# Welcome to the thingSoC® I2C Hub

The TSOC_GROVEY_I2CHUB is an I2C Switch/Hub, based on the NXP PCA9546A chip, in an Embedded Module format for the new thingSoC, Internet of Things open source hardware standard.

Getting Started :

The TSOC_GROVEY_I2CHUB provides four (4) high speed I2C ports for four independent I2C channels. While you could just "daisy-chain" four (4) I2C connections, there are several situations that require a "hub", including :

1. When you need to do 3.3 Volt to 5.0 Volt level conversion.

2. When you have several I2C peripherals that use the same I2C address and you cna't change the addess. The "hub" allows you to select between them.

3. When you want to limit the capacitance of each I2C bus segment. This allows you to run the I2C bus faster than daisy-chaining would allow.

The TSOC_GROVEY_I2CHUB is an open source hardware project from PatternAgents, LLC, and you are free to download the schematics, layouts, gerbers, BOMs, etc and build your own boards if you wish.
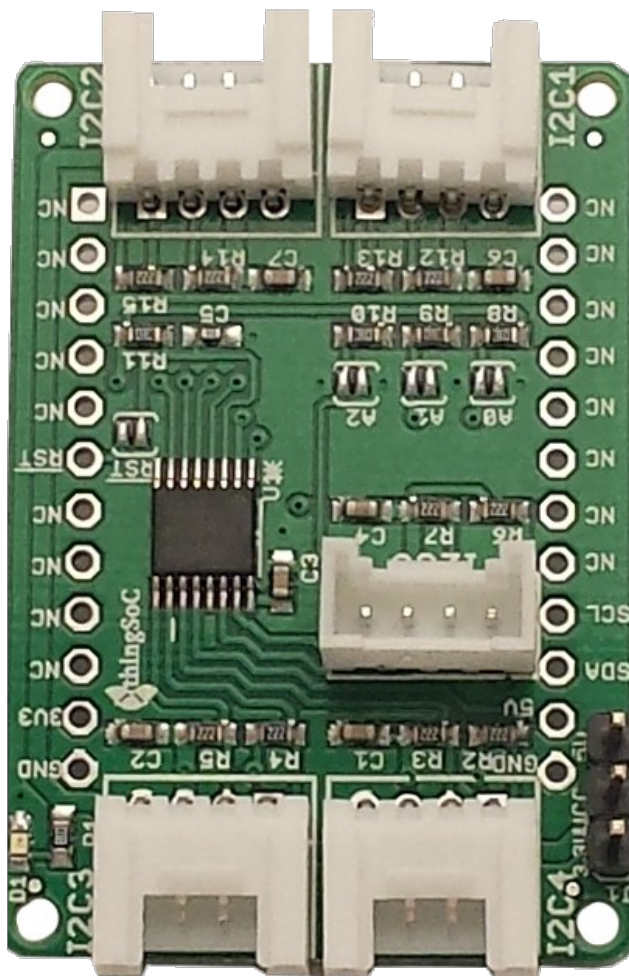
Safe Handling Precautions :

1) Always remove/unplug all power before inserting or removing peripherals.
2) Always ground yourself by touching a ground point before handling your boards.
3) Use a static safe bag when transporting your TSOC_GROVEY_I2CHUB board.

Adding Grove Peripherals :
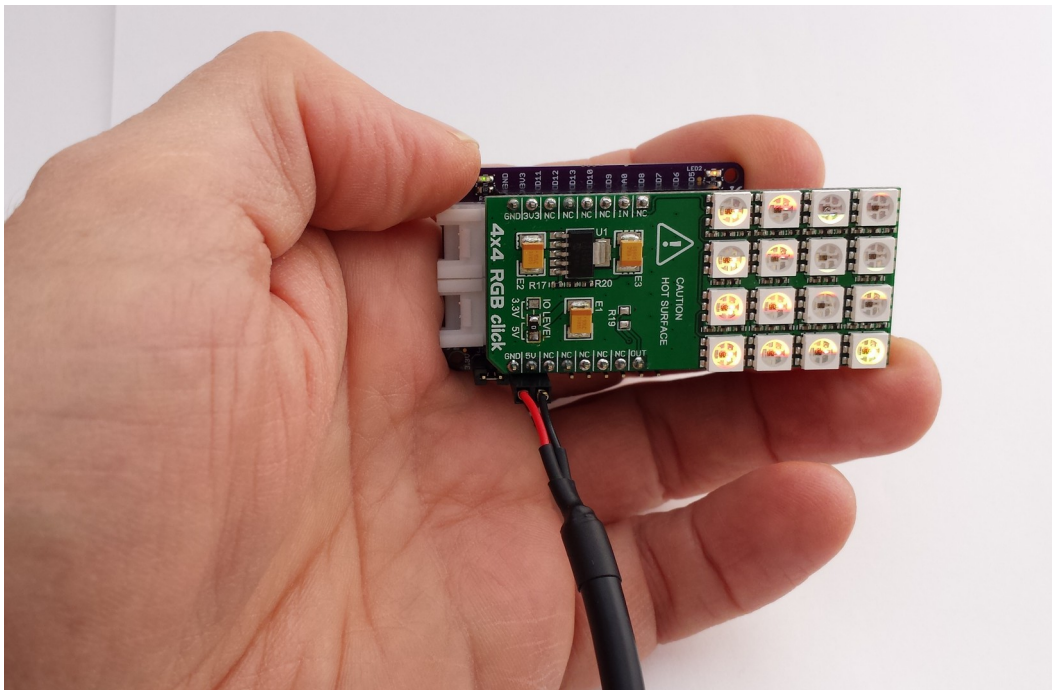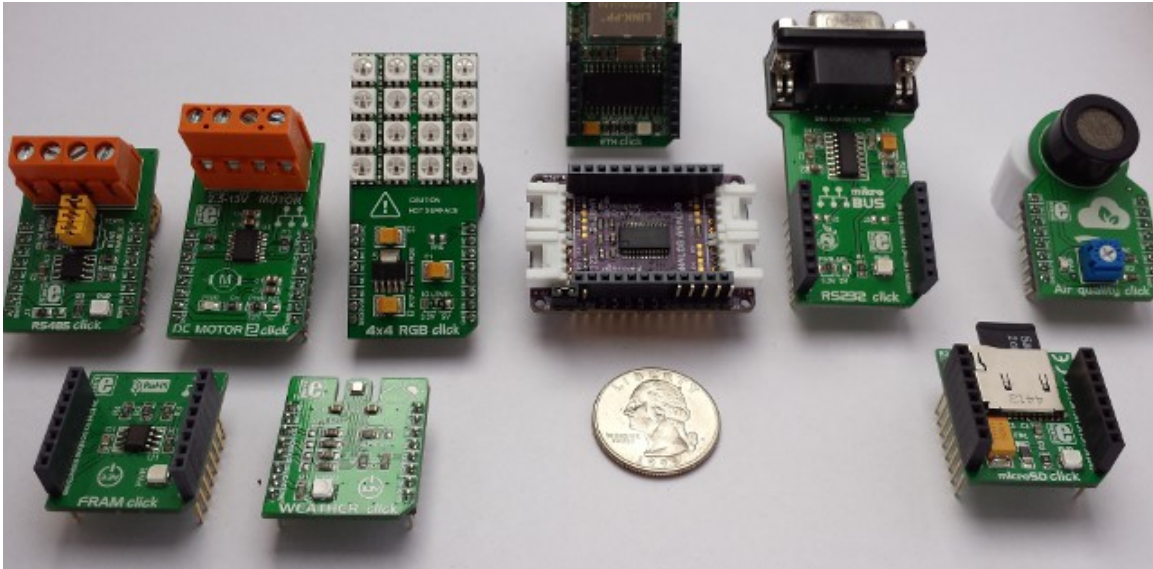
The TSOC_GROVEY_I2CHUB board supports Grove peripherals.
1) Grove connectors are polarized, and can only be plugged in one way.
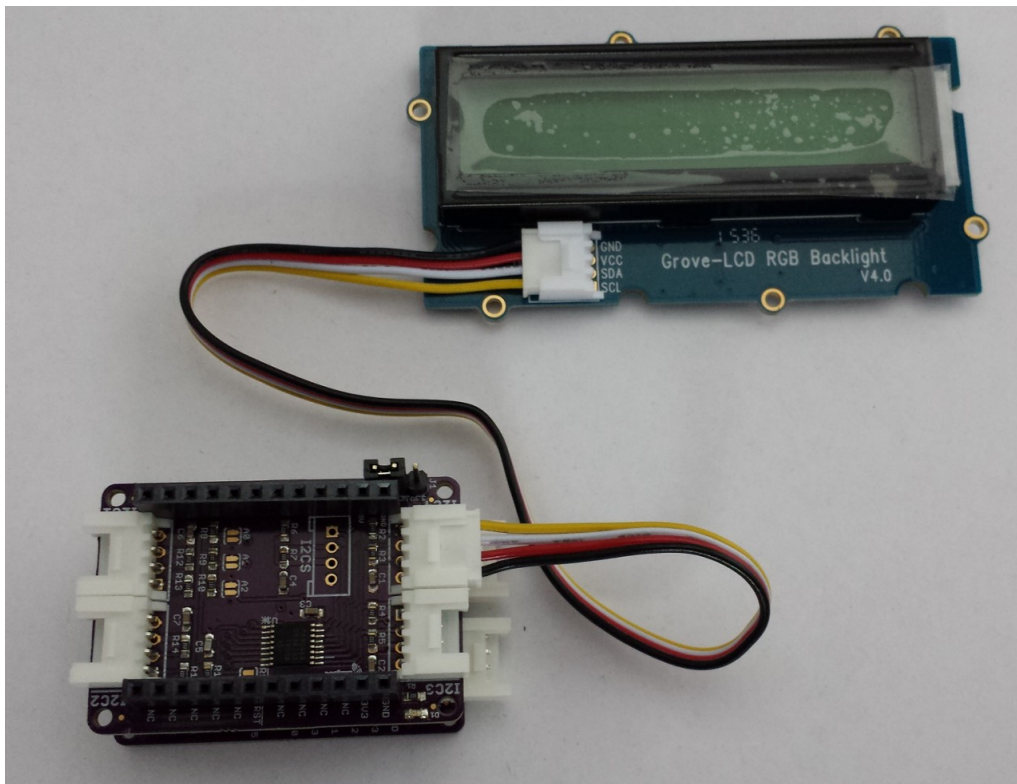
Adding Mikrobus Peripherals :

The TSOC_GROVEY_I2CHUB board supports both Grove and Mikrobus peripherals.

1) *Make sure to align the SQUARE/CUT edges* of the Mikrobus board together to insure that the polarity is correct. Push down **evenly** to seat the boards in the socket.

2) Note that the "stacking pins" are somewhat longer by design, and there will be some extra space between the boards when using stacking connectors.

thingSoC® Grovey One Arduino Example :

1) Using Multiple LCD Displays with the TSOC_GROVEY_I2CHUB board
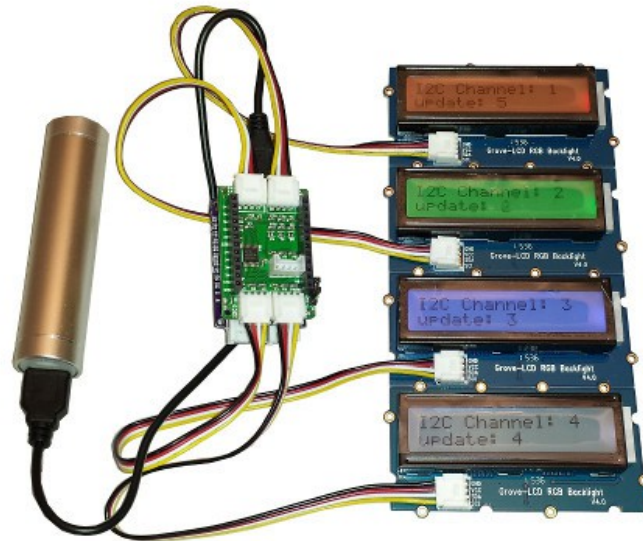
For more information and examples :

Complete documentation, including schematics, layouts, gerbers, and Bill of Materials (BOM) are available on the thingSoC website at :

https://github.com/thingSoC/TSOC_GROVEY_I2CHUB/tree/master/TSOC_GROVEY_I2CHUB

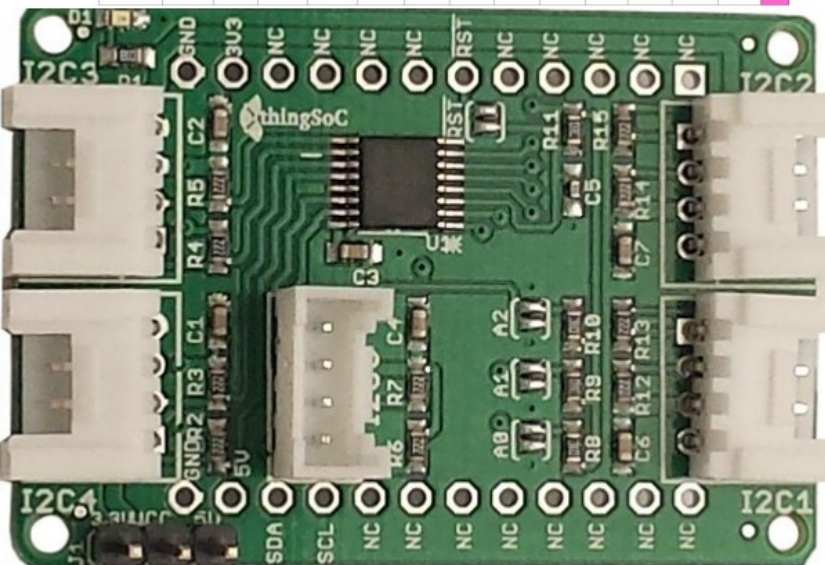There is also a project Wiki available for asking questions and more information at :

https://github.com/thingSoC/TSOC_GROVEY_I2CHUB/wiki

thingSoC® Grovey One Features :

The TSOC_GROVEY_I2CHUB is a low cost, embeddable module featuring an NXP PCA9546A device :

- NXP PCA9546A

- 0 Hz to 400KHz I2C Bus Speed

- 3.3 Volt or 5.0 Volt operation

- Optional Active Low Reset Line

- All channels deselected on Power up

- No Glitch switching

- Supports hot insertion

- Low Standby current

- Builtin ESD protection

- I2C (4 Channels)

- Power LEDs

- thingSoC Compliant Module

- Mikrobus Compatible Module

- Support SeeedStudio Grove Peripherals

Top pin table

DEFAULT	PORT	ADC	PWM
IO2	NC		
IO1	NC		
SS2	NC		
SS1	NC		
IRQ	NC		
ATN	RST		
SSEL	NC		
SCK	NC		
MISO	NC		
MOSI	NC		
3.3 VOLTS	3V3		
GROUND	GND		
POWER LED	VCC		

Left connector I2C3 (upper)

I2C3			
SCL3	SCL	VCC	GND
SDA3	SDA	PWR3	GNDR3

Left connector I2C4 (lower)

SCL4	SCL	VCC	GND
SDA4	SDA	PWR4	GNDR4

Right connector I2C2 (upper)

			I2C2
I2C2	SCL	VCC	GND
SDA	SDA	PWR	GND

Right connector I2C1 (lower)

			I2C1
I2C1	SCL	VCC	GND
SDA	SDA	PWR	GND

Bottom pin table

DEFAULT	PORT	ADC	PWM
RI	NC		
DCD	NC		
DSR	NC		
DTR	NC		
RTS	NC		
CTS	NC		
RXD	NC		
TXD	NC		
SCL	SCL		
SDA	SDA		
5.0 VOLTS	5V0		
GND	GND		

LEGEND

SPI BUS PINS	
I2C BUS PINS	
PROGRAM/JTAG/DEBUG PINS	
UART PINS	
TOUCH PINS	
PWM PINS	
ANALOG/ADC PINS	
DIGITAL PINS	
POWER/GROUND PINS	