



RAK2287/RAK5146 Pi HAT Datasheet

Overview

Description

RAK2287/RAK5146 Pi HAT is a converter board with a Raspberry Pi form factor that enables the RAK2287 SPI or RAK5146 SPI LPWAN concentrator modules to be mounted on the top of the Raspberry Pi.

This board integrates one (1) 40-pin female Pi HAT connector and one (1) mini PCIe connector. The RAK Pi HAT is compatible with the Raspberry Pi 3 Model B+ and Raspberry 4.

Features

- Raspberry Pi form factor with a 40-pin compatible header
- Compatible with the Raspberry Pi 3 Model B+/Raspberry 4
- Mini PCIe connector on board

Specifications

Overview

RAK2287/RAK5146 Pi HAT integrates one (1) 40-pin female Pi HAT connector and one (1) PCIe connector. This makes it possible to connect RAK2287 or RAK5146 to Raspberry Pi.

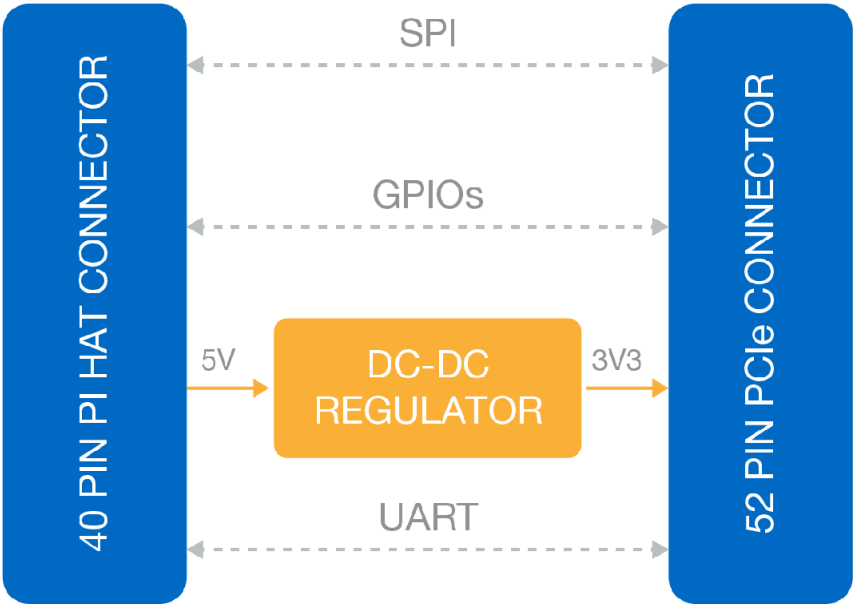


Figure 1: RAK2287/RAK5146 Pi HAT Block Diagram

Hardware

Pin Definition

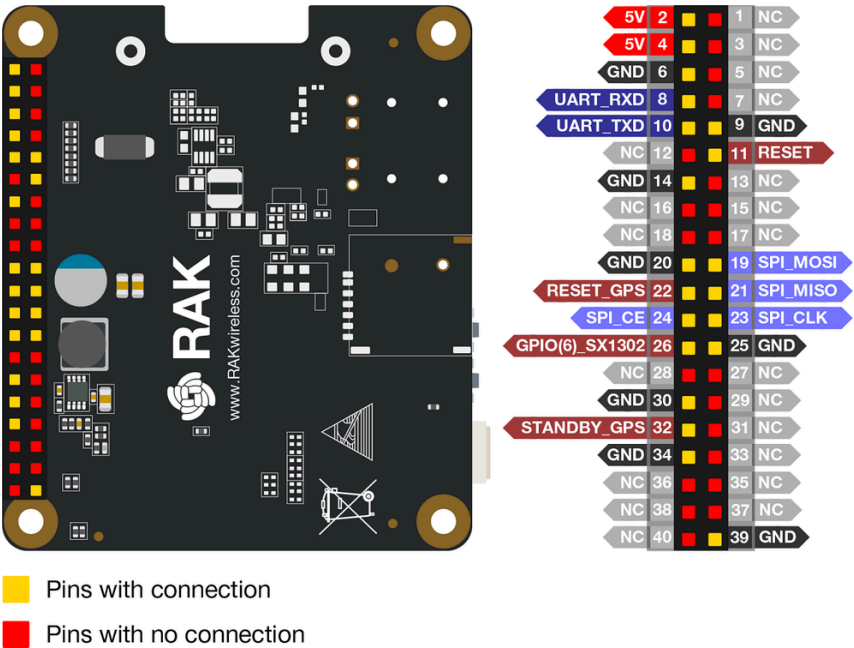


Figure 2: RAK2287/RAK5146 Pi HAT Pinout Diagram

Type	Description
IO	Bidirectional
DI	Digital input
DO	Digital output

Type	Description
OC	Open collector
OD	Open drain
PI	Power input
PO	Power output
NC	No Connection

Pin No.	Raspberry Pi 40-Pin Connector	RAK2287 Pi HAT Pin	Type	Remarks
1	3V3	NC	-	No Connection
2	5 V	5 V	PI	5 V Input
3	GPIO2 (SDA1)	NC	-	No Connection
4	5 V	5 V	PI	5 V Input
5	GPIO3 (SCL1)	NC	-	No Connection
6	GND	GND	-	Ground
7	GPIO4 (GPIO_GCLK)	NC	-	No Connection
8	GPIO14 (TXD0)	UART_RXD_ZOE-M8Q	DI	Connect RAK2287 built in GPS Module (ZOE-M8Q)'s UART_RXD
9	GND	GND	-	Ground
10	GPIO15 (RXD0)	UART_TXD_ZOE-M8Q	DO	Connect to RAK2287 built in GPS Module (ZOE-

Pin No.	Raspberry Pi 40-Pin Connector	RAK2287 Pi HAT Pin	Type	Remarks
				M8Q)'s UART_TXD
11	GPIO17 (GPIO_GEN0)	RESET_RAK2287	DI	Connect to SX1302's RESET PIN, SX1302 reset input, Active high, ≥ 100 ns for SX1302 reset
12	GPIO18 (GPIO_GEN1)	NC	-	No Connection
13	GPIO27 (GPIO_GEN2)	NC	-	No Connection
14	GND	GND	-	Ground
15	GPIO22 (GPIO_GEN3)	NC	-	No Connection
16	GPIO23 (GPIO_GEN4)	NC	-	No Connection
17	3V3	NC	-	No Connection
18	GPIO24 (GPIO_GEN5)	NC	-	No Connection
19	GPIO10 (SPI_MOSI)	SPI_MOSI	DI	Host SPI MOSI
20	GND	GND	-	Ground
21	GPIO9 (SPI_MISO)	SPI_MISO	DO	Host SPI MISO

Pin No.	Raspberry Pi 40-Pin Connector	RAK2287 Pi HAT Pin	Type	Remarks
22	GPIO25 (GPIO_GEN6)	RESET_GPS_ZOE-M8Q	DI	Connect to RAK2287 built in GPS Module (ZOE-M8Q)'s RESET, GPS module ZOE-M8Q reset inputs, Active low
23	GPIO11 (SPI_CLK)	SPI_CLK	DI	Host SPI CLK
24	GPIO8 (SPI_CE0_N)	SPI_CE	DI	Host SPI CS
25	GND	GND	-	Ground
26	GPIO7 (SPI_CE1_N)	GPIO (6)_SX1302	IO	Connect to SX1302's GPIO [6]
27	ID_SD	NC	-	No Connection
28	ID_SC	NC	-	No Connection
29	GPIO5	NC	-	No Connection
30	GND	GND	-	Ground
31	GPIO6	NC	-	No Connection
32	GPIO12	STANDBY_GPS_ZOE-M8Q	DI	Connect to RAK2287 built in GPS Module (ZOE-M8Q)'s STANDBY, GPS module ZOE-M8Q external interrupt input, Active low

Pin No.	Raspberry Pi 40-Pin Connector	RAK2287 Pi HAT Pin	Type	Remarks
33	GPIO13	NC	-	No Connection
34	GND	GND	-	Ground
35	GPIO19	NC	-	No Connection
36	GPIO16	NC	-	No Connection
37	GPIO26	NC	-	No Connection
38	GPIO20	NC	-	No Connection
39	GND	GND	-	Ground
40	GPIO21	NC	-	No Connection

Models / Bundles

Ordering Information

Model	Description	Supported Module
RAK2287/RAK5146 Pi HAT	PCIe to Pi HAT Convert Board for RAK2287 or RAK5146 module with SPI interface	RAK2287-S

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