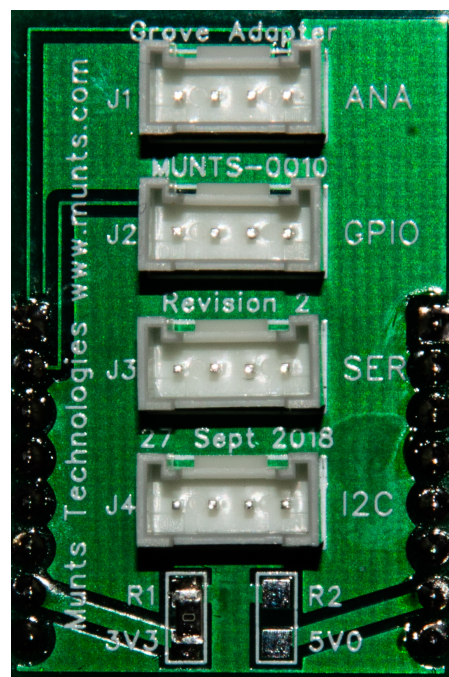# mikroBUS™ Grove Adapter MUNTS-0010 User Guide

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Munts Technologies

http://tech.munts.com

Introduction

The ***mikroBUS^{TM} Grove Adapter*** is a mechanical adapter that enables you to connect ***Grove System*** modules to a microcomputer target board with a ***microBUS*** I/O expansion socket. The adapter plugs into a ***microBUS*** socket and provides four ***Grove System*** connectors.

Each of the ***Grove System*** connectors has two signal pins (analog, digital, serial, or I^2C) connected to two signal pins of the ***mikroBUS*** socket. See page 3 for the connection table.

Since the ***Grove System*** doesn't support SPI (Serial Peripheral Connect) devices, the four ***mikroBUS*** SPI signal pins are not connected.

Credits

The ***mikroBUS^{TM}*** system is defined by MikroElektronika D.O.O.: https://www.mikroe.com/mikrobus

The ***Grove System*** is defined by Seeed Studio: http://wiki.seeedstudio.com/Grove_System

The ***Qwiic Connect System*** is defined by SparkFun Electronics: https://www.sparkfun.com/qwiic

The ***Pmod^{TM} System*** is defined by Digilent: https://store.digilentinc.com/pmod-modules-connectors

Grove Connector Pin Connections

Connector		Pin	mikroBUS™ Function
J1	Analog	1	AN
J1	Analog	2	PWM
J1	Analog	3	VCC
J1	Analog	4	GND
J2	GPIO	1	RST
J2	GPIO	2	INT
J2	GPIO	3	VCC
J2	GPIO	4	GND
J3	Serial	1	RX
J3	Serial	2	TX
J3	Serial	3	VCC
J3	Serial	4	GND
J4	I²C	1	SCL
J4	I²C	2	SDA
J4	I²C	3	VCC
J4	I²C	4	GND

Target board *microBUS* socket connections vary widely and may not be at all what you expect. For example, the 2-socket *BeagleBone Click Shield* connects each `AN` pin directly to a 1.8V analog input on the target board while the 4-socket *BeagleBone mikroBUS Cape* has scaling resistors that divide the voltage at each `AN` pin in half, yielding a more useful analog full scale range of 3.6V.

Both the 1-socket *Pi Click Shield* and the 2-socket *Pi 2 Click Shield* for the Raspberry Pi connect each `AN` pin to a GPIO pin on the target board expansion header while the newest 2-socket *Pi 3 Click Shield* connects each `AN` pin to an on-board MCP3204 A/D converter with an analog full scale range of 4.096V.

So with *just* BeagleBone and Raspberry Pi target boards alone, and depending on the particular *microBUS* shield used, the `AN` signal at `J1` may be connected to a digital GPIO pin, or a dedicated analog input with a full scale range of 1.8, 3.6, or 4.096V.

Using Qwiic Modules

The ***Qwiic Connect System*** is a family of peripheral modules from SparkFun Electronics that have 4-pin I^{2}C connectors. You can connect a single Qwiic module to `J4` using an adapter cable available from SparkFun Electronics: https://www.sparkfun.com/products/14739. Qwiic modules generally have upstream and downstream connectors, so you can usually connect the first Qwiic module with the adapter cable and then daisy-chain other modules using Qwiic cables.

Using Other Modules

You can also use other types of peripheral modules with Grove adapter cables like these:

https://www.seeedstudio.com/Grove-4-pin-Female-Jumper-to-Grove-4-pin-Conversion-Cable-5-PCs-per-PAc-p-1020.html
https://www.seeedstudio.com/Grove-4-pin-Male-Jumper-to-Grove-4-pin-Conversion-Cable-5-PCs-per-Pac-p-1565.html.

For example, you can use a **female** conversion cable to connect a Digilent I^{2}C Pmod module (https://store.digilentinc.com/by-communication-protocol/i2c) to `J4`.

Or you can use a **male** conversion cable to connect a single chip microcontroller in a solderless breadboard to `J3` (serial) or `J4` (I^{2}C). The possibilities are endless!
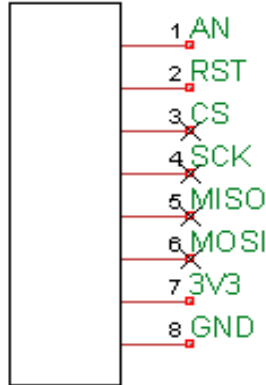
5V Operation

The factory default configuration supplies 3.3V to all of the Grove connectors. This can be changed to 5V by moving the zero ohm resistor from position `R1` to position `R2`.

Most Grove modules can operate with either 3.3V or 5V power. A few older modules **require** 5V power while some newer modules **require** 3.3V power. All Qwiic modules are designed for 3.3V power, as are Digilent Pmod modules.
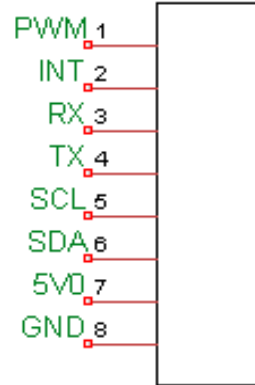
You should change the power supply voltage to 5V **only** if you need to work with an older module that requires 5V, as you will then be unable to use modules that require 3.3V power.

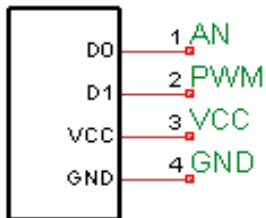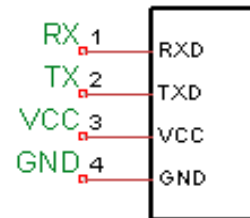# Schematic Diagram

8 pin header

1 AN
2 RST
3 CS
4 SCK
5 MISO
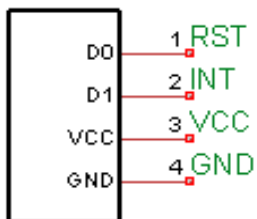6 MOSI
7 3V3
8 GND

8 pin header

PWM 1
INT 2
RX 3
TX 4
SCL 5
SDA 6
5V0 7
GND 8

J1
Grove

Grove Analog

D0 — 1 AN
D1 — 2 PWM
VCC — 3 VCC
GND — 4 GND

J3
Grove

RX 1 — RXD
TX 2 — TXD
VCC 3 — VCC
GND 4 — GND

Grove Serial

J2
Grove

Grove Digital

D0 — 1 RST
D1 — 2 INT
VCC — 3 VCC
GND — 4 GND

J4
Grove

SCL 1 — SCL
SDA 2 — SDA
VCC 3 — VCC
GND 4 — GND
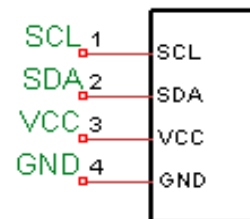
Grove I2C

Grove Connector Power Selector

3V3   5V0

R1   R2
0 ohm   0 ohm   Do Not Mount R2!

VCC