Contents

[Board to board connectors 2](#_Toc57715694)

[AVX INTERCONNECT 009159010061916 2](#_Toc57715695)

[AVR INTERCONNECT 009159006551906 3](#_Toc57715696)

[AVX Corporation 13 9159006101916 3](#_Toc57715697)

[**Brick R Knowledge: Click here** 4](#_Toc57715698)

[**Similar model brick connector from Alibaba: Click here \_Alibaba** 4](#_Toc57715699)

[Quick connect Blade type pcb smd terminal block 4](#_Toc57715700)

[TE Connectivity, Hermaphroditic Board to Board, Surface Mount, Rated At 6A, 125 V ac/dc 4](#_Toc57715701)

[Pluggable Terminal Blocks ZEC 1.5/ 6-5.0-LPV 6](#_Toc57715702)

[Magnetic connectors 6](#_Toc57715703)

[HYTEPRO-HTP-CON-M417 6](#_Toc57715704)

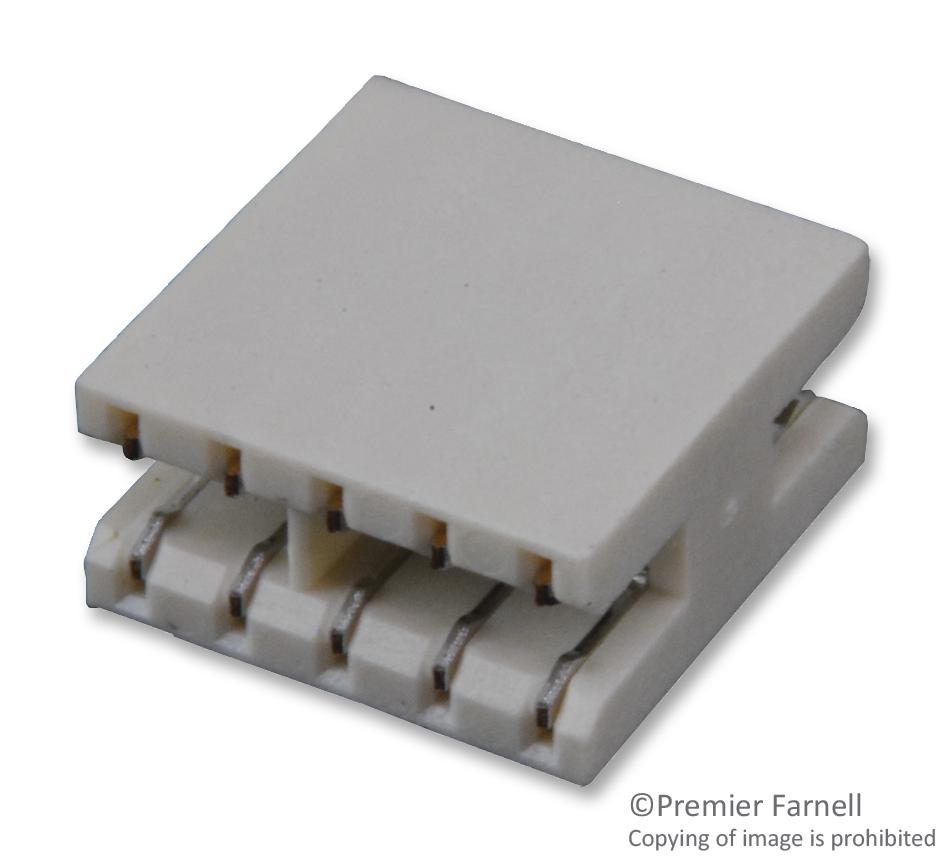
[HYTEPRO –Positive 4 pogo pin magnetic charger connector M411P 7](#_Toc57715705)

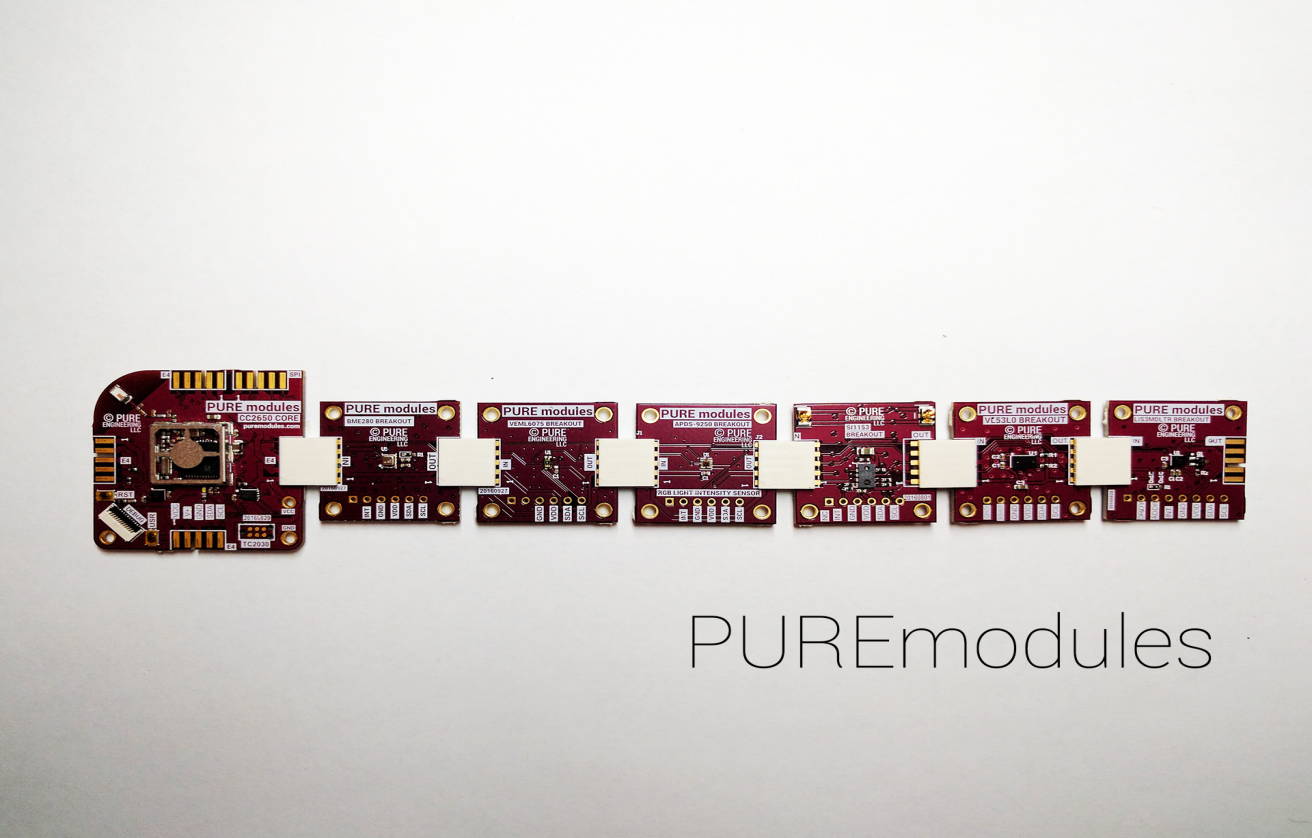
[STEM kits providing companies 8](#_Toc57715706)

# Board to board connectors

AVX INTERCONNECT 009159010061916

Card Edge Connector, Dual Side, 1.6 mm, 10 Contacts, Surface Mount, Right Angle, Solder

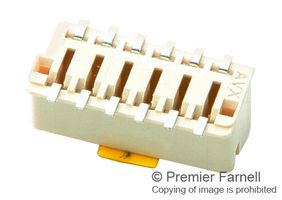




* Features
  + Coplanar
  + Easy to connect using gold fingers
  + Polarized
* Number of positions:4,6,8,10
* Availability & cost
  + element14 :2747 in stock –Rs 72.8[Click here](https://in.element14.com/avx-interconnect/009159010061916/card-edge-conn-dual-side-10pos/dp/2668413)
  + Mouser:2 in stock-Rs62.05 [Click here](https://www.mouser.in/ProductDetail/AVX/009159010061916?qs=%2Fha2pyFadujLRCBjhj%2FMFr3djm7uBops4tNUsywMCgkteCOR9K2UmO9%2FOM2El6nm&utm_source=octopart&utm_medium=aggregator&utm_campaign=581-009159010061916&utm_content=AVX)

### AVR INTERCONNECT 009159006551906

Card Edge Connector, Single Side, 1.6 mm, 6 Contacts, Surface Mount, Straight, Solder



* Features
  + Right angle connection
  + Board is connected using gold fingers.
  + SMT type
* Number of positions:2,3,4,5,6
* Availability & cost
  + element14 :223 in stock –Rs 94.21[Click here](https://in.element14.com/avx-interconnect/009159006551906/card-edge-conn-single-side-6pos/dp/2668411)
  + Mouser:2683 in stock-Rs61.32[Click here](https://www.mouser.in/ProductDetail/AVX/009159006501906?qs=4xWrLIlwatDG%2FIqPw5dxXw%3D%3D)

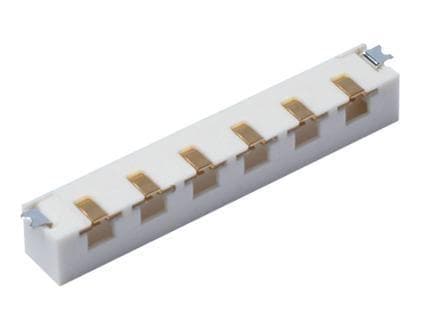
### AVX Corporation 13 9159006101916



* Feature
  + End to end connection, Coplanar
  + SMT type
  + Requires female socket for connection
* Number of positions:2,3,4,5,6
* Availability & cost
  + Mouser:3845 in stock-Rs124.83[Click here](https://www.mouser.in/ProductDetail/AVX/139159006101916?qs=Dc2RuoSqrEW%252BfVsIzni8kQ%3D%3D)

AVX Corporation 209159006101916

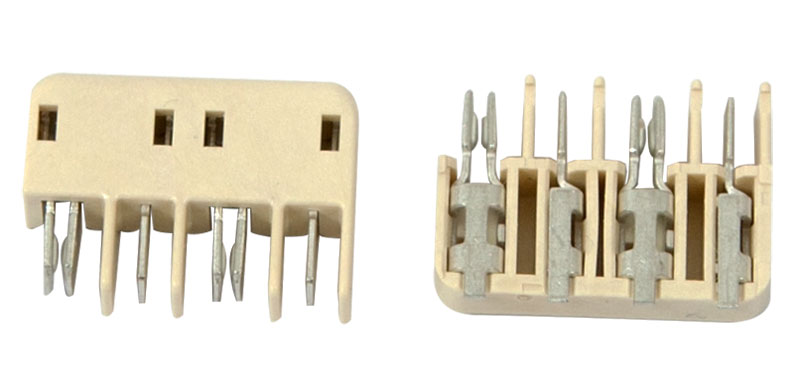
Horizontal Socket: BTB 20-9159



* Features
  + SMT type
  + Requires male connector
* Number of positions:2,3,4,5,6
* Availability & cost
  + Mouser:2444 in stock-Rs115.34[Click here](https://www.mouser.in/ProductDetail/AVX/209159006101916?qs=%2Fha2pyFadujXKcGNb8hX5DE51ChAMthOgvYgAxYfJlF%252BSD5SzB4vIK3unLq5WEtO)

**Brick R Knowledge:** [**Click here**](https://www.brickrknowledge.de/fr/bricks/active-basic/)

Youtube video:<https://youtu.be/XAMB9qxogMY>



**Hermaphroditic Blade And Receptacle connector**

**Board-to-Board**

**Similar model brick connector from Alibaba:** [**Click here \_Alibaba**](https://www.alibaba.com/product-detail/Quick-connect-Blade-type-pcb-smd_1850369566.html)

Quick connect Blade type pcb smd terminal block

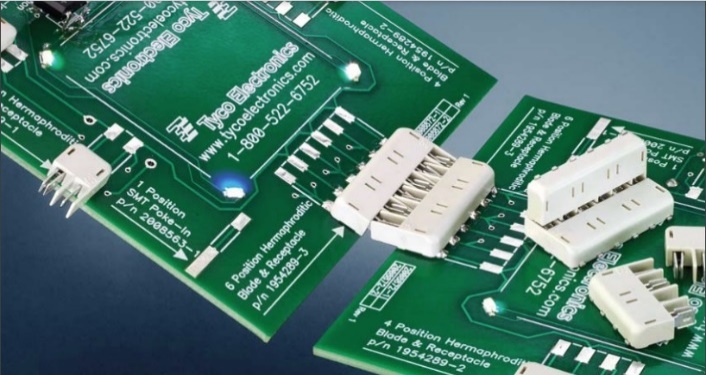


TE Connectivity, Hermaphroditic Board to Board, Surface Mount, Rated At 6A, 125 V ac/dc

[Click here\_TE](https://www.te.com/usa-en/products/connectors/lighting-connectors/intersection/hermaphroditic-connectors.html?source=header-match&tab=pgp-story)

[Click here\_RS delivers](https://in.rsdelivers.com/product/te-connectivity/1-1954289-2/te-connectivity-hermaphroditic-board-to-board/6860855?gclid=EAIaIQobChMItsi8iMuf7QIV0nwrCh0bXwGEEAQYASABEgIp6vD_BwE&gclsrc=aw.ds)





* Features
  + Use the same connector for power, data or signal connections with 2, 4 or 6 positions
  + Single connector that mates to itself
  + Vertical or horizontal connections can be made(connector can be articulated from 90° to 180°)
  + Simplify design by allowing the same footprint on both ends of the board
  + Speed assembly time with surface mount and reflow compatible low profile design in tape and reel packaging.
* Number of positions:2,4,6
* Availability & cost for 6 pin connector:
  + Model no:1954289-3,1325 in stock Cost:Rs145.18 per piece,RS delivers: [Click here](https://in.rsdelivers.com/product/te-connectivity/1-1954289-2/te-connectivity-hermaphroditic-board-to-board/6860855?gclid=EAIaIQobChMItsi8iMuf7QIV0nwrCh0bXwGEEAQYASABEgIp6vD_BwE&gclsrc=aw.ds)
  + Model no:1954289-3,8600 in stock,Cost:Rs148.92 per piece,Mouser:[Click here](https://www.mouser.in/ProductDetail/TE-Connectivity/1954289-3?qs=%2Fha2pyFaduiYDP43xn3I9E5Ka2lfFRtI10gnyom%2FOYk=)
  + Model no:2213614-3, 11905 in stock ,Cost:Rs254.04 per piece,Mouser :[Click here](https://www.mouser.in/ProductDetail/TE-Connectivity-PB/2213617-3?qs=%2Fha2pyFaduiduGWC%252BCGrj6efUffcHAvvbgbAUuwCsEdVTdPYjdgJgw%3D%3D&utm_source=octopart&utm_medium=aggregator&utm_campaign=571-2213617-3&utm_content=TE%20Connectivity&tetid=8wnlCKxIgi)

Pluggable Terminal Blocks ZEC 1.5/ 6-5.0-LPV



* Features
  + Coplanar edge connector
  + Easy to connect using gold fingers.
  + Polarized
* Number of positions:6
* Availability & cost
  + Mouser:26 in stock-Rs1005.94 [Click here](https://www.mouser.in/ProductDetail/Phoenix-Contact/1898305?qs=71zq8cT40IQ55Ox2N2UCWg==)

# Magnetic connectors

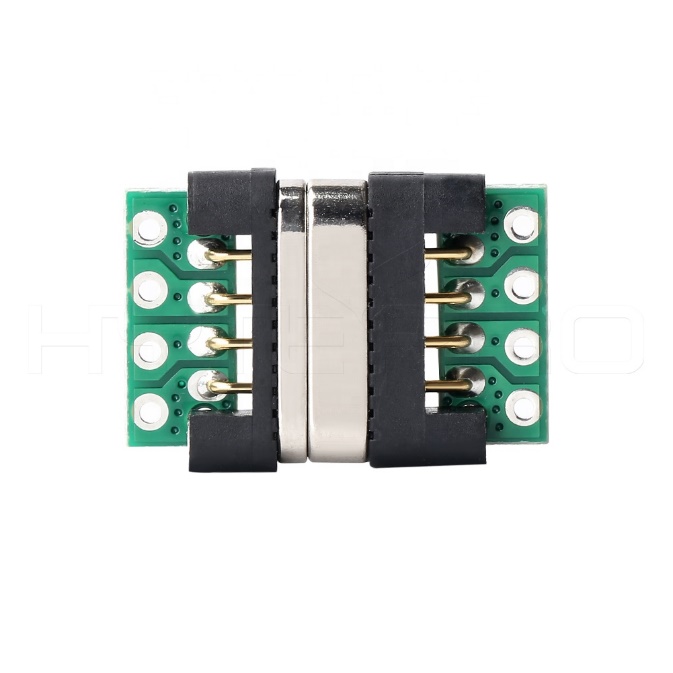
## HYTEPRO-HTP-CON-M417

Right angle 4 pogo pin PCB mount magnetic connector anti-reverse design

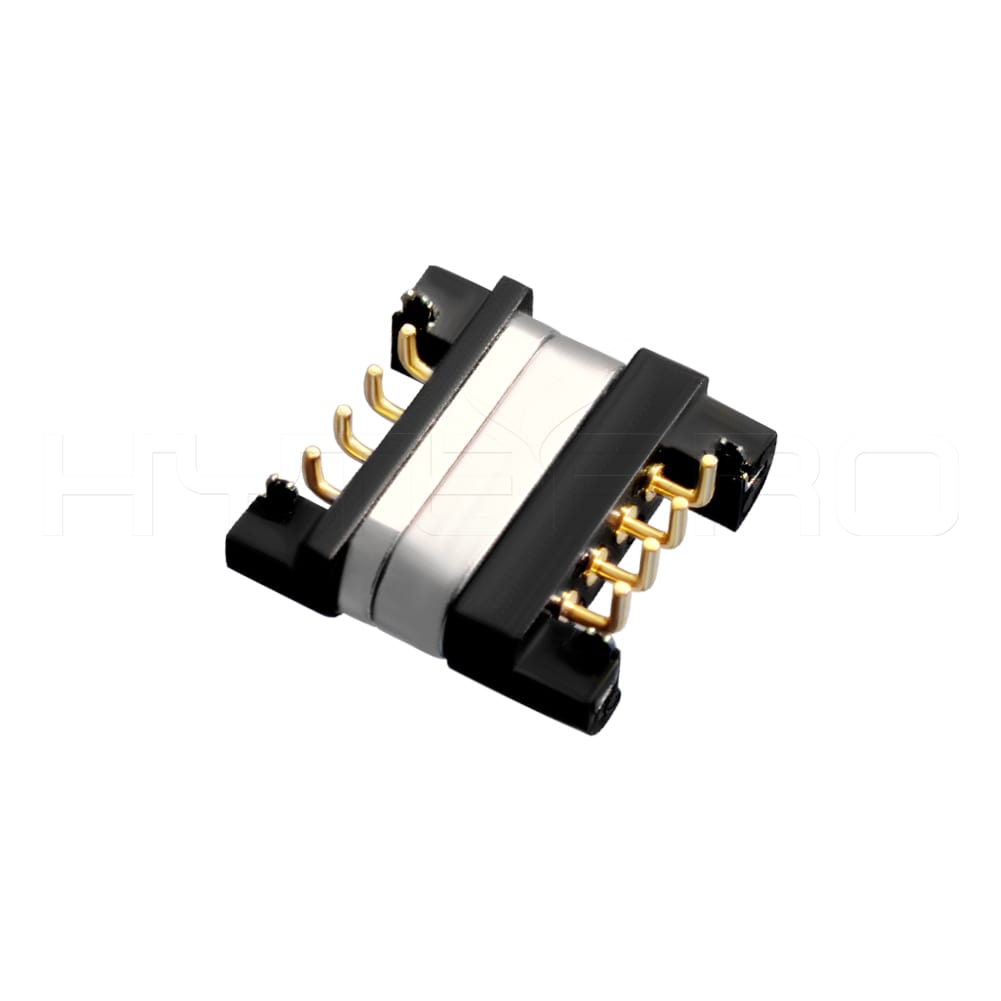
[Click here from alibaba](https://www.alibaba.com/product-detail/Right-angle-4-pogo-pin-pcb_62321909258.html?spm=a2700.7724857.0.0.166d79bb2cPHbX)

Cost:

* 500-999 Pairs **US$2.85=Rs210**
* >=1000 Pairs **US$2.70=Rs199.75**

## HYTEPRO –Positive 4 pogo pin magnetic charger connector M411P[Click here to go to hytepro](https://www.hyte.pro/product/m411p.html)



* Features
  + Used for data transmission and charging
  + Can be connected with PCB board.
* Availability and cost
  + Instock from Alibaba[Click here1](https://www.alibaba.com/product-detail/Positive-5v-power-connector-right-angle_1600135824305.html?spm=a2700.icbuShop.152.6.1feb66a19z5adR),[Click here2](https://www.alibaba.com/product-detail/Positive-4-pogo-pin-right-angle_62314423285.html?spm=a2700.galleryofferlist.normal_offer.d_title.340b7319TpSgSF)
  + 500-999 pairs -Rs186.51
  + >=1000pairs-Rs176.9

# 1-12-2020:Finalised connector is magnetic type.- Positive 4 pogo pin magnetic charger connector M411P

# STEM kits providing companies

1. Little bits
2. Creation create
3. Snapcircuits
4. Brick R Knowledge
5. Mind storms…
6. Electrobits(Kit4Curious)[Clickhere](https://kit4curious.com/electrobits/)

# Protocol guidelines

The system consist of one master and many number of bricks .Both to and fro communication is possible .The slave consist of two UART and the master consist of one UART .The TX pin of master is connected to RX pin of first slave and then the RX pin is connected to TX pin of the first slave.

RX1

Master brick

RX1

TX2

TX

Brick 2

Brick 1

RX

RX2

TX1

TX1

The protocol consist of two frames

* Synchronization frames
  + Color Synch. Frame(C)
  + Name frame(N)
  + Potentiometer frame (conditions apply).(P)
* Data frames
  + Data forward frame
  + Data reverse frame

## **Synchronization Frames**

**Color synch. Frame:** This frame consist of bits which defines the color of the indicator LED placed on the brick.

This bits moves from master to slave and it is a permanent frame. It will be sent from the master to the first slave and then moves to the second slave and so on. (Master to Slave)

**Name frame:** This frame consist of bits which tells the master the address of the brick. When each new brick is connected the slaves address is sent to the master through each slaves. The bits are send from slave to master brick.(Slave to Master)

**Potentiometer frame:** This frame is introduced in the protocol when potentiometer is connected in the sytem.The bits are transferred from master to slaves. Used when both the potentiometer and led bricks are connected.

## **Data frames**

**Data forward frame:** The data from the master to the slave is sent through this frame. It moves from master to slaves. It is a decrementing frame.

**Data reverse frame:** The data from the slave to master is sent through this frame. The frame moves from slave to master. It’s an incrementing frame. Null bits are being used in this frame format.