

Key Features

- **Connect all pins from Raspberry Pi to any punch down block (e.g. 66 Block or Split 66 block) via RJ45 cables.**
- **Terminal blocks for power and ground.**
- **5V, 3.3V and Ground from Raspberry Pi.**
- **Protective PTC fuse for 5V and 3.3V.**
- **Mirrored Pi header available for debug and tracing.**
- **Header on Pi-EzConnect-RJ45 is designed to clear the RJ45 and USB connectors on Pi.**
- **Works with any SBC with a 40 pin Raspberry Pi header.**
- **Pin connections documented on the board.**
- **Same size as Raspberry Pi.**

Pi-EzConnect-RJ45®

Connect Pi header pins to punch-down blocks using RJ45 cables

Ever need to connect a Raspberry Pi in a wiring closet or to a punch down block (e.g. M66 block or other punch down blocks)? Pi-EzConnect-RJ45 provides that connectivity.

However, with multiple sensors IoT boards or other devices distributed over the network can cause a wiring rats nest. Debugging or tracing the wiring can be time consuming.

With Pi-EzConnect-RJ45, use Ethernet cables or straight through RJ45 cables, punch down the connections from the Pi to the Punch down block and then route the connections from the punch down block to the sensors or other IoT devices.

RJ45 connectors provided are not an Ethernet connection nor are they a serial IO connection. Pi-EzConnect-RJ45 provides connectivity from each Raspberry Pi GPIO or pin to a RJ45 break out. A mirrored Pi header makes it easy to debug and trace connections.

Power connections can be tapped from RJ45 as well as from external Terminal blocks on Pi-EzConnect-RJ45 board. A PTC fuse protects the power supply against shorts. Both the 5V and 3.3V power sources are protected by a PTC fuse.

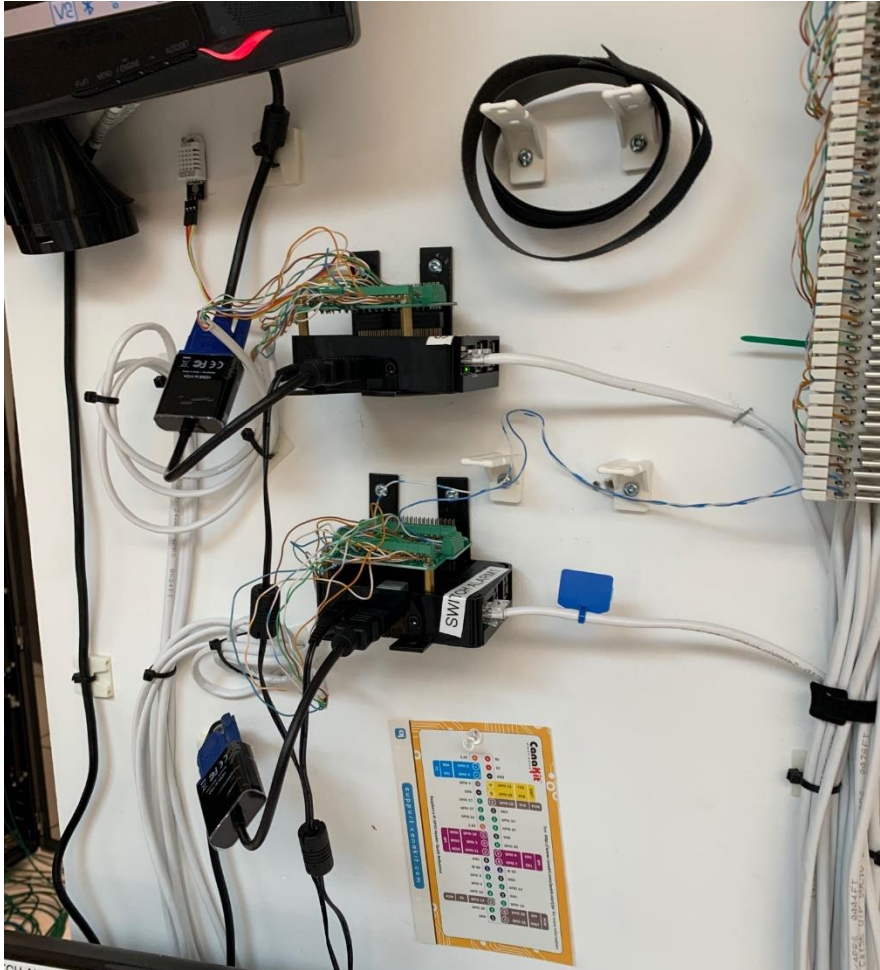
Today, Raspberry Pi's are used for many functions. For example, a Pi can be a streaming media server or a network-based file server or a monitoring system. Whatever the use is, there is a need to install the Pi and connect the Pi to the office wiring system or the home wiring system. Most of the time, wiring is done using a punch down block. Pi-EzConnect-RJ45 makes the wiring easy and clean.

If there are plans to deploy a Raspberry Pi in a wiring closet or in a Rack or any other network location, Pi-EzConnect-RJ45 makes the wiring to a punch down block easy and clean.

The pictures show the Before and After wiring using Pi-EzConnect-RJ45 boards. Pictures also show close-up of the board.

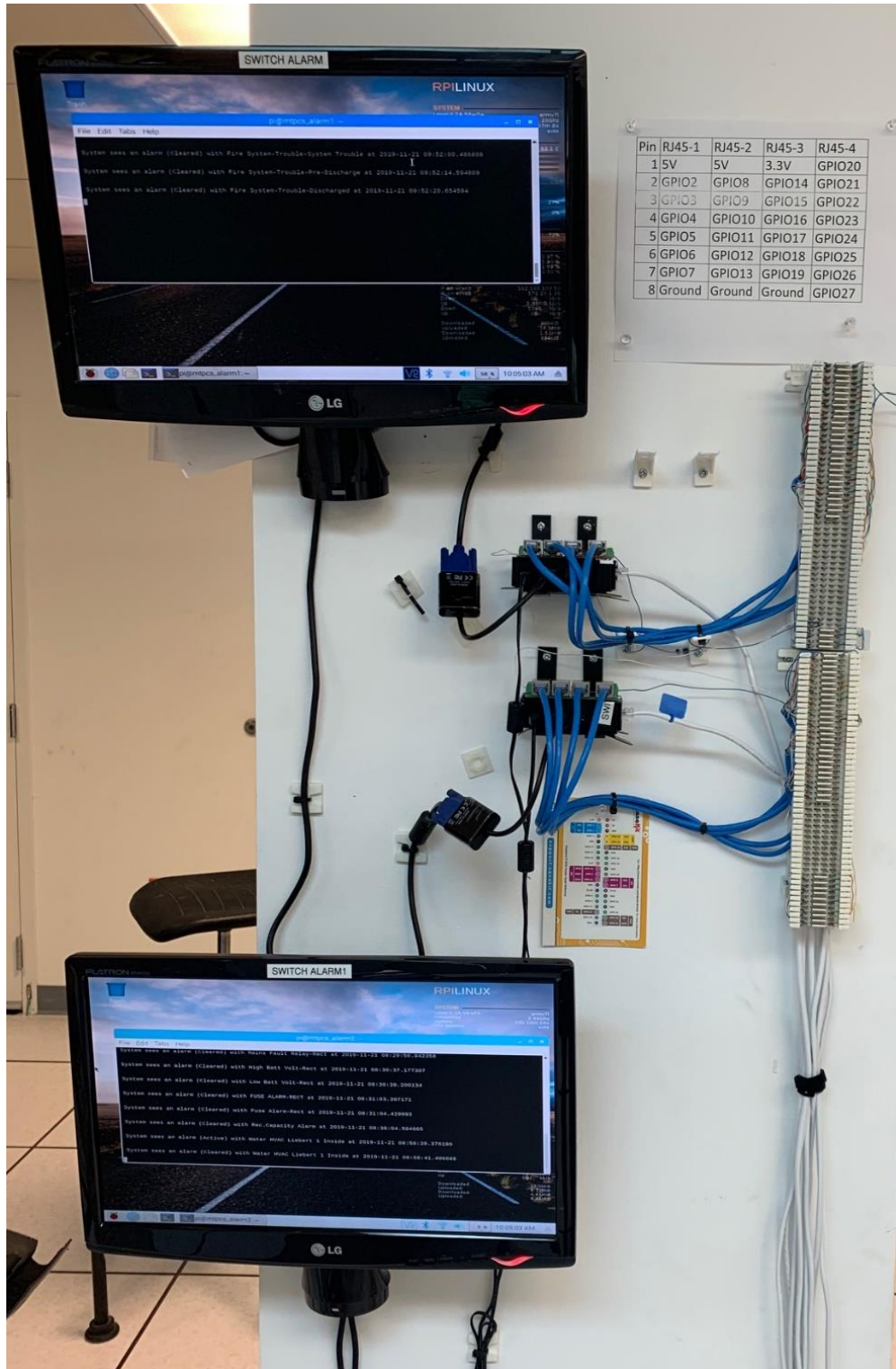


PICTURES



A wiring closet monitoring an Alarm system using Raspberry Pi and Pi-EzConnect from Alchemy Power Inc. Note the 40-pin header image on the wall, to ensure the proper GPIO is connected to the proper punch down location.

The next picture shows the same closet with Pi-EzConnect-RJ45.



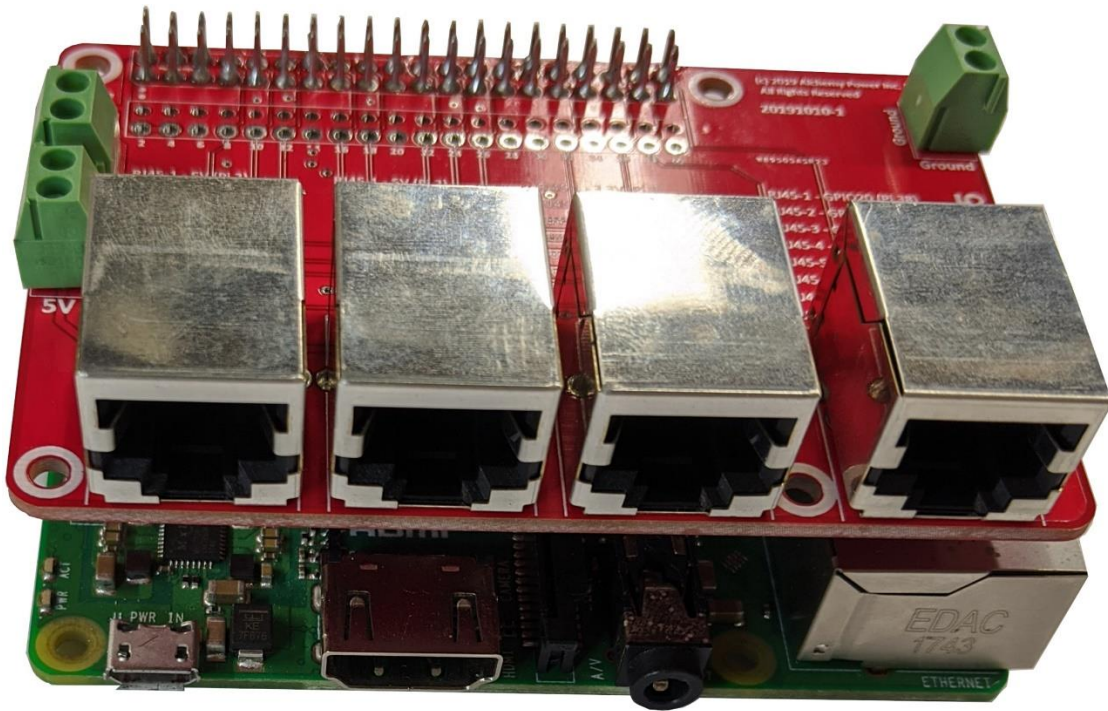
A wiring closet monitoring an Alarm system using Raspberry Pi and Pi-EzConnect-RJ45. Note the simplistic GPIO to RJ45 port map on the wall, also provided in this data sheet.

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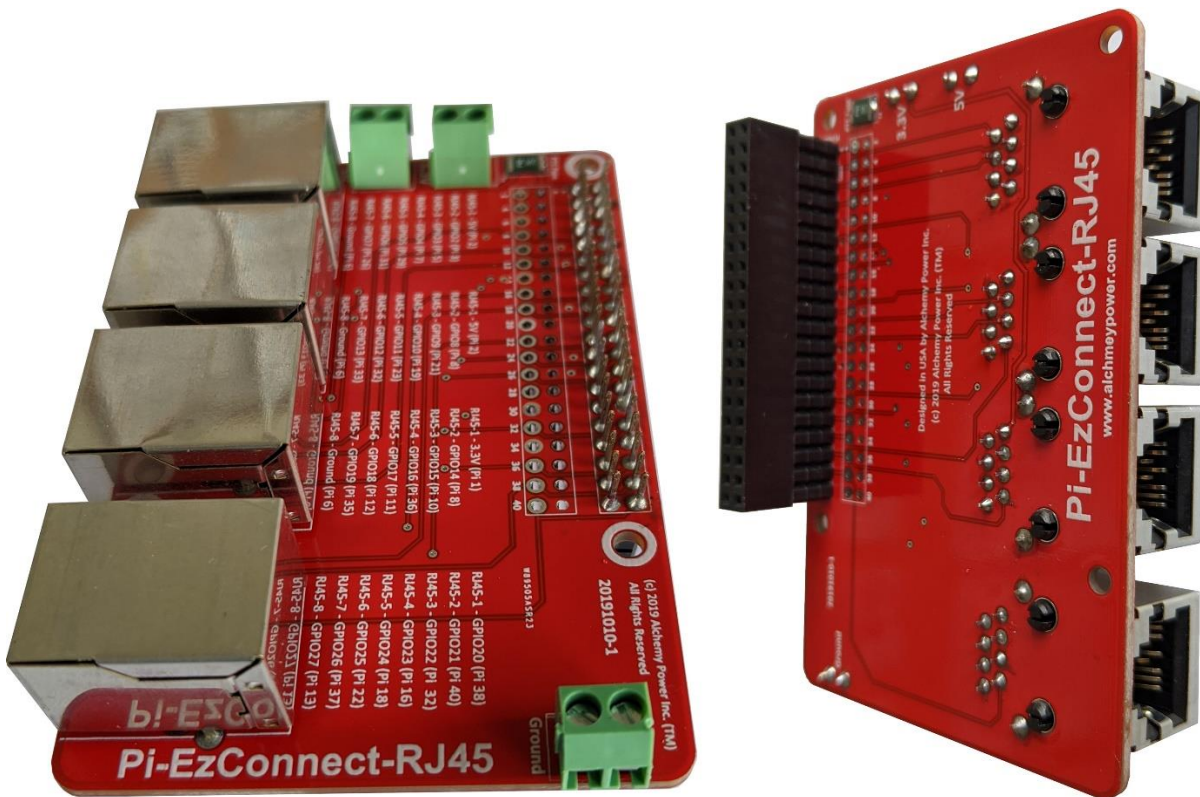
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Photos of closets courtesy E. Carrozo. Reproduced here with permission.



Pi-EzConnect-RJ45 mounted on a Raspberry Pi. Not shown are the spacers to provide mechanical stability to the stack. Raspberry Pi, spacers are not included.



Side view and back view of Pi-EzConnect-RJ45. Note the top layer has the connections documented.

Pin Out

Pin	RJ45 1	RJ45 2	RJ45 3	RJ45 4
1	5V	5V	3.3V	GPIO 20
2	GPIO 2	GPIO 8	GPIO 14	GPIO 21
3	GPIO 3	GPIO 9	GPIO 15	GPIO 22
4	GPIO 4	GPIO 10	GPIO 16	GPIO 23
5	GPIO 5	GPIO 11	GPIO 17	GPIO 24
6	GPIO 6	GPIO 12	GPIO 18	GPIO 25
7	GPIO 7	GPIO 13	GPIO 19	GPIO 26
8	Ground	Ground	Ground	GPIO 27

Pin number and RJ45 Port number map.



Raspberry Pi 40 pin header definition. Artwork recreated by Alchemy Power Inc.

PI-EzConnect-RJ45 connections.

Syntax RJ [port #], Pin #

RJ 3, 1	3.3V	1	2	5V Power	RJ 1-2, 1
RJ 1, 2	GPIO 2 I ² C_SDA	3	4	5V Power	RJ 1-2,1
RJ 1, 3	GPIO 3 I ² C_SCLK	5	6	Ground	RJ 1-3,8
RJ 1,4	GPIO 4 GPIO_GCLK	7	8	GPIO 14 UART0_TX	RJ 3, 2
RJ 1-3,8	Ground	9	10	GPIO 15 UART0_RX	RJ 3,3
RJ 3, 5	GPIO 17 GPIO_GEN0	11	12	GPIO 18 GPIO_GEN1	RJ 3,6
RJ 4, 8	GPIO 27 GPIO_GEN2	13	14	Ground	RJ 1-3,8
RJ 4,3	GPIO 22 GPIO_GEN3	15	16	GPIO 23 GPIO_GEN4	RJ 4,4
RJ 3, 1	3.3V	17	18	GPIO 24 GPIO_GEN5	RJ 4,5
RJ 2, 4	GPIO 10 SPI0_MOSI	19	20	Ground	RJ 1-3,8
RJ 2, 3	GPIO 9 SPI0_MISO	21	22	GPIO 25 GPIO_GEN6	RJ 4,6
RJ 2, 5	GPIO 11 SPI0_SCLK	23	24	GPIO 8 SPI0_CE0	RJ 2,1
RJ 1-3,8	Ground	25	26	GPIO 7 SPI0_CE1	RJ 1,7
	ID_SD I ² C ID EEPROM	27	28	ID_SC I ² C ID EEPROM	
RJ 1,5	GPIO 5	29	30	Ground	RJ 1-3,8
RJ 1, 6	GPIO 6	31	32	GPIO 12	RJ 2,6
RJ 2,7	GPIO 13	33	34	Ground	RJ 1-3,8
RJ 3,7	GPIO 19	35	36	GPIO 16	RJ 3,4
RJ 4, 7	GPIO 26	37	38	GPIO 20	RJ 4, 1
RJ 1-3,8	Ground	39	40	GPIO 21	RJ 4,2

Raspberry Pi 40 pin header definition mapped to Pi-EzConnect-RJ45 Port #, Pin #.

Specifications

General Information

Model Number: Pi-EzConnect-RJ45

Raspberry Pi Models supported

Any Raspberry Pi with a 40-pin header is supported.

These include Pi 2, Pi 3, Pi4, Pi Zero etc. Older Raspberry Pi models with a 26-pin header is not supported. The board includes a 2x20-pin header.

Capabilities

Input Power Source: 5V, sourced from Raspberry Pi header, pin number 2.

3.3V, sourced from Raspberry Pi header, pin 1.

RJ45: 4 ports. Provides connectivity to the 2x20 pin Pi headers.

Fuse: PTC fast blow 3.3V and 5V. Hold Current 1.25A, trip current 2.5A. Max rating 6V, 100A. Time to trip 400ms, Initial resistance 40 mOhms, Post trip resistance 140 mOhms.

Maximum DC Voltage: Maximum +5V.

Terminal Blocks: 3.5 mm spacing. 10A, 300V maximum for each connection. 16-26 AWG wire. Torque (screw) 0.22-0.25 Nm (1.9-2.2 lb-in). M2 screw thread.

Terminal Block Use: For Power and Ground, as marked on the board.

Max RJ45 cable length: The max distance will depend on use, type of RJ45 cable used (copper resistivity). Recommend not to exceed 10 feet cable length. It may be less, depending on frequency, cross talk, V drop and other parameters. Every situation is different.

Dimensions

Board dimensions: 83mm x 56mm x 35mm x (3.3" x 2.2" x 1.4"). Height includes header height and RJ45 port height.

Weight: About 20g (0.7 oz.)

Header: Female pins on bottom. Male pins on the top. Pin thickness appx. 0.6mm. Female pin height appx 16 mm. Male pin height appx 7 mm.

HAT compatibility: The board follows the HAT guidelines for the board dimensions, mounting holes and connectors.

Warranty

90-day limited warranty. Warranty voided by improper use.

Spacers

M2.5x20mm spacers recommended.

Other Information

Recommended peripherals: Pi-EzConnect, Pi-UpTime UPS 2.0, PiZ-Uptime UPS 2.0.

RoHS Compliance: Electronic components, board etc. are RoHS compliant.

Operating Temperature: -10°C to 85°C.

Operating Humidity: 10% to 80% non-condensing.

Code download: none

User Guide download: none

Product Video: TBD

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GP Consulting Inc.

(Owner of Alchemy Power Inc. IP and all rights)

Phone: 650.823.2316

Email: sales@alchemypower.com
www.alchemypower.com