16BIT	WORD	1		DISC.INPUTS

data types

Code	Data type by language		Size	
	IEC-61131-3	C	bytes	bits
X	BOOL	uint8_t	1	8
B	BYTE, USINT, SINT	uint8_t, int8_t	1	8
W	WORD, UINT, INT	uint16_t, int16_t	2	16
D	DWORD, UDINT, DINT, REAL	uint32_t, int32_t, float	4	32
L	LWORD, ULINT, LINT, LREAL	uint64_t, int64_t, double	48	64

SERVER

PLATFORM SPECIFICATION

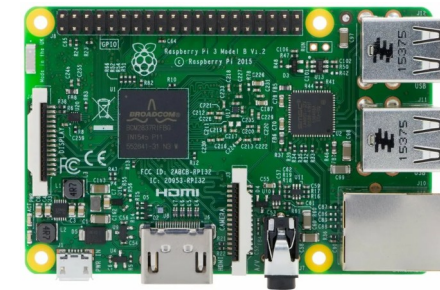
Type	Desktop Server SingleBoard PC (ex. RPi2, 3, 4)
MCU	x86, x64, ARM
RAM	512 MB (minimum)
FLASH/HDD	32 GB (minimum)
Network interfaces	1x USB 1x ETH

Operation System	MS Windows XP, 7, 10, 11 Linux
Server Software	<p>webSocket Logger (wslogger) support ModBus RTU devices support websocket clients</p> <p>webServer (Apache) for delivery the webSCADA Project to web-clients</p> <p>webSCADA Project (wsscada) websocket client</p> <p>DataBase Server (MySQL/MariaDB)</p>



Desktop

Server



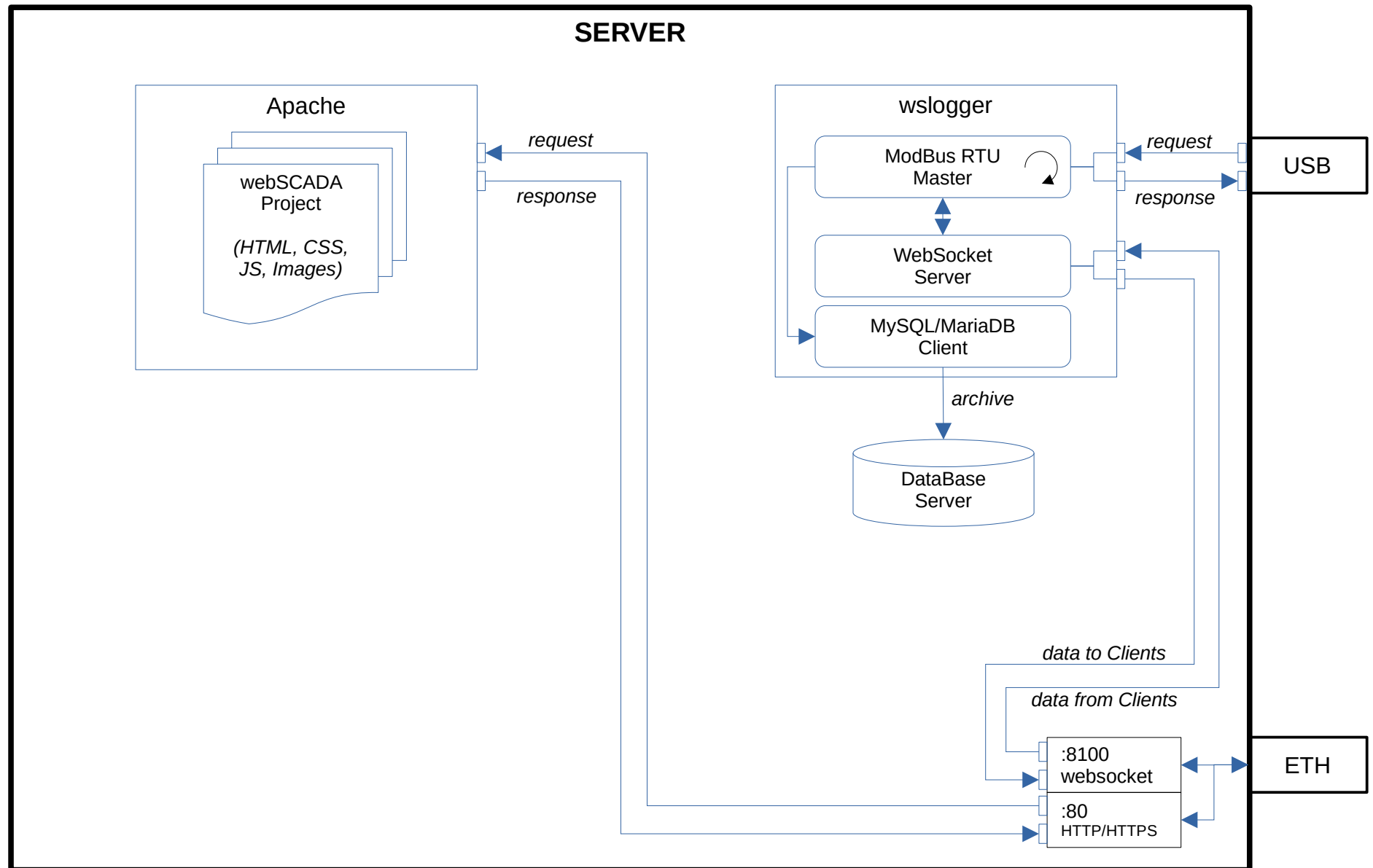
SingleBoard PC



UART-USB
converter

SERVER

MULTITASK SCHEME



WEB-CLIENT

PLATFORM SPECIFICATION

Type	Desktop LapTop SmartPhone Tablet
MCU	x86, x64, ARM, ...
Network interfaces	1x ETH 1x WiFi 1x GSM/GPRS

Operation System	Any
Client Software	webBrowser support HTTP/HTTPS, websocket support HTML, CSS, JS



Desktop



LapTop



SmartPhone



Tablet

WEB-CLIENT

MULTITASK SCHEME

