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COMMUNICATIONS SOLUTIONS

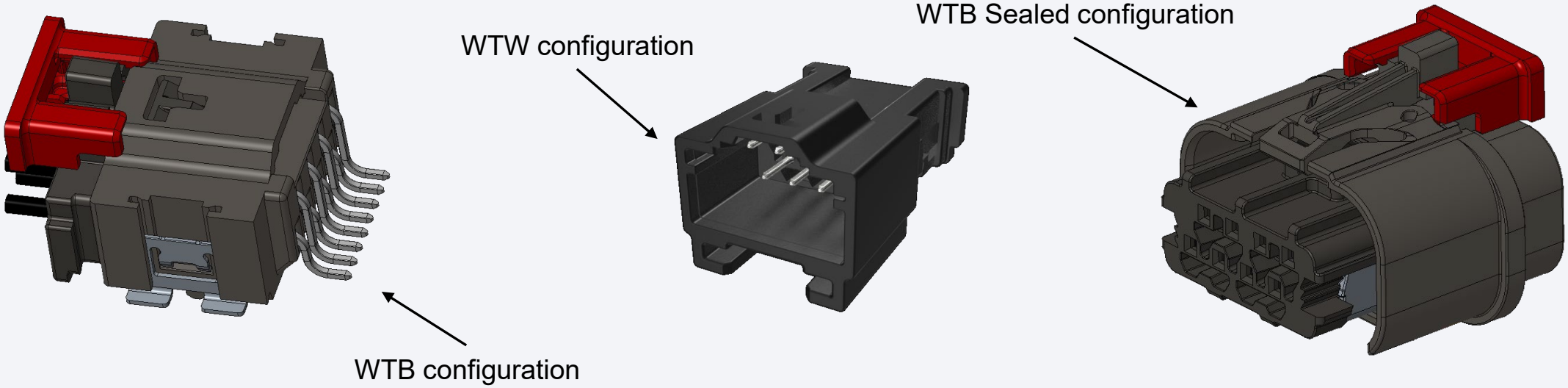
MicroSpaceXS™ Product Presentation

FCi Basics

Value Proposition

- The MicroSpaceXS™ 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.

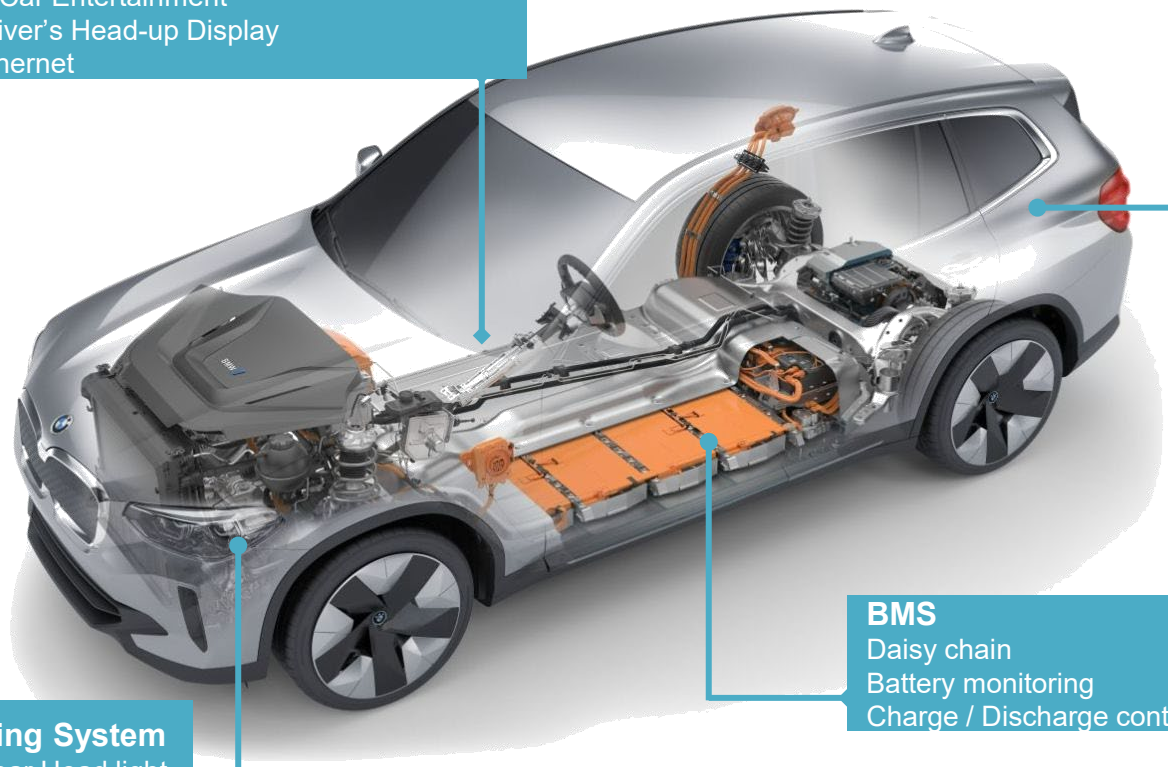
- The connector has nominal current carrying capacity of up to 4A and cable external diameter up to 1.4 mm.



- The unique design of the MicroSpaceXS™ CtW makes this solution and contact pitch compatible with LV214 Severity-2 and USCAR-T2V2. The right choice when high vibration endurance, primary latch, TPA, CPA, Poka Yoke, Kojiri safe are required with flexible configurations.

MicroSpaceXS™ Target Market Application

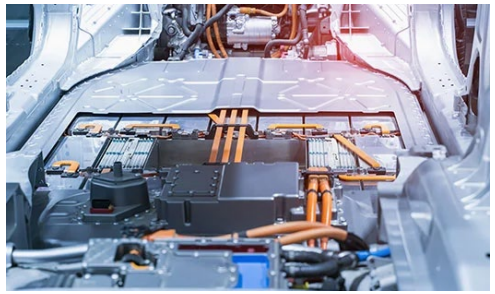
Infotainment
Navigation
In Car Entertainment
Driver's Head-up Display
Ethernet



Camera System
Front Camera
Rear Camera
Surrounding Camera
Internal Camera

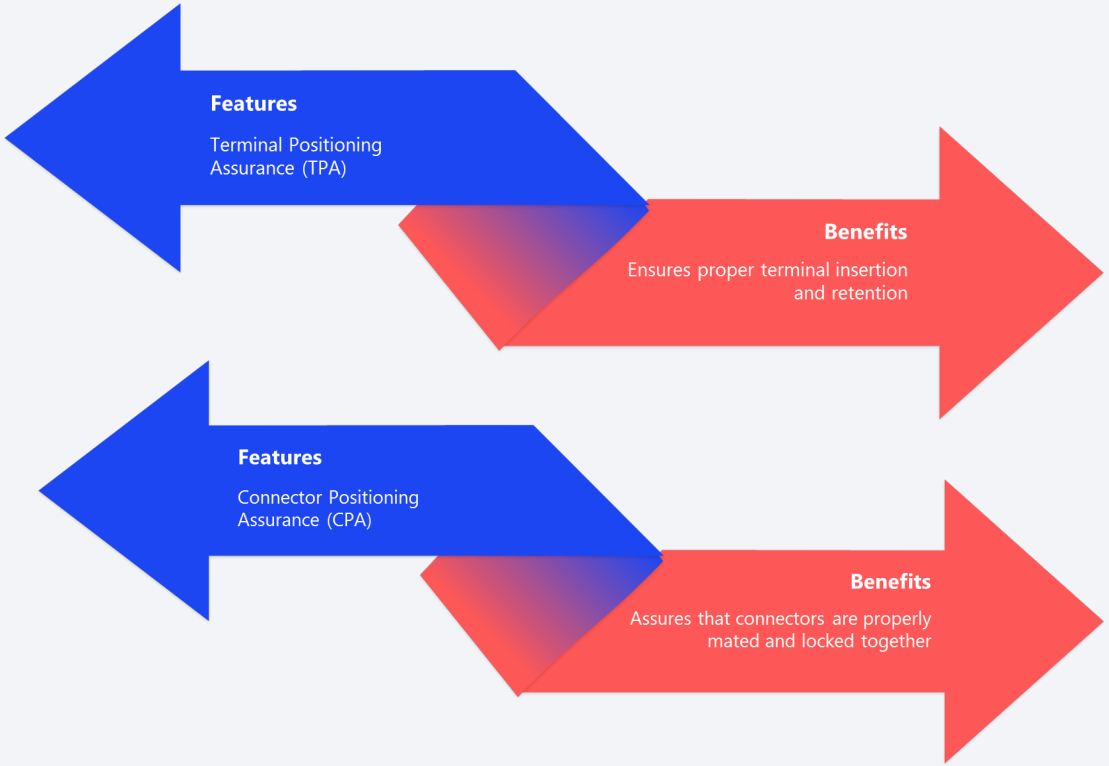
LED Lighting System
Front and Rear Head light
Internal Lights

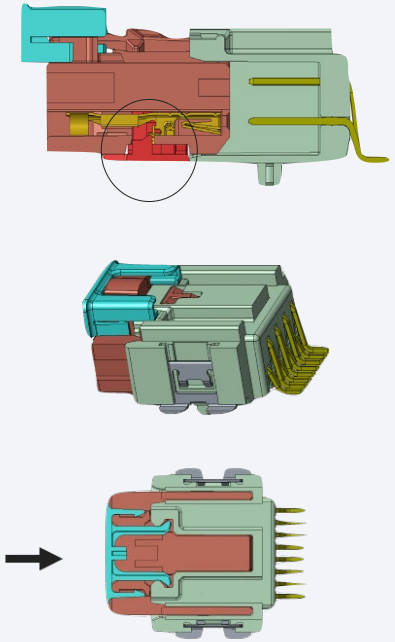
BMS
Daisy chain
Battery monitoring
Charge / Discharge control



How MicrospaceXS™ 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.



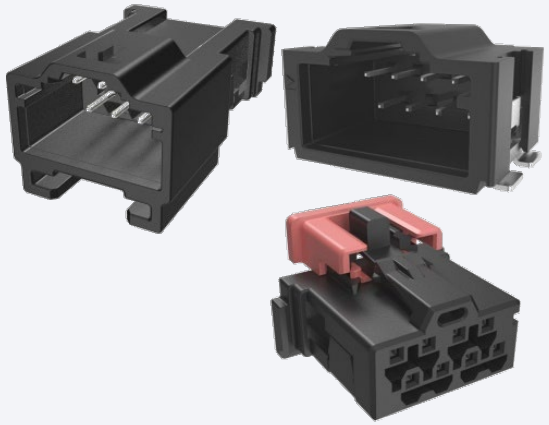


At the final position the CPA block the movement

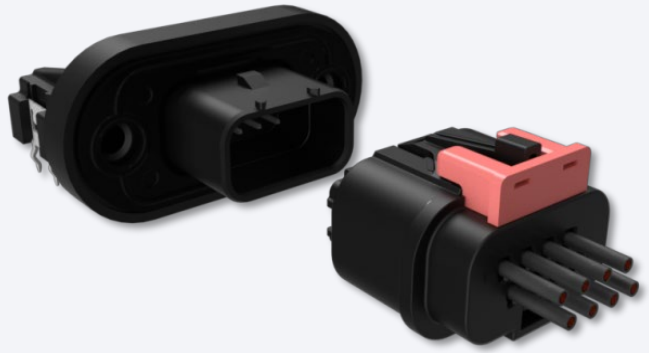
Product offering

MicroSpaceXS™
LV214 Severity2
- USCAR T2V2

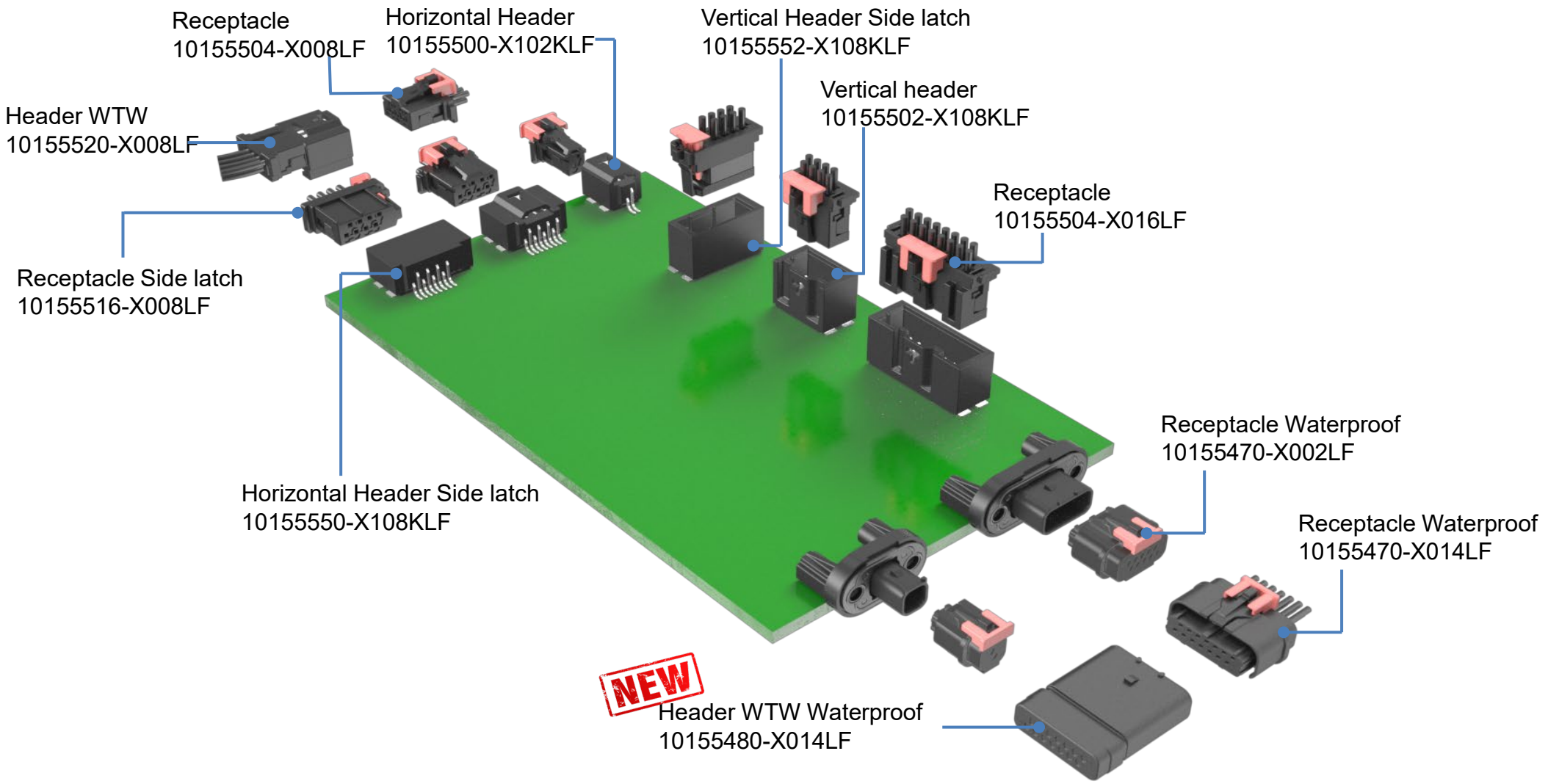
MicrospaceXS™ Unsealed



MixcrospaceXS™ Waterproof



MicroSpaceXS™ Product Overview



Unsealed Family Configuration Matrix

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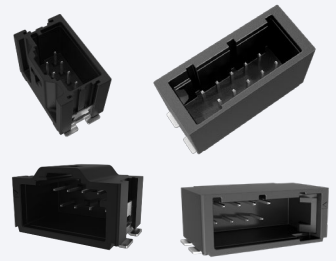
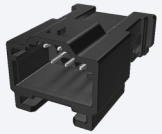
Pitch	Header		Receptacle	Wire to Board	Max Current (A)	Wire size		Plating options	Top Latch	Side Latch	CPA	TPA
				STG*		AWG	OD (mm)					
1,27 mm	Vertical	10155502 10155512 10155552	10155504 10155514 10155516	✓	4	22-28	1.4	Tin, Gold	✓	✓	✓	✓
	Horizontal	10155500 10155510 10155550	10155504 10155514 10155516									

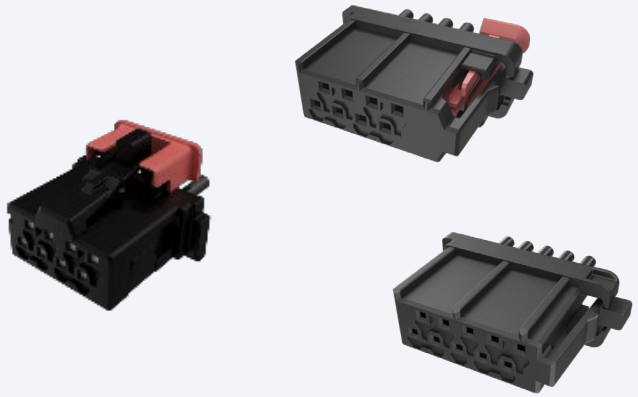


Pitch	Header		Receptacle	Wire to Wire	Max Current (A)	Wire size		Plating options	Top Latch	CPA	TPA	Connector clip (optional)
				STG*		AWG	OD (mm)					
1,27 mm	WTW Flying	10155520	10155504	✓	4	22-28	1.4	Tin, Gold	✓	✓	✓	✓



- Latch position: *Top and Side*
- 1,27 Staggered (positions): *2 to 16*
- *Header soldering :* *SMT*

**STG : staggered*



MicrospaceXS™ is layout compatible with
Microspace™ design
for 3 to 16 positions

Product Specification MicrospaceXS™ unsealed

STANDARDS compatibility
- LV214 specification – up to severity 3 *(See the product SPEC GS-12-1634)*
- VW 75174 Slow motion bending test
- USCAR T2V2
- VW 60330 crimp specification

MATERIALS

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

ELECTRICAL PERFORMANCES

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

ENVIRONMENTAL

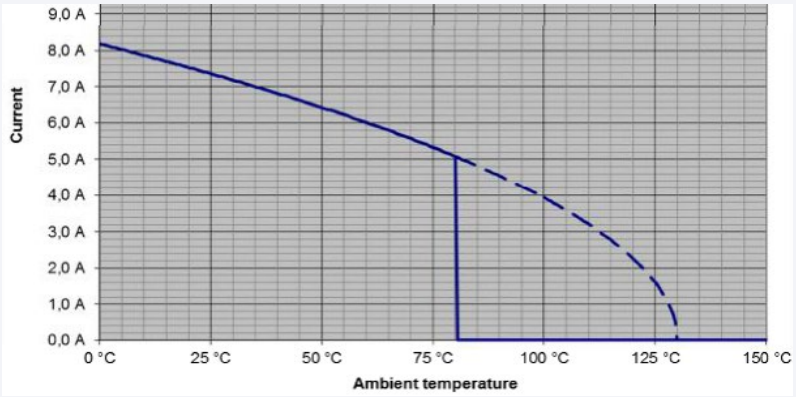
• Operating Temperature:	*-40°C to +105°C for Sn* *-40°C to +150°C for Au*
• Lead Free, Halogen Free	

TOOL INFORMATION

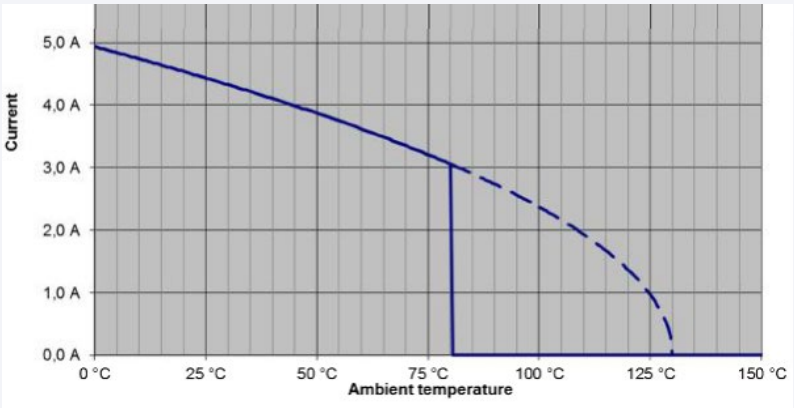
• Mini-applicator Crimping Tool:	Amphenol *Filec (see next slides)*

MECHANICAL PERFORMANCE

• Terminal Insertion Into Housing:	*< 3N*
• Terminal Retention Into Housing:	*> 40N*
• Durability:	*20 mating cycles for Sn;* *100 mating cycles for Au*
• Wire Pullout Force:	*> 50N for 0.35 mm²*
• Mating Force/Terminal	4N max

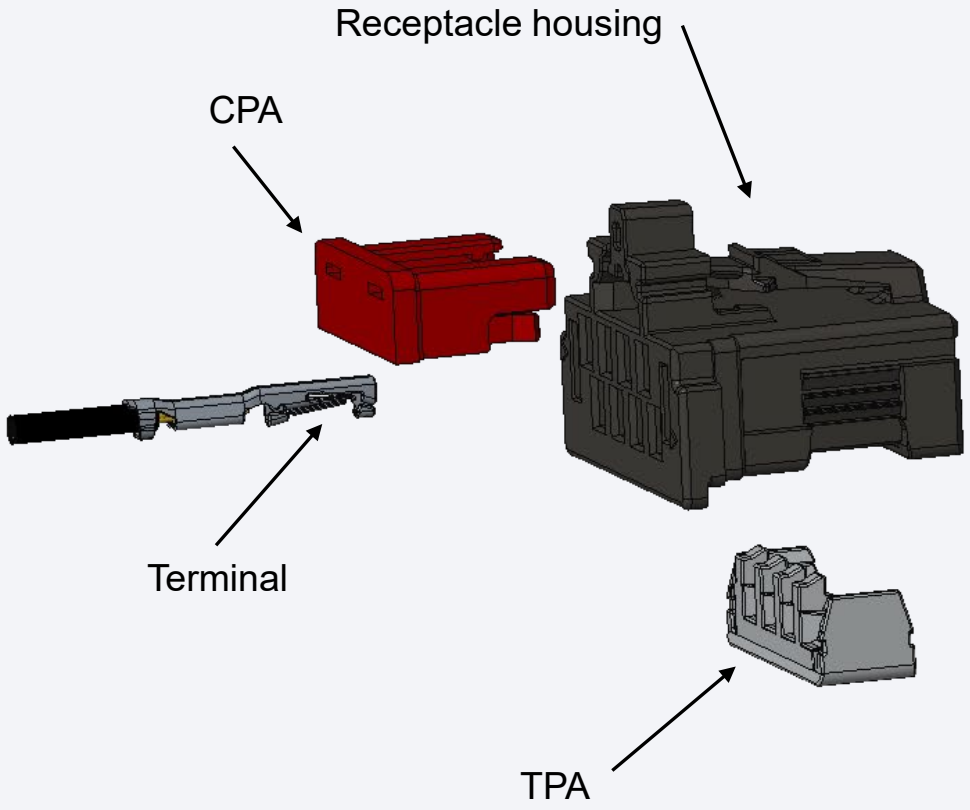


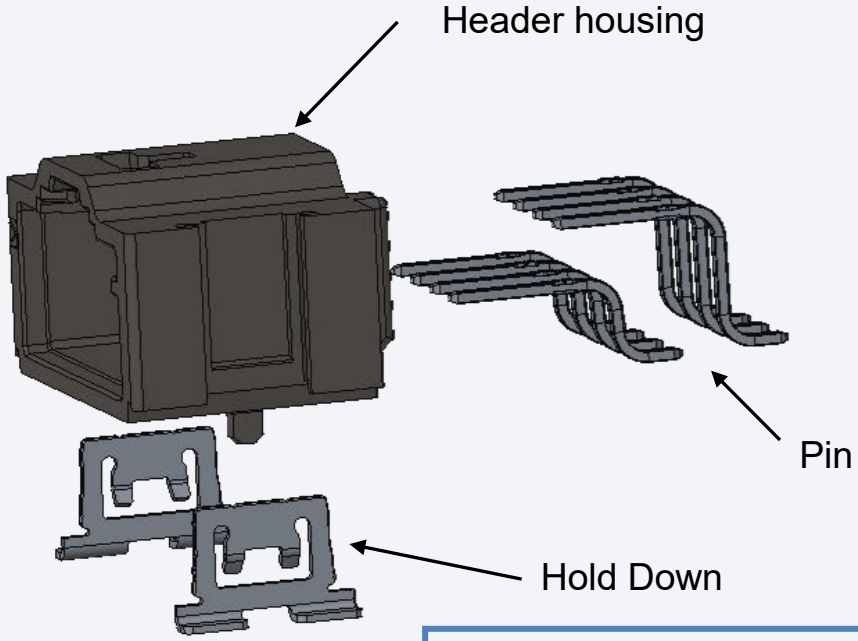
Derating according DIN EN 60512-5-2
Contact 10155447-111LF, AWG22 « free in air »

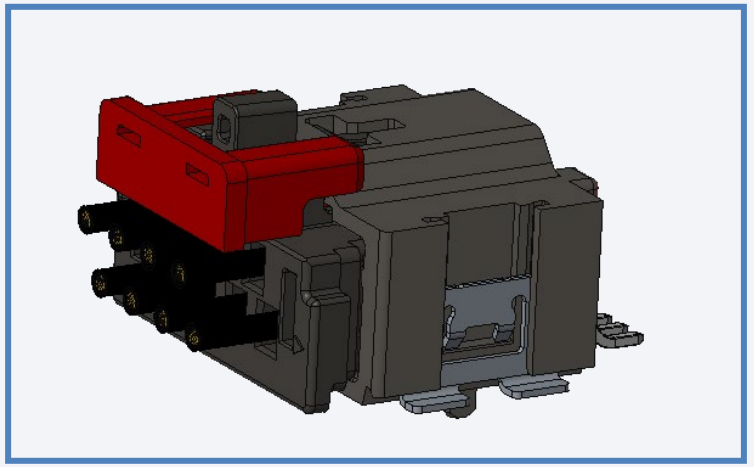


Derating according DIN EN 60512-5-2
Contact 10155447-111LF, AWG22 « derating in the housing »
8 pin connector 10155504-A108LF/10155500-A108LF

Overview MicrospaceXS™ WTB unsealed

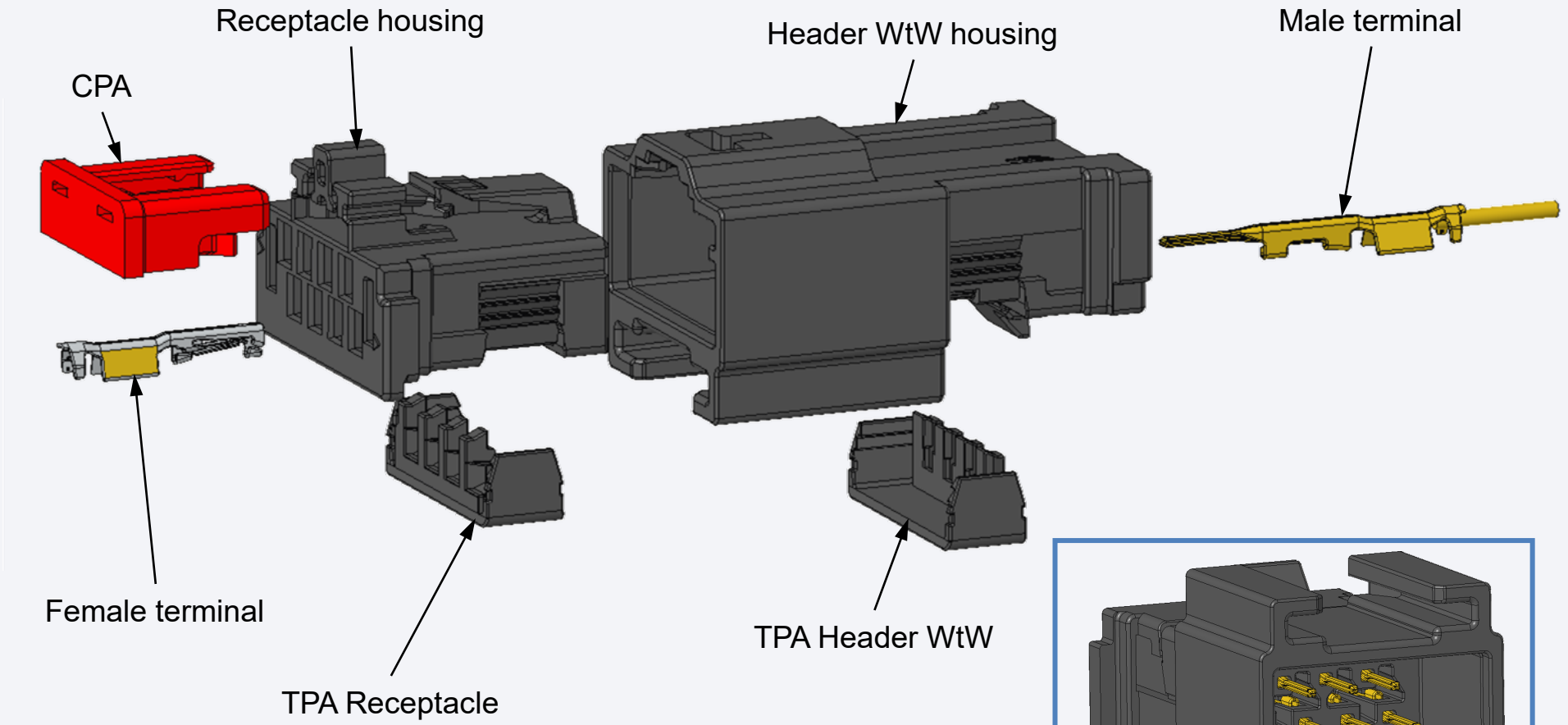


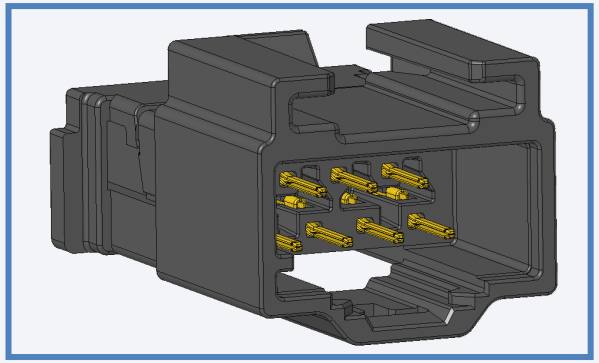


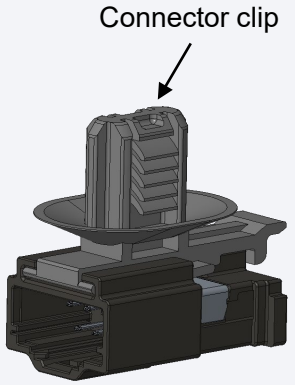


CTW:	10155447
Receptacle:	10155504
Header:	10155500

Overview MicrospaceXS™ WTW unsealed







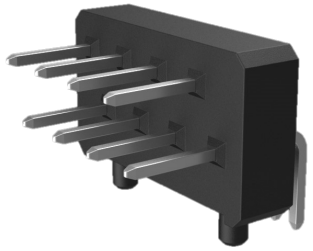
CTW female:	10155447
CTW male:	10155449
Receptacle:	10155504
Header:	10155520

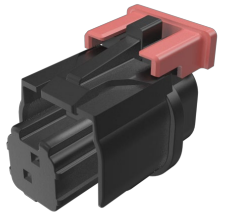
Waterproof Family Configuration matrix

Pitch	Header	Receptacle	STG*	Max Current (A)	Wire size		Plating options	Latch	CPA	TPA
					AWG	OD (mm)				
1,27 mm	Wire To Wire Flying : 10155480	10155470	✓	3	22	1.4	Tin, Silver, Gold	✓	✓	✓
	Wire To Device : 10167562									

- Latch position: *Top*
- Staggered (positions): *2 to 10*
- Wire to wire configuration: *Available // Design phase*

**STG : staggered*





Product Specification MicrospaceXS™ Waterproof

STANDARDS compatibility
- USCAR T2V2
- VW 60330 crimp specification
- IP68
- **LV214 S2 NEW**

MATERIALS

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

ELECTRICAL PERFORMANCES

• Low Level Contact Resistance:	*< 30mΩ*
• Insulation Resistance:	*> 100MΩ*
• Voltage Rating:	*48V*
• Dielectric Withstand Voltage:	*500VAC*
• Current Rating:	*3A at 20°C ambient* T° Rise : *30°C max*

ENVIRONMENTAL

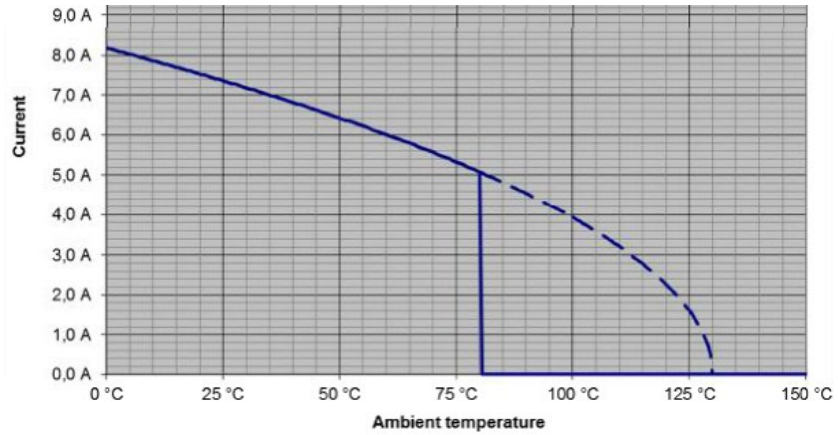
• Operating Temperature:	*-40°C to +105°C for Sn* *-40°C to +150°C for Au*
• Lead Free, Halogen Free	

TOOL INFORMATION

• Mini-applicator Crimping Tool:	Amphenol *Filec (see next slides)*

MECHANICAL PERFORMANCE

• Terminal Insertion Into Housing:	*< 10N*
• Terminal Retention Into Housing:	*> 40N*
• 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 10155447-111LF, AWG22 « free in air »

Overview MicrospaceXS™ WTW Waterproof

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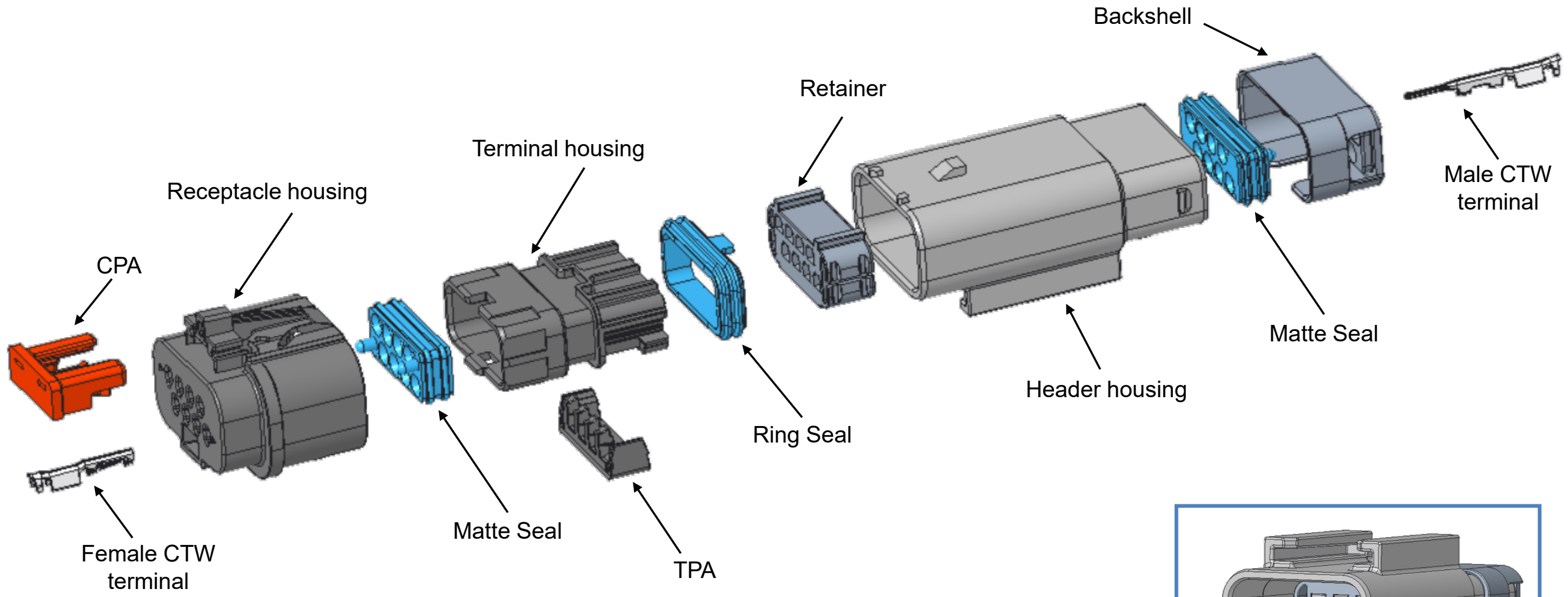
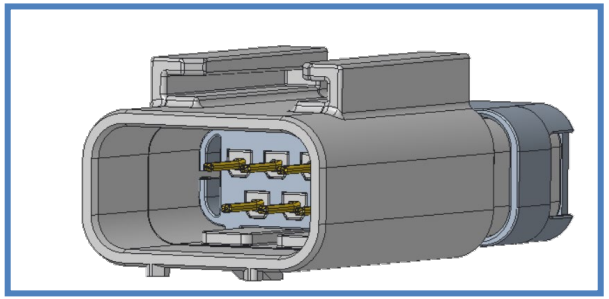
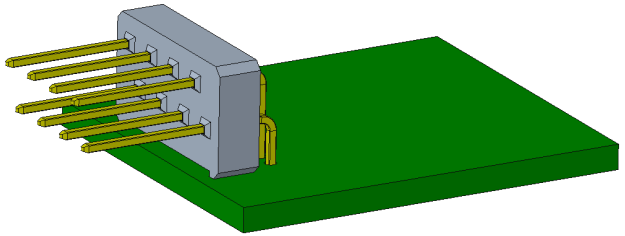


CTW female:	10155447
CTW male:	10155449
Receptacle:	10155470
Header:	10155480

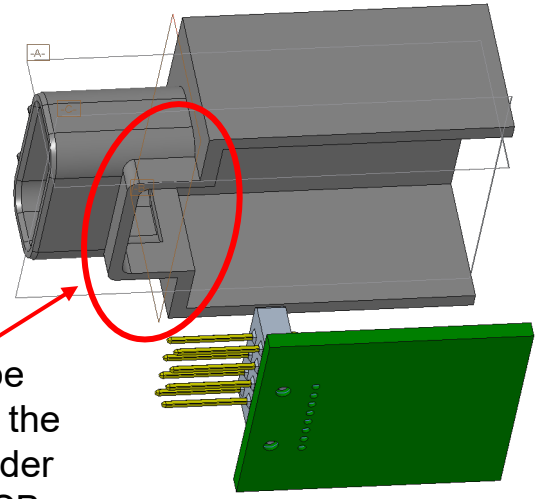


Wire To Device Pin Header

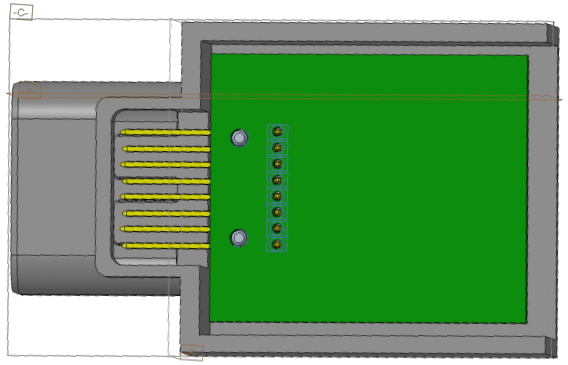
- Mounting option :



Pin header soldered on a PCB

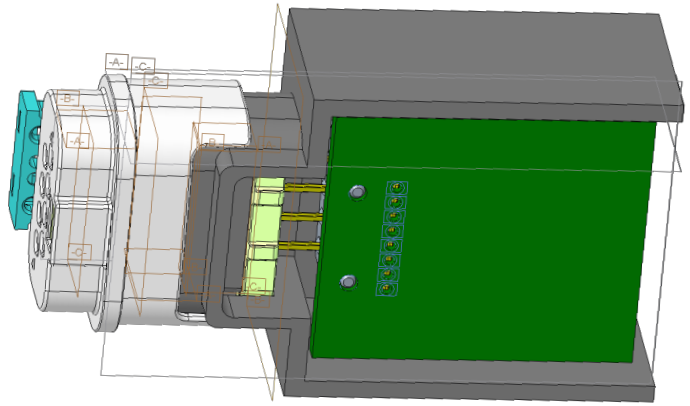


An extrusion can be designed to facilitate the assembly of the header housing onto the PCB



The header housing case has to be closed from the bottom to assure water tightness

Final assembly with the receptacle



MicrospaceXS™ female terminal features

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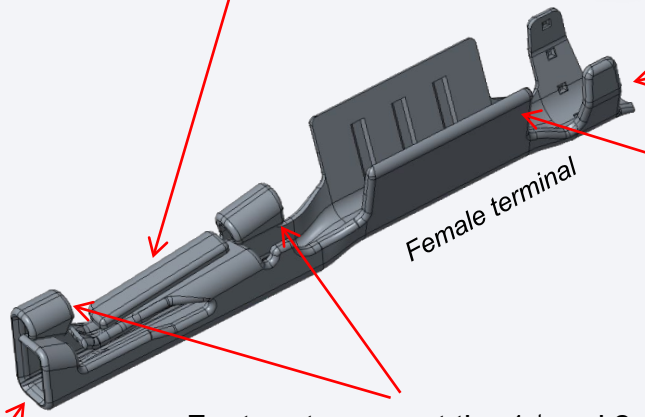
Supported contact beam
to maximize contact normal force

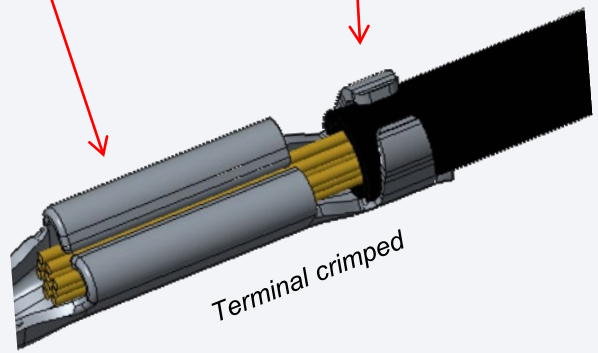
Insulation front crimp barrels to
maximize retention



Large wire crimp region for an
automotive proof retention and
connection

Feature to respect the 1st and 2nd retention
on the terminal into the housing

Front receiving opening and
rear cradle to protect the
contact region and to guide &
align the mated pin within



MicrospaceXS™ male terminal features

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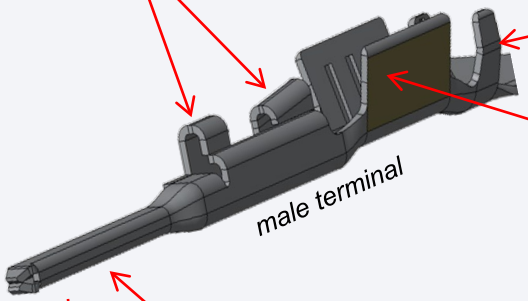
Feature to respect the 1st and 2nd retention on the terminal into the housing

LV214 USCAR

Insulation front crimp barrels to maximize retention

LV214 USCAR

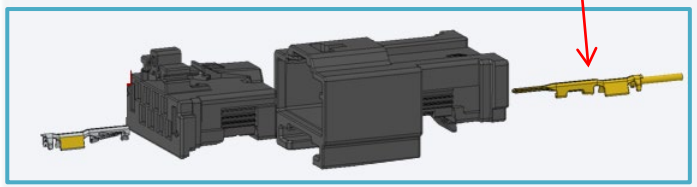


Large wire crimp region for an automotive proof retention and connection

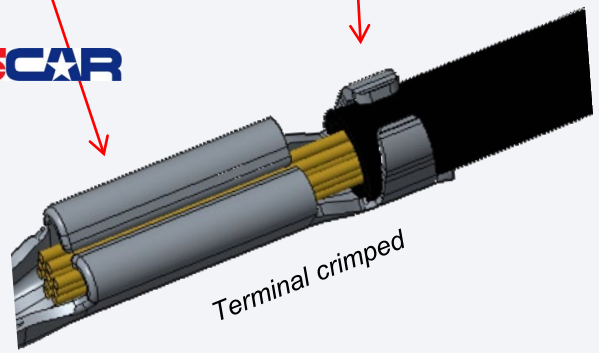
LV214 USCAR

LV214

CTW front pin to connect to the female terminal

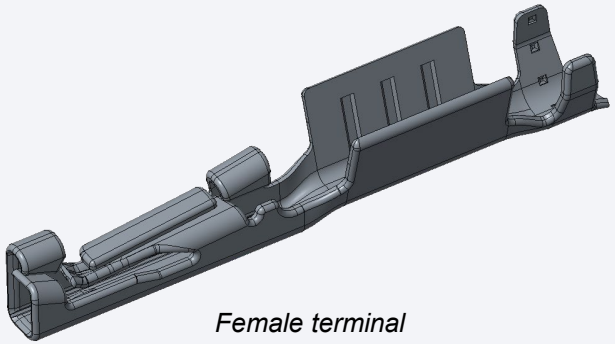


USCAR

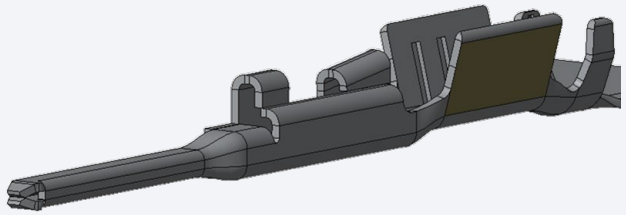


MicrospaceXS™ terminal performance

- Expected current — *2A ** (0.9mm OD wire – AWG28)*
  up to 4A (1.4mm OD wire – AWG22)
- Material — *High conductive copper alloy*
- Designed to full-fill — *LV214 specification – severity 2*
  USCAR – T2V2
  VW 75174 Slow motion bending test
  VW 60330 crimp specification



Female terminal



Male terminal

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

Crimping process and application tooling

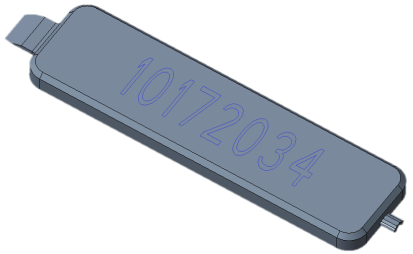
Mini-applicator Crimping Tool:

- *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-20-0657*
- *Semi automatic crimping machine under development*

Handtool 10161117-002

Extraction Tool :

- *Application for receptacle terminal. Extraction procedure see spec GS-20-0657*



Rear loading terminal assembly

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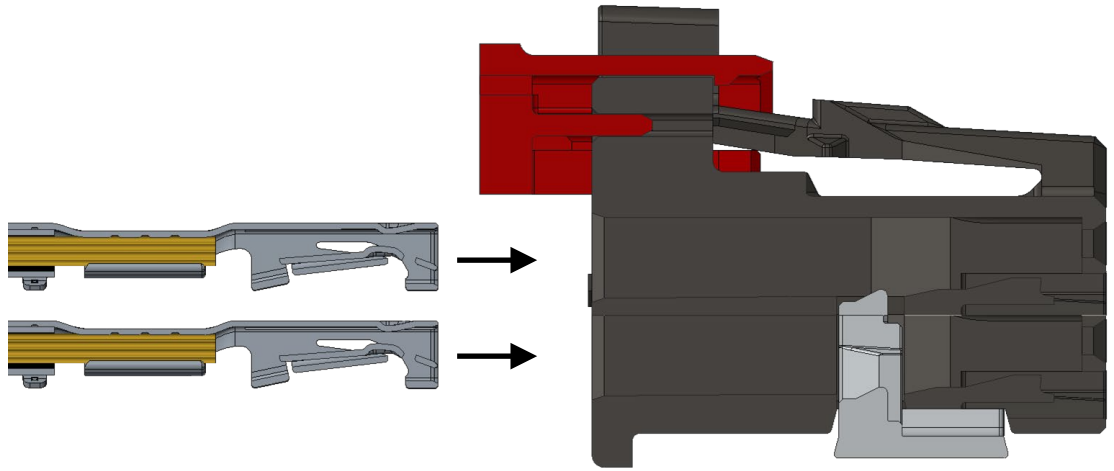
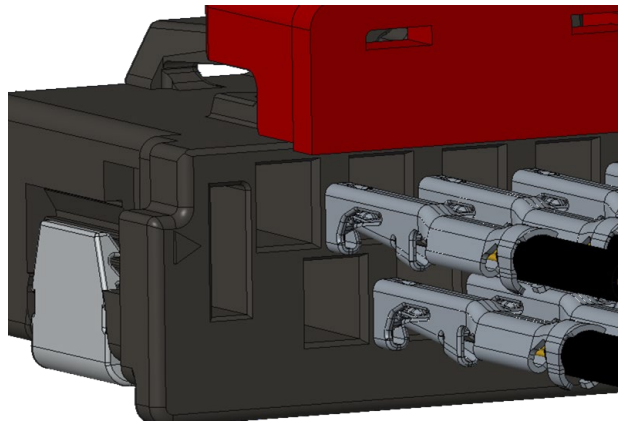
Insertion of terminal into receptacle housing

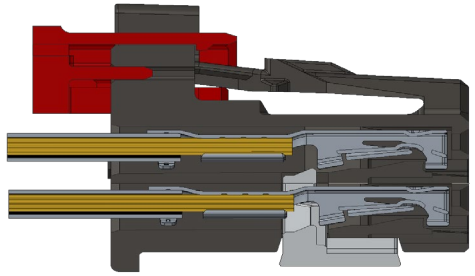
Housing with open TPA



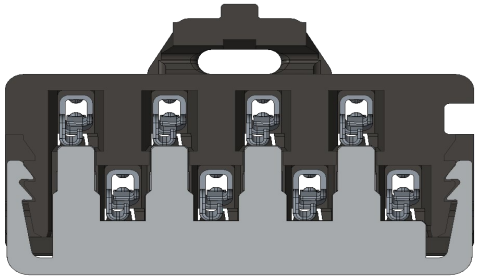
Keying function of terminal prevents wrong insertion

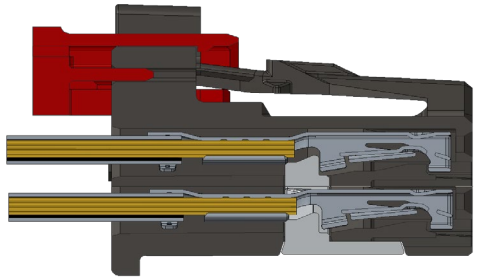


TPA functionality

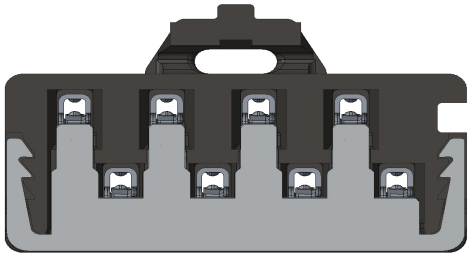


Housing with open TPA

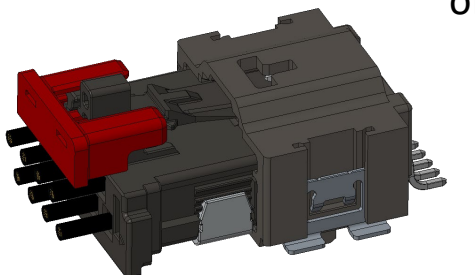


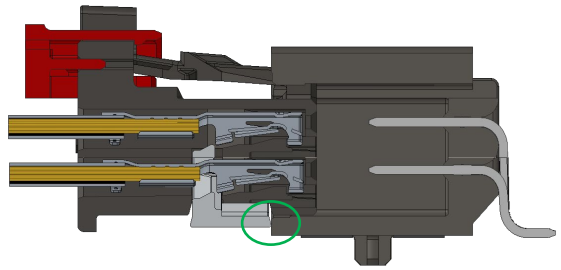


Housing with closed TPA



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





CPA insertion

Amphenol
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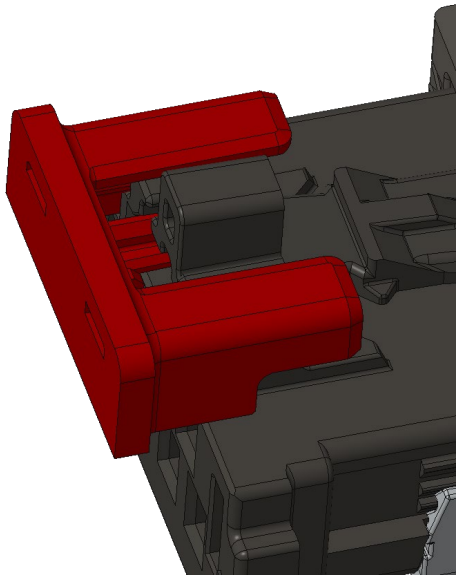
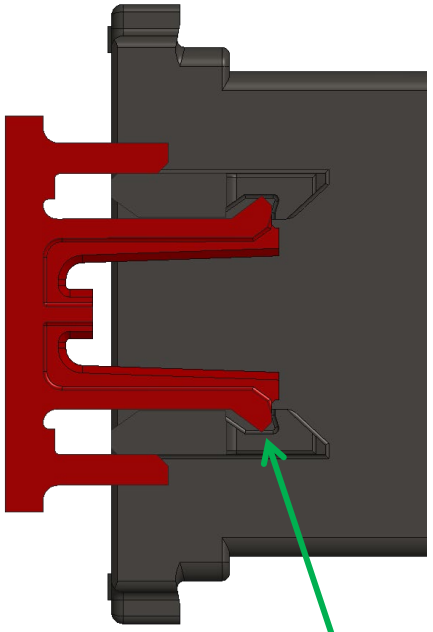
Insert CPA on the receptacle housing



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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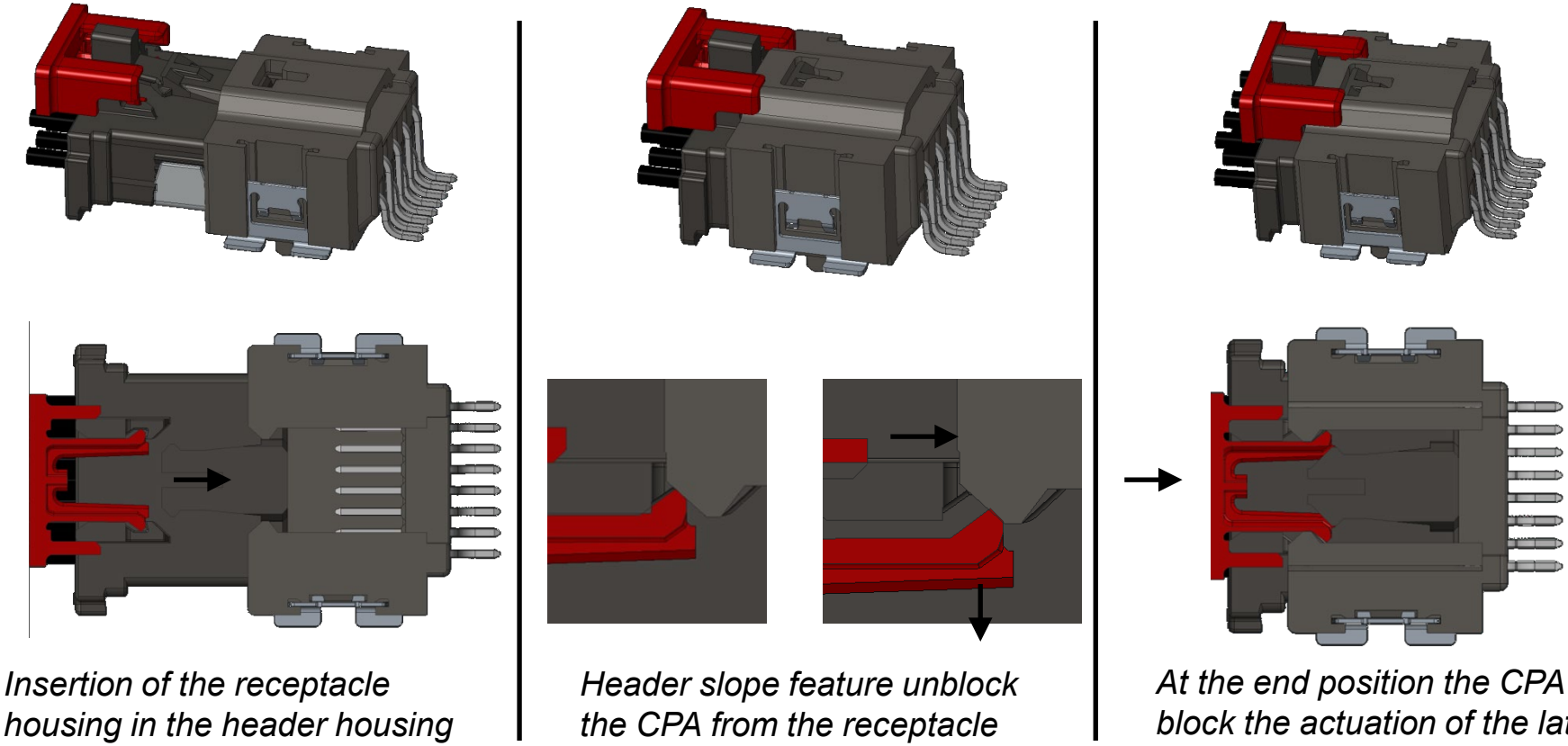
Insert CPA on the receptacle housing

Header have to be not connected



Insertion of the receptacle housing in the header housing

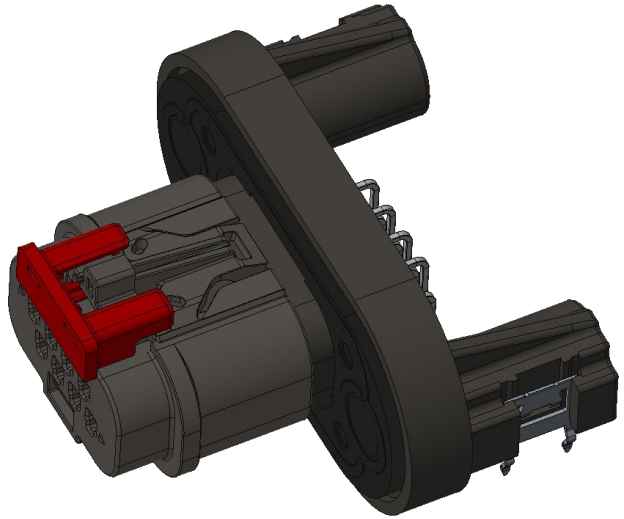
Header slope feature unblock the CPA from the receptacle

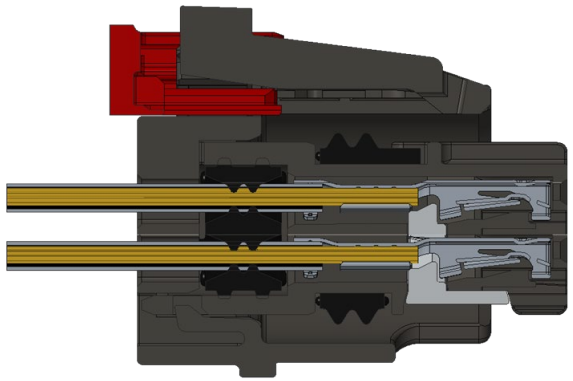
At the end position the CPA block the actuation of the latch

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

Sealing functionality

Connector completely seal (example)

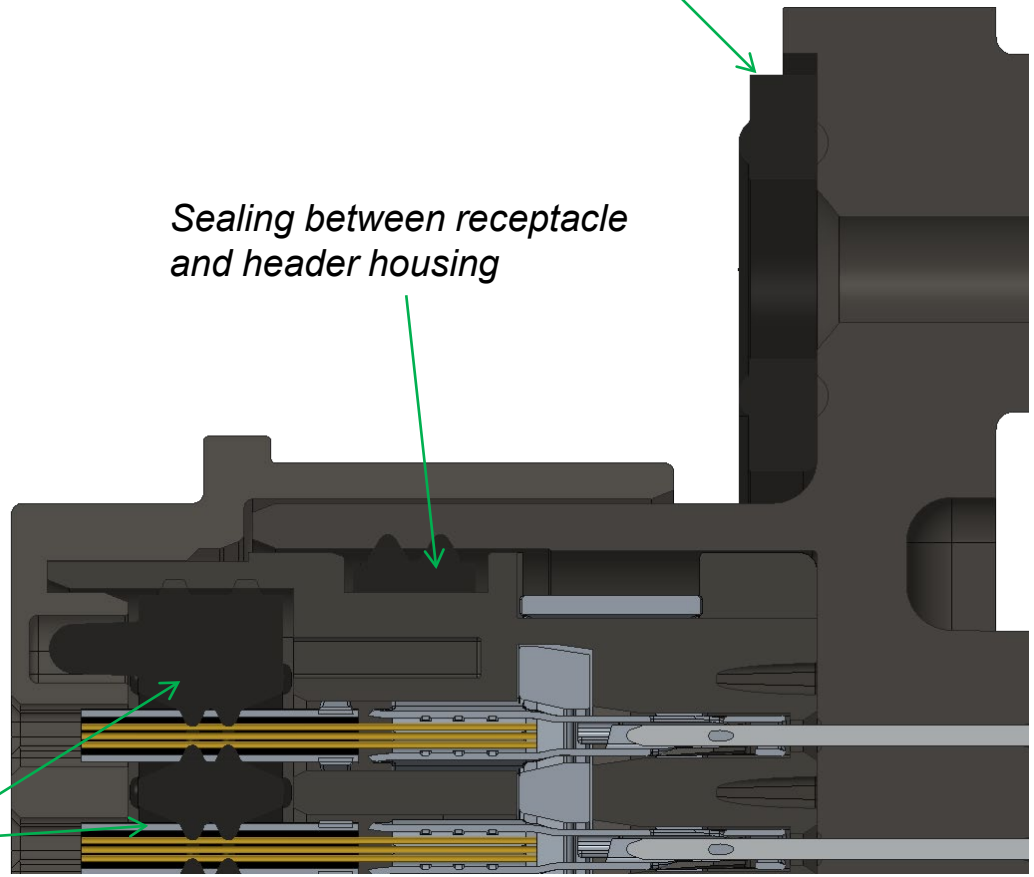




Sealing around terminals

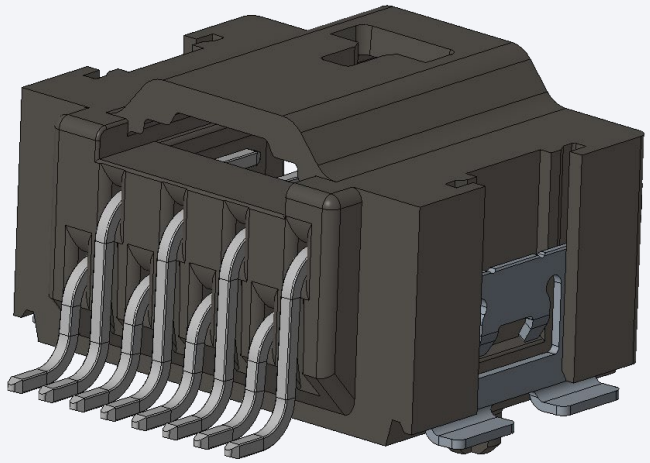
Sealing between connector and panel

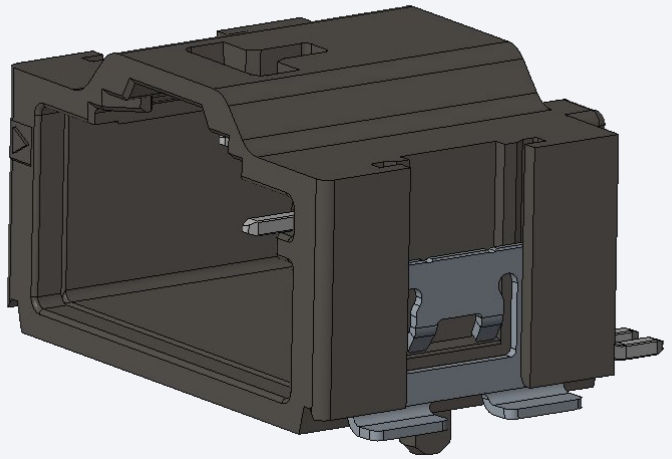
Sealing between receptacle and header housing



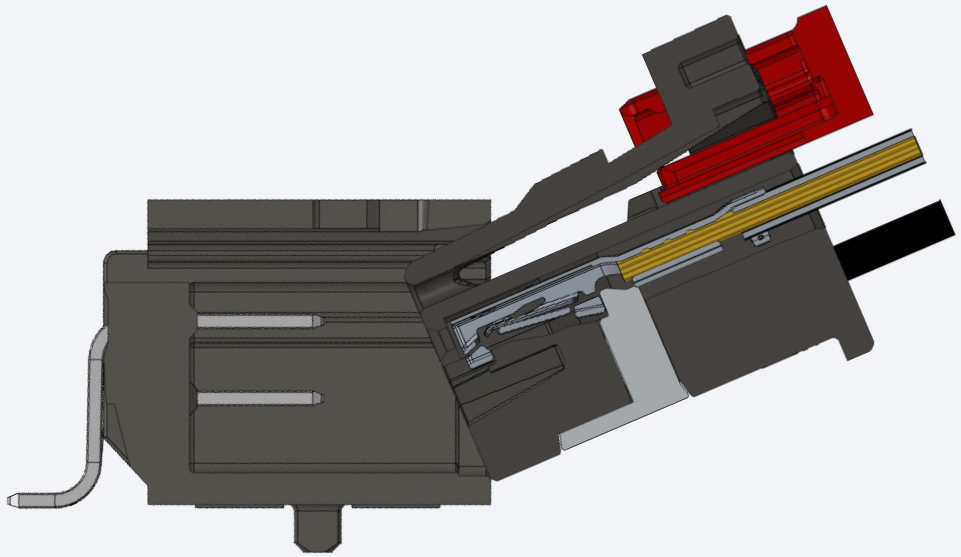
Header SMD Solution - Contact

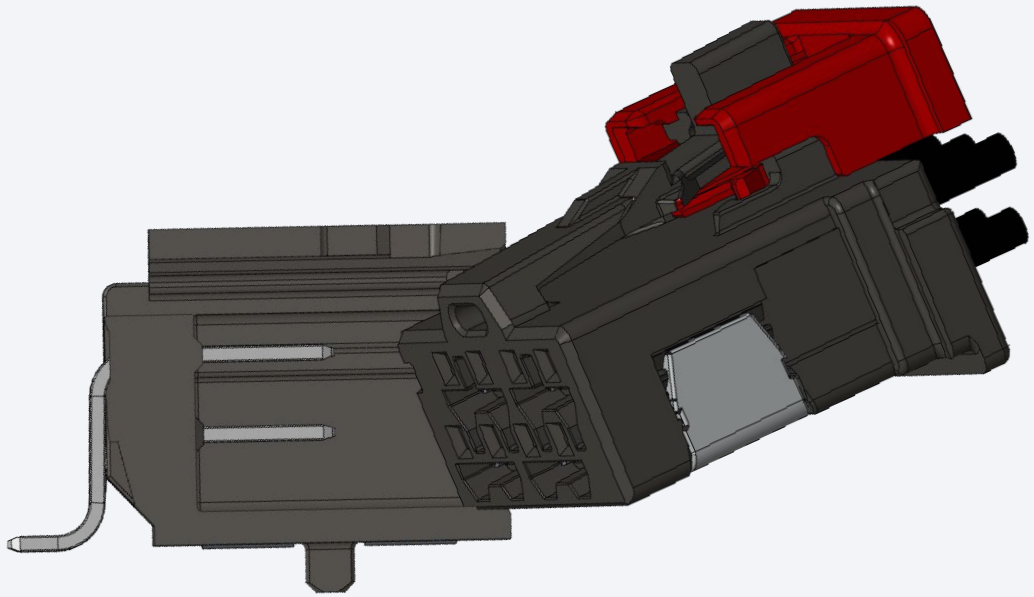
Dimension	*Square pin 0.47mm.*
Base material	*High conductive alloy*
Finish	*Sn, Au*





Concept 1.27mm pitch staggered 1 TPA





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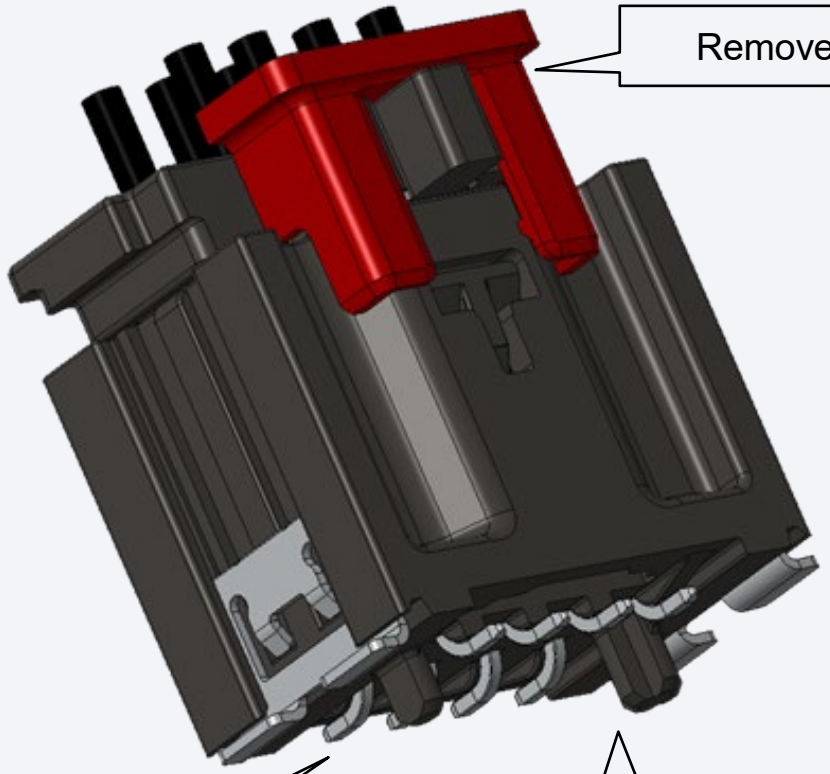
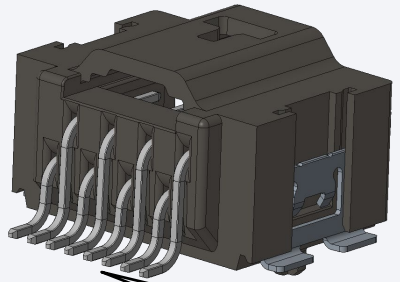
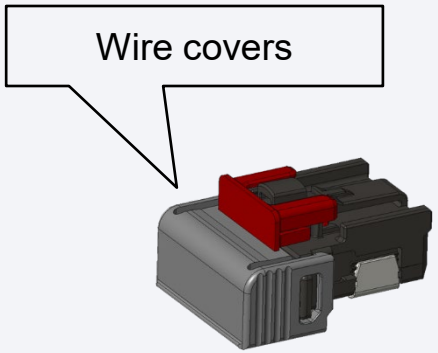
Example of possible Customized Solution:







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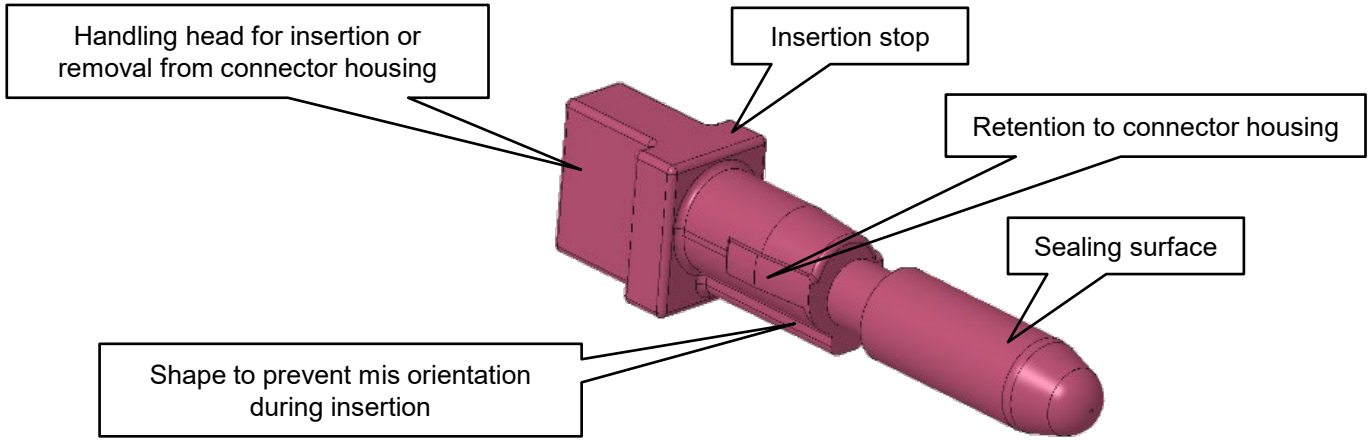
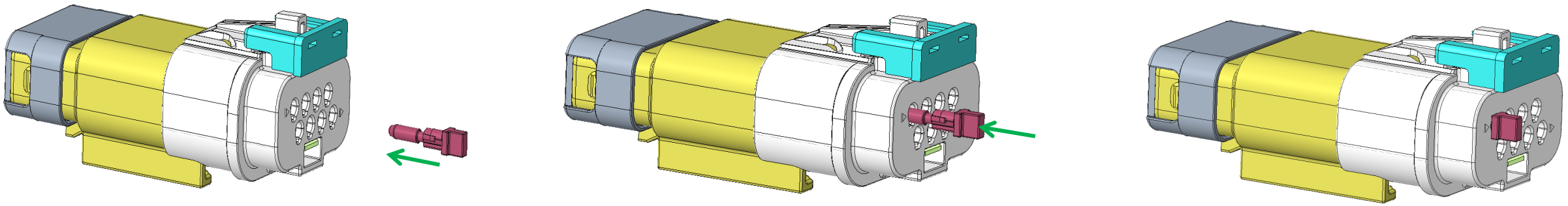
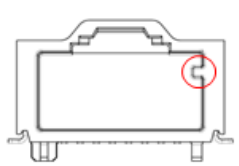
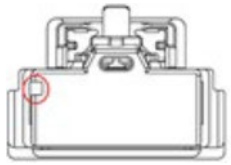
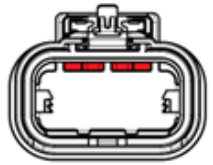
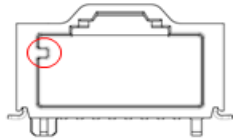
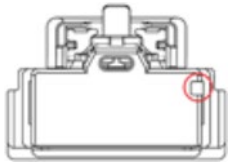
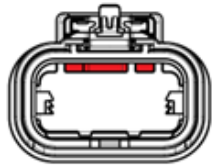
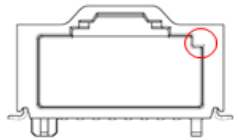
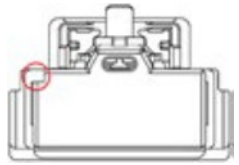
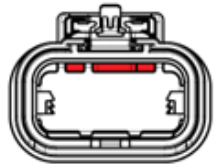
Example of possible Accessories Solution: MicroSpaceXS Sealed Sealing plug



10155475-000LF

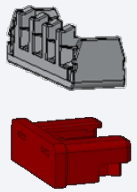


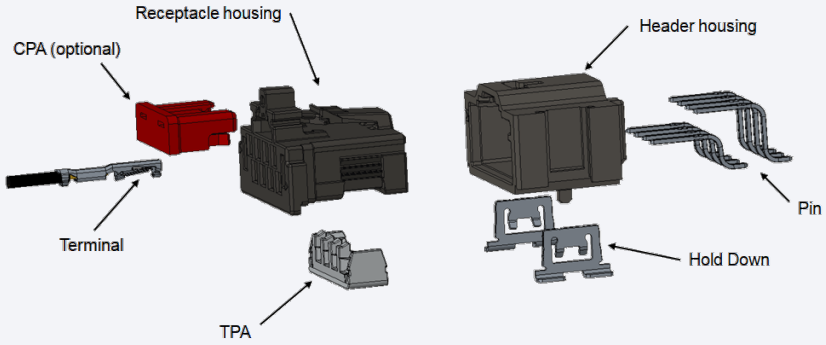
Mechanical coding functionality

	MicroSpace XS		MicroSpace XS Waterproof	
Coding	**Header**	**Receptacle**	**Header**	**Receptacle**
A				
B				
C				

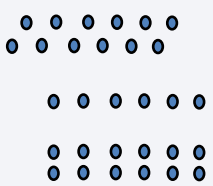
Glossary

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

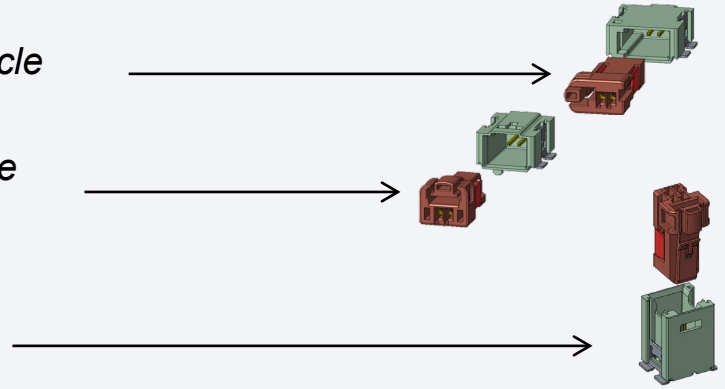




- **StS** *Side to Side (contacts placed on side to side row)*
- **StG** *Staggered (contacts placed on staggered row)*
- **SR** *Simple row (contacts placed on 1 side to side row)*
- **DR** *Double row (contacts placed on 2 side to side row)*



- **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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