

e-Gizmo Voice Control Command Module (VCCM) is a stand-alone (off-line) voice recognition board based on AI-Thinker VC-02 module. It is pre loaded with custom firmware that sports an English language voice command library focused on robotics, home automation and general controller applications.



The module can recognize voice commands even under moderate background noise, and varying accent, as long as the voice command is correctly pronounced.

e-Gizmo VCCM communicates with a host controller via a UART port. It has a native 3.3V level UART port that can interface directly with 3.3V logic host controllers. A 3.3V to 5V level converted port is built on board to allow you to wire it directly with 5V controllers (e.g. Arduino UNO).

1.4 Electrical

- 2.1 Voltage Rating: 3.6V to 5VDC
- 2.2 Standby Current: 56.6mA Typical
- 2.3 Sleep Mode Current: 0.7mA max.
- 2.4 Responding Current: 232mA max.
- 2.5 Serial Parameters: 115200 baud, 8-bit data, 1 start bit, 1 stop bit, No parity
- 2.6 User GPIO - 5

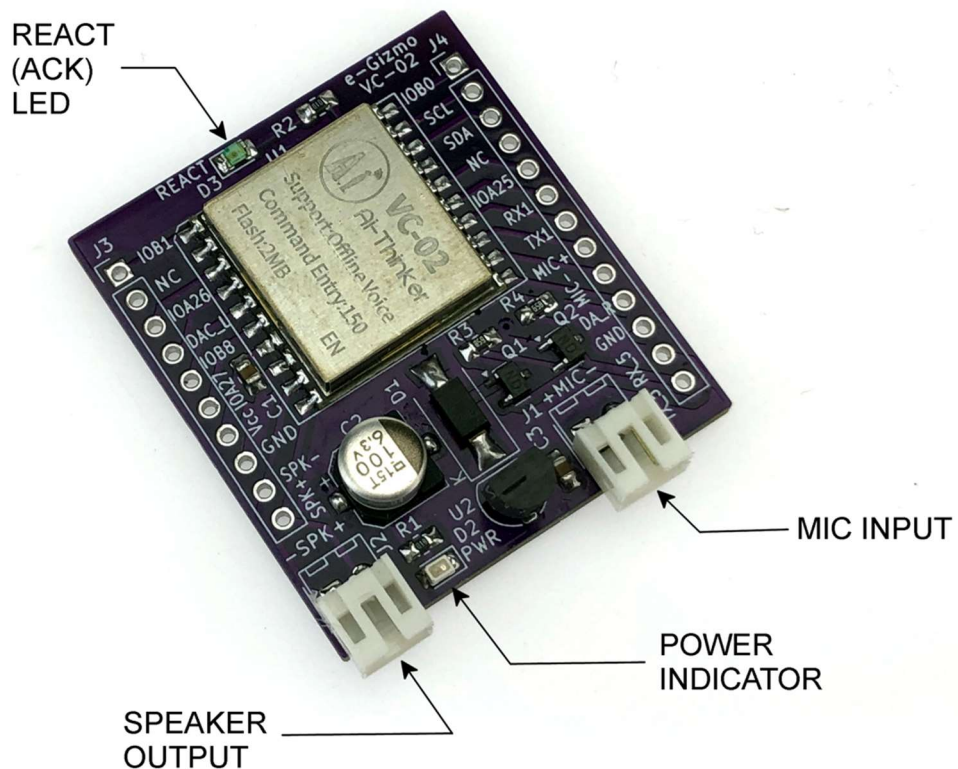
1.5 Pin Description

1.5.1 J3 Group

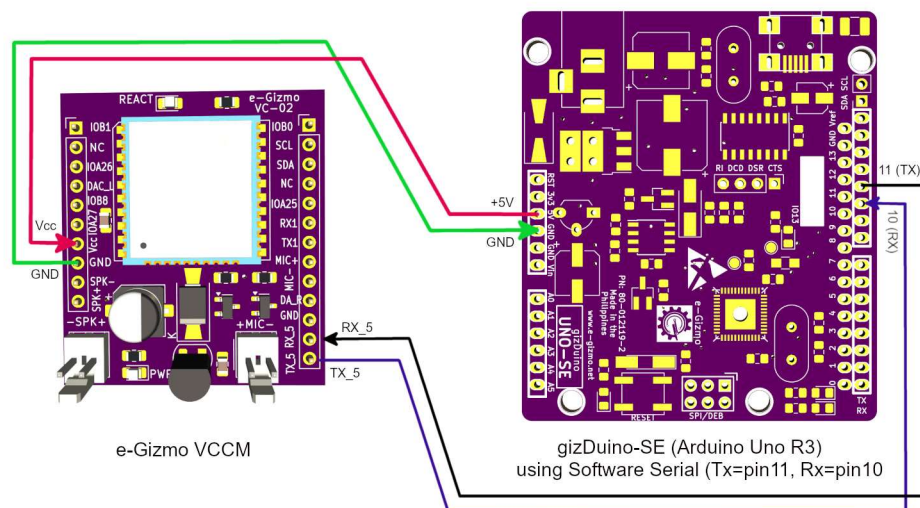
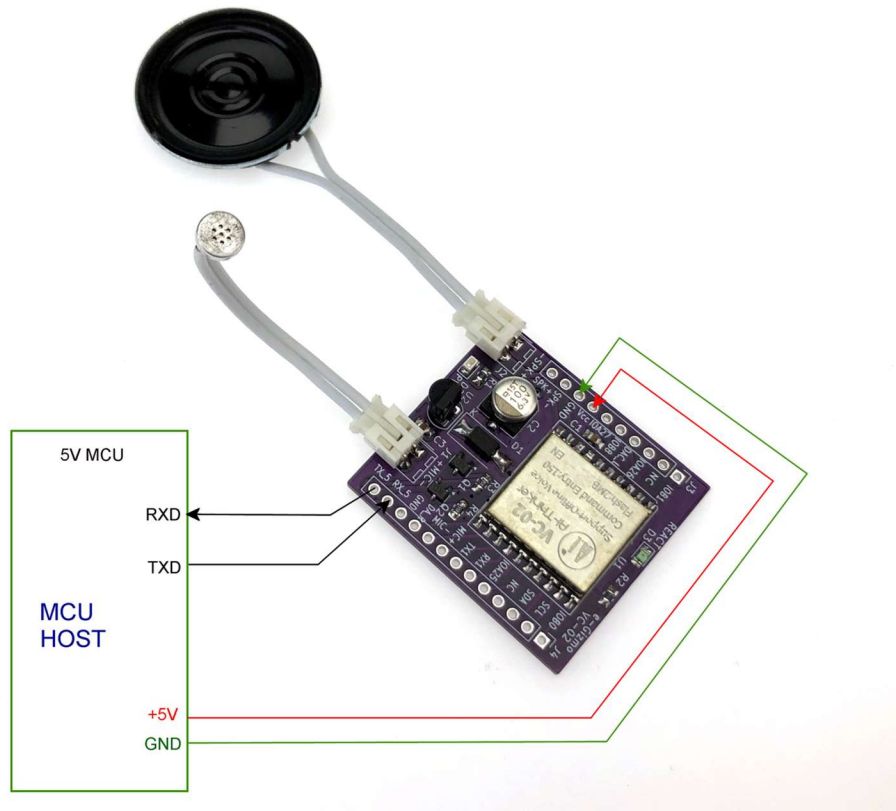
- 1- IOB1 User I/O
- 3 - IOA26 User I/O
- 4 - DAC_L Reserved
- 5 - IOB8 User I/O
- 6 - IOA27 User I/O
- 7 - Vcc - (+) Power Input
- 8 - GND (-) Power Input
- 9 - SPK- Speaker Output
- 10 - SPK+ Speaker Output

1.5.2 J4 Group

- 1 - IOB0 User I/O
- 2 - SCL Reserved
- 3 - SDA Reserved
- 5 - IOA25 REACT Output
- 6 - RX1 3.3V UART Receive Input
- 7 - TX1 3.3V UART Transmit Output
- 8 - MIC+ Microphone Input (+)
- 9- MIC- Microphone Input (-)
- 10 - DAC_R Reserved
- 11- GND
- 12 - RXD_5 5V Level UART Receive Input
- 13 - TXD_5 5V Level UART Transmit Output



2. Wiring Examples:



3. UART Communications with a Host Controller

UART Setup:

Baud Rate: 115200

Data: 8 bit

Start Bit: 1

Stop Bit: 1

Parity: None

Handshake: None

3.1 UART Connection to a host controller

VCCM is equipped with a UART port that can work either with 3.3V logic or 5V logic. As such, you need to know at what logic level your host controller UART port can work properly. If your host controller works with 3.3V logic(e.g. Raspberry Pi Pico), connect it using the VCCM RX1 and TX1. For 5V logic hosts (e.g. Arduino Uno), use VCCM RXD_5 and TXD_5 ports instead.

The VCCM RX port should be connected to the host TX port.

The VCCM TX port should be connected to the host RX port.

Equally important, the VCCM GND line should be connected to the host GND.

Each time a voice command is recognized, the VCCM sends out a fix 5-byte long data with the following format:

Byte No:

1 - Start Byte = \$5A

2 - Command

3 - Unused = \$00

4 - Unused = \$00

5 - Checksum = \$5A + Command

Example:

Voice command "Run Forward" (Command A.18) will send out a 5-byte stream as follows (shown in Hex)

5A 96 00 00 F0

Your host UART service task is then to simply capture the command portion and let the rest of the host firmware process it accordingly.

4. VCCM Voice Commands

To activate the VCCM, you must first get its attention by casually calling it with any one of its name (See Table 1).

Example:

“Hey Electra” or “Hello Electra”

It will respond by saying “I am here” or “please go ahead” or “what can I do for you” if you got its attention.. You can now speak your voice commands.

Note: The VCCM will say “see you later” and then go to sleep if it didn’t hear you say anything it can recognize within 10(?) seconds.

Tips: You can make the speaker sound output significantly louder by mounting the speaker into some kind of baffle board. The mic sensitivity can be increased in a similar manner. Note that increased mic sensitivity may make the VCCM more prone to false recognition.

Table 1. VCCM Nicknames

	Voice Command	Mnemonic	Hex	Decimal
	Athena		0	0
	Apollo		0	0
	Demeter		0	0
	Data		0	0
	Electra		0	0
	Hermes		0	0
	Jupiter		0	0
	e Gizmo		0	0
	Robot		0	0
	Titan		0	0

Table A..Robot Commands

	Voice Command	Mnemonic	Hex	Decimal
A.1	Grip Engage	GripEngaged	1	1
A.2	Grip Release	GripeRelease	2	2
A.3	Start Position	StartPosition	3	3
A.4	Standby	Standby	4	4
A.5	Faster	GripFaster	5	5

A.6	Grip Slower	GripSlower	6	6
A.7	Grip Stop	GripStop	7	7

	Voice Command	Mnemonic	Hex	Decimal
A.8	Forward	MotFor	8C	140
A.9	Reverse	MotRev	8D	141
A.10	Turn Right	MotTR	8E	142
A.11	Turn Left	MotTL	8F	143
A.12	Move Around	MotMovA	90	144
A.13	Halt	MotHalt	91	145
A.14	Soft Left	MotSoftL	92	146
A.15	Soft Right	MotSoftR	93	147
A.16	Spin Left	MotSpinL	94	148
A.17	Spin Right	MotSpinR	95	149
A.18	Run Forward	MotRun	96	150

Table B. Servo Actuator Commands (Used as preamble combined with Table C command set)

	Voice Command	Mnemonic	Hex	Decimal
B.1	Group Arm	ServoARM	8	8
B.2	Group Servo One	ServoOne	9	9
B.3	Group Servo Two	ServoTwo	A	10
B.4	Group Servo Three	ServoThree	B	11
B.5	Group Servo Four	ServoFour	C	12
B.6	Servo Cancel	ServoCancel	D	13

Table C. Stored Servo/Positioning (These set of command follows after Table B.)

	Voice Command	Mnemonic	Hex	Decimal
C.1	Goto Home	StoredServoHome	E	14
C.2	Goto One	StoredOne	F	15

C.3	Goto Two	StoredTwo	10	16
C.4	Goto Three	StoredThree	11	17
C.5	Goto Four	StoredFour	12	18
C.6	Goto Five	StoredFive	13	19
C.7	Goto Six	StoredSix	14	20
C.8	Goto Seven	StoredSeven	15	21
C.9	Goto Eight	StoredEight	16	22
C.10	Goto Nine	StoredNine	17	23
C.11	Goto Ten	StoredTen	18	24
C.12	Goto Eleven	StoredEleven	19	25
C.13	Goto Twelve	StoredTwelve	1A	26
C.14	Goto Thirteen	StoredThirteen	1B	27
C.15	Goto Fourteen	StoredFourteen	1C	28
C.16	Goto Fifteen	StoredFifteen	1D	29
C.17	Goto Next	StoredNext	1E	30
C.18	Goto Previous	StoredPrev	1F	31

Table D. Stored Gait/Sequence

	Voice Command	Mnemonic	Hex	Decimal
D.1	Move Gait One	MGOne	20	32
D.2	Move Gait Two	MGTwo	21	33
D.3	Move Gait Three	MGThree	22	34
D.4	Move Gait Four	MGFour	23	35
D.5	Move Gait Five	MGFive	24	36
D.6	Move Gait Six	MGSix	25	37
D.7	Move Gait Seven	MGSeven	26	38
D.8	Move Gait Eight	MGEight	27	39
D.9	Move Gait Nine	MGNine	28	40
D.10	Move Gait Ten	MGTen	29	41
D.11	Move Gait Eleven	MGEleven	2A	42
D.12	Move Gait Twelve	MGTwelve	2B	43
D.13	Move Gait Thirteen	MGThirteen	2C	44
D.14	Move Gait Fouteen	MGFourteen	2D	45
D.15	Move gait Fifteen	MGFifteen	2E	46

D.16	Move Next	MoveNex	2F	47
D.17	Move Previous	MovePrev	30	48

Table F. HOME DEVICES

	Voice Command	Mnemonic	Hex	Decimal
F.1	Switch On	SwitchOn	31	49
F.2	Switch Off	SwitchOff	32	50
F.3	Switch Low	SwitchLow	33	51
F.4	Switch Medium	SwitchMed	34	52
F.5	Switch High	SwitchHigh	35	53
F.6	Emergency on	EmergOn	36	54
F.7	Emergency off	EmergOff	37	55
F.8	Red light on	RedOn	38	56
F.9	Red light off	RedOff	39	57
F.10	Green light on	GreenOn	3A	58
F.11	Green light off	GreenOff	3B	59
F.12	Blue light on	BlueOn	3C	60
F.13	Blue light off	BlueOff	3D	61
F.14	Lights on	LightOn	3E	62
F.15	Lights off	LightOff	3F	63
F.16	Lights One On	LOneOn	40	64
F.17	Lights One Off	LOneOff	41	65
F.18	Lights Two On	LTwoOn	42	66
F.19	Lights Two Off	LTwoOff	43	67
F.20	Light Three On	LThreeOn	44	68
F.21	Lights Three Off	LThreeOff	45	69

	Voice Command	Mnemonic	Hex	Decimal
F.22	Lights Four On	LFourOn	46	70
F.23	Light Four Off	LFourOff	47	71
F.24	Turn on the fan	FanOn	48	72
F.25	Turn off the fan	FanOff	49	73
F.26	Fan one turn on	FOneOn	4A	74

F.27	Fan one turn off	FOneOff	4B	75
F.28	Fan two turn on	FTwoOn	4C	76
F.29	Fan two turn off	FTwoOff	4D	77
F.30	Fan three turn on	FThreeOn	4E	78
F.31	Fan three turn off	FThreeOff	4F	79
F.32	Motor On	MotOn	50	80
F.33	Motor Off	MotOff	51	81
F.34	Motor One On	MotOneOn	52	82
F.35	Motor One Off	MotOneOff	53	83
F.36	Motor Two On	MotTwoOn	54	84
F.37	Motor Two Off	MotTwoOff	55	85

	Voice Command	Mnemonic	Hex	Decimal
F.38	Pump On	PumpOn	56	86
F.39	Pump Off	PumpOff	57	87
F.40	Pump One On	POneOn	58	88
F.41	Pump One Off	POneOff	59	89
F.42	Pump Two On	PTwoOn	5A	90
F.43	Pump Two Off	PtwoOff	5B	91
F.44	Turn on the washing	WashOn	5C	92
F.45	Turn off the washing	WashOff	5D	93
F.46	Turn on the aircon	AirconOn	5E	94
F.47	Turn off the aircon	AirconOff	5F	95
F.48	Turn on the radio	RadioOn	60	96
F.49	Turn off the radio	RadioOff	61	97
F.50	Turn on the stereo	StereoOn	62	98
F.51	Turn off the stereo	StereoOff	63	99
F.52	Open the garage	GarageOpen	64	100
F.53	Close the garage	GarageClose	65	101

	Voice Command	Mnemonic	Hex	Decimal
F.54	Open the gate	GateOpen	66	102
F.55	Close the gate	GateClose	67	103
F.56	Open the door	DoorOpen	68	104

F.57	Close the door	DoorClose	69	105
F.58	Turn on the Tv	TurOnTv	6A	106
F.59	Turn off the tv	TurOffTv	6B	107
F.60	Turn on the computer	ComputerOn	6C	108
F.61	Turn off the computer	ComputerOff	6D	109
F.62	Turn on the laptop	LaptopOn	6E	110
F.63	Turn off the laptop	LaptopOff	6F	111
F.64	Turn on the monitor	MonitorOn	70	112
F.65	Turn off the monitor	MonitorOff	71	113
F.66	Turn on the videoke	VideokeOn	72	114
F.67	Turn off the videoke	VideokeOff	73	115
F.68	Turn on the extension	ExtOn	74	116
F.69	Turn off the extension	ExtOff	75	117

	Voice Command	Mnemonic	Hex	Decimal
F.70	Living room lights on	LivRoomOn	76	118
F.71	Living room lights off	LivRoomOff	77	119
F.72	Master room lights on	MasRoomOn	78	120
F.73	Master room lights off	MasRoomOff	79	121
F.74	Guest room lights on	GueRoomOn	7A	122
F.75	Guest room lights off	GueRoomOff	7B	123
F.76	Bedroom A lights on	BedAOn	7C	124
F.77	Bedroom A lights off	BedAOff	7D	125
F.78	Bedroom B lights on	BedBOn	7E	126
F.79	Bedroom B lights off	BedBOff	7F	127
F.80	Bedroom C lights on	BedCOn	80	128
F.81	Bedroom C lights off	BedCOff	81	129
F.82	Maid room lights on	MaiRoomOn	82	130
F.83	Maid room lights off	MaiRoomOff	83	131
F.84	Pantry lights on	OnPantry	84	132
F.85	Pantry lights off	OffPantry	85	133

	Voice Command	Mnemonic	Hex	Decimal
F.86	Dining lights on	OnDining	86	134

F.87	Dining lights off	OffDining	87	135
F.88	Patio lights on	OnPatio	88	136
F.89	Patio lights off	OffPatio	89	137
F.90	Pool lights on	OnPool	8A	138
F.91	Pool lights off	OffPool	8B	139