



# VOICE USER INTERFACE SOLUTION

Easy-to-use Reference Design with RA Family

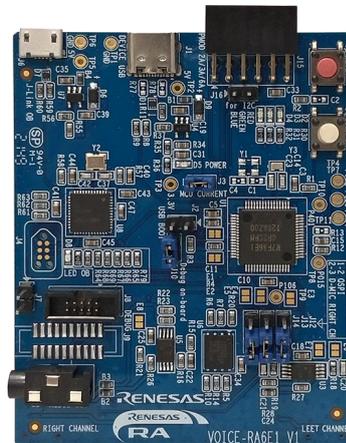
The new Renesas easy-to-use hardware platform for Voice User Interface (VUI) solutions is based on the high-performance RA family of 32-bit MCUs. The new reference platform is used for all VUI partner-enabled solutions within the Renesas Ready Partner Network and demonstrates how easy it is to control your system with a simple voice command interface without extensive coding experience or in-house expertise.

The reference kit enables local voice recognition without a network connection, and allows you to quickly start building an enhanced VUI in minutes that recognizes your own voice commands to trigger the corresponding operation.



## Hardware Features

- RA Arm® Cortex®-M23 & -M33 MCU
- Up to two digital microphones and two analog microphones
- External QSPI flash to store voice samples and library data
- Communication interfaces:
  - Pmod type-2A / 3A / 6A
  - USB type-C and micro-B
  - On board J-link Seggar debugger / programmer



## Software Features

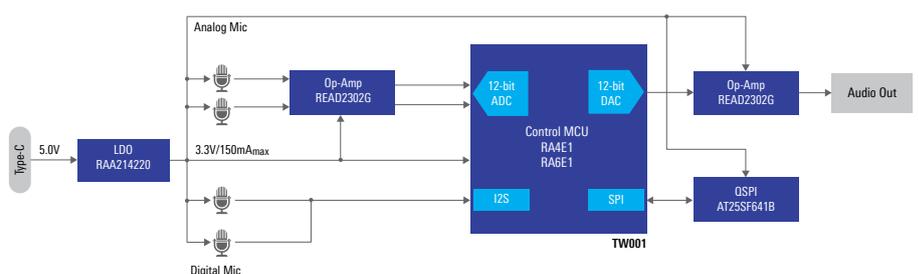
- Cyberon DSPotter
  - Provides DNN based pre-trained voice model
  - User creates command by text input
  - Support for Online & Offline test options
  - Analyze recognition score
  - Tune performance real-time
  - Real-time tool to observe input voice waveform



## Target Applications

- Edge applications enabling endpoint voice user interface independent from network / cloud / edge connections
  - IoT Devices
  - Home Appliances
  - Wearable / Hearable Devices

## Block Diagram



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## Benefits

- Local voice trigger and command recognition
  - Endpoint capable, no need of network connection
- Robust noise reduction | High-accuracy performance | Very small footprint
  - Small footprint (Flash: 55K/90KB/155KB + 32B\*Xc, RAM:18KB/21KB/24KB+128B\*Xc)
- Supports multiple languages | Arm® Trust Zone for security
  - Separation of recognition engine and command model, switching commands dynamically
- Enables command customization, performance tuning, testing
  - Quick command customization / optimization by model adaptation with only a small amount of speech data
- Voice Activity Detection (VAD) and audio playback
  - Reduces power consumption, provides snooze mode, enables voice response function

## 44+ Languages Supported



## Ordering Information

Part Number	Description
TW001-VUIA6E1POCZ	RA6E1 Voice reference kit with multi-language support
TW001-VUIA4E1POCZ	RA4E1 Voice reference kit with command recognition
TW001-VUIA2L1POCZ	RA2L1 Voice reference kit with low MHz consumption

Get more details and request a kit at: [renesas.com/voice-recognition](https://renesas.com/voice-recognition)

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