WIRELESS
RADAR SENSORS & ANTENNAS FOR TELEMATICS
GLOBAL AUTOMOTIVE DIVISION

WIRING SOLUTIONS FOR AUTOMOTIVE

tyco Electronics
Tyco Electronics is one of the major business units of Tyco International Ltd. Headquartered in Harrisburg, Pennsylvania, USA, Tyco Electronics is the world’s largest passive electronic components manufacturer and a world leader in cutting-edge wireless technologies. The company has facilities located in over 50 countries, serving customers in the aerospace, automotive, computer, communications, consumer electronics, industrial and power industries.

GLOBAL AUTOMOTIVE DIVISION - WIRELESS TECHNOLOGIES

The Global Automotive Division is your source for interconnection and wireless technologies for automotive, truck and off-highway OEMs and Tier 1 suppliers. As more telematic functions are integrated into vehicles, you need a whole new breed of tools in your design kit, like wireless sensors that provide driver assistance while improving safety and security. We deliver wireless sensors for just about any spot you can imagine. We are first to market in radar-based sensors for truck collision warning systems, autonomous cruise control systems, and meanwhile offer a variety of short-range sensor systems. Modern automotive on-board navigation systems use the Global Positioning System to pinpoint your car’s location. M/A-COM has provided literally millions of GPS antennas to major auto manufacturers for a variety of auto platforms. Automotive navigation/safety systems currently require two separate antennas for operation: a GPS antenna for navigation and tracking information, and a second, separate whip antenna for cellular communication. Our latest innovation is a quad band antenna, which includes Satellite Radio (SDARS), GPS and two cellular bands.

A VITAL PART OF YOUR WORLD

Tyco businesses operate in thousands of different areas of industry. The products and services we deliver all have one thing in common. They are vital to everyday living. Individuals and companies worldwide have critical needs. And every minute of every day, we satisfy them.
Next Generation Quad Band Antenna SDARS, GPS, 2x Cellular Bands

77GHz Radar Front End for Adaptive Cruise Control Systems

24GHz Ultra Wide Band Short Range Radar Sensor
TECHNOLOGY

Tyco Electronics is a world leading supplier of radar technology for the automotive industries. In cooperation with system integrators and OEMs, Tyco Electronics developed 24GHz high resolution short range radar sensors in Ultra Wide Band technology and 77GHz Adaptive Cruise Control radar front ends suitable for driver assistance applications, which enable advanced active and passive safety systems.

Tyco Electronics develops, produces and supplies antennas for the automotive industries. Single to Quad band antennas are available in state of the art planar and dipole technologies. All telematic frequency bands for satellite radio, navigation, emergency positioning and cellular mobile communications are covered.

The European Technology & Application Center ETAC in Germany supports with its competent engineering resources the adaptation of this sensor technology to the specific requirements by early involvement of customers. Therefore a team of qualified and experienced engineers is available in Schweinfurt. RF equipment, RF lab, simulation tools, anechoic chamber and a 300 square meter absorber hall enable a broad spectrum of competence.

AUTOMOTIVATED IN EVERY DETAIL

Our global automotive research centers are setting the technological landscape by developing new technologies, products and production processes. The increasingly fast growing number of functions in present and future cars require varieties of powerful and versatile connection systems. We compare existing standards with alternative possibilities in which costs, functionality, dependability and serial production are the basics of our procedures.
COMPETENCES AT ETAC

- System Analysis
- Specification
- Simulation

- System Integration and Development
- Radar Front-End
- Digital Signal Processing

- Application Support
- Vehicle integration
- Resident engineering

Test bench with Modular RF Setup for design and performance verification

Anechoic chamber for 3D antenna characterization

Hard- and Software design for digital and analog Signal processing
COMPETENCES

SYSTEM ANALYSIS
The system analysis enables the design of key components. Using simulation tools critical parameters for the components and interfaces can be determined in an early state. The feedback to semiconductor development enables the efficient development of a suitable RF chip set.

SYSTEM INTEGRATION
The system integration includes development, design and characterization of all components of the radar system. The required functionality influences the selection of architectures, modules and components.

The Tyco Electronics Smart Radar Sensor System consists of the RF module which carries on one side the planar antenna and on the other special substrate, RF components and the connection to the digital signal processing unit (DSPU).

The DSPU converts the preprocessed radar signals into digital information by using a software with extensive algorithms. This results into a detailed object map which will be supplied to the vehicle bus infrastructure.

APPLICATION SUPPORT
Position, alignment, materials, painting directly influence radar performance. Radar components and signal processing have to be precisely adapted to this environment, whereas a close interaction with the OEM is an important advantage.

The available support also includes vehicle system performance tests in anechoic measurement hall and outdoor test campaigns.

COST REDUCTION AND INCREASED RELIABILITY
Beside the support of automotive customers and application engineering, development activities for advanced radar sensors are performed. Cost reduction and increased reliability are objectives of highest priority. This will be achieved with higher integration and advanced concepts
- 24GHz Front End with SiGe Chip Set
- Low Cost DSP platform.
APPLICATIONS

Cars will be more and more equipped with radar sensors that enable autonomous cruise control, near range obstacle detection for parking and back up warning, blind spot detection- and even pre-crash warning for safety systems.

As more telematic functions are integrated into vehicles, you need a whole new breed of tools in your design kit, like wireless sensors that provide driver assistance while improving safety and security.

Tyco Electronics delivers wireless sensors for just about any spot you can imagine. We are first to market in radar-based sensors for truck collision warning systems, autonomous cruise control systems, and meanwhile offer a variety of short-range sensor systems.

Satellite Radio, On-Board Navigation, GPS, Wireless Voice and Data. Tyco Electronics provides antennas for the whole range of telematics applications, for both OEM and aftermarket installations. Tyco Electronics’ antenna expertise is the result of many years of innovation. With its roots in the design of antennas for military applications, Tyco Electronics has evolved into a major provider of antennas to the commercial world, for applications ranging from wireless LAN to MMDS, and most recently, telematics.
Product and Machine Literature

For more information about Tyco Electronics’ Global Automotive Division and its wide range of products we offer you a variety of literature such as product databooks and a lot of product specific brochures. For databooks and product brochures please contact your local Tyco Electronics organization.

Internet Homepage

www.tycoelectronics.com
www.tycoelectronics.com/automotive

Electronic Internet Catalog

www.catalog.tycoelectronics.com

Electronics Online

The Tyco Electronics Website is more than merely an Internet-guide. It is an innovative and inter-active source for application tips, product update and technical information. With our StepSearch-Software you can easily surf through all of our product lines.

Product Information Center (PIC)

You can rely on our PIC Team’s support. Our experienced staff is an additional information source, and the team has been particularly trained to answer your technical questions. To reach our PIC, please contact your local Tyco Electronics organization.