CONNECTION SYSTEMS.
TRANSPORTATION MARKET PORTFOLIO.
Contents

Aptiv overview

Connection Systems overview

Manufacturing & engineering capabilities

A comprehensive portfolio
We are a global technology company that develops safer, greener and more connected solutions, which enable the future of mobility.
Power and Flexibility of Global Footprint and Talent

$12.9B 2017 revenue

$19.3B in bookings

$1B annual engineering investment

147,000 Employees in 45 countries

16,000 engineers

6,000 focused on software

109 manufacturing sites

14 major technical centers

Connection Systems Transportation Market Portfolio Overview | September 2018 | Aptiv
Experienced Leadership Team
Addressing Mobility’s Toughest Challenges
Urban Mobility
CHALLENGES by 2050

+70%
Of Population

+40%
freight

5x
Emissions

4x
Cost

3x
Travel time

BENEFITS of mobility
automation to cities

28%
Fewer Vehicles

87%
Fewer Accidents

66%
Lower Emissions

44%
Fewer Parking Spaces

30%
Shorter Travel Time
Aptiv Addressing Mobility’s Toughest Challenges

Aptiv provides end-to-end solutions that allow us to commercialize new mobility

SMART VEHICLE ARCHITECTURE

SOFTWARE

SENSING AND COMPUTING

SIGNAL AND POWER DISTRIBUTION

CONNECTIVITY

SMART MOBILITY SOLUTIONS

ACTIVE SAFETY

USER EXPERIENCE

CONNECTED SERVICES

AUTONOMOUS SYSTEMS
Industry-leading Software Capabilities

Global Footprint

30+ Key Partnerships

University Engagement

Bangalore, India • Boston, MA • Krakow, Poland • Mountain View, CA • Pittsburgh, PA • Shanghai, China • Wuppertal, Germany
Software

STRONG FOUNDATION IN SOFTWARE AND ARTIFICIAL INTELLIGENCE EXPERTISE

ENGINEERS DEVOTED TO SOFTWARE
6,000+

LINES OF CODE SHIPPED DAILY
40B

LEADER IN SOFTWARE DESIGN & USER EXPERIENCE
Sensing & Computing

VEHICLES DEMANDING EXPONENTIALLY MORE COMPUTING POWER

DATA TRANSFER SPEEDS

2015
2020
Future

6+ GBPS\(^1\) (~90X)
1.5 GBPS\(^1\) (~22X)
65 MBPS\(^1\)

DECISION MAKING

2015
2020
Future

200 TFLOPS\(^2\) (~10kX)
2 TFLOPS\(^2\) (~1kX)
< 0.2 TFLOPS\(^2\)

DATA GENERATION

40+ Terabytes / Hour

2TB

Processed
Compressed
Uncompressed

1. Megabits per second and gigabits per second
2. Teraflops (TFLOPS) – trillion floating point operations per second
Signal & Power Distribution

SOFTWARE ENABLED FEATURES DRIVING GREATER DEMANDS FOR OPTIMIZED NEXT GENERATION ARCHITECTURES
Connected Services technology to be embedded in Aptiv products by 2020
Connectivity
SOFTWARE-ENABLED SOLUTIONS

Scalable cloud platform that:
Enables Aptiv to deliver AMoD and Connected Services
Supports 3rd party application ecosystem and data brokerage
Enabling End-To-End Mobility Solutions

CONNECTING THE VEHICLE TO THE SURROUNDING ECOSYSTEM; DATA SERVICES AND SMART MOBILITY MOVE BEYOND THE VEHICLE TO CREATE VALUE.
Global Mobility & Services Capabilities

UNMATCHED POSITION IN MOBILITY & SERVICES WITH DEEP CAPABILITIES IN SOFTWARE DEVELOPMENT, AUTOMOTIVE GRADE INDUSTRIALIZATION AND SYSTEMS INTEGRATION

~50 PhDs in applicable fields

250+ engineers devoted to automated driving

~70 cars today with 150+ on the road by end of 2018

10M controllers with embedded OTA by 2020

Mountain View, Las Vegas, Pittsburgh, Boston, Wolfsburg, Singapore, Shanghai
Global Connection Systems overview.
APTIV’s Business Segments

SEGMENTS REFLECT EVOLVING CAPABILITIES AS THE ONLY PROVIDER OF INTEGRATED BRAIN AND NERVOUS SYSTEM

ADVANCED SAFETY & USER EXPERIENCE
Formerly Electronics & Safety
Encompasses our deep expertise in software, centralized computing platforms, advanced safety systems and automated driving, while acknowledging the growth in areas that enrich the in-vehicle experience.

SIGNAL & POWER SOLUTIONS
Formerly Electrical / Electronic Architecture
Reflects the growing significance of next-generation architectures with high speed data and electrical power distribution as the foundation necessary for future mobility.

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Our valued customers

Continental®
GM
Volkswagen
SAIC
Hyundai
Nissan
Great Wall

Delphi Technologies
FCA
Peugeot
MAN
KIA Motors
Honda
Changan

Bosch
Cummins
Tatra
Mercedes-Benz
CAT
Toyota
Geely Auto

Hitachi

Sensata

Navistar®
Ford
PACCAR
Volvo
Tata
Mahindra

Autoliv
Takata
Mando
LEA

system
oem
wiring tier
distributor

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Power and Flexibility of Global Footprint and Talent

$2.9B 2017 revenue

10 strategic product lines

17,119 employees

2,431 engineers

30 manufacturing sites

12 major technical centers
Manufacturing & engineering footprint.
Global innovation. Local implementation.

R&D and engineering capabilities:
Design | Mold flow | Metrology | Vibration | Locking efficiency | High Voltage testing | Temperature & Humidity cycling | Corrosion tests | Waterproofness tests | CT scanning

12 technical centers
>2,000 scientists & engineers
9 test labs, 14,000 m²
Our scalable portfolio enables smart mobility solutions.
Advanced technology drives connection system evolution

Consumer demand and regulatory driven

Next generation architecture challenges

Technology drivers

Technology focused on megatrends drives market growth

Safety
Detection and mitigation
Addressing driver distraction
Improving reaction time

Electrification
Fuel economy improvements
Emissions reduction
Electric/Hybrid vehicle penetration

Connectivity
“Always Connected” consumers
Smart phone users
Linkage to safety

Miniaturization
More content
Architectural complexity

Connection Systems Transportation Market Portfolio Overview | September 2018 | Aptiv
A comprehensive product portfolio

10 strategic product lines aligned with market needs, trends, and growth opportunities.
6 product lines available as off-the-shelf solutions for heavy duty applications.
Covering all major applications, from unsealed in-cab to sealed on-engine.
Housings & Terminals
Connection system: housings, terminals, sealing

One of the industry’s most complete connection system portfolios. Available for device and in-line connections for most vehicle applications, with various terminal type options.

<table>
<thead>
<tr>
<th>Segments</th>
<th>Applications</th>
<th>Active:</th>
<th>Passive:</th>
<th>Terminal Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powertrain &amp; Engine Compartment</td>
<td>• Engine sensors • Fuel injectors • Wiper systems • Cruise control • Engine control module</td>
<td>• Anti-lock braking system / electronic stability control • Electronic park brake • Traction control</td>
<td>• Passenger occupant detection system • Sensing diagnostic module</td>
<td>One-piece</td>
</tr>
<tr>
<td>Active &amp; Passive Safety</td>
<td>• Seat systems • Ride control • Power steering • External lighting • Door controls • Mirror features • Body control module</td>
<td>Radio • Speakers • Amplifiers • Rear seat entertainment • Navigation • Telematics</td>
<td></td>
<td>Two-piece</td>
</tr>
<tr>
<td>Body &amp; Chassis</td>
<td>• Climate control • Multifunction switch • Ambient lighting • Accessory power outlet • Overhead systems • Clusters</td>
<td></td>
<td></td>
<td>Ring</td>
</tr>
<tr>
<td>Multimedia</td>
<td></td>
<td></td>
<td></td>
<td>Bus bar</td>
</tr>
<tr>
<td>Interior</td>
<td></td>
<td></td>
<td></td>
<td>Specialty</td>
</tr>
</tbody>
</table>

Connection Systems Transportation Market Portfolio Overview | September 2018 | Aptiv
## SAE/USCAR-2 performance key & Aptiv design indicators key

### Temperature

<table>
<thead>
<tr>
<th>Class</th>
<th>Ambient Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>T2</td>
<td>-40°C to +100°C</td>
</tr>
<tr>
<td>T3</td>
<td>-40°C to +125°C</td>
</tr>
<tr>
<td>T4</td>
<td>-40°C to +150°C</td>
</tr>
</tbody>
</table>

### Vibration

<table>
<thead>
<tr>
<th>Class</th>
<th>Common Name</th>
<th>Typical Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>Chassis Profile</td>
<td>Components on sprung portions of vehicle not coupled to Engine</td>
</tr>
<tr>
<td>V2</td>
<td>Engine Profile</td>
<td>Components coupled to Engine with severe vibration possible</td>
</tr>
<tr>
<td>V3</td>
<td>Severe On-Engine</td>
<td>Components subject to severe vibration</td>
</tr>
<tr>
<td>V4</td>
<td>Extreme Vibration</td>
<td>Used as needed to correlate to extreme vibration areas</td>
</tr>
</tbody>
</table>

### Sealing

<table>
<thead>
<tr>
<th>Class</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Unsealed</td>
</tr>
<tr>
<td>S2</td>
<td>Sealed</td>
</tr>
<tr>
<td>S3</td>
<td>Sealed (w/high pressure spray)</td>
</tr>
</tbody>
</table>

### Design

- BB: Box & Blade
- PS: Pin & Sleeve
- TL: Tangless
- T: Tanged
- U: Universal Cavity
Family benefits
- Interchangeable industry mating interface
- Optimal standard-duty performance at optimal cost
- Application versatility

Key features
- CPA capability for additional lock assurance
- Punchable strain reliefs
- Thumb grip for easier connector unmating
- Connector lock overstress protection to prevent lock relaxation
- Polyester resins for enhanced audible click, dimensional stability
- Positive forward stop in cavity to prevent terminal push through
- Terminals manufactured of high grade copper alloy
- Optional wire dress / back shell

Available Configurations

| Blade Configurations       | 0.5, 0.64, 1.2, 1.5, 2.8, Mixed |
| Cavity Configurations      | 2-96 way                        |
| Genders                    | Male and Female                |
| Connector Sealing          | Sealed or Unsealed             |
| Terminal Type              | Tangless (Clean Body)          |
| Terminal Sealing           | Mat or Cable seal              |
| Terminal Plating           | Tin or Silver                  |
| Cable Size                 | 0.13-5.0mm² on copper, aluminum-ready |

Performance

Temperature T3
Vibration V2
Sealing S3
Up to
Metri-Pack™ Connection System Family

Family benefits
- Long-standing footprint leadership
- Optimal heavy-duty performance at optimal cost
- Superior durability
- Application versatility

Key features
- Strength and stability of terminals help assure correct alignment
- CPA and TPA for superior connection reliability
- Validated to SAE J2030, Volvo specs and other CV industry standards

Available Configurations

<table>
<thead>
<tr>
<th>Blade Configurations</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5, 2.8, 4.8, 6.3, 8.0, Mixed</td>
<td>T4 Temperature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cavity Configurations</th>
<th>V3 Vibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-12 way</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genders</th>
<th>S2 Sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male and Female</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connector Sealing</th>
<th>Up to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sealed or Unsealed</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminal Type</th>
<th>T4 Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanged or Tangless</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminal Sealing</th>
<th>T4 Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable seal or Pull-to-Seat Mat</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminal Plating</th>
<th>V3 Vibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin, Silver, or Gold</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cable Size</th>
<th>S2 Sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.35-5.0mm²</td>
<td>Up to</td>
</tr>
</tbody>
</table>
Family benefits
- Top-of-the line performance
- Highest current rating among competitors
- Ergonomic design

Key features
- High conductivity copper alloy
- Raised duel rib contact surface and spring protection for resistance against stress relaxation
- CPA capability for additional lock assurance
- Pre-assembled for efficient harness assembly
- Optional wire dress / back shells
- ErgoMate™ axial mechanical assist mating feature for ergonomic mating available on 24-way (55-way in development)

Available Configurations

<table>
<thead>
<tr>
<th>Blade Configurations</th>
<th>Cavity Configurations</th>
<th>Genders</th>
<th>Connector Sealing</th>
<th>Terminal Type</th>
<th>Terminal Sealing</th>
<th>Terminal Plating</th>
<th>Cable Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2, 1.5, 2.8, Mixed</td>
<td>2, 3, 4, 6, 10, 14, 16, 24 way</td>
<td>Male and Female</td>
<td>Unsealed or Sealed</td>
<td>Two-piece Tangless</td>
<td>Cable seal or Mat seal</td>
<td>Tin, Silver, or Gold</td>
<td>0.5-4.0mm²</td>
</tr>
</tbody>
</table>

Performance

- Temperature T4
- Vibration V3
- Sealing S3

Up to
CTCS™

Connection System Family

Family benefits
- Application versatility
- Unparalleled reliability and performance
- Designed for the transportation market

Key features
- Superior terminal design with high pre-loaded stainless steel spring reduces relaxation of terminal base body
- Additional connector shielding for protection against debris ingress
- Pre-staged locking mechanism
- Mounting flexibility: panel, strap/clip, pass thru bracket

Available Configurations

<table>
<thead>
<tr>
<th>Terminal Type</th>
<th>Blade Configurations</th>
<th>Cavity Configurations</th>
<th>Genders</th>
<th>Connector Sealing</th>
<th>Terminal Plating</th>
<th>Terminal Sealing</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanged</td>
<td>1.5, 2.8, 6.3, Mixed</td>
<td>2-62 way</td>
<td>Male and Female</td>
<td>Sealed or Unsealed</td>
<td>Tin, Silver, or Gold</td>
<td>Cable seal</td>
<td>T4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S3</td>
</tr>
</tbody>
</table>

Cable Size
- 0.08-6.0mm²

Connection Systems Transportation Market Portfolio Overview | September 2018 | Aptiv
**Family benefits**
- Interchangeable industry mating interface
- Superior protection against environmental forces
- Designed to outperform competition

**Key features**
- Terminal designed for lower insertion forces
- 3-rib design for better sealing capability, up to 50% improvement
- Specialized finger design to eliminate terminal unseat
- Frontward/backward compatibility
- Sonic welded design provides 360° of contact to withstand high vibration
- Validated to J2030

**Available Configurations**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade Configurations</td>
<td>1.0, 1.6, 2.4mm</td>
</tr>
<tr>
<td>Cavity Configurations</td>
<td>19, 21, 23, 29, 31, 47 way</td>
</tr>
<tr>
<td>Genders</td>
<td>Male and Female</td>
</tr>
<tr>
<td>Connector Sealing</td>
<td>Sealed</td>
</tr>
<tr>
<td>Terminal Type</td>
<td>Pin</td>
</tr>
<tr>
<td>Terminal Sealing</td>
<td>Mat seal</td>
</tr>
<tr>
<td>Terminal Plating</td>
<td>Nickel or Gold</td>
</tr>
<tr>
<td>Cable Size</td>
<td>0.35-6.0mm²</td>
</tr>
</tbody>
</table>

**Performance**
- Temperature: T4
- Vibration: V4
- Sealing: S3
- Up to
## Connection systems performance comparison

<table>
<thead>
<tr>
<th>V1</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>OCS (S3)</td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td></td>
<td></td>
<td></td>
<td>M/P (S2) APEX (S3)</td>
</tr>
<tr>
<td>V3</td>
<td></td>
<td></td>
<td></td>
<td>CTCS (S3) HES (S3)</td>
</tr>
<tr>
<td>V4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mechatronic Packages & Pin Headers
Mechatronic packages and pin headers

Segments
- Mechatronic Packages
- Pin Headers
- Press-fit Based Pins
- Assembly Technology

Applications
- Pin count @ 2 ~ 100 pins
  Product outline > PCB dimension
  Includes other mechanical functions
- Engine management (ECUs)
- Restraint controller (SDMs and PODS)
- Radar housings (SRR, MRR)
- Other modules (Body controller, Seat Modules)
- In-house high speed stamping

Pin count 2 to 300+
Product outline < PCB dimension

- ABS & ESC housings
- Radar & Lidar housings
- Sensor housing (pressure, acceleration)
- Air management (TPS cover, sensor)
- Fuel supply (injector headers)
- Sub systems
- Transmission
- Exhaust treatment

Assembly Technology
- Automated manufacturing capabilities
- Globally aligned processes for best-in-class production capabilities
- Tailored to customer & product
- Complex over molding & multi-component molding
- Highly integrated assembly solutions
- Fully automated EoL inspection

Press-fit Based Pins
- 0.40, 0.60 & 0.80 product family
- Engine control
- Body & security
- Comfort
- Passive safety
- Steering
- Data ports

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High Speed Data Cable Assemblies
Data connectivity: high speed cable assemblies

A complete line of data connectivity products enabling the linkage of vehicle occupants with the vehicle environment. Seamlessly transmitting gigabits of data.

## Segments

### Multicore Links
- USB Standard A / mini B
- USB / LVDS / multi-protocol connections
- Data rates up to 2.5Gbps
- Camera & infotainment

### Coax Links
- Fakra stamped & formed sealed and unsealed
- RF Antennas
- LVDS / APIX connections
- MiniCoax with optimized package size & performance

### 2-wire Links
- AMEC: Unshielded 100Mbps / shielded 1Gbps Ethernet
- H-MTD: Shielded 1G/5G/10G Ethernet
- High data rates for ADAS / Autonomous driving
FAKRA
RF/Coax Connector Assembly

Family benefits
• Supports high frequencies
• Offers variety of applications
• Serviceable

Key features
• Stamped & formed terminals
• Anti-stubbing technology
• Secondary locks on terminals and housings
• Optional CPA
• Audible, tactile feedback

Available Configurations

<table>
<thead>
<tr>
<th>Cavity Configurations</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 2 way</td>
<td>Antenna/RF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genders</th>
<th>Camera/LVDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male and Female</td>
<td>Ethernet, including power over coax</td>
</tr>
</tbody>
</table>

| Connector Sealing     | |
|-----------------------|-
| Sealed (1-way)        | |
| or Unsealed (1- & 2-way) | |

| Cable Orientation     | |
|-----------------------| |
| 180° or 90°           | |

| Cable Size            | |
|-----------------------| |
| 2.0-6.0mm             | |

| Characteristic Impedance | |
|--------------------------| |
| 50 Ohm connectors        | |
| 50-125 Ohm cables        | |

| Supported Cable Types   | |
|-------------------------| |
| RG174LL/316/DACAR462, 1.5 DS, RTK031/DACAR302, 2.0 DS, RG59Mini, RG58LL, RG59, RG62/71, RG62M/71M |
AMEC (2019)
Ethernet Connector Assembly

**Family benefits**
- Footprint commonality
- High data rates
- Scalable design

**Key features**
- Meets Open Alliance BroadR-Reach and IEEE requirements
- Scalable design supports 100 Mb/s and 1 Gb/s data rates
- Supports both unshielded twisted pair and shielded twisted pair cable types
- Single footprint for unsealed straight (180°), right angle (90°), unshielded and shielded headers (sealed footprint is different)
- Scalable header shielding. Add shielding when using shielded cables and in 6-Way header at 1 Gb/s for isolation
- Pre-qualified cables for 100 Mb/s and 1 Gb/s
- Uses standard 0.50 terminals
- Optional CPA

### Available Configurations

<table>
<thead>
<tr>
<th>Cavity Configurations</th>
<th>1, 4, 6 way</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connections</td>
<td>Inline and headers</td>
</tr>
<tr>
<td>Sealing</td>
<td>Sealed or Unsealed</td>
</tr>
<tr>
<td>Cable Orientation</td>
<td>180° or 90° headers 180° connectors</td>
</tr>
<tr>
<td>Cavity Configurations</td>
<td>1, 4, 6 way</td>
</tr>
<tr>
<td>Connections</td>
<td>Inline and headers</td>
</tr>
<tr>
<td>Sealing</td>
<td>Sealed or Unsealed</td>
</tr>
</tbody>
</table>
High Power
# High power / high voltage electrification

Leading the way in vehicle electrification solutions for OEMs and device manufacturers globally.

<table>
<thead>
<tr>
<th>High Voltage Auxiliary Modules</th>
<th>High Voltage Power Conversion</th>
<th>Chargers and Charging Cables</th>
<th>Charging Inlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications up to 40A, 1000V Integrated HVIL 2W-4W systems, inline, splice systems</td>
<td>Applications up to 250A, 1000V Integrated HVIL 2W, 3W systems, pass-thru systems</td>
<td>Global certifications Global vehicle interfaces Temperature protection grid plug Charging up to 11KW power</td>
<td>All global vehicle interfaces Temperature sensing Custom designs for OEM needs</td>
</tr>
<tr>
<td>• DC converter • On-board charger • Electric air conditioning • Electric heater • Coolant heater control</td>
<td>• Inverter • Drive motors • Motor generator unit • Battery</td>
<td>• Mode 2 EVSE • Mode 3 cable assemblies • Interface pigtails for charging</td>
<td>• SAE J1772 • IEC type II • GB-T • Combo 1/Combo 2 fast charge</td>
</tr>
</tbody>
</table>
**RCS™**

High Power Connection System

**Family benefits**
- Compact solution
- Easy to assemble and cost effective
- Long industry leadership

**Key features**
- Compact mate-assist system for low mating force and smaller packaging
- Unique header sealing design that keeps it sealed even when disconnected
- Round terminal system for additional packaging space savings
- External braiding system for greater cost effectiveness

<table>
<thead>
<tr>
<th>Available Configurations</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Size</td>
<td>8mm round</td>
</tr>
<tr>
<td>Cavity Configurations</td>
<td>2 &amp; 3 way</td>
</tr>
<tr>
<td>Genders</td>
<td>Male and Female</td>
</tr>
<tr>
<td>Connector Sealing</td>
<td>Sealed: IP67, IP69K</td>
</tr>
<tr>
<td>Interlock Function</td>
<td>Integrated HVIL</td>
</tr>
<tr>
<td>Cable Orientation</td>
<td>180° or 90°</td>
</tr>
<tr>
<td>Terminal Plating</td>
<td>Silver</td>
</tr>
<tr>
<td>Cable Size</td>
<td>35 - 50mm²</td>
</tr>
</tbody>
</table>

**Performance**
- Temperature: T4
- Vibration: 15g
- 230A@70C
- 1000V DC

Up to
Family benefits
- Robust and highly compact connection
- Cost effective solution for e-motors

Key features
- Multiple keying indexes for easier connection management
- Full metal body for high vibration capability
- Ring terminal bolted to device for better withstanding against vibration
- Individually shielded cables for filtering against EMI and RFI

Available Configurations

<table>
<thead>
<tr>
<th>Available Configurations</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Type</td>
<td>Ring terminal</td>
</tr>
<tr>
<td>Cavity Configurations</td>
<td>1-way</td>
</tr>
<tr>
<td>Indexes</td>
<td>6-8 different indexes</td>
</tr>
<tr>
<td>Sealing</td>
<td>Sealed : IP67, IP69K</td>
</tr>
<tr>
<td>Cable Orientation</td>
<td>180°</td>
</tr>
<tr>
<td>Cable Size</td>
<td>25, 35, 50mm² (70, 95mm² in development)</td>
</tr>
<tr>
<td>Temperature</td>
<td>T4</td>
</tr>
<tr>
<td>Vibration</td>
<td>V4</td>
</tr>
<tr>
<td>Current</td>
<td>250A @ 70°C</td>
</tr>
<tr>
<td>Voltage</td>
<td>1000V DC</td>
</tr>
</tbody>
</table>
**HV280**

High Power Connection System

**Family benefits**
- Compact solution
- Easy installation
- Broad application coverage

**Key features**
- Multiple HVIL configurations to meet multiple OEM requirements for HVIL management
- Individual shielded cables for protection against EMI and RFI
- Rated to up to 1000V DC for heavy duty applications

**Available Configurations**

<table>
<thead>
<tr>
<th>Terminal Size</th>
<th>2.8mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cavity Configurations</td>
<td>2-way</td>
</tr>
<tr>
<td>Genders</td>
<td>Male and Female</td>
</tr>
<tr>
<td>Connector Sealing</td>
<td>Sealed: IP67, IP69K</td>
</tr>
<tr>
<td>Interlock Function</td>
<td>Integrated HVIL</td>
</tr>
<tr>
<td>Cable Orientation</td>
<td>180° (90° in development)</td>
</tr>
<tr>
<td>Terminal Plating</td>
<td>Silver</td>
</tr>
<tr>
<td>Cable Size</td>
<td>2.5 – 5mm²</td>
</tr>
</tbody>
</table>

**Performance**

- **Temperature**: T3
- **Vibration**: 40A@85C
- **1000V DC**: Up to
Couplers & Cordsets

Family benefits
• Long-standing footprint leadership
• Covering all regions’ standards
• Preferred by leading EV OEMs

Key features
• Robust and ergonomic design for optimal performance in various environments
• Expertise in terminal system fueling high terminal reliability
• Split terminal contact design allows for low engage and low resistances
• Simplified internal design for reduction in manufacturing time and complexity
• Innovative sealing system to protect critical crimps and connection components
• Covering all regional standards NA-J1772, EU- IEC62196, China-GBT
• Available in Mode 2 and Model 3
• Mode 2 with In Cable Control Box (ICCB) for direct grid connection
• Mode 3 cable assembly for charging station connections
Charging Inlets

Family benefits
- Long-standing footprint leadership
- Covering all regions’ standards
- Preferred by leading EV OEMs

Key features
- Vehicle interface through three global standards
- Wall/infrastructure side according to European & Chinese standards.
Aptiv 48V
High Power Connection System

Family benefits
- 4x the voltage, 4x the power
- Best value electrification
- Improved functionality, better performance, greater efficiency

Key features
- Sealed for robust connections at 48V
- Ring terminal interface provides high current and vibration capabilities
- Side-by-side connector bodies mate together
- Ideal solution for 48V electrical centers, power distribution boxes, start-stop systems, E-turbo, battery, active suspension, and BSG units
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Thank you.