Amphenol

COMMUNICATIONS SOLUTIONS

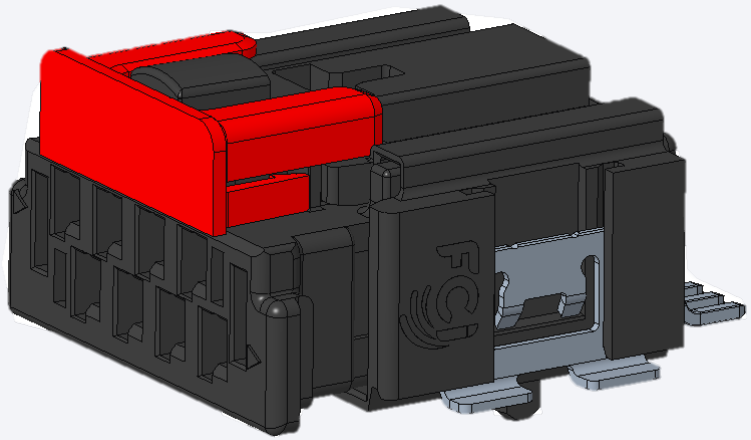
MicroSpace™ Product Presentation

FCi Basics

Value Proposition

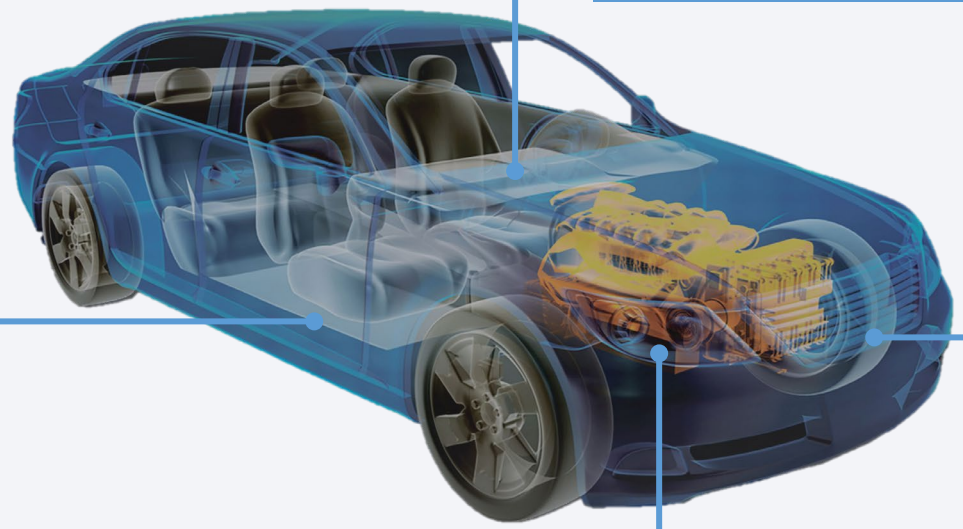
- The MicroSpace™ Crimp-to-Wire's compact design addresses the growing demand for miniaturizing components. The connector is capable of reducing the PCB footprint by 50% due to the increase in signal density.

- The connector has nominal current carrying capacity of up to 4A and cable external diameter up to 1.4 mm.



- The unique design of the MicroSpace™ CtW makes this solution and contact pitch compatible with LV214 Severity-2. The right choice when high vibration endurance, primary latch, TPA, CPA, Poka Yoke, Kojiri safe are required with flexible configurations (staggered, side to side 1 or 2 rows, side or top latching).

Target Market Application



Infotainment
Navigation
In Car Entertainment
Driver's Head-up Display

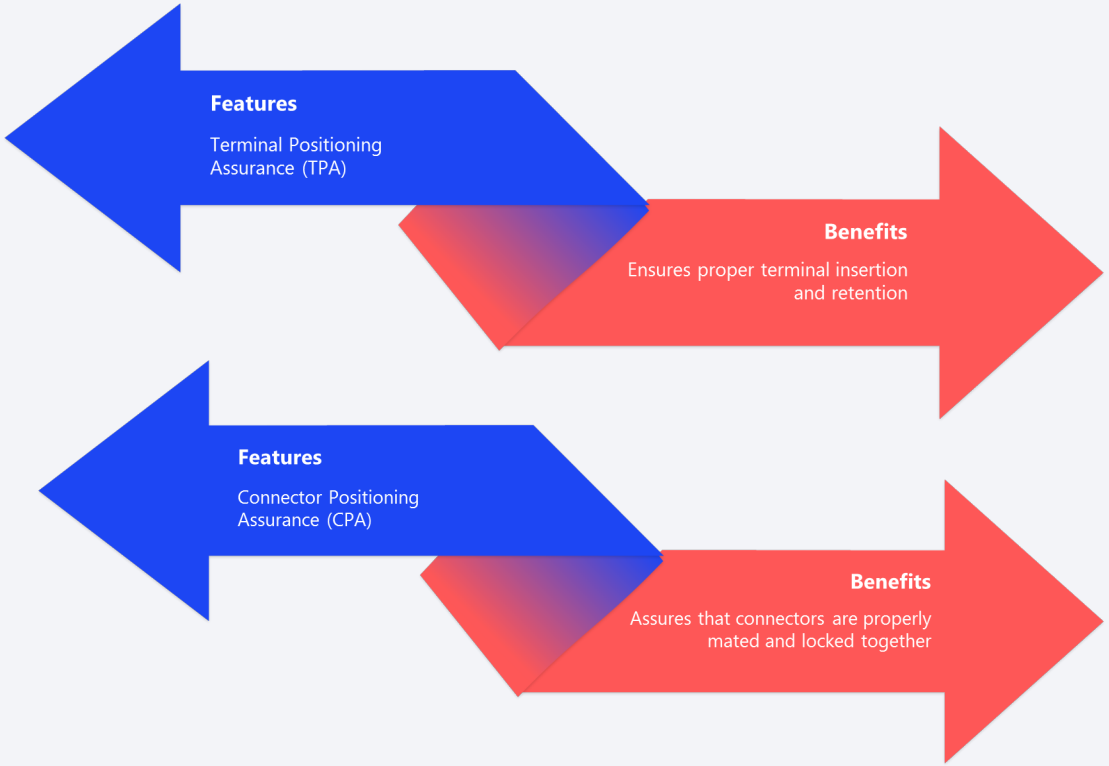
Ethernet
In vehicle internet

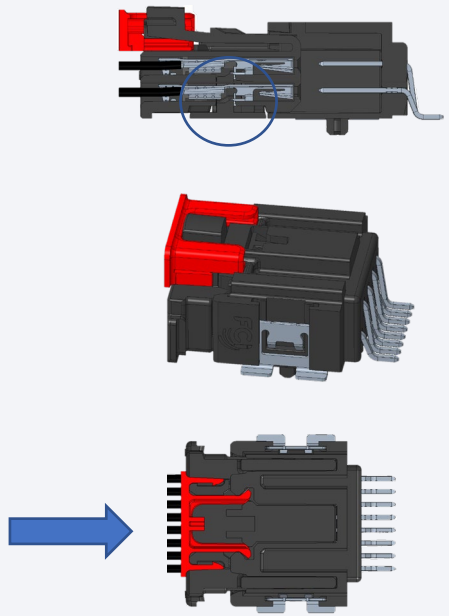
Camera System
Front Camera
Rear Camera
Surrounding Camera
Internal Camera

LED Lighting System
Front and Rear Head light
Internal Lights

How Microspace™ is answering to technology trend

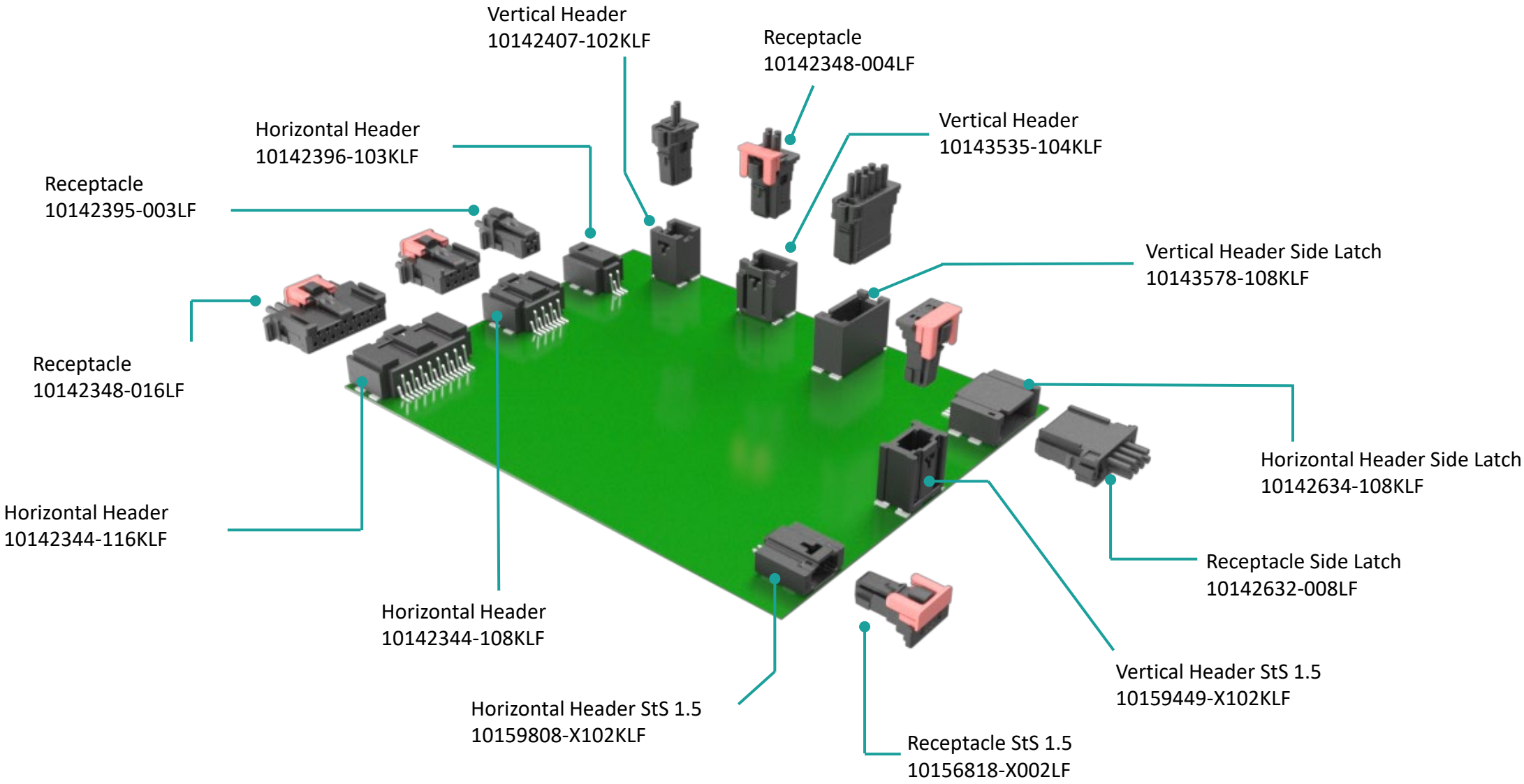
The evolving technology has imposed some new features like Terminal Positioning Assurance to ensure proper position and retention of the crimp terminal in the housing, or Connector Positioning Assurance to ensure the connectors are well mated in the final position and avoid accidental activation of the connector latching.





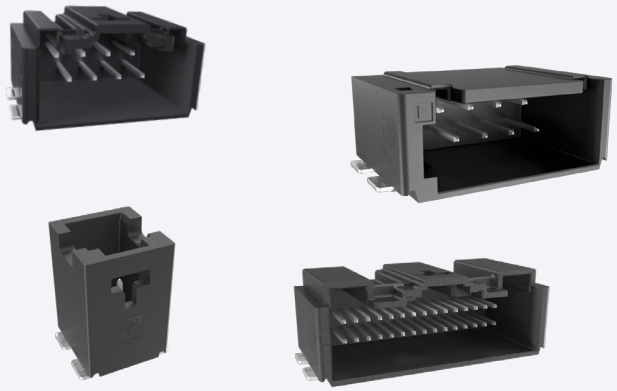
At the final position the CPA block the movement

Microspace™
Product Overview



Family Configuration Matrix

Board pitch	Board header	Configuration	Max Current (A)	Wire size		Plating options	Latch	CPA	TPA
				AWG	Max OD (mm)				
1,27 mm	Vertical	Staggered	4*	22-28	1.4	Tin, Gold, Silver	✓	✓	✓
	Horizontal								



- Latch position: *Top or Side*
- Staggered (ways): *2 to 16***
- Header soldering options: *SMT*

** Current estimated, limitation depend of the wire type*
*** 2 and 3 ways comes without CPA*

STANDARDS compatibility
- LV214 specification – severity2 & VW 75174 Slow motion bending test
- VW 60330 crimp specification

MATERIALS

• Board Header Connector contact:	*High Current Alloy*
• Housing:	*High temp. UL94V-0*
• Terminal for Crimping:	*High Current Alloy*

ELECTRICAL PERFORMANCES

• Low Level Contact Resistance:	*< 15mΩ*
• Insulation Resistance:	*> 100MΩ*
• Voltage Rating:	*48V*
• Dielectric Withstand Voltage:	*500VAC*
• Current Rating:	*4A at 20°C ambient* T° Rise : *30°C max*

ENVIRONMENTAL

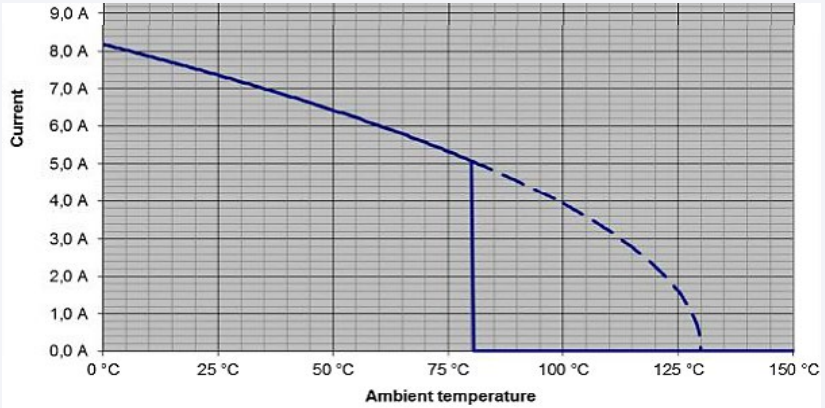
• Operating Temperature:	*-40°C to +130°C*
• Lead Free, Halogen Free	

TOOL INFORMATION

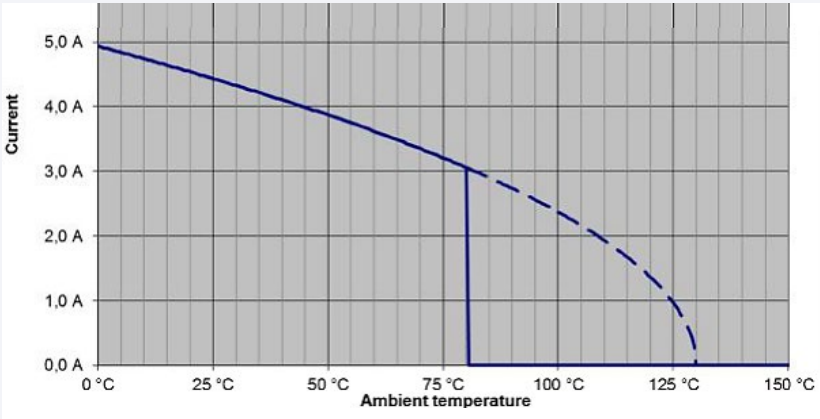
• Mini-applicator Crimping Tool:	See application GS-20-0513

MECHANICAL PERFORMANCE

• Terminal Insertion Into Housing:	*< 3N*
• Terminal Retention Into Housing:	*> 50N*
• Durability:	*20 mating cycles for Sn;* *100 mating cycles for Au*
• Wire Pullout Force:	*> 50N for 0.35 mm²*
• Mating Force/Terminal	4N max

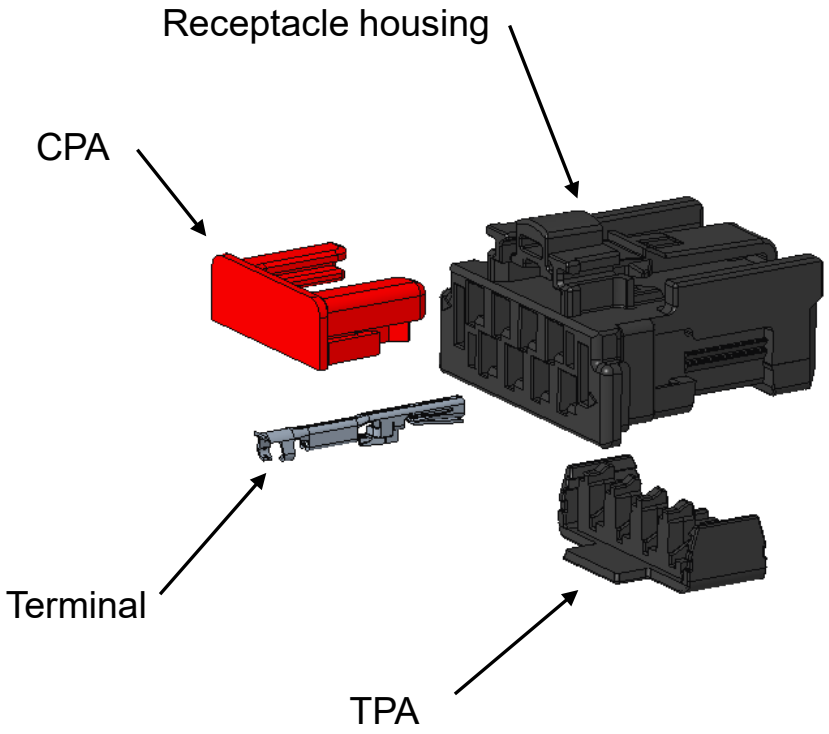


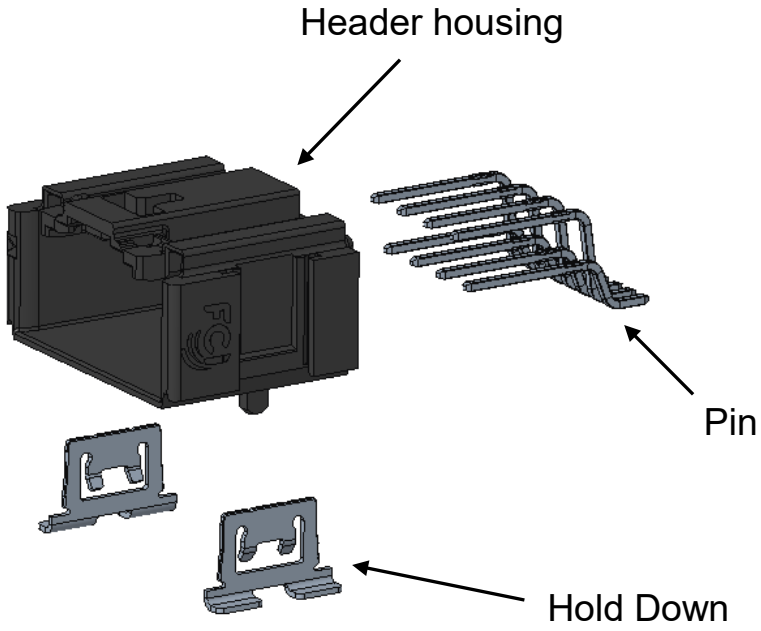
Derating according DIN EN 60512-5-2
Contact 10141272-111ALF, AWG22 « free in air »

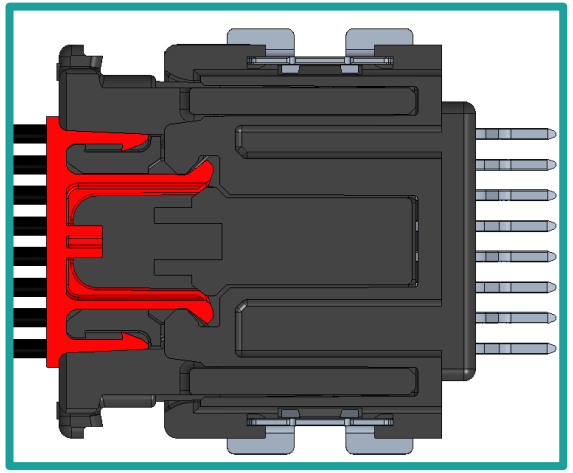


Derating according DIN EN 60512-5-2
Contact 10141272-111ALF, AWG22 « derating in the housing »
8 pin connector 10142344-108LF/10142348-108LF

Overview Microspace™

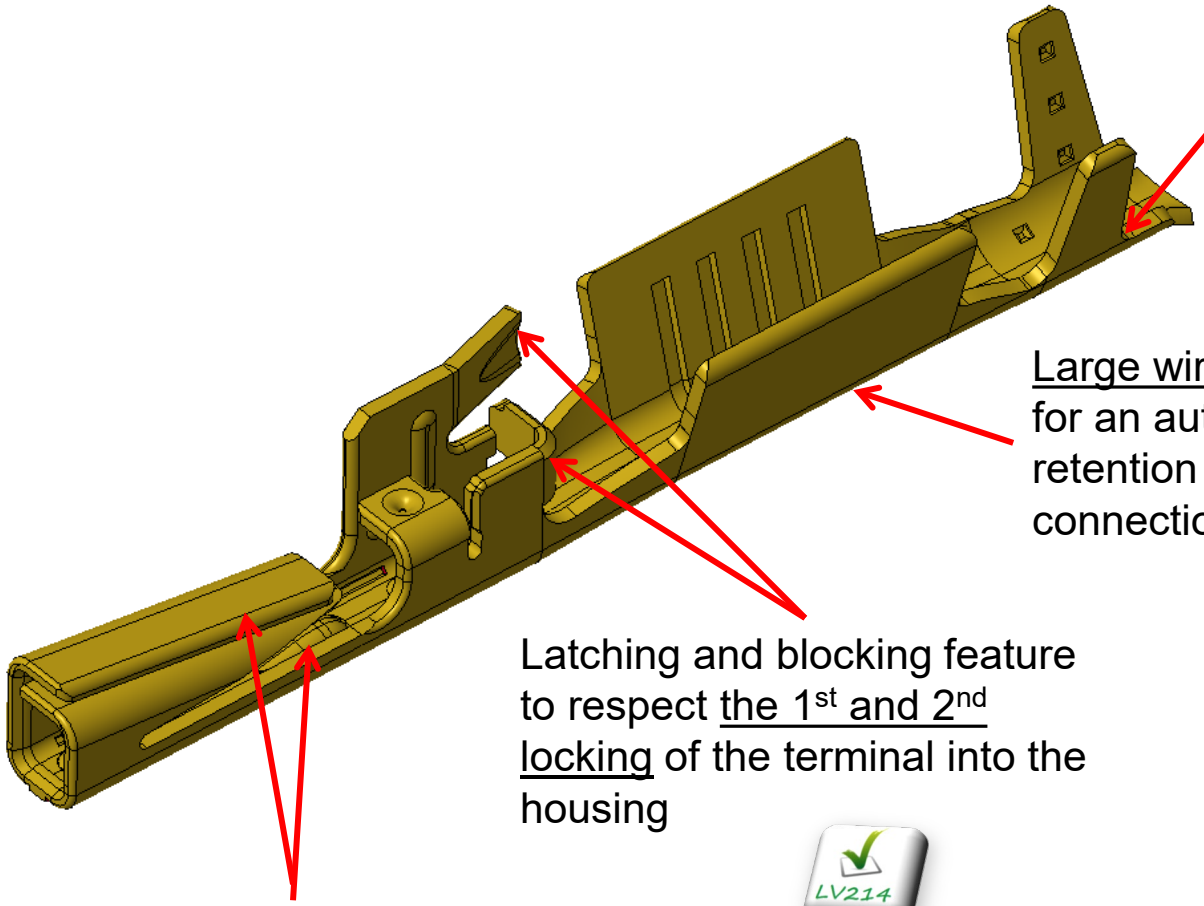






CTW: 10141272
Receptacle: 10142348
Header: 10142344

Microspace™ Terminal features

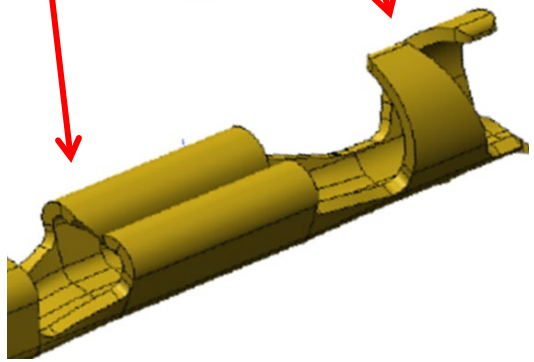


Overlapping insulation crimp barrels to maximize retention

Large wire crimp region for an automotive proof retention and connection

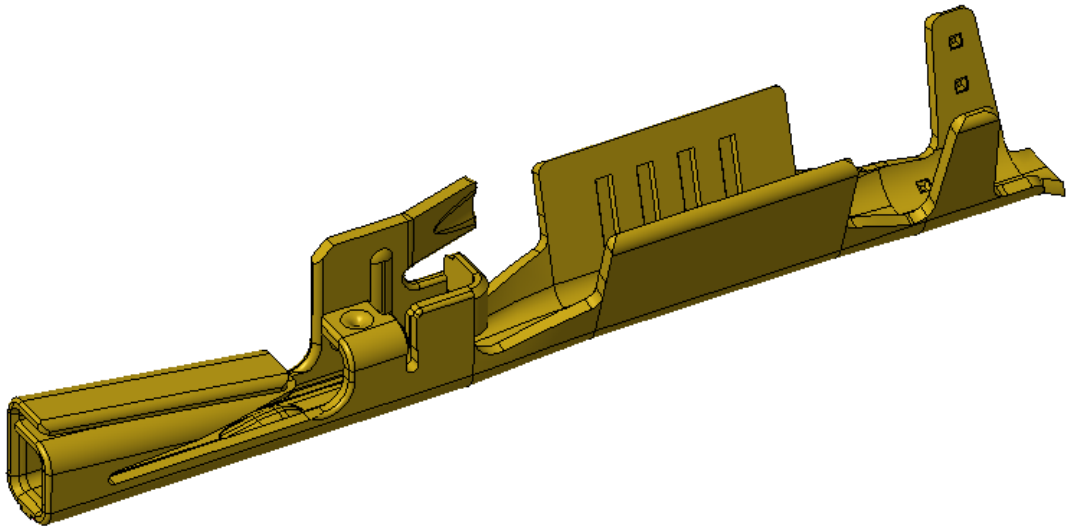
Latching and blocking feature to respect the 1st and 2nd locking of the terminal into the housing

Reinforced features for contact beams (x2) to maximize contact normal force



Microspace™ terminal performance

- Expected current — *2A ** (0.9mm OD wire – AWG28)*
  up to 4A (1.4mm OD wire – AWG22)
- Material — *High conductive alloy*
- Designed to full-fill — *LV214 specification – severity 2*
  VW 75174 Slow motion bending test
  VW 60330 crimp specification



***Current estimated, limitation depends on the wire type*

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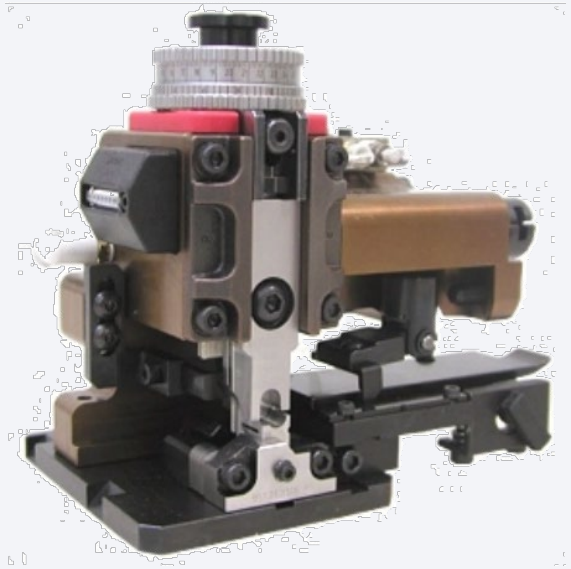
Mini-applicator Crimping Tool:

- *Crimping zone partnership design*
- *VW60330 compliance terminal crimping*
- *Provide mini applicator and crimping set*
- *List of compatible tools can be found in the application spec GS-20-0513*
- *Semi automatic crimping machine under development*



Handtool 10161117-001

Rear loading terminal assembly

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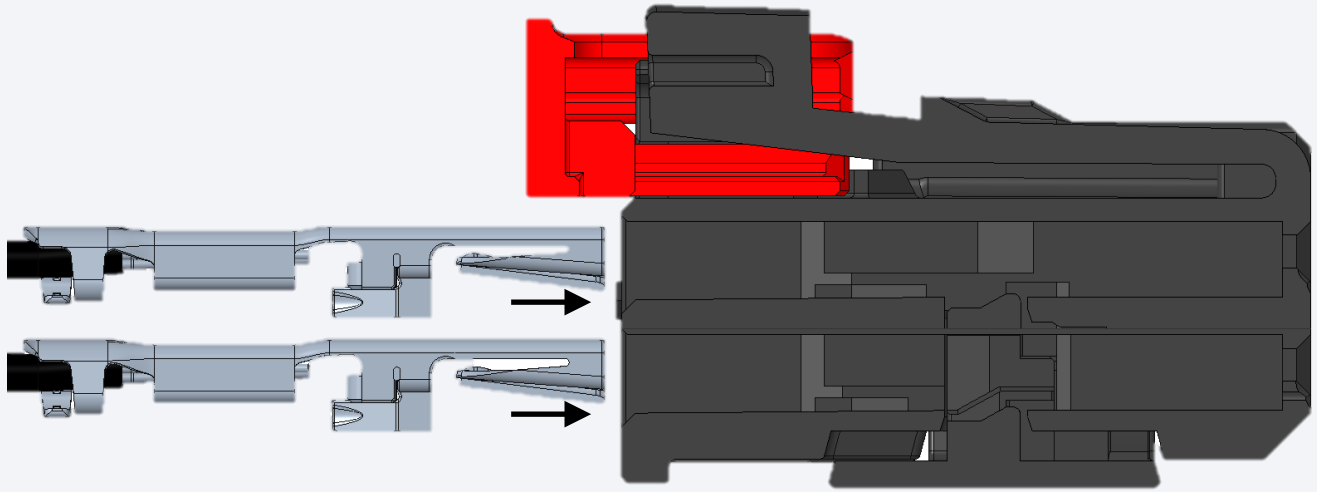
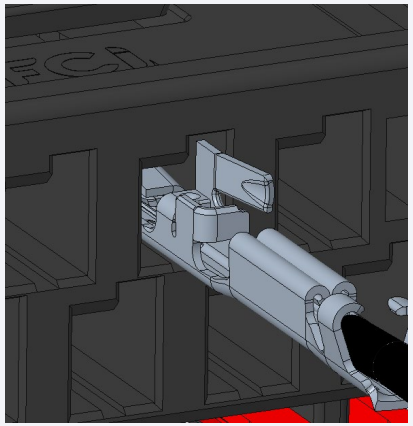
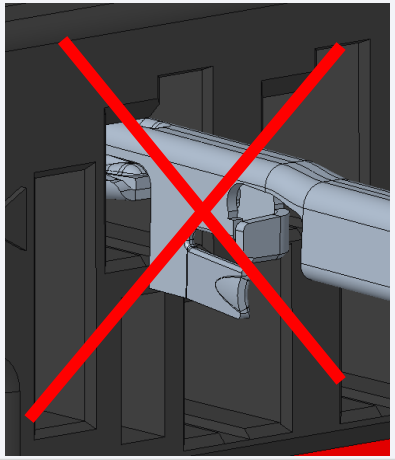
Insertion of terminal into receptacle housing

Housing with open TPA

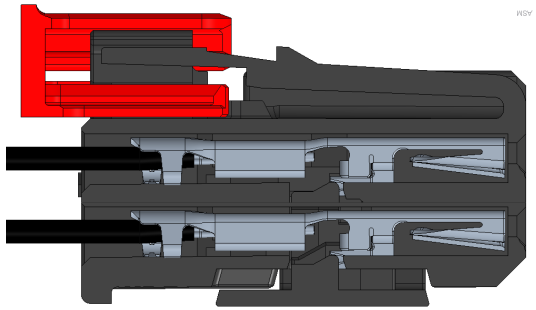


Keying function of terminal prevents wrong insertion

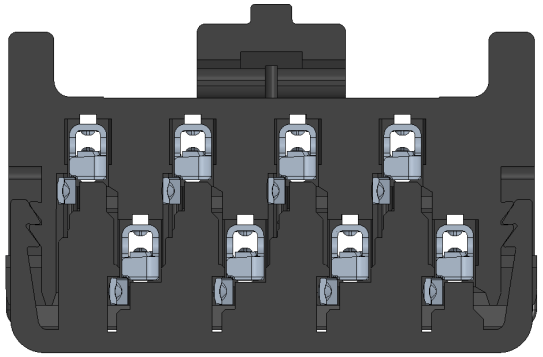


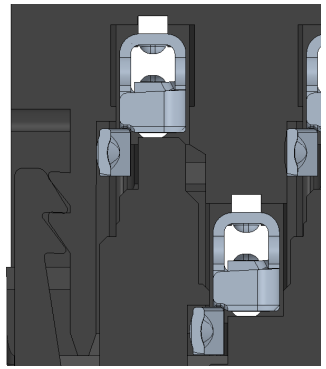


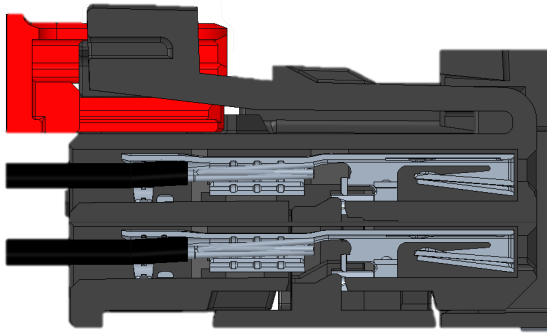
TPA functionality



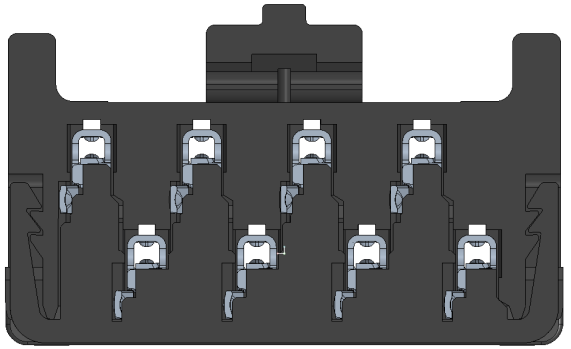
Housing with open TPA

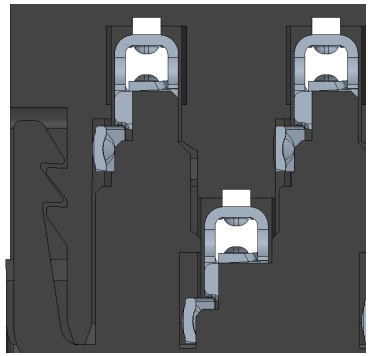




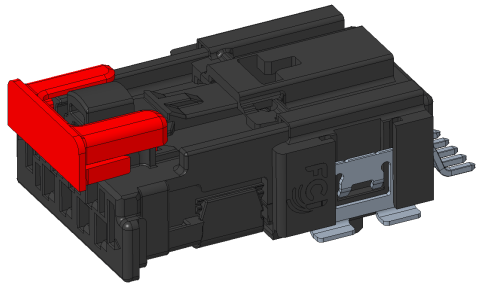


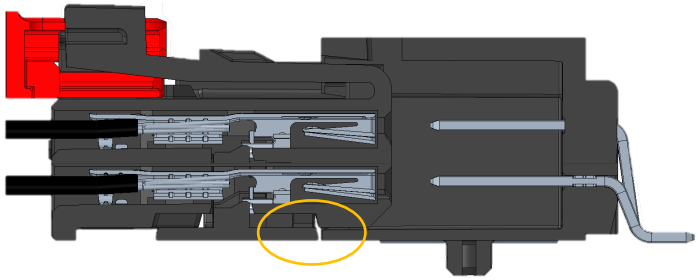
Housing with closed TPA





When TPA is NOT at its final position it will blocked against the interface of the header and make NO electrical contact.





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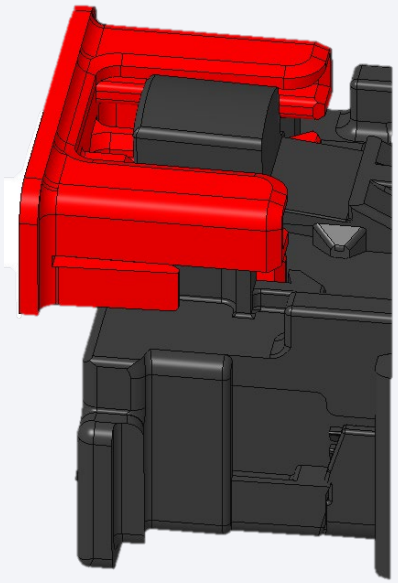
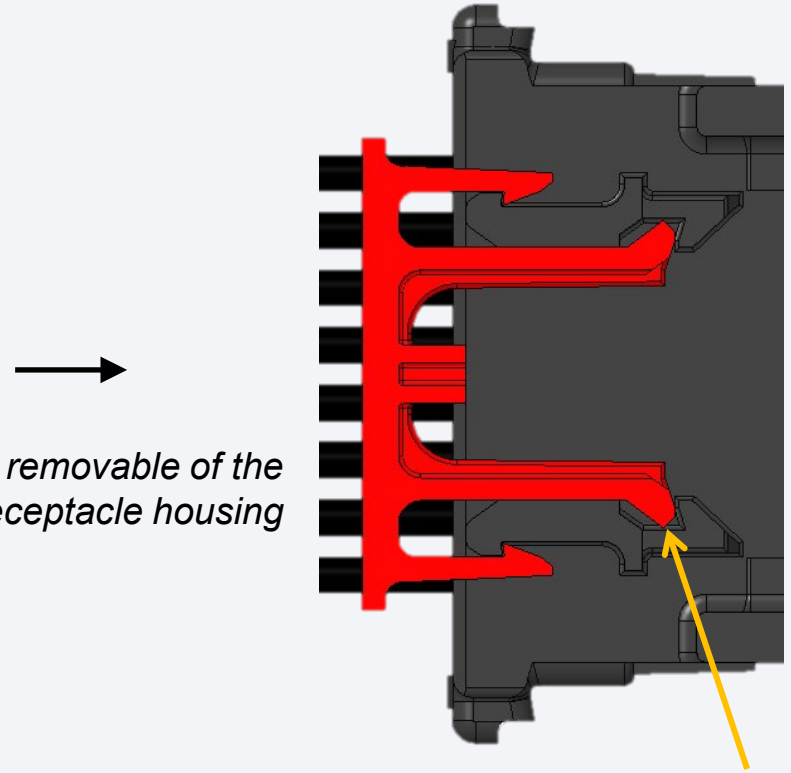
Insert CPA on the receptacle housing





CPA is not removable of the receptacle housing

CPA is blocked in preload position

When receptacle is not unmatted, CPA could not be removed or actuated

CPA functionality

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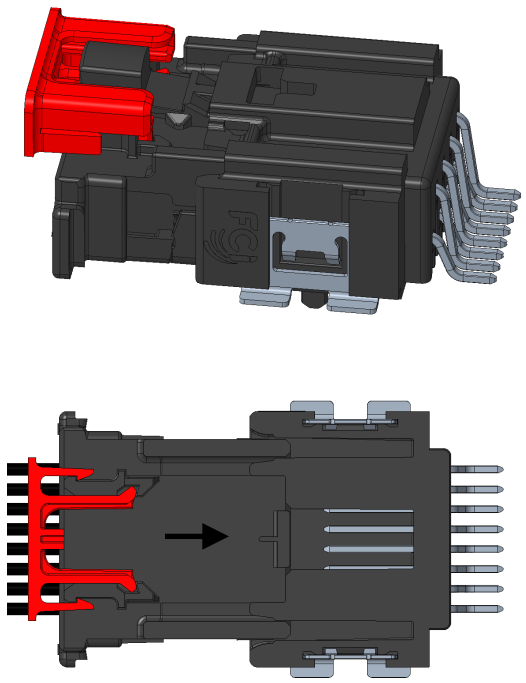
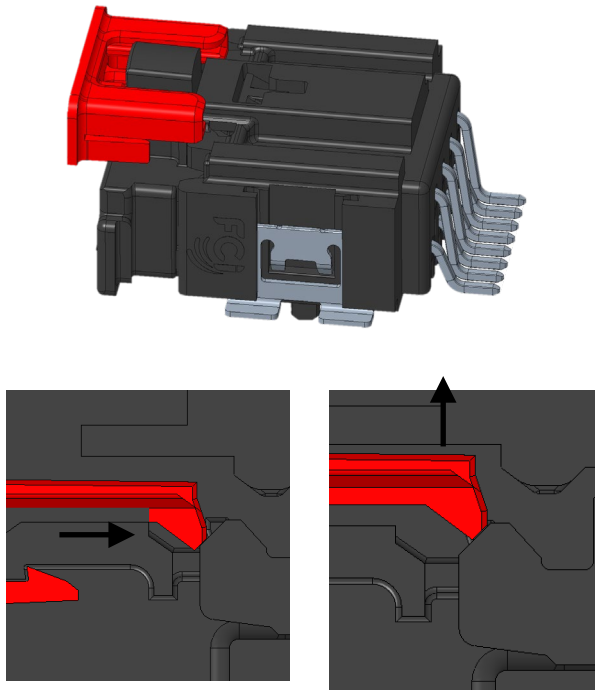
Insert CPA on the receptacle housing

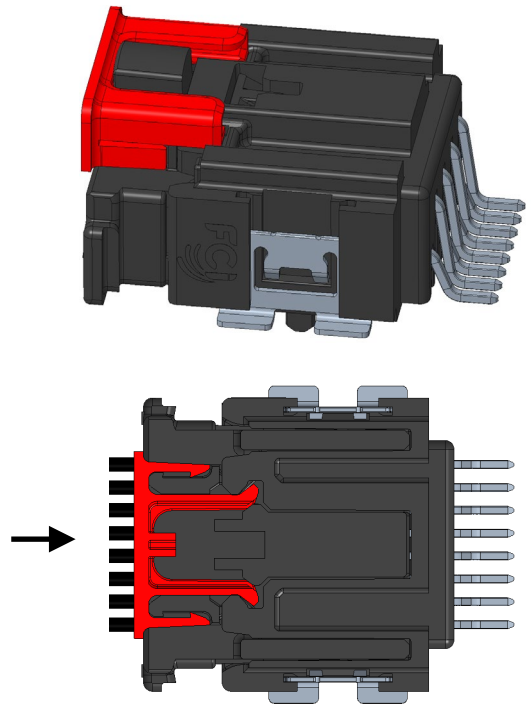
Header have to be not connected



Insertion of the receptacle housing in the header housing



Header slope feature unblock the CPA from the receptacle

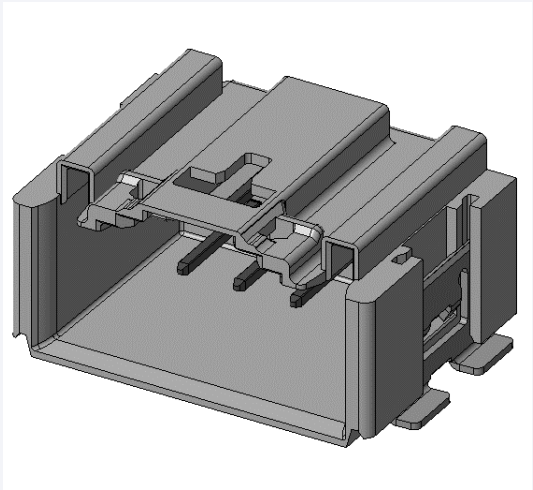


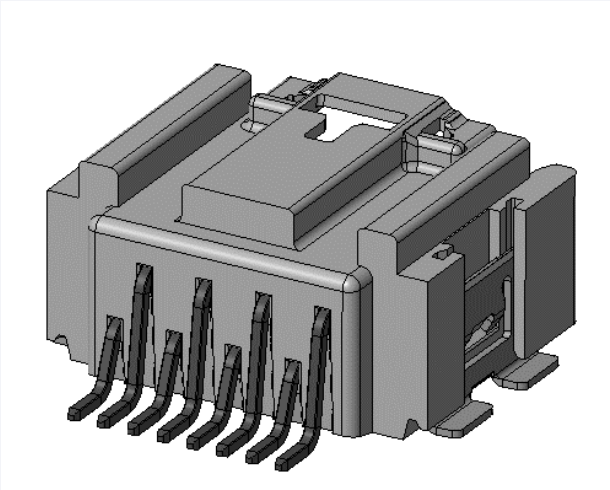
At the end position the CPA block the actuation of the latch

CPA can be actuated only if the receptacle is mounted into the header at the final position

Header SMD Solution - Contact

Dimension	*Square pin 0.47mm.*
Base material	*High conductive alloy*
Finish	*Sn, Au, Ag*





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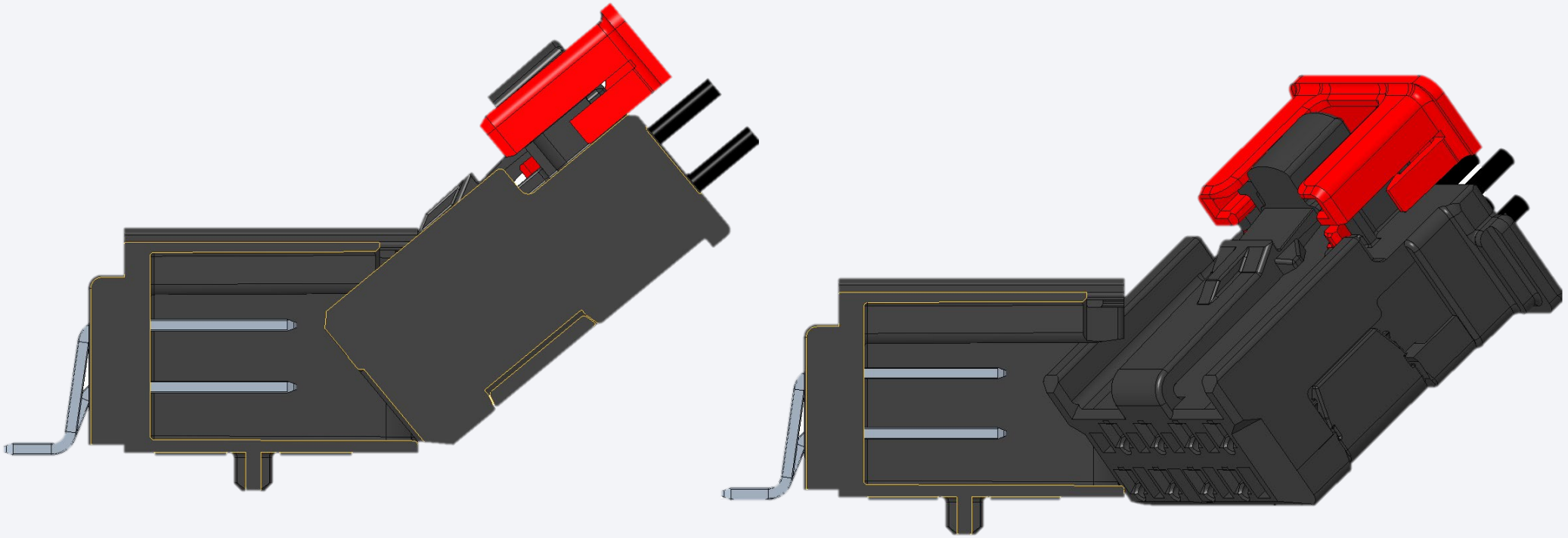
Concept 1.27mm pitch staggered 1 TPA



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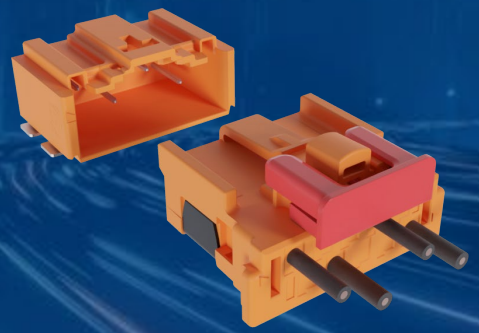
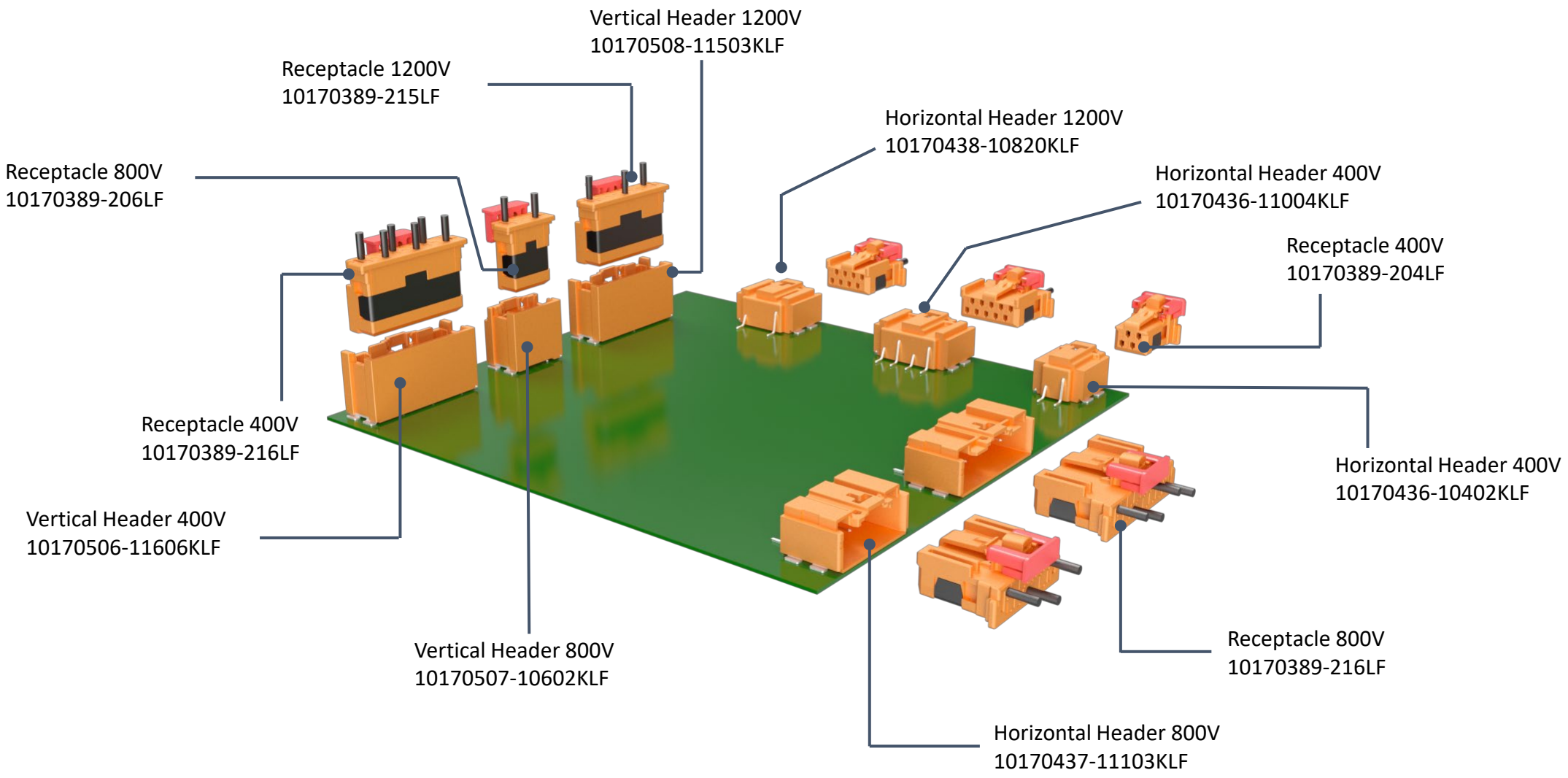
MicroSpace™ High Voltage



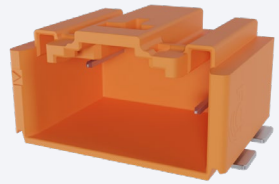
FCi Basics

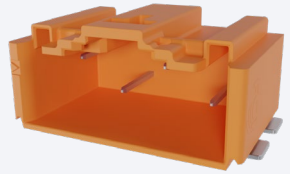
Microspace™ High Voltage Selective Loaded
Product Overview

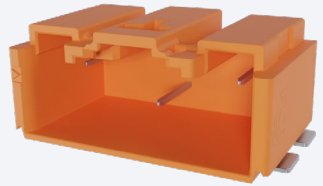


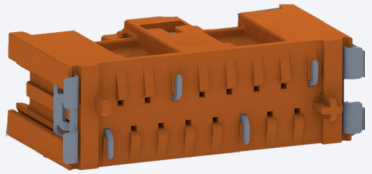
Family Configuration Matrix

Board pitch	Board header	Configuration	Max Current (A)	Wire size		Plating options	Latch	CPA	TPA
				AWG	Max OD (mm)				
1,27 mm	Vertical	Staggered	4*	22	1.4	Tin, Gold, Silver	✓	✓	✓
	Horizontal								





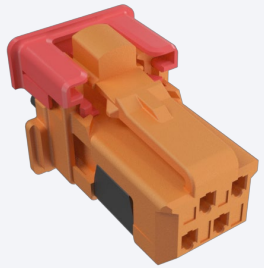


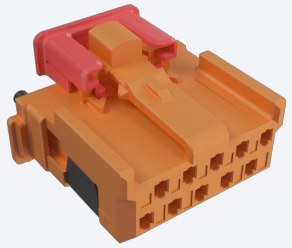


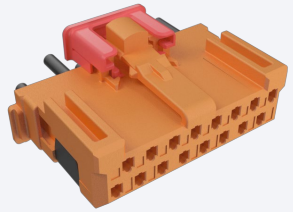
- High Voltage Configuration : 400VAC; 800VAC; 1200V*AC*
- Latch position: *Top*
- Staggered (ways): *2 to 16***
- Header soldering options: *SMT*

** Current estimated, limitation depend of the wire type*

*** 2 and 3 ways comes without CPA*







STANDARDS compatibility
- LV214 specification – severity2 & VW 75174 Slow motion bending test
- VW 60330 crimp specification

MATERIALS

• Board Header Connector contact:	*High Current Alloy*
• Housing:	*High temp. UL94V-0, CTI > 600*
• Terminal for Crimping:	*High Current Alloy*

ELECTRICAL PERFORMANCES

• Low Level Contact Resistance:	*< 15mΩ*
• Insulation Resistance:	*> 100MΩ*
• Voltage Rating:	*400V; 800V; 1200VAC*
• Dielectric Withstand Voltage:	*1200VAC; 2500VAC; 3600VAC*
• Current Rating:	*4A at 20°C ambient* T° Rise : *30°C max*

ENVIRONMENTAL

• Operating Temperature:	*-40°C to +130°C*
• Lead Free, Halogen Free	

TOOL INFORMATION

• Mini-applicator Crimping Tool:	See application GS-20-0513

MECHANICAL PERFORMANCE

• Terminal Insertion Into Housing:	*< 3N*
• Terminal Retention Into Housing:	*> 50N*
• Durability:	*20 mating cycles for Sn;* *100 mating cycles for Au*
• Wire Pullout Force:	*> 50N for 0.35 mm^2*
• Mating Force/Terminal	4N max

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MicroSpace™ Customization

FCi Basics

Customized Product On Demand

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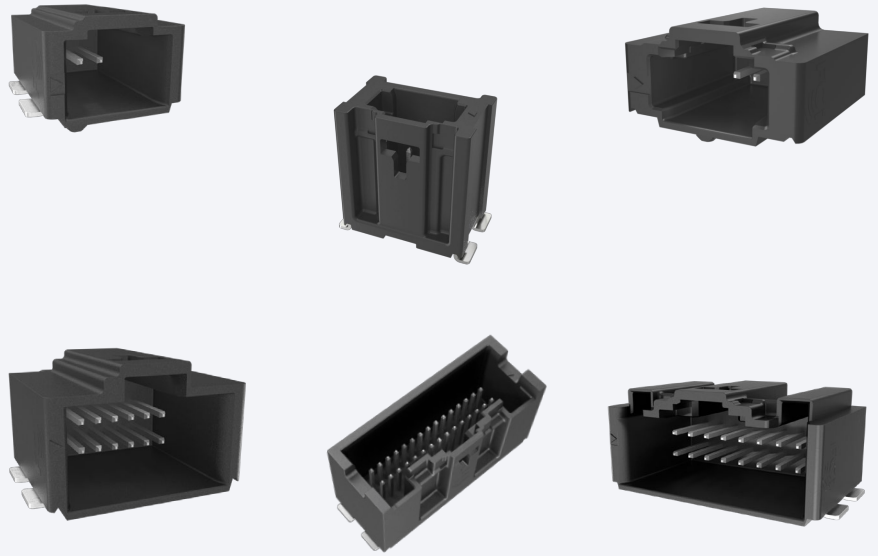
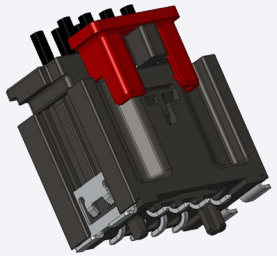
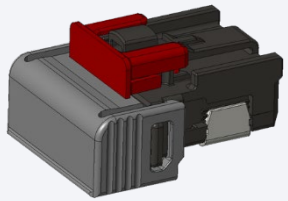
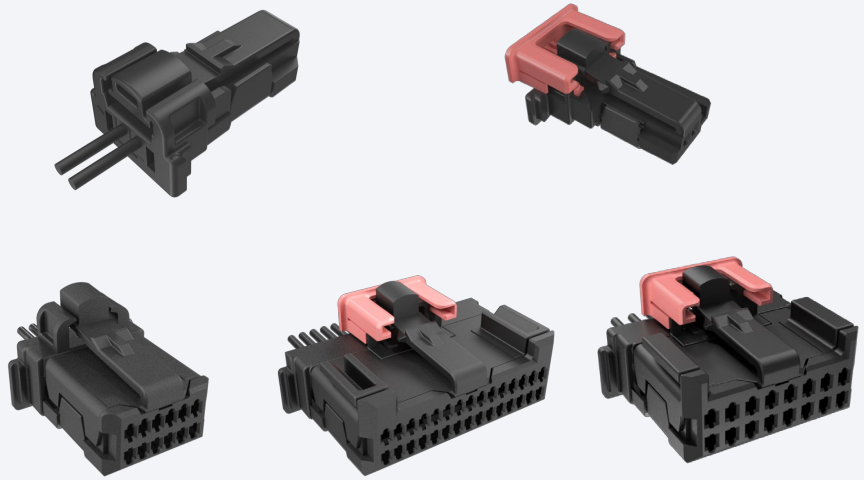
Board pitch	Board header	Wire to Board		Max Current (A)	Wire size		Plating options	Latch	CPA	TPA
		Single Row	Double Row		AWG	OD (mm)				
1,27 mm	Vertical	✓	✓	2 *	28	0.9	Tin, Gold, Silver	✓	✓	✓
	Horizontal									
1,50 mm	Vertical	✓	✓	3 *	26-28	1.1	Tin, Gold, Silver	✓	✓	✓
	Horizontal									
1,80 mm	Vertical	✓	✓	4 *	22-28	1.4	Tin, Gold, Silver	✓	✓	✓
	Horizontal									



- Latch position: *Top or Side*
- Single row (ways): *2 to 15*
- Double row (ways): *4 to 30*
- Header soldering options:
  - *SMT, THT and PIP.*
  - *With or without peg.*
  - *Longer pins*
- *Receptacle options :* *With or without CPA*
- *Accessories :* *Wire Cover*



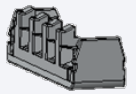


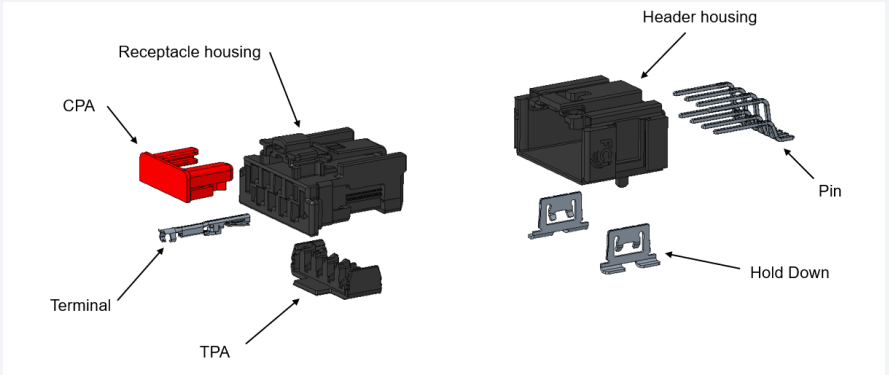


**Current estimated, limitation depend of the wire type*

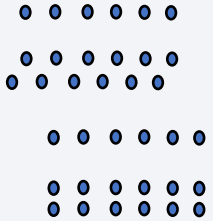
Glossary

- **Header** *Housing with pins (Male connector)*
- **Receptacle** *Female housing*
- **Terminal** *CTW contact*
- **TPA** *Terminal Position Assurance*
- **CPA** *Connector Position Assurance*

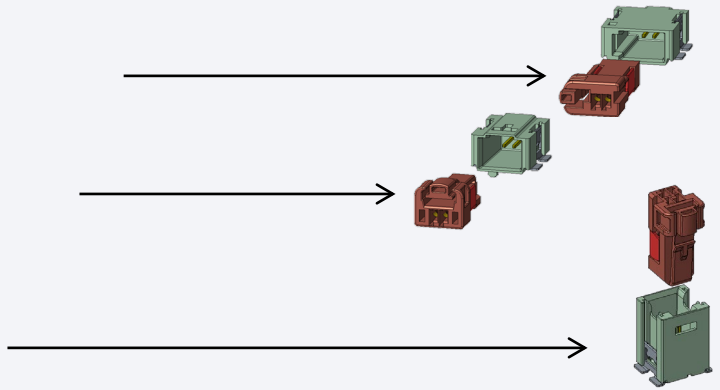




- **StS** *Side to Side (contacts placed on side to side row)*
- **StG** *Staggered (contacts placed on staggered row)*
- **SR** *Simple row (contacts placed on 1 side to side row)*
- **DR** *Double row (contacts placed on 2 side to side row)*



- **SL** *Side Latch (latch between header and receptacle placed on the side of the connector)*
- **TL** *Top latch (latch between header and receptacle placed on the top of the connector)*
- **Horizontal** *Connection axis parallel to the board*
- **Vertical** *Connection axis perpendicular to the board*



Thank You

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