CPU Embedded Wireless LAN Module
WYSACVLAY-XZ & WYSACVLAY-WX
Overview

Version 1.0

Jun 10th, 2020

TAIYO YUDEN Wireless LAN Module Line Up

WLAN Module

CPU Embedded
- ◆ Type approval pre-certified
- ◆ PCB trace antenna

Blank Module
- ◆ Possible to develop software using SDK

*SDK：Software Development Kit

SDK Solution

WYSACVLAY- XZ

Easy to control
- ◆ Command control through UART

Integrated TY's Original SW

WYSACVLAY-WX

SDIO I/F
- ◆ For high-speed communication

External Antenna
- ◆ Small size
- ◆ Flexibility in customer design
- ◆ Low cost

w/o Antenna Type

WYSBHVGXG

Pre-Certified Module
- ◆ Type approval pre-certified
- ◆ Chip antenna or RF connector

Antenna Type

WYSAGVDXG

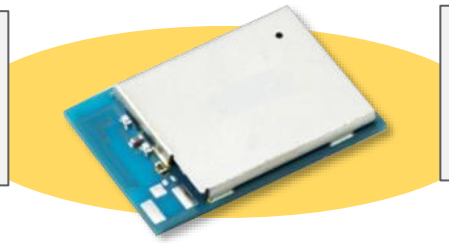
Connector Type

WYSEGVDXG

Product Information

- The following two types of wireless modules are most appropriate for IoT applications in the industrial equipment market such as M2M including robot control, bar code scanning handy terminal, etc., and the environment and energy market such as HEMS for lighting control, smart meter, etc.
  - WYSACVLAY-WX
    - Equipped original software "TAIYO YUDEN Standard Application for Wireless-LAN“ in the module.
    - Realize easy wireless communication by simple commands.
    - Significantly shorten the development period of customer’s device with wireless function.
  - WYSACVLAY-XZ
    - Possible for customer to develop their own application by using SDK.
    - Possible to integrate customer’s application and wireless control software in the module.
- Module option

To communicate easily with simple commands without developing software.



To communicate by developing and installing original software.

WYSACVLAY-WX
Built-in TY’s application enables easy wireless LAN communication.

WYSACVLAY-XZ
SDK is provided to develop embedded.

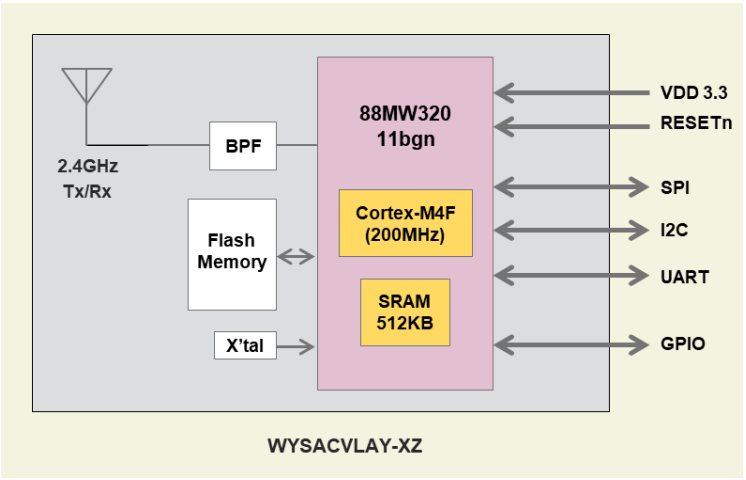
CPU Embedded Wireless LAN Module
Blank Module WYSACVLAY-XZ

WYSACVLAY-XZ: CPU Embedded 802.11b/g/n Module

Features

- SMD type module. with trace antenna
- IEEE802.11b/g/n conformity.
- Channel Number : 1 to 11 channel (11bgn)
- Interface : UART (baud rate: 9600~2000000, default 115200)
  SPI, UART, I2C and GPIO
- Built-in Application Processor, WLAN front end, Flash Memory, Xtal, Power circuits
- Security: WPA-2 using AES/CCMP along with legacy security features
- Advanced Wi-Fi features: 802.11n, Micro-AP mode, client mode, WPS
- Software: HTTP client, HTTPs client, WPS, IEEE power save/Deep sleep, Firmware update
- Outline: 21.4 x 14.0 x 2.4max mm
- Package: Metal case package
- Japan, FCC and ISED qualified
- CE conducted test report available
- RoHS Conformity

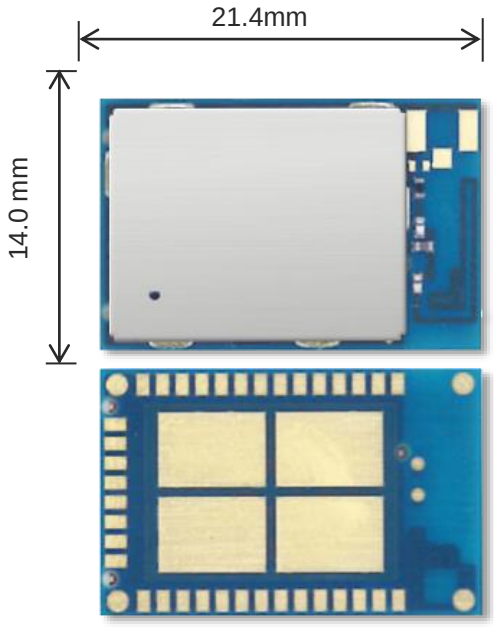
Block Diagram



General Electrical Specification

Parameter	Description	Min.	Typ.	Max.	Units
Frequency Range	11b/ g/ n	2412		2462	MHz
Operation Voltage	VBAT	3.0	3.3	3.6	V
	VIO	3.0	3.3	3.6	V
TX Output Power(11b/g/n)	11b/11g/11n		15 / 9 / 9		dBm
RX Sensitivity (11b/g/n)	11b/11g/11n		-86 / -71 / -68		dBm
TX Power Consumption	Burst Mode 11b		165		mA
RX Power Consumption	Mode 11n-HT20		82		mA
Power Consumption	Sleep Mode		0.6		mA
Operating Temperature		-30		85	deg-C

Outline



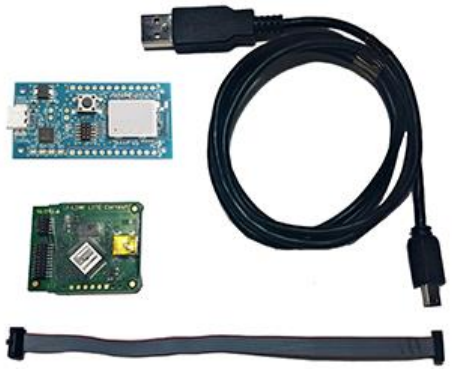
W_SACVLAY-XZ: Wireless LAN Module Evaluation Board

WBSACVLAY-XZ and WKSACVLAY-XZ are evaluation board and evaluation kit for WYSACVLAY-XZ.
They are useful for evaluation of RF characteristics and software development at the early stage of development.

*J-Link Lite is required to write customer's software into the module.

WKSACVLAY-XZ Kit includes:

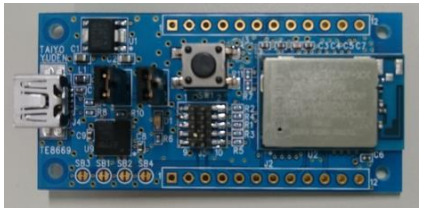
No.	Item	Description	Qty
1	WBSACVLAY-XZ	Evaluation Board for WLAN module WYSACVLAY-XZ with mini USB interface	1
2	Debug tool	J Link Lite : Debug probe for software development Flat cable : Connect the JTAG signals between WBSACVLAY-XZ and J-Link Lite USB cable: Connection between J-Link Lite to PC	1



WKSACVLAY-XZ

WBSACVLAY-XZ Kit includes:

No.	Item	Description	Qty
1	WBSACVLAY-XZ	Evaluation Board for WLAN module WYSACVLAY-XZ with mini USB interface	1



WBSACVLAY-XZ

SDK for CPU Embedded module

NXP SDK

- Provided by NXP
- Free of charge (*SLA required)
- Non-support

	NXP SDK
OS	Free RTOS
License	BSD License
Document	English
Configuration	Source code changes
Customer support	Non-support
Reliability	By customers
Maintenance	By customers
Contract development of application	Non-support

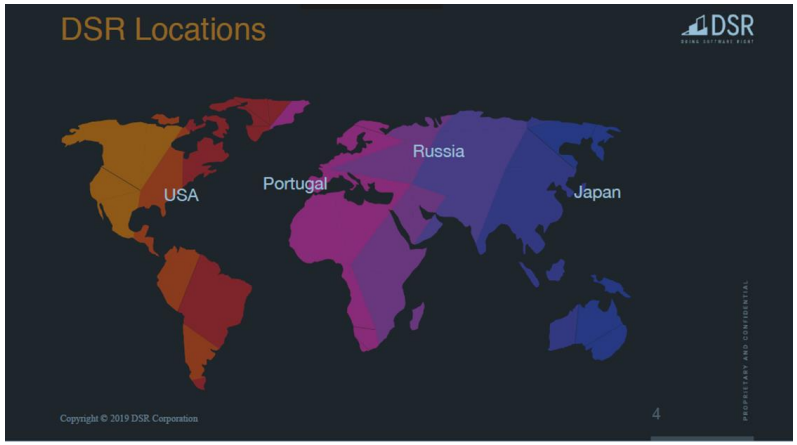
*SLA: Software License Agreement

Partner for Software Development

For software development contractors using NXP SDK, we can introduce our partner DSR.

DSR

DOING SOFTWARE RIGHT



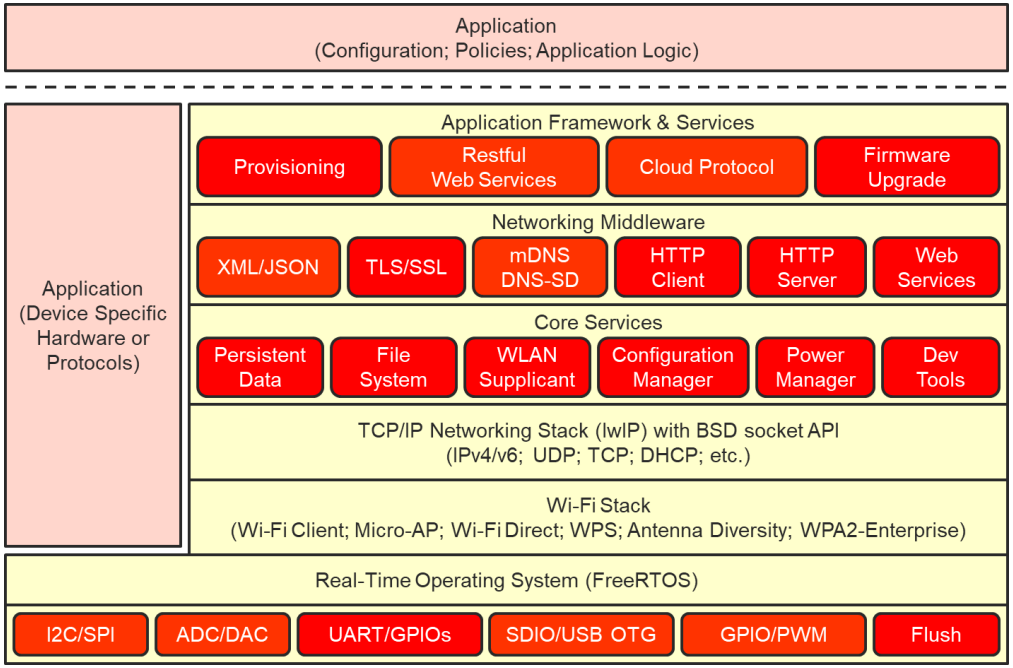
Visit website for details.
https://en.dsr-corporation.com/
https://jp.dsr-corporation.com/

NXP SDK Solution for WYSACVLAY-XZ

NXP SDK for WYSACVLAY-XZ (MW320) is available.
Before using NXP SDK, it is necessary to agree to sublicense agreement (SLA) with TAIYO YUDEN.
Development tools and documentation are included in the SDK.
Please see following for included documents.

【Document List】

1. Introducing-WMSDK
2. WMSDK-Developer-Tutorial
3. sdk-reference-manual
4. 88MW30X_Secure_Boot
5. 88MW30X_WLAN-Bridge -API-and-CLI-Usage-Guide
6. MW30x_FlashDevices
7. EZConnect-V3-Application-Development-Guide
8. Developing With WMSDK
9. Developing With IAR
10. Development-Host-Setup



Please contact TAIYO YUDEN for more details of the SDK.

CPU Embedded Wireless LAN Module
TY's Application Module WYSACVLAY-WX

WYSACVLAY-WX: Software Embedded 802.11b/g/n Module

Features

- SMD type module. with trace antenna
- IEEE802.11b/g/n conformity.
- Channel Number : 1 to 11 channel (11bgn)
- Interface : UART (baud rate: 9600~2000000, default 115200)
- Built-in Application Processor, WLAN front end, Flash Memory, Xtal, Power circuits
- Security: WPA-2 using AES/CCMP along with legacy security features
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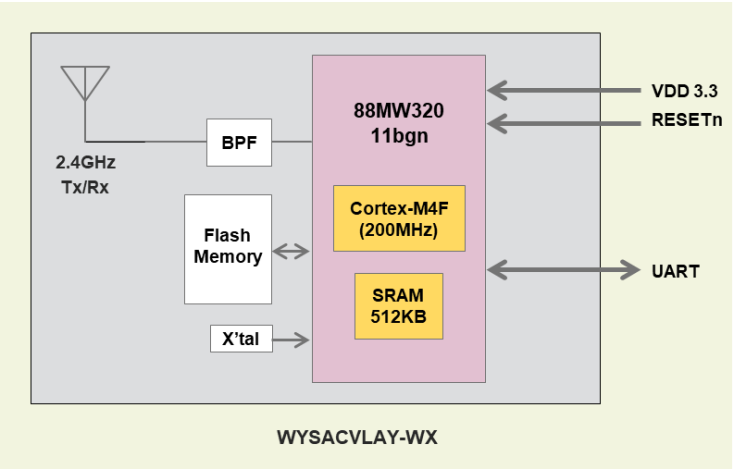

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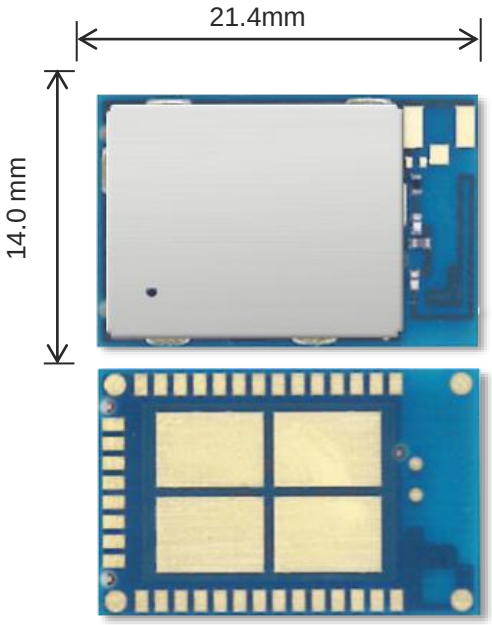
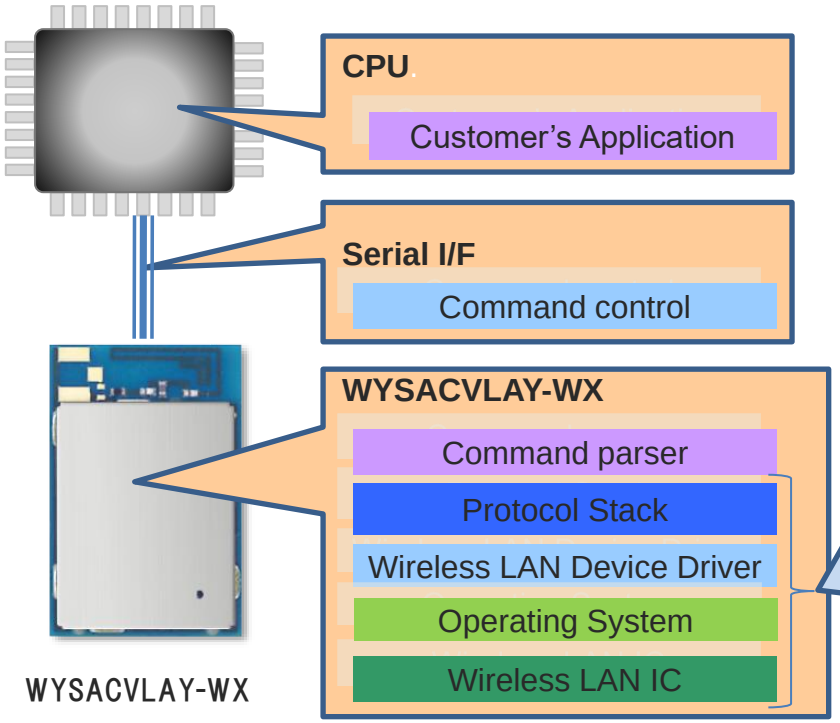
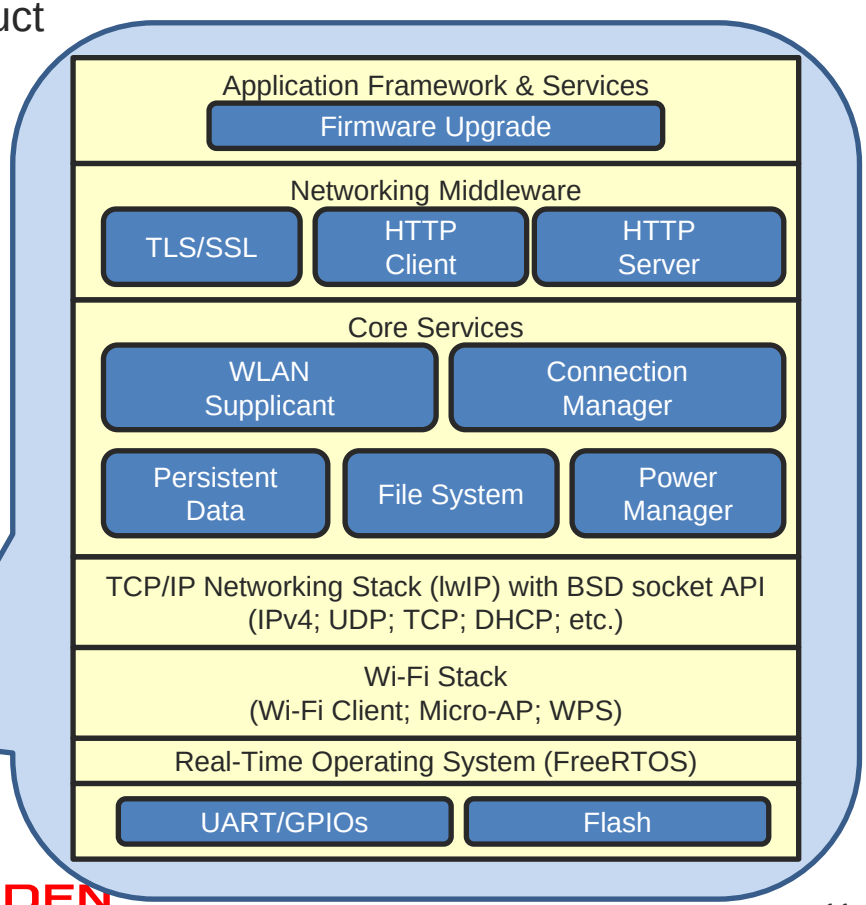


Software Structure for WYSACVLAY-WX

Original software "TAIYO YUDEN Standard Application for Wireless-LAN“ is included in WYSACVLAY-WX.

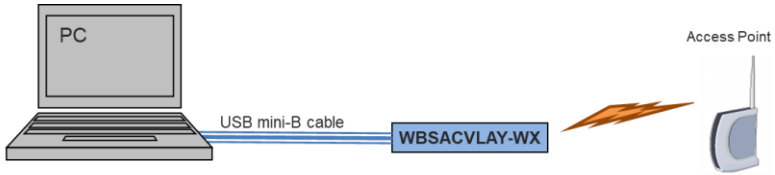
- WLAN driver, OS, Protocol Stack are included in the module.
- Controlled by easy commands through UART
- Easy to implement wireless LAN, TCP/IP as socket interface and Internet access protocols of HTTP and HTTPs to your product
- MQTT is also supported

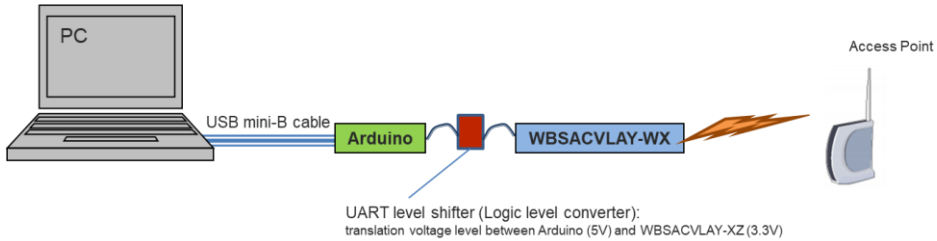




WBSACVLAY-WX: Wireless LAN Module Evaluation Board

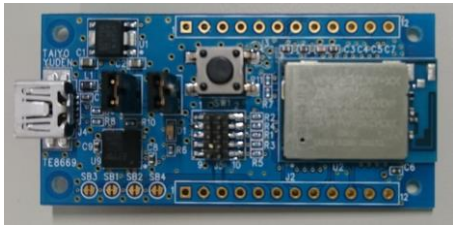
WBSACVLAY-WX is an evaluation board of WYSACVLAY-WX.
It realizes easy wireless communication by simple commands.





WBSACVLAY-WX includes:

No.	Item	Description	Qty
1	WBSACVLAY-WX	Evaluation Board for WLAN module WYSACVLAY-WX with mini USB interface	1



WBSACVLAY-WX

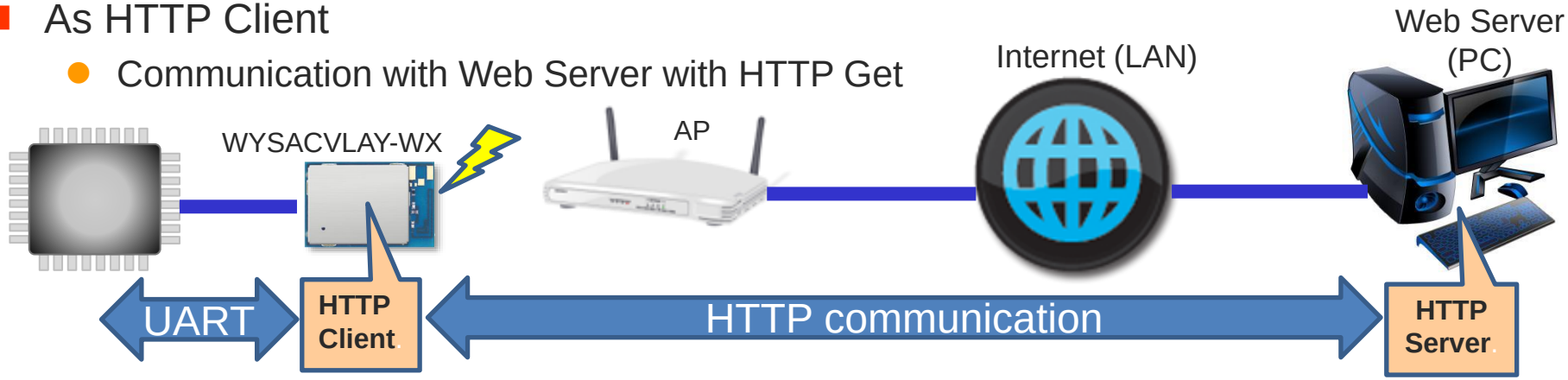
Anyone can access other documents at the following site:

English: https://www.yuden.co.jp/ut/product/category/module/lineup/wysacvlay-wx/

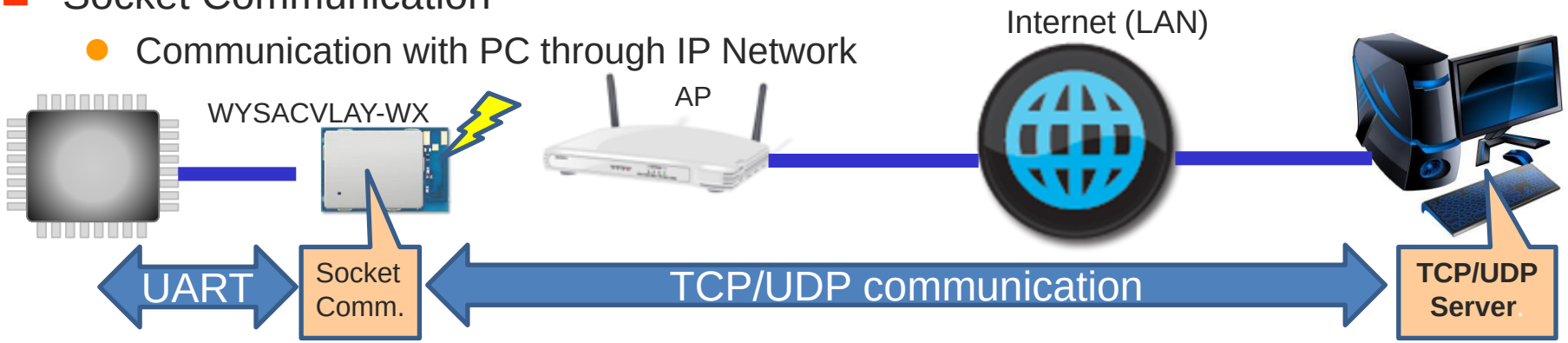
Japanese: https://www.yuden.co.jp/jp/product/category/module/lineup/wysacvlay-wx/

Usage Examples for WYSACVLAY-WX

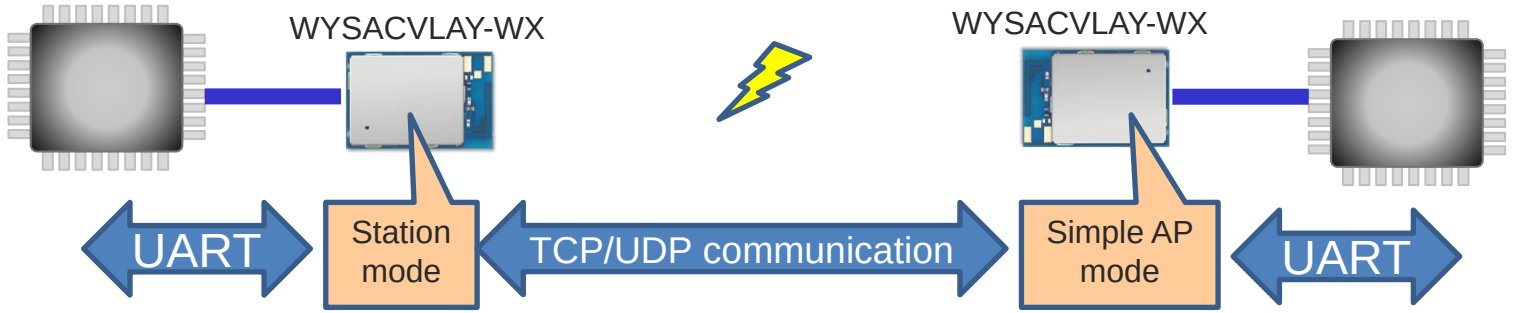
- As HTTP Client
  - Communication with Web Server with HTTP Get



- Socket Communication
  - Communication with PC through IP Network

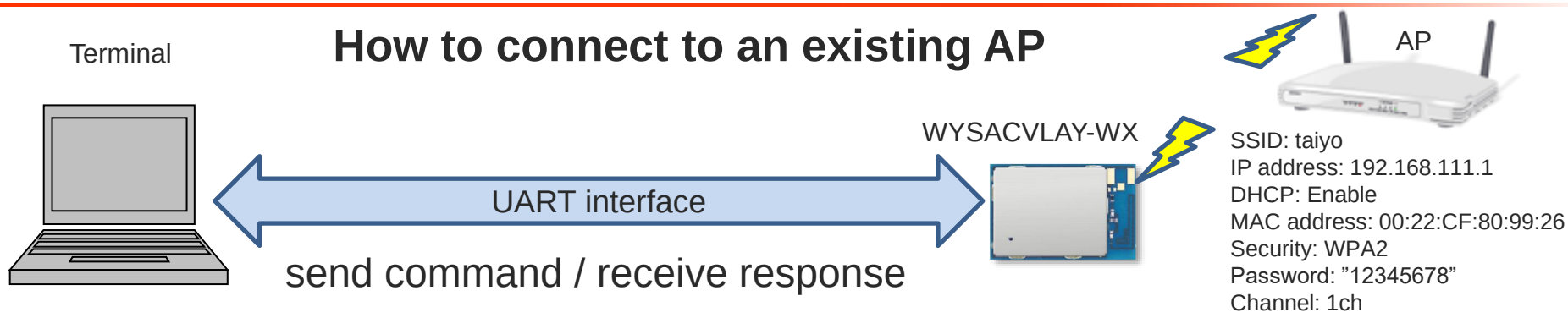


  - Replace the UART cable



WYSACVLAY-WX Command Sequence Example

How to connect to an existing AP



Sequence	Send command to the module	Response from the module	Brief Description
Step-1	WISC	SCR01,0022CF809926,taiyo SCR02,0022CF809927,ap-game-809927 SCR03,001D738229D4,BUFFALO-AGL300NH_G SCR04,1CB17FE59B5A,ap_demo SCR05,2EB17FE59B5A,aterm-b47dc0-gw ACK	Scan access points (5 AP exists in this case)
Step-2	WISD01	SCD01,0022CF809926,1,1,1,1,0,0,1,-46,taiyo	Confirm details of “taiyo” AP based on scan results. （BSSID=“0022CF809926”, channnel=1ch, WMM=supported, WPS=PIN, WEP=WPA=unavailable, WPA2=available, RSSI=-46dBm、SSID=“taiyo”)
Step-3	WSTI101taiyo	ACK	Select SSID (“taiyo”) to be connect
Step-4	WSTI1024	ACK	Select security type (WPA2)
Step-5	WSTI10312345678	ACK	Set pass phrase (“12345678”)
Step-6	WSTI1041	ACK	DHCP
Step-7	WICO1	CON1,taiyo	Connect to AP -> Success to connect to “taiyo”
Step-8	WGCN	CFG0022CF809926,1,4,192.168.111.2,taiyo	Get connect info (BSSID=“0022CF809926”, channel=1ch, security=WPA2, IP address, SSID=“taiyo”)

Note: Please refer to the TY-Web site for detail.
https://www.yuden.co.jp/jp/product/category/module/lineup/cms/wp-content/uploads/2020/02/WYSACVLAY-WX_Software_Usermanual_EN.pdf

TAIYO YUDEN