

## 48-Volts

48 V terminals & connectors  
 2 way; 3 way; 4 way cavities  
 Proven product quality  
 High Voltage Interlock included (HVIL)  
 Materials with high comparative tracking index (CTI>300)  
 Comply with requirements DIN EN 60664-1 for clearance and creepage distances



## Fuse Boxes

Complete portfolio of underhood and interior applications  
 Proven engineering solutions  
 Hard wired, PCB and Hybrid systems



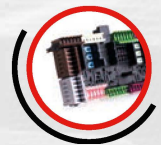
## Pre-fuse Boxes

Screwless solution  
 Combined with Lear Variafuse/Multifuse  
 Integration of active components



## Modular Fuse Boxes

Adapt power scaling modules  
 Lightweight  
 Eliminate tooling expenditure



## Inline Connectors

18; 30; 32; 54; 62 way cavities  
 High functional density  
 Hybrid terminal system



## Wire to Board Connectors

Various pinheaders  
 Conventional inserts/pressfit zone



## Device Connectors

High density architecture  
 Hybrid terminal system  
 Various application EPS, ABS, ECU, Seat Connectors, etc...



## Pressfit Pins

Flexible pressfit zone reduce insertion stress for PCB  
 Tabs width from 0.64 mm to 9.5 mm  
 Tab thickness 0.4 mm; 0.64 mm; 0.8 mm



## Channels/Brackets

Alternative materials  
 Lightweight



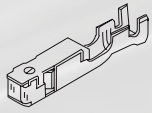
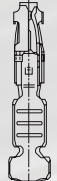
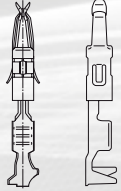
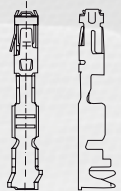
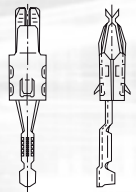
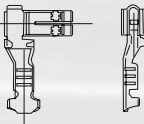
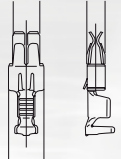
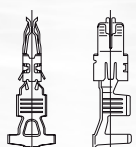
## Ring Terminals, Eylets

Wide range of common catalog and also customized parts













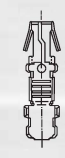

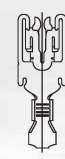

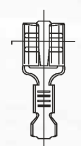



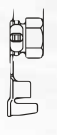
Lear Terminals for single and multi-way connection covering broad range of usage mainly in automotive and also domestic, control engineering, consumer & electronic industry.

For terminal details, part number references, technical specifications, please contact us.

Terminal Type	Contact Point Specification	
<h3>Clean Body Connection System</h3> <p>M2000 1.5 M2000 2.8 M2000 6.3</p>	<p>1.5 x 0.8 CB 2.8 x 0.8 CB 6.3 x 0.8 CB</p>	
<h3>Leaf Spring Connection System</h3> <p>VEK</p>	<p>0.63 x 0.63</p>	
<h3>Leaf Spring Connection System</h3> <p>MFK/MFS</p>	<p>1.5 x 0.6</p>	
<h3>Leaf Spring Connection System</h3> <p>AFK 0.63</p>	<p>0.63 x 0.63</p>	
<h3>Leaf Spring Connection System</h3> <p>MDK</p>	<p>2.8 x 0.8 / 4.8 x 0.8</p>	
<h3>Angle Leaf Spring Connection system</h3> <p>WDF</p>	<p>2.8 x 0.8 / 4.8 x 0.8</p>	
<h3>Leaf Spring Connection System</h3> <p>DFK</p>	<p>4.8 - 6.3 x 0.8</p>	
<h3>Leaf Spring Connection System</h3> <p>Maxi DFK</p>	<p>9.5 x 0.8</p>	

Lear Terminals for single and multi-way connection covering broad range of usage mainly in automotive and also domestic, control engineering, consumer & electronic industry.

For terminal details, part number references, technical specifications, please contact us.

Terminal Type	Contact Point Specification					
<p><b>Secure Contact System</b></p> <p>SIKO</p>	<p>4.8 - 6.3 x 0.8</p>					
<p><b>Leaf spring Round Connection System</b></p> <p>MKR/MKS</p>	<p>1.5 mm diameter</p>					
<p><b>Pin and Socket Round Connection System</b></p> <p>CONI</p>	<p>1.6 &amp; 2.1 mm diameter</p>					
<p><b>Pin and Socket Round Connection System</b></p> <p>RSA</p>	<p>1.6 mm diameter</p>					
<p><b>Leaf spring Round Connection System</b></p> <p>VKR/VKS</p>	<p>2.5 mm diameter</p>					
<p><b>Pin and Socket Round Connection System</b></p> <p>RAM</p>	<p>3.5 mm diameter</p>					
<p><b>Flat Fuse Connection System</b></p> <p>GSK</p>	<p>Flat fuse contact</p>					
<p><b>Other Connections System</b></p> <p>Flat receptacles &amp; tabs</p> <p>Pins/Pressfit pins</p> <p>Ring terminals / eyelets</p>	<p>2.8; 4.8; 6.3; 9.5</p> <p>0.63 - 12.0 tab sizes</p>					





## MSK 0.63



**MSK 0.63 mm product features:**

- Terminal system for 0.63 mm blades
- Contact spring support for reliable electrical performance
- Closed box design protecting contact area
- Sn and Au plated versions available
- Sealed and unsealed version available
- Centerline pitch 2.54 mm
- Wire cross section 0.13 mm<sup>2</sup> up to 0.75 mm<sup>2</sup>

**MSK 0.63 mm product advantages:**

- High electrical reliability due to contact area supported by stainless steel spring
- Robust terminal design for safe handling and assembly
- System allows connector design with high terminal density
- Compatible with common industry standards

## MSK

The MSK terminal is a well proven 0.63 mm terminal system covering a broad range of automotive applications. Made up of a copper alloy body and a supporting stainless steel spring it provides reliable performance and handling robustness. Its design combines ability for high density connector housing design and mechanical strength.

MSK 0.63	Technical data (Sn)	Technical data (Au)
Wire cross section	0.13 - 0.75 mm <sup>2</sup>	0.13 - 0.75 mm <sup>2</sup>
Current rating capacity	Up to 8 A @ 80 °C	Up to 8 A @ 80 °C
Temperature range	- 40 °C to +130 °C	- 40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 5 N	≤ 4 N
Unmating force	≥ 2 N	≥ 1 N
Contact resistance	≤ 4 mΩ	≤ 4 mΩ





Lear T&C Part	Lear GPN	Wire Size (mm <sup>2</sup> )	Surface Finish
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### MSK Unsealed System 0.63

28783.201.178	E02 232 800	0.13	Sn
28783.201.702	E02 232 900	0.13	Au
28785.201.178	E02 233 000	0.13	Sn
28785.201.702	E02 233 100	0.13	Au
28034.201.178	320 257 4Z6	0.22 - 0.5	Sn
28034.201.702	320 25Y 0WH	0.22 - 0.5	Au
28054.201.178	320 251 9S9	0.22 - 0.5	Sn
28054.201.702	320 259 8F4	0.22 - 0.5	Au
28038.201.178	320 257 5I5	0.75	Sn
28038.201.702	E00 000 460	0.75	Au
28053.201.178	320 259 8D9	0.75	Sn
28053.201.702	320 25Y 2CL	0.75	Au

### MSK Sealed System 0.63

28103.201.178	320 259 7Z9	0.2 - 0.5	Sn
28103.201.702	320 256 4N6	0.2 - 0.5	Au
28104.201.178	320 259 7Y1	0.5 - 0.75	Sn
28104.201.702	E00 564 900	0.5 - 0.75	Au





## MAK 1.5



### MAK 1.5 mm product features:

- Closed box design for contact spring protection and outstanding robustness
- Contact spring support for reliable electrical performance
- Two latches for terminal locking and retention
- 4-side terminal secondary lock provision
- Sn and Au plated versions available
- Wire cross section 0.2 mm<sup>2</sup> up to 1.5 mm<sup>2</sup>

### MAK 1.5 mm product advantages:

- Robust closed box design for safe handling in harness assembly plants
- High electrical reliability due to contact area supported by stainless steel spring
- Connector design flexibility for 4-side secondary lock option
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- Compatible with common industry standards

## MAK 2.8



### MAK 2.8 mm product features:

- Closed box design for contact spring protection and outstanding robustness
- Contact spring support for reliable electrical performance
- Two latches for terminal locking and retention
- 4-side terminal secondary lock provision
- Sn and Au plated versions available
- Wire cross section 0.2 mm<sup>2</sup> up to 4.0 mm<sup>2</sup>

### MAK 2.8mm product advantages:

- Robust closed box design for safe handling in harness assembly plants
- High electrical reliability due to contact area supported by stainless steel spring
- Connector design flexibility for 4-side secondary lock option
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- Compatible with common industry standards

## MAK 4.8–6.3



### MAK 4.8 – 6.3 mm product features:

- Closed box design for contact spring protection and outstanding robustness
- Contact spring support for reliable electrical performance
- Two latches for terminal locking and retention
- 4-side terminal secondary lock provision
- Wire cross section 0.2 mm<sup>2</sup> up to 6.0 mm<sup>2</sup>

### MAK 4.8 – 6.3 mm product advantages:

- Robust closed box design for safe handling in harness assembly plants
- High electrical reliability due to contact area supported by stainless steel spring
- Connector design flexibility for 4-side secondary lock option
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- Compatible with common industry standards

# MAK

The MAK terminal series covers the range of 1.5 mm; 2.8 mm; 4.8 - 6.3 mm blades. Its high performance copper alloy body provides an excellent electrical performance, while the stainless steel spring guarantees superior contact reliability. Its closed box design ensures protection of the functional parts, whilst its compact size and low mating efforts provide benefits to vehicle assembly.

MAK 1.5	Technical data (Sn)	Technical data (Au)
Wire cross section	0.2 - 1.0 mm <sup>2</sup>	0.2 - 1.0 mm <sup>2</sup>
Current rating capacity	Up to 14 A @ 80 °C	Up to 15 A @ 80 °C
Temperature range	- 40 °C to +130 °C	- 40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 6 N	≤ 6 N
Unmating force	≥ 0.5 N	≥ 0.5 N
Contact resistance	≤ 2 mΩ	≤ 2 mΩ

MAK 2.8	Technical data (Sn)	Technical data (Au)
Wire cross section	0.2 - 2.5 mm <sup>2</sup>	0.2 - 2.5 mm <sup>2</sup>
Current rating capacity	Up to 25 A @ 80 °C	Up to 25 A @ 80 °C
Temperature range	- 40 °C to +130 °C	- 40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 8 N	≤ 8 N
Unmating force	≥ 2 N	≥ 2 N
Contact resistance	≤ 1 mΩ	≤ 1 mΩ

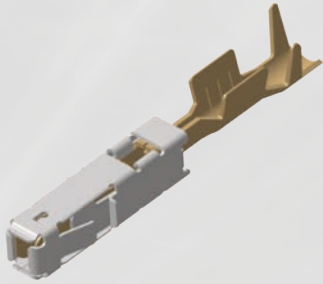
  

MAK 4.8 / 6.3	Technical data
Wire cross section	0.2 - 6.0 mm <sup>2</sup>
Current rating capacity	Up to 34 A @ 80 °C
Temperature range	- 40 °C to +130 °C
Mating cycles	20x
Mating force	≤ 12 N
Unmating force	≥ 2 N
Contact resistance	≤ 0.5 mΩ



Lear T&C Part	Lear GPN	Wire Size (mm <sup>2</sup> )	Surface Finish
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### MAK Unsealed System 1.5

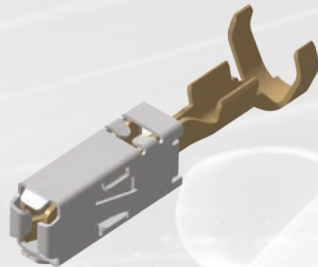


28287.306.185	320 259 4Z2	0.2 - 0.35	Sn
28443.306.702	320 259 6A7	0.2 - 0.35	Au
28288.306.185	320 259 5A8	0.5 - 1.0	Sn
28442.306.702	320 259 5Z1	0.5 - 1.0	Au
28289.306.185	E01 211 800	0.5 - 1.0	Sn
28441.306.702	E06 600 200	0.5 - 1.0	Au
28288.306.718	320 258 6Q4	0.5 - 1.0	Au
29084.000.001	E13 277 500	1.5	Sn

### MAK Sealed System 1.5

28354.306.185	320 259 5M2	0.2 - 0.35	Sn
28440.306.702	320 25Y 199	0.2 - 0.35	Au
28355.306.185	320 25Y 196	0.5 - 1.0	Sn
28439.306.702	320 25Y 195	0.5 - 1.0	Au

### MAK Unsealed System 2.8

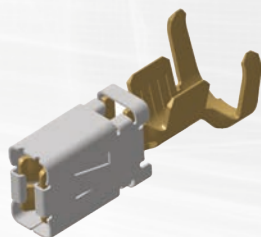


28271.306.185	320 259 7W5	0.2 - 0.35	Sn
28433.306.709	320 259 5X5	0.2 - 0.35	Au
28272.306.185	320 259 4J9	0.5 - 1.0	Sn
28432.306.709	320 259 5W7	0.5 - 1.0	Au
28273.306.185	320 259 4K7	1.5 - 2.5	Sn
28431.306.709	320 25Y 2TN	1.5 - 2.5	Au
29086.000.001	E13 276 000	4.0	Sn

### MAK Sealed System 2.8

28318.306.185	320 259 5K6	0.2 - 0.35	Sn
28436.306.709	E00 012 057	0.2 - 0.35	Au
28319.306.185	320 25Y 194	0.5 - 1.0	Sn
28435.306.709	320 25Y 193	0.5 - 1.0	Au
28320.306.185	E00 000 266	1.5 - 2.5	Sn
28434.306.709	E00 012 059	1.5 - 2.5	Au

### MAK Unsealed System 4.8 - 6.3



28304.306.185	E00 011 031	0.2 - 0.35	Sn
28305.306.185	E00 011 488	0.5 - 1.0	Sn
28306.306.185	320 257 Q92	1.0 - 2.5	Sn
28307.306.185	E00 011 489	2.5 - 4.0	Sn
28839.000.001	E13 490 500	4.0 - 6.0	Sn

### MAK Sealed System 4.8 - 6.3

28364.306.185	320 259 5P5	0.5 - 1.0	Sn
28365.306.185	E00 274 200	1.5 - 2.5	Sn
28366.306.185	E00 274 300	4.0	Sn







## AFK 1.5



### AFK 1.5 mm product features:

- Contact spring support
- Two latches for terminal locking and retention
- 4-side terminal secondary lock provision
- Sn and Au plated versions available
- Wire cross section 0.2 mm<sup>2</sup> up to 2.0 mm<sup>2</sup>

### AFK 1.5 mm product advantages:

- Robust terminal system
- High electrical reliability due to contact area supported by stainless steel spring
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- Low mating efforts allow multiple connections without additional lever features
- Compatible with common industry standards

## AFK 2.8



### AFK 2.8 mm product features:

- Contact spring support
- Two latches for terminal locking and retention
- 4-side terminal secondary lock provision
- Sn and Au plated versions available
- Wire cross section 0.2 mm<sup>2</sup> up to 2.5 mm<sup>2</sup>

### AFK 2.8 mm product advantages:

- Robust terminal system
- High electrical reliability due to contact area supported by stainless steel spring
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- Low mating efforts allow multiple connections without additional lever features
- Compatible with common industry standards

## AFK 4.8–6.3



### AFK 4.8 – 6.3 mm product features:

- Contact spring support
- Two latches for terminal locking and retention
- 4-side terminal secondary lock provision
- Sn and Ag plated versions available
- Wire cross section 0.2 mm<sup>2</sup> up to 6.0 mm<sup>2</sup>

### AFK 4.8 – 6.3 mm product advantages:

- Robust terminal system
- High electrical reliability due to contact area supported by stainless steel spring
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- Low mating efforts allow multiple connections without additional lever features
- Compatible with common industry standards

## AFK

The AFK terminal series covers the range of 1.5 mm; 2.8 mm; 4.8 - 6.3 mm blades. Its high performance copper alloy body provides an excellent electrical performance, while the stainless steel spring guarantees superior contact reliability. Its compact design, low mating efforts and good terminal retention allow high density connectors.

AFK 1.5	Technical data	Technical Data (Au)
Wire cross section	0.2 - 1.0 mm <sup>2</sup>	0.2 - 1.0 mm <sup>2</sup>
Current rating capacity	Up to 14 A @ 80 °C	Up to 14 A @ 80 °C
Temperature range	-40 °C to +130 °C	-40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 6 N	≤ 6 N
Unmating force	≥ 1 N	≥ 1 N
Contact resistance	≤ 2 mΩ	≤ 2 mΩ

AFK 2.8	Technical data	Technical Data (Au)
Wire cross section	0.2 - 2.5 mm <sup>2</sup>	0.2 - 2.5 mm <sup>2</sup>
Current rating capacity	Up to 22 A @ 80 °C	Up to 22 A @ 80 °C
Temperature range	-40 °C to +130 °C	-40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 8 N	≤ 8 N
Unmating force	≥ 1 N	≥ 1 N
Contact resistance	≤ 1 mΩ	≤ 1 mΩ

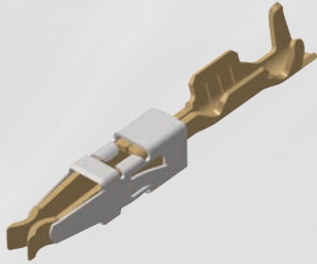
AFK 4.8 / 6.3	Technical data	Technical Data (Au)
Wire cross section	0.2 - 4.0 mm <sup>2</sup>	1.2 - 2.5 mm <sup>2</sup>
Current rating capacity	Up to 34 A @ 80 °C	Up to 32 A @ 80 °C
Temperature range	- 40 °C to +130 °C	-40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 12 N	≤ 12 N
Unmating force	≥ 2,5 N	≥ 2,5 N
Contact resistance	≤ 1,5 mΩ	≤ 1,5 mΩ



Lear T&C Part	Lear GPN	Wire Size (mm <sup>2</sup> )	Surface Finish
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### AFK Unsealed System 1.5

26591.331.185	320 253 1A5	0.2 - 0.35	Sn
26591.201.702	320 258 5G7	0.2 - 0.35	Au
26592.331.185	320 265 0K8	0.5 - 1.0	Sn
26592.201.702	320 256 4Y0	0.5 - 1.0	Au
26593.331.185	320 258 5U4	0.5 - 1.0	Sn
28412.331.185	320 258 5V1	2.0	Sn
28412.201.702	320 259 9D8	2.0	Au



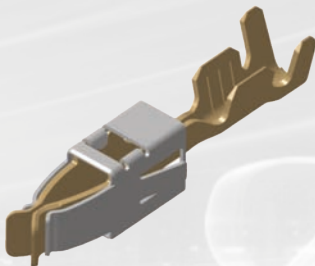
### AFK Sealed System 1.5

26596.331.185	320 257 AW5	0.2 - 0.35	Sn
26596.201.702	320 256 5G1	0.2 - 0.35	Au
26041.331.185	320 253 7D3	0.5 - 1.0	Sn
26041.201.702	320 256 5J4	0.5 - 1.0	Au
26041.201.716	320 258 8N8	0.5 - 1.0	Au

### AFK Unsealed System 2.8

26700.201.185	320 253 6L6	0.2 - 0.35	Sn
26700.201.702	320 259 3B8	0.2 - 0.35	Au
26700.201.186	E09 992 500	0.2 - 0.35	Sn (HT*)
26701.201.185	320 258 1Y9	0.5 - 1.0	Sn
26701.201.702	320 259 3C6	0.5 - 1.0	Au
26701.201.186	E09 992 600	0.5 - 1.0	Sn (HT*)
26705.201.185	320 258 1I7	1.5 - 2.5	Sn
26705.201.702	320 259 3D4	1.5 - 2.5	Au
26705.201.186	E09 992 700	1.5 - 2.5	Sn (HT*)

\* Heat Treatment

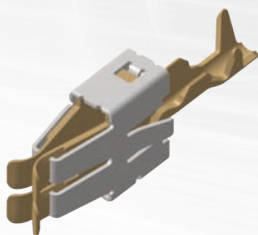


### AFK Sealed System 2.8

26638.201.185	320 253 5N2	0.2 - 0.35	Sn
26638.201.702	320 259 2M5	0.2 - 0.35	Au
26637.201.185	320 252 1A7	0.5 - 1.0	Sn
26637.201.702	320 256 9D4	0.5 - 1.0	Au
26636.201.185	320 255 0H6	1.5 - 2.5	Sn
26636.201.702	320 256 9E1	1.5 - 2.5	Au

### AFK Unsealed System 4.8 - 6.3

26697.330.186	320 257 AU0	0.2 - 0.35	Sn
26649.330.186	320 253 7J9	0.5 - 1.0	Sn
26648.330.186	320 253 7M3	1.5 - 2.5	Sn
26646.330.141	E00 021 360	1.5 - 2.5	Ag
26650.330.186	320 257 BP2	2.5 - 4.0	Sn
28095.330.186	320 257 AZ9	4.0 - 6.0	Sn



### AFK Sealed System 4.8 - 6.3

26679.330.186	320 257 AY1	0.5 - 1.0	Sn
26682.330.186	320 257 AV7	1.5 - 2.5	Sn
26684.330.186	320 257 AX3	2.5 - 4.0	Sn







## AFS 1.5



### AFS 1.5 mm product features:

- Two latches for terminal locking and retention
- Sn and Au plated versions available
- Wire cross section 0.2 mm<sup>2</sup> up to 2.0 mm<sup>2</sup>

### AFS 1.5 mm product advantages:

- Robust closed box design for safe handling in harness assembly plants
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- compatible with common industry standards

## AFS 2.8



### AFS 2.8 mm product features:

- Two latches for terminal locking and retention
- Sn and Au plated versions available
- Wire cross section 0.2 mm<sup>2</sup> up to 2.5 mm<sup>2</sup>

### AFS 2.8 mm product advantages:

- Robust closed box design for safe handling in harness assembly plants
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- compatible with common industry standards

## AFS 4.8–6.3



### AFS 4.8 – 6.3 mm product features:

- Two latches for terminal locking and retention
- Sn and Au plated versions available
- Wire cross section 0.2 mm<sup>2</sup> up to 6.0 mm<sup>2</sup>

### AFS 4.8 – 6.3 mm product advantages:

- Robust closed box design for safe handling in harness assembly plants
- System allows connector designs with high terminal density
- Available for sealed and unsealed applications
- compatible with common industry standards

## AFS

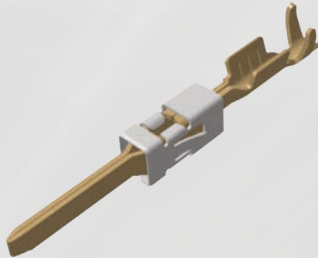
The AFS terminal series covers the range of 1.5 mm; 2.8 mm; 4.8 - 6.3 mm blades. Its high performance copper alloy body provides an excellent electrical performance, while the stainless steel spring guarantees superior contact reliability. Its compact design, low mating efforts and good terminal retention allow high density connectors.

AFS 1.5	Technical data	Technical data (Au)
Wire cross section	0.2 - 1.0 mm <sup>2</sup>	0.2 - 1.0 mm <sup>2</sup>
Current rating capacity	Up to 14 A @ 80 °C	Up to 14 A @ 80 °C
Temperature range	-40 °C to +130 °C	-40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 6 N	≤ 6 N
Unmating force	≥ 1 N	≥ 1 N
Contact resistance	≤ 2 mΩ	≤ 2 mΩ

AFS 2.8	Technical data	Technical data (Au)
Wire cross section	0.2 - 2.5 mm <sup>2</sup>	0.2 - 2.5 mm <sup>2</sup>
Current rating capacity	Up to 22 A @ 80 °C	Up to 22 A @ 80 °C
Temperature range	-40 °C to +130 °C	-40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 8 N	≤ 8 N
Unmating force	≥ 1 N	≥ 1 N
Contact resistance	≤ 1 mΩ	≤ 1 mΩ

AFS 4.8 / 6.3	Technical data	Technical data (Au)
Wire cross section	0.2 - 4.0 mm <sup>2</sup>	1.2 - 2.5 mm <sup>2</sup>
Current rating capacity	Up to 34 A @ 80 °C	Up to 32 A @ 80 °C
Temperature range	-40 °C to +130 °C	-40 °C to +150 °C
Mating cycles	20x	50x
Mating force	≤ 12 N	≤ 12 N
Unmating force	≥ 2,5 N	≥ 2,5 N
Contact resistance	≤ 1,5 mΩ	≤ 1,5 mΩ



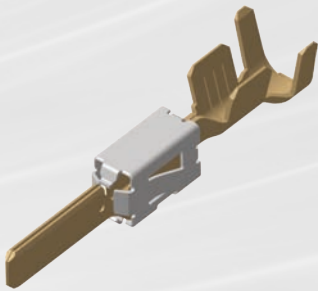


### AFS Unsealed System 1.5

Lear T&C Part	Lear GPN	Wire Size (mm <sup>2</sup> )	Surface Finish
26589.330.185	320 250 A86	0.2 - 0.35	Sn
26589.201.702	320 259 9P1	0.2 - 0.35	Au
26590.330.185	320 250 A94	0.5 - 1.0	Sn
26590.201.702	320 253 7H4	0.5 - 1.0	Au
28414.330.185	320 259 9B2	2.0	Sn
28414.201.702	320 259 9N5	2.0	Au

### AFS Sealed System 1.5

26594.330.185	320 263 6X6	0.2 - 0.35	Sn
26594.201.702	320 263 6W8	0.2 - 0.35	Au
26595.330.185	320 263 6Z2	0.5 - 1.0	Sn
26595.201.702	320 263 6Y4	0.5 - 1.0	Au

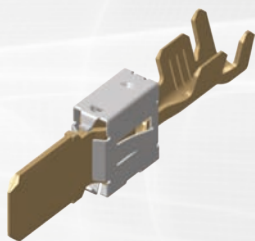


### AFS Unsealed System 2.8

26671.330.185	320 250 AA1	0.2 - 0.35	Sn
26671.201.702	320 263 7Y3	0.2 - 0.35	Au
26659.330.185	320 250 AB9	0.5 - 1.0	Sn
26659.201.702	320 263 7X5	0.5 - 1.0	Au
26659.201.009	E09 104 800	0.5 - 1.0	Sn
26659.201.142	320 25Y 2U7	0.5 - 1.0	Ag
26657.330.185	320 250 AC7	1.5 - 2.5	Sn
26657.201.702	320 25Y 2U6	1.5 - 2.5	Au
26657.201.142	320 25Y 2U5	1.5 - 2.5	Ag

### AFS Sealed System 2.8

26673.330.185	320 253 7F8	0.2 - 0.35	Sn
26673.201.702	320 263 7T4	0.2 - 0.35	Au
26674.330.185	320 253 7C5	0.5 - 1.0	Sn
26674.201.702	320 263 7U2	0.5 - 1.0	Au
26676.330.185	320 263 7V9	1.5 - 2.5	Sn



### AFS Unsealed System 4.8 - 6.3

26788.330.185	320 263 7S6	0.2 - 0.35	Sn
26685.330.185	320 263 7Q3	0.5 - 1.0	Sn
26689.330.185	320 253 8H3	1.5 - 2.5	Sn
26695.330.185	320 263 7R1	2.5 - 4.0	Sn
28093.330.185	320 260 3V9	4.0 - 6.0	Sn

### AFS Sealed System 4.8 - 6.3

26687.330.185	320 263 6Q4	0.5 - 1.0	Sn
26691.330.185	320 263 6T5	1.5 - 2.5	Sn
26693.330.185	320 263 6U3	2.5 - 4.0	Sn
26978.330.185		4.0 - 6.0	Sn
26978.306.179	320 263 6K7	4.0 - 6.0	Sn
26978.306.710	320 263 6L5	4.0 - 6.0	Ag





## MAK 8 & 12



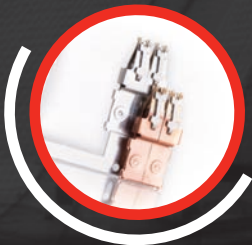
### MAK 8 & 12mm product features:

- Smallest terminal with high current capability
- Sn and Ag plated versions available
- Fulfill new 48 V requirements
- Ag-Ni plating for high temperature applications
- Expanded weld tab for peeling force measurement available
- Secondary locking
- Available for both Aluminium and Copper applications
- Wire cross section 1.5 mm<sup>2</sup> up to 35 mm<sup>2</sup>

### MAK 8 & 12mm product advantages:

- Robust closed box design for safe handling in harness assembly plants
- High electrical reliability due to contact area supported by stainless steel spring
- High vibration robustness
- Temperature range up to 170 °C
- Available for sealed and unsealed applications
- Low mating and unmating force
- Compatible with common industry standards

## HC 6.3 & 14.5



### HC 6.3 & 14.5 mm:

- Robust design high current terminal
- Stainless steel spring support
- Wire cross section up to 70 mm<sup>2</sup>
- Fulfill new 48 V requirements
- Terminal base material available copper or aluminium alloy, adaptable to wire material base
- Current capability up to 250 A @85 °C

## MAS 8 & 12



### MAS 8 & 12mm product features:

- Sn and Ag plated versions available
- Fulfill new 48 V requirements
- Ag-Ni plating for high temperature applications
- Expanded weld tab for peeling force measurement available
- Wire cross section 2.5 mm<sup>2</sup> up to 35 mm<sup>2</sup>

### MAS 8 & 12mm product advantages:

- High vibration robustness
- Temperature range up to 170 °C
- Available for sealed and unsealed applications
- Compatible with common industry standards

## MAK 8 & 12

Lear's outperforming next generation MAK 8 mm and MAK 12 mm high power terminal with extended high vibration performance and temperature range. The MAK power terminal series covers blades sizes 8.0 mm to 9.5 mm and 12.0 mm. They are designed for single and multiple connections. The terminals offer an excellent current rating for use on power demanding applications and closed box design protects from environmental influences and damage.

MAK 8 (9.5)	Technical Data Crimp (Ag)	Technical Data Welding (Ag)
Wire cross section	1.5 - 16.0 mm <sup>2</sup>	4.0 - 25.0 mm <sup>2</sup>
Current rating capacity	Up to 97 A @ 80 °C	Up to 110 A @ 80 °C
Temperature range	-40 °C to +150 °C	-40 °C to +150 °C
Mating cycles	20x	20x
Mating force	≤ 25 N	≤ 25 N
Unmating force	≥ 3 N	≥ 3 N
Contact resistance	≤ 1 mΩ	≤ 1 mΩ

MAK 12	Technical Data (Ag)
Wire cross section	4.0 - 35.0 mm <sup>2</sup>
Current rating capacity	Up to 135 A @ 80 °C
Temperature range	-40°C to +150 °C
Mating cycles	20x
Mating force	≤ 25 N
Unmating force	≥ 3 N
Contact resistance	≤ 1 mΩ

## HC 6.3 & 14.5

Lear's high current HC 6.3 mm and 14.5 mm terminal system provides superior performance in current capability and lifetime performance stability in compact package space with flexible wire connection.

HC 6.3	Technical Data
Wire Cross Section:	Up to 16 mm <sup>2</sup>
Current rating capacity:	Up to 148 A @ 100°C ROA for 16 mm <sup>2</sup> Cu wire
Temperature range:	-40°C to +175°C
Mating cycles:	> 20x
Mating Force (.80 mm Blade):	≤ 15 N Cu / ≤ 11 N Steel
Contact Resistance:	≤ 0.25 mΩ

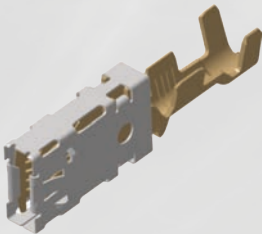
HC 14.5	Technical Data
Wire Cross Section:	Up to 70 mm <sup>2</sup>
Current rating capacity:	Up to 333A @ 100°C ROA for 50 mm <sup>2</sup> Cu wire
Temperature range:	-40°C to +175°C
Mating cycles:	> 20x
Mating Force (.80 mm Blade):	≤ 36N Cu / ≤ 25N Steel
Contact Resistance:	≤ 0.2mΩ



Wire Size (mm <sup>2</sup> )	Surface Finish	Blade	Wire Exit
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### MAK 8 Unsealed System

1.5 - 16.0	Ag	0.8	
1.5 - 16.0	Sn	0.8	
2.5 - 16.0	SnAg	0.8	
2.5 - 16.0	Sn	1.2	
2.5 - 16.0	Ag	1.2	



### MAK 8 Sealed System

2.5 - 16.0	Sn	0.8	
2.5 - 16.0	Ag	0.8	
2.5 - 10.0	SnAg	0.8	
2.5 - 16.0	Sn	1.2	
2.5 - 16.0	Ag	1.2	

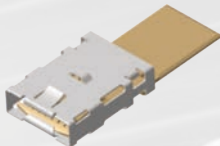
### MAK 8 USW System

4.0 - 25.0	Ag	0.8	180° wire exit
4.0 - 25.0	Ag	0.8	90° wire exit



### MAK 12 USW System

4.0 - 35.0	Ag	0.8	180° wire exit
4.0 - 35.0	Ag	0.8	90° wire exit



### HC 6.3 System USW

2.5 - 16.0	Cu	0.8 - 1.5	90° / 180° wire exit
2.5 - 35.0	Cu	0.8 - 1.5	90° / 180° wire exit



### HC 14.5 System USW

>70.0	Cu	1.2 - 2.2	90° / 180° wire exit
>70.0	Al	1.2 - 2.2	90° / 180° wire exit



### MATING PARTS

#### MAS 8 Crimp / USW System

2.5 - 16.0	Ag	0.8	
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#### MAS 12 USW System

4.0 - 35.0	Sn	0.8	180° wire exit
4.0 - 35.0	Ag	0.8	90° wire exit









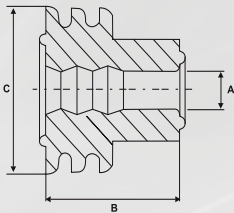
Cavity seals / Seal caps

- MSK
- MAK
- AFK
- HC



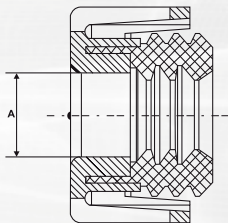
## Cavity seals for terminals MSK, MAK and AFK.

Lear T&C Part (C)	Lear GPN	Cable Insulation Diameter (A)	Lenght (B)	Hole/Cavity Diameter
14000.627.670	320 455 AA5	1.2 - 2.1	7.6	3.6
14448.627.621	320 454 1N0	1.7 - 2.1	7.0	4.0
14458.627.610	320 455 A9V	1.9 - 2.5	7.0	4.0
16276.627.642	320 455 A94	1.2 - 2.1	7.5	5.2
16695.627.619	320 454 7D7	1.2 - 2.1	7.5	5.2
16695.627.642	320 451 3S1	1.2 - 2.1	7.5	5.2
16260.627.626	320 455 A96	1.9 - 3.0	7.5	5.2
16694.627.626	320 454 7E4	1.9 - 3.0	7.5	5.2
14740.627.694	320 455 A6X	1.4 - 2.1	7.5	5.4
14414.627.626	320 455 A6V	1.2 - 2.1	7.5	6.7
14415.627.670	320 455 A6U	1.9 - 3.0	7.5	6.7
16277.627.611	320 455 A9U	1.2 - 2.1	7.5	8.2
16278.627.694	320 455 ATQ	1.9 - 3.0	7.5	8.2
16696.627.694	320 455 A9C	1.9 - 3.0	7.5	8.2
16259.627.646	320 455 A9G	3.4 - 4.4	7.5	8.2
14739.627.619	320 455 A6Y	2.2 - 3.0	7.5	5.4
16697.627.626	E00 020 638	2.7 - 3.7	7.6	8.2
13085.627.642	320 455 AA0	1.15 - 1.6	7.0	4.0



## Seal caps for terminals MAK 8, MAK 12, HC 14.5

Lear T&C Part	Lear GPN	Cable Insulation Diameter (A)	Color
19593.000.001	E05 919 000	10.7 - 1.0	basalt grey
17726.000.000	321 95X 0K9	10.7 - 0.7	grass green
19654.000.001	E06 190 400	10.4 - 1.0	flame red
19592.000.001	E05 918 900	9.8 - 1.0	ochre brown
17725.000.000	321 95X 0K8	9.8 - 0.7	gentian blue
19658.000.001	E06 254 700	9.1 - 1.0	flame red
19283.000.001	E00 011 083	9.1 - 1.0	flame red
19591.000.001	E05 918 800	8.3 - 0.9	blue green
17724.000.000	321 95X 0K7	8.3 - 0.7	pure orange
19054.000.000	321 95X 0KU	7.7 - 0.8	uncolored
19659.000.001	E06 254 800	7.0 - 0.5	ivory
19267.000.001	E00 024 538	7.0 - 0.5	ivory
19052.000.000	321 95X 0KR	6.6 - 0.7	tomato red
19590.000.001	E05 918 700	6.2 - 0.8	corn yellow
19062.000.000	321 95X 0LL	6.2 - 0.6	sky blue
19055.000.000	E00 010 019	5.2 - 1.2	squirrel grey
19056.000.000	321 95X 0KW	3.9 - 0.5	sulfur yellow
19131.000.000	321 95X 0N6	blind	pure white



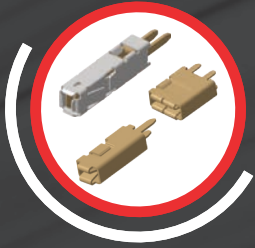






# Female terminals for Printed Circuit Boards

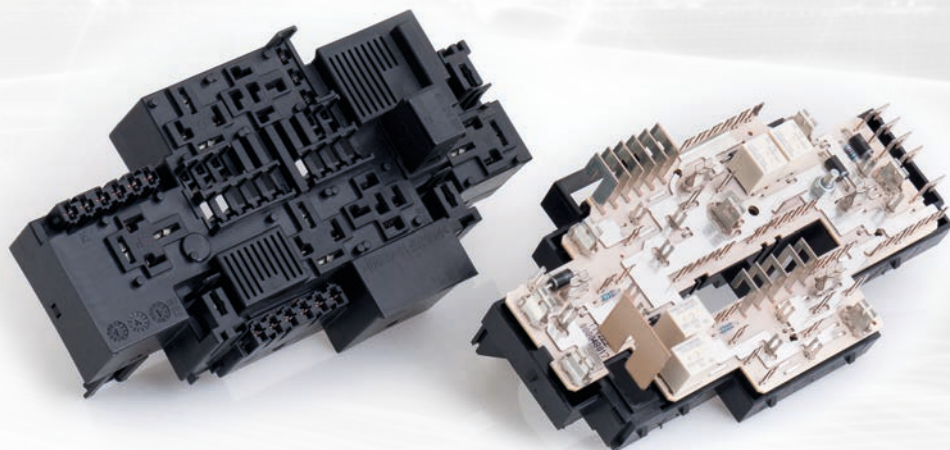
## PCB Terminals



- Female terminals for Printed Circuit Boards product features:**
- market proven solution for connection of Printed Circuit Boards
  - for tab range from 1.5 mm to 9.5 mm

# Female terminals for Printed Circuit Boards

- market proven solution for connection of Printed Circuit boards
- for tab range from 1.5 mm to 9.5 mm

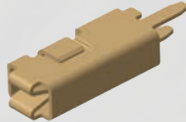


Lear T&C Part	Lear GPN	Surface Finish	Blade
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### 1.5 mm Soldered System

28376.306.710	320 259 5R1	Ag	0.6 - 0.8
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### 2.8 mm Soldered System

28370.306.178	318 901 196	Sn	0.8
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### 6.3 mm Soldered System

28371.306.178	318 901 204	Sn	0.8
28396.306.178	318 901 212	Sn	0.65



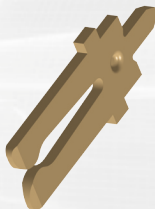
### 6.3 mm Soldered System

06029.201.179	320 25Y 1U5	Sn	0.6 - 0.8
06029.331.142	E00 225 700	Ag	0.6 - 0.8
06282.331.142	320 25Y 1Y4	Ag	0.6 - 0.8
26029.331.142	318 900 834	Ag	0.6 - 0.8



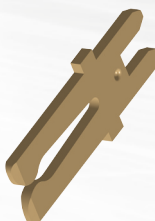
### 9.5 mm Soldered System

28360.306.178	318 901 238	Sn	1.2
28360.306.710	E00 004 166	Ag	1.2
28359.306.178	318 901 220	Sn	0.8
28359.306.710	E00 004 167	Ag	0.8



### 1 Pin Fork Terminal System\*

	318 901 055	Sn	0.8
	318 901 063	Sn	0.6



### 2 Pins Fork Terminal System\*

	318 900 719	Sn	0.8
	318 900 727	Sn	0.6

\* Various versions available, for more details pls contact our sales representative.





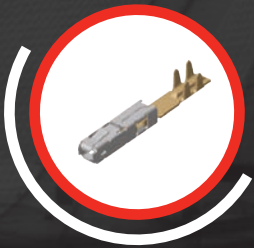
## FLM



### FLM – The mass termination system advantages:

- Maximum process reliability
- Mass termination in one stroke
- Low processing cost
- No bare copper area required
- Pre-loaded housings
- Gas tight connection
- Variable copper track thicknesses/widths
- No monitoring of wire positions necessary
- Short process time/easy processing
- Full processing automation

## FLC



### FLC - The crimping termination system for very thin up to medium sized wires advantages:

- Maximum process reliability
- Gas tight connection
- Full processing automation
- No bare copper area required
- Low processing cost
- Short process time/easy processing
- Full processing automation

## FLP



### FLP - The crimping splicing system for very thin up to medium sized wires advantages:

- Maximum process reliability
- Full processing automation
- No bare copper area required
- Low processing cost
- Short process time/easy processing
- Full processing automation

# Flat Wiring Terminal System

For both Flexible Flat Cables (FFC) and Flexible Printed Cables (FPC) applications. It is widely used in the automotive, medical, consumer electronics industry.

The MSK terminal is a well proven 0.63 mm terminal system covering a broad range of automotive applications. Made up of a copper alloy body and a supporting stainless steel spring it provides reliable performance and handling robustness. Its design combines ability for high density connector housing design and mechanical strength.

## FLC & FLM MSK 0.63

### Technical data (Sn)

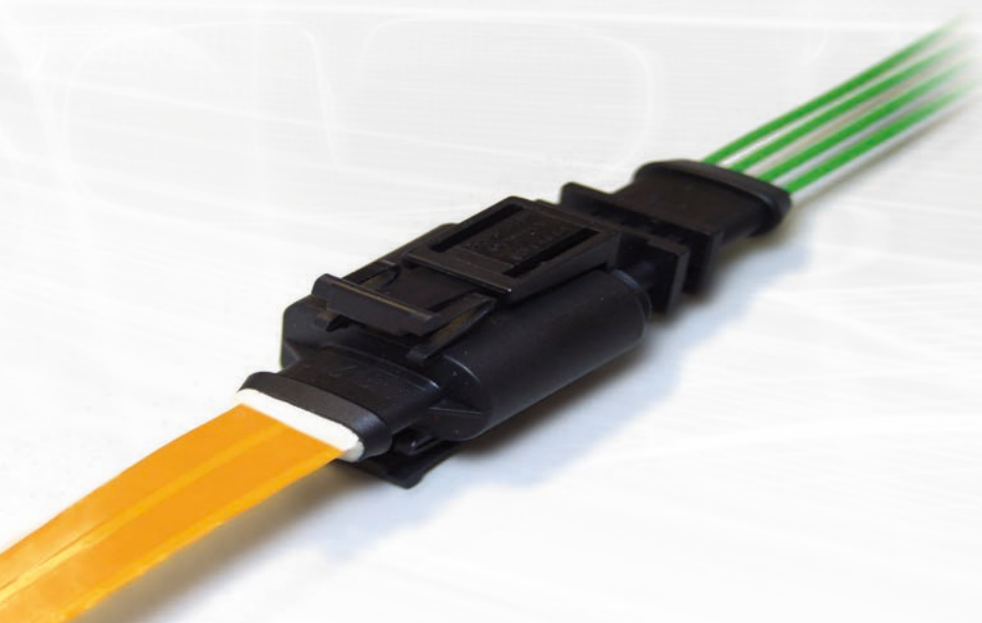
Current rating capacity	Up to 8 A @ 80°C
Temperature range	- 40°C to + 130°C
Mating cycle	20x
Contact resistance	≤ 4mΩ

The MAK terminal 1.5 mm made with high performance copper alloy body provides an excellent electrical performance, while the stainless steel spring guarantees superior contact reliability. Its closed box design ensures protection of the functional parts, while its compact size and low mating efforts provide benefits to vehicle assembly.

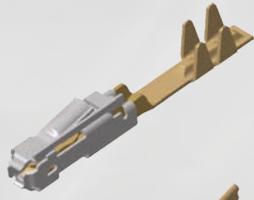
## FLC & FLM MAK 1.5

### Technical data (Sn)

Current rating capacity	Up to 14 A @ 80°C
Temperature range	- 40°C to + 130°C
Mating cycle	20x
Contact resistance	≤ 2mΩ

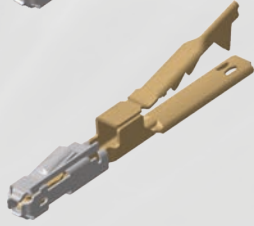


Lear T&C Part	Lear GPN	Copper thickness	Surface Finish	Flat wire
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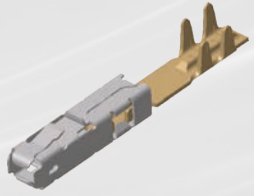
### FLC MSK 0.63

28349.201.178	3202594H4	35 - 70 $\mu\text{m}$	Sn	FPC
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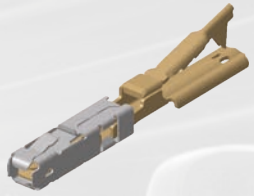
### FLM MSK 0.63

28417.306.178	3202598M9	200 $\mu\text{m}$	Sn	FFC
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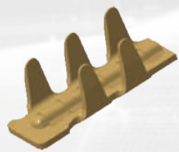
### FLC MAK 1.5

28449.213.178	3202596C3	35 - 105 $\mu\text{m}$	Sn	FPC
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### FLM MAK 1.5

28416.306.178	3202595T4	200 $\mu\text{m}$	Sn	FFC
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### FLP Matrix - Splice

28321.306.184		35 - 105 $\mu\text{m}$	Sn	FPC
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#### 48-Volts qualified applications

- E-turbo Chargers
- Battery Cells Connection
- Coolant Pumps
- Air-conditioning
- Power Steering
- Adjustable Suspensions
- Heatings/ Defrosters
- Regenerative Braking
- MGU's - Starters/Motor Generator Units
- Electromechanical Roll Stabilization Systems
- Compressors
- and many others are coming

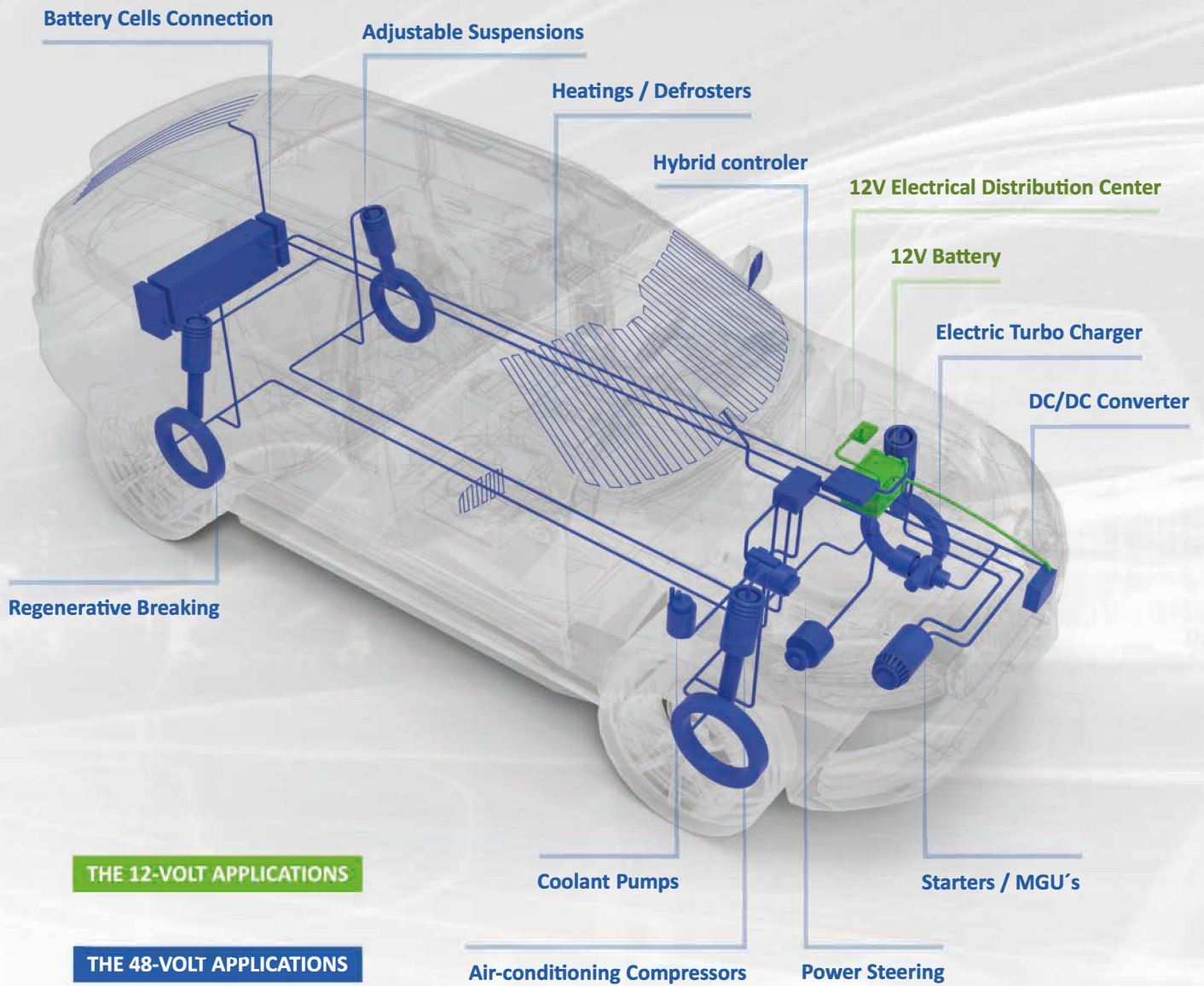
# 48-Volts technology

Increasing fuel economy up to 15% with respective CO2 emission reduction. This was the opening gate for 48-Volts system electrification. The first medium and upper class vehicles have been supplied with 48-Volts mild hybrid systems with excellent results and moderate cost. That's why 48-Volts system architecture is forecasting double annual growth compare to High Voltage vehicles.

Safe solution built on Lear proven Terminals and Connectors represent lower weight, higher efficiency, extreme reliability of next generation 48- Volts vehicles.

48-Volts vehicle infrastructure may gain 70% of electric vehicle benefits for fractional cost compare to High-Voltage infrastructure.

Lear proven capabilities enables our customers to connect application with wide range of terminals and connectors which fulfill 48-Volts requirements such as air gap and creeping distance per DIN EN 60664-1.



Development of 48-Volts terminals and connectors follow VDA 320. Precise selection of connector material with high comparative tracking index (CTI>300) provides high insulation capability, which enable smooth packaging in the existing compartment.

## Terminal families applicable for 48 Volts:



MSK – 0.63

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MAK – 1.5; 2.8; 4.8-6.3

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AFK – 1.5; 2.8; 4.8-6.3

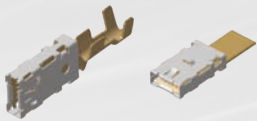
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AFS – 1.5; 2.8; 4.8-6.3

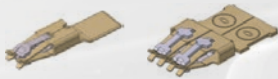
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## Power terminals:



MAK – 8; 12

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HC – 6.3; 14.5

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MAS – 8; 12

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## Power Connector housings applicable for 48 Volts:



1way MAK 12 EPS - 19318000002

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2 way MAK 12 EPS – 19163000002 (4w – 17977000000)

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2way HC 14.5 with „HVIL“

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