



20  
SYSTEMS



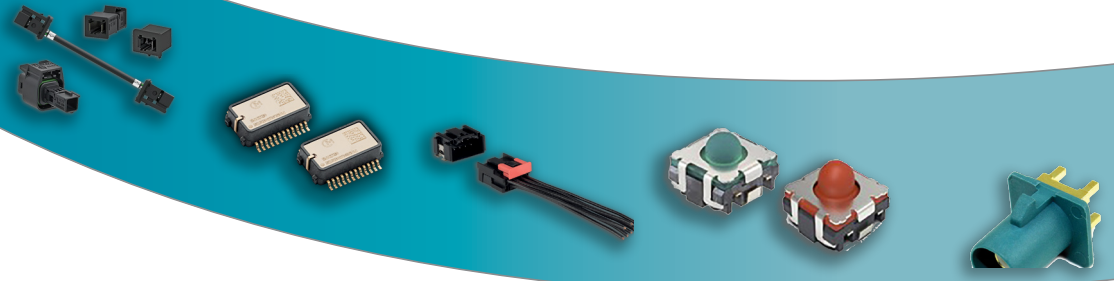
20 °C  
/ 68 F

53

30

01 02 03

54



[ttieurope.com](http://ttieurope.com)

# Automotive Sub-Systems Application Guide (Connector & Electromechanical)

TTI, Inc., – A Berkshire Hathaway Company



ttieurope.com



# The Specialist in Electronic Component Distribution



**Global Distribution Centres  
with more than 120,000m<sup>2</sup>  
of automated warehousing  
in North America, Europe  
and Asia.**

### Why Choose TTI?

Founded in 1971, TTI has steadily grown to become a world leading specialist distributor of electronic components. The company was founded on the premise that passive component purchasing could be made more efficient by offering product specialization, customer-driven service and proprietary supply chain solutions.

### Global Distribution Centres

Our European headquarters is located just outside of Munich, Germany in Maisach-Gernlinden. In total, we have 35.000m<sup>2</sup> of dedicated warehouse space and local sales and technical support in over 40 locations across Europe. TTI has more than 120,000m<sup>2</sup> of automated warehousing in North America, Europe and Asia. All are linked into a global warehouse management system that provides superior customer service and overall business efficiencies. Wherever you are in the world, TTI can support you.

Year after year, customers rate our inventory availability, on-time delivery and accuracy among the very best in the industry – contact us today to find out what a true specialist has to offer.

### Quality and Reliability

TTI's global warehouses are all ISO-registered and have received certification to the ISO 9001 and ISO 14001 Standards. TTI Europe is also certified to EN9120/EN9100, IECQ-CECC and ISO/IEC 27001 Standards. Additionally, our European sales branches are ISO 9001 certified. TTI has one global documentation system that ensures that every TTI branch and warehouse in the world follows the same processes.



## Automotive Sub-Systems Applications

### Body Electronics

- Infotainment & navigation systems
- Camera & rear vision systems
- Comfort & control systems
- Internal lighting systems
- Keyless entry systems
- Communication networks
- Antennas

### Safety Electronics

- Advanced driver assistance systems
- Electronic braking systems
- LED/rear lighting systems
- Airbag control systems
- Front lighting

### Powertrain Systems

- Electronic power steering
- Transmission control module
- Engine cooling systems
- Injection coils

### Electrification

- 48V mild hybrid systems
- 48V DC/DC converter
- HEV inverter/motor drives
- Battery management systems
- Onboard chargers
- Fast charging stations



Infotainment Systems



LED Lighting



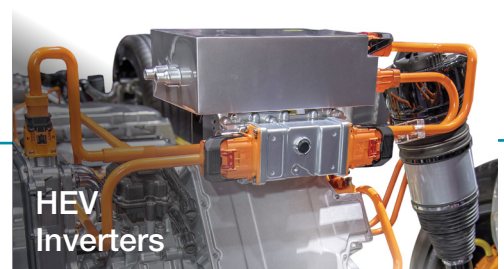
Engine Control Unit



ADAS Systems



Camera Systems



HEV Inverters




# Connectors

<p><b>Amphenol ICC</b></p>	<p><b>Amphenol ICC</b></p>	<p><b>Amphenol ICC</b></p>	<p><b>Amphenol ICC</b></p>
<p>Minitek MicroSpace™</p>	<p>Flex Connector Solutions</p>	<p>BergStak® 0.5mm Mezzanine Connector</p>	<p>HSD (High Speed Data) Connector System</p>
			
<p><b>Amphenol® RF</b></p>	<p><b>Amphenol® RF</b></p>	<p><b>• A P T I V •</b></p>	<p><b>• A P T I V •</b></p>
<p>Fakra Connectors</p>	<p>Mini-Fakra Connectors</p>	<p>Apex Series</p>	<p>CMC Series</p>
			
<p><b>• A P T I V •</b></p>	<p><b>• A P T I V •</b></p>	<p><b>• A P T I V •</b></p>	<p><b>• A P T I V •</b></p>
<p>CTS 0.50 Unsealed Series</p>	<p>HDK 1.2 Sealed Series</p>	<p>OCS 1.5 Sealed Series</p>	<p>Sigma Series</p>
			
<p><b>JAE</b></p>	<p><b>JAE</b></p>	<p><b>JAE</b></p>	<p><b>JAE</b></p>
<p>MX68 Automotive LVDS/GVIF</p>	<p>MX77A Series</p>	<p>MX80 Series</p>	<p>MX84 Series</p>
			

# Connectors

<p><b>JST</b></p>	<p><b>JST</b></p>	<p><b>JST</b></p>	<p><b>JST</b></p>
<p>AIT &amp; AIT II Series</p>	<p>CPT – Automotive / Wire-to-Board</p>	<p>JIA – Automotive / Wire-to-Board</p>	<p>TLDR – Wire-to-Board / High voltage</p>
			
<p><b>molex</b></p>	<p><b>molex</b></p>	<p><b>molex</b></p>	<p><b>molex</b></p>
<p>DuraClik Connector System</p>	<p>FAKRA and Sealed FAKRA Connector Systems</p>	<p>HSAutoLink Interconnect System</p>	<p>Mini50 Connection Systems</p>
			
<p><b>molex</b></p>	<p><b>molex</b></p>	<p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>	<p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>
<p>stAK50h Connection System</p>	<p>Antenna Solutions</p>	<p>Nano MQS Connectors</p>	<p>MQS Connectors</p>
			
<p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>	<p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>	<p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>	<p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>
<p>MCP Connectors</p>	<p>Timer Connectors</p>	<p>MateNet Ethernet Connectors</p>	<p>Hirschmann Antennas</p>
			

# Power, Relays & Sensors

 <p><b>muRata</b> INNOVATOR IN ELECTRONICS</p>	 <p><b>OMRON</b></p>	 <p><b>OMRON</b></p>	 <p><b>OMRON</b></p>
<p>AECQ104 Power Supplies</p>	<p>G8PM Series PCB Automotive Relays</p>	<p>G8G Series PCB Automotive Relays</p>	<p>G8NB Series PCB Automotive Relays</p>
			
 <p><b>Littelfuse</b> Expertise Applied   Answers Delivered</p>	 <p><b>Panasonic</b> INDUSTRY</p>	 <p><b>Panasonic</b> INDUSTRY</p>	 <p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>
<p>CPC1907B Power Relay</p>	<p>TL Series PCB Relay</p>	<p>TM Series PCB Relay</p>	<p>V23234 Plug-in Mini ISO Relay</p>
			
 <p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>	 <p><b>TE</b> connectivity AUTHORIZED DISTRIBUTOR</p>	 <p><b>Amphenol</b> Advanced Sensors</p>	 <p><b>Amphenol</b> Advanced Sensors</p>
<p>V23086 Single+Double PCB</p>	<p>V23076 Power PCB Relay K</p>	<p>Battery Temperature Sensing</p>	<p>NTC Type CR-1 Chip Thermistor</p>
			
 <p><b>Amphenol</b> Advanced Sensors</p>	 <p><b>i2s</b> an Amphenol company</p>	 <p><b>muRata</b> INNOVATOR IN ELECTRONICS</p>	 <p><b>muRata</b> INNOVATOR IN ELECTRONICS</p>
<p>T6713 NDIR Telaire miniature CO2 Sensor</p>	<p>CCT Series Pressure Sensor</p>	<p>3D MEMS technology Accelerometers</p>	<p>3D MEMS technology Gyro Sensors</p>
			

# Sensors & Switches

 <p><b>Sensata</b> Technologies</p>	 <p><b>Sensata</b> Technologies</p>	 <p><b>Sensata</b> Technologies</p>	 <p><b>Honeywell</b></p>
<p>Klixon 3NT Series Sealed Fixed Thermostat</p>	<p>Klixon 20PS Pressure Switch</p>	<p>DARTS 850C Series Platinum RTD Sensors</p>	<p>AMR Speed and Direction IC platform Sensors</p>
			
 <p><b>Honeywell</b></p>	 <p><b>Honeywell</b></p>	 <p><b>Honeywell</b></p>	 <p><b>ALPSALPINE</b></p>
<p>VG481V1 Speed Sensor</p>	<p>HPM Series Particulate Matter Sensors</p>	<p>V15W Series Microswitch</p>	<p>SKSU Series TACT Switch</p>
			
 <p><b>ALPSALPINE</b></p>	 <p><b>ALPSALPINE</b></p>	 <p><b>C&amp;K</b></p>	 <p><b>C&amp;K</b></p>
<p>SKTQ Series Tact Switch</p>	<p>SPVQ8 Microswitch</p>	<p>KSC Series Sealed Tact Switch</p>	<p>KSC Dual Circuit Technology Tact Switch</p>
			
 <p><b>C&amp;K</b></p>	 <p><b>OMRON</b></p>	 <p><b>Panasonic</b> INDUSTRY</p>	 <p><b>Panasonic</b> INDUSTRY</p>
<p>SAM Series Multiway Switches</p>	<p>D2HW-AQ Sealed Ultra Sub-miniature Switches</p>	<p>ESE24-Series Detector Switches</p>	<p>EVPAW Series Light Touch Switches</p>
			



ttieurope.com



Contact TTI today to see what a true specialist can offer.

### Corporate Headquarters

TTI, Inc.  
2441 Northeast Parkway, Fort Worth, Texas 76106 U.S.A.  
T: +1 817 740 9000 | F: +1 817 740 9898  
E: information@ttiinc.com

### European Headquarters

TTI, Inc.  
Ganghoferstr. 34, 82216 Maisach-Gernlinden Germany  
T: +49 (0) 81 42 66 80 0 | F: +49 (0) 81 42 66 80 490  
E: sales@de.ttiinc.com

### European Sales Offices

#### Austria

Vienna  
T: +43 (0) 18 79 85 90  
E: sales.vienna@at.ttiinc.com

#### Belgium

Gent  
T: +32 9 274 0670  
E: sales.belnelux@nl.ttiinc.com

#### Bulgaria

Varna  
T: +359 52 51 10 59  
E: sales.varna@bg.ttiinc.com

#### Czech/Slovak Republic

Brno  
T: +420 541 126 714  
E: sales.brno@cz.ttiinc.com

#### Denmark

Brøndby  
T: +45 (0) 43 29 35 35  
E: sales.copenhagen@dk.ttiinc.com  
Risskov  
T: +45 (0) 38 41 31 00  
E: sales.copenhagen@dk.ttiinc.com

#### Estonia

Tallinn  
T: +372 664 81 00  
E: sales.estonia@ee.ttiinc.com

#### Finland & Baltic Region

Espoo  
T: +358 98 94 65 200  
E: sales.finland@fi.ttiinc.com

#### France

Brive  
T: +33 (0) 5 55 92 92 93  
E: sales.france@fr.ttiinc.com  
Bron  
T: +33 (0) 472 81 2030  
E: sales.lyon@fr.ttiinc.com  
Bruz  
T: +33 (0) 2 99 77 60 84  
E: sales.rennes@fr.ttiinc.com  
La Ciotat  
T: +33 (0) 442 84 4142  
E: sales.marseille@fr.ttiinc.com  
Montigny Le Bretonneux  
T: +33 (0) 130 13 7380  
E: sales.paris@fr.ttiinc.com

#### Germany

Berlin  
T: +49 (0) 30 8877 40 200  
E: sales.berlin@de.ttiinc.com  
Dortmund  
T: +49 (0) 2301 91 304 0  
E: sales.dortmund@de.ttiinc.com  
Frankfurt  
T: +49 (0) 6102 5999 100  
E: sales.frankfurt@de.ttiinc.com  
Hanover  
T: +49 (0) 5 11 7 80 59 0  
E: sales.hannover@de.ttiinc.com  
Munich  
T: +49 (0) 81 42 66 80 110  
E: sales.munich@de.ttiinc.com  
Nuremberg  
T: +49 (0) 911 9520 0  
E: sales.BDG@de.ttiinc.com  
Pforzheim  
T: +49 (0) 7231 14788 0  
E: sales.stuttgart@de.ttiinc.com

#### Hungary

Budapest  
T: +36 1 40 22 111  
E: sales.budapest@hu.ttiinc.com

#### Ireland

T: +44 (0)1494 460000  
E: sales.ireland@ie.ttiinc.com

#### Israel/Ray-Q Ltd.

Airport City  
T: +972 3 975 3333  
E: sales@ray-q.com

#### Italy

Civitanova Marche  
T: +39 0733 81 8655  
E: sales.milan@it.ttiinc.com  
Florence  
T: +39 (0) 55 094 63 76  
E: sales.milan@it.ttiinc.com  
Milan  
T: +39 02 822 521  
E: sales.milan@it.ttiinc.com  
Naples  
T: +39 081 4245719  
E: sales.milan@it.ttiinc.com

#### Padova

T: +39 049 7802311  
E: sales.milan@it.ttiinc.com

#### Rome

T: +39 0774 57 1302  
E: sales.rome@it.ttiinc.com

#### Netherlands

Eindhoven  
T: +31 (0) 40 290 1616  
E: sales.belnelux@nl.ttiinc.com

#### Norway

Drammen  
T: +47 (0) 92 66 87 66  
E: sales.norway@no.ttiinc.com

#### Poland

Kwidzyn  
T: +48 (0) 55 279 67 57  
E: sales.poland@pl.ttiinc.com

#### Portugal

Vila Nova de Famalicao  
T: +351 252 493084  
E: sales.barcelona@es.ttiinc.com

#### Romania

Cluj Napoca  
T: +40 (0) 733 339 002  
E: sales.romania@ro.ttiinc.com

#### South Africa

Pretoria  
T: +27 86 111 2844  
E: sales.southafrica@za.ttiinc.com

#### Spain

Barcelona  
T: +34 (0) 93 645 25 75  
E: sales.barcelona@es.ttiinc.com  
Madrid  
T: +34 (0) 91 416 11 90  
E: sales.madrid@es.ttiinc.com  
Vizcaya  
T: +34 (0) 94 623 25 80  
E: sales.bilbao@es.ttiinc.com

#### Sweden

Gothenburg  
T: +46 (0) 31 741 12 90  
E: sales.gothenburg@se.ttiinc.com  
Stockholm  
T: +46 (0) 8 594 11 800  
E: sales.stockholm@se.ttiinc.com

#### Switzerland

Baar  
T: +41 (0) 41 76741 90  
E: sales.swiss@ch.ttiinc.com

#### Algeria, Egypt & Tunisia

T: +216 (0) 71 862 693  
E: sales.tunis@fr.ttiinc.com

#### Morocco

T: +33(0) 555 92 92 93  
E: sales.morocco@de.ttiinc.com

#### Turkey

Istanbul  
T: +90 (0) 216 688 91 75 76  
E: sales.turkey@tr.ttiinc.com

#### United Kingdom

High Wycombe  
T: +44 (0)1494 460000  
E: sales.london@uk.ttiinc.com

#### Manchester

T: +44 (0)161 872 2019  
E: sales.london@uk.ttiinc.com

#### Resellers or Distributors

TTI Connect - Europe  
T: +49 8142 6680 168  
E: service@tticonnect.com

TTI, Inc. Headquarters Europe



www.tuev-sued.de/ms-zert



IECQ-P BSI 14.0013 (Germany)  
IECQ-P BSI 14.0013-02 (Basildon)  
www.iecq.org