Vodafone Automotive Telematics Hardware

Enabling a wide range of connected car services
automotive.vodafone.com

Vodafone
Power to you
Enabling connected car services for the automotive, insurance and fleet industries

IoT connects objects, such as cars, buildings and machines to the internet, turning them into ‘intelligent’ assets that can communicate with people, applications and each other.

Vodafone Automotive focuses on one of the key IoT verticals – Automotive – and operates through two business units that offer state of the art electronic systems and components together with a vehicle-centric telematics platform and related services. The company has 40 years of experience both at point of manufacture and after, delivering a complete end-to-end service or any part thereof.

Vodafone Automotive Manufacturing is a Tier One partner to the main European and Asian car, truck and motorcycle manufacturers, including Volkswagen Group, Jaguar Land Rover Group, Testa, Aston Martin, Ferrari, Maserati, McLaren, Volvo Group, KIA, Hyundai, Toyota, Honda, Renault-Nissan Group, Daimler, Peugeot Citroën Group, Mazda, General Motors, Subaru, Suzuki, Mitsubishi for which it develops bespoke solutions for both factory and aftermarket installation: antitheft, parking assistance and telematics systems. We are also Tier One partners to telematics service providers, such as Vodafone Automotive Telematics, but also have the capability to partner with other providers.

International Presence

Vodafone Automotive operates internationally through distributors, licensees and national service providers. It is represented by 40 partners around the globe. In Europe, Secure Operating Centres assist customers in 44 countries. Vodafone Automotive provides telematics as well as non-connected products, such as alarms and parking sensors, with process engineering and manufacturing skills in Italy, Korea and China. The other company subsidiaries are focused on selling products and connected car services to the local market.

Vodafone Automotive Varese: a 10,000 sqm area serving customers worldwide, nearly 3 million systems produced last year. Each electronic device is automatically traceable via the Process Quality System (PQS).

Vodafone Automotive Manufacturing Core Competencies

From the beginning Vodafone Automotive has positioned itself as a centre of technical excellence capable of identifying, developing, producing and offering its customers innovative solutions for the automotive sector.

We have full control from the engineering phase, the hardware-software-mechanical integrated development to vehicle application studies and simulations.

We focus on development programs in order to respond to the most severe automotive standards. All our devices are approved by the European, extra-European, North American and Asian certifying bodies (including insurance directives) and by country specific authorities. The company is regularly audited by vehicle manufacturers and successfully passed the following certification processes:

- Quality management systems - ISO 9001
- Environmental management systems - ISO 14001
- Automotive sector quality management systems - ISO TS 16949
- Social accountability management systems - SA 8000
- Automotive SPiCE CL 1 : 2007 audited by Volkswagen Group
- Automotive SPiCE CL 2 : 2011 audited by Continental

Vodafone Automotive in-house laboratory is equipped with test instruments and simulators to satisfy the requirements of vehicle manufacturers, insurance companies and legal requirements of the European Union and to support the design and development activities:

- Functional tests
- EMC evaluation
- Temperature shock
- Endurance and reliability tests
- Power consumption management
- Humidity

Transforming the way we think about transport

The automotive industry is facing new challenges. Manufacturers, dealers, insurers and service providers are looking for new ways to control operating costs, comply with new regulations, improve the driving experience and generate additional revenue streams. By 2018, more than half of all new cars being sold will come with connectivity built in, and the after-market opportunity is also accelerating. Tomorrow vehicles will communicate with each other, and with other elements of the transportation infrastructure ecosystem — from traffic signals to public transport scheduling and parking. They will be used on-demand, paid for and insured accordingly.

Source: Website of the European Commission

Solutions for the connected car

IoT data enables businesses to be more competitive

Automotive is perhaps the most advanced industry in the use of data overall. Businesses say that:

- 94% - IoT’s value depends on effectively using the data it generates
- 59% - They store their IoT data in the cloud
- 68% - They use big data platforms to support decision-making.

Source: Vodafone IoT Barometer 2016
Vodafone Automotive key services

Our diverse hardware portfolio allows to cover the needs of the automotive, insurance and fleet industries:

- **Theft management**: geo-localisation and recovery of stolen vehicles
- **Usage Based Insurance**: devices for the supply of insurance services based on the real usage of the vehicle
- **Safety**: products enabling assistance services in case of emergency – accident or breakdown
- **Vehicle Management and Monitoring**: telematics hardwares which allow services for the monitoring and management of vehicles, like vehicle performance, mileage and reliability, maintenance planning. Especially suited for fleet customers

<table>
<thead>
<tr>
<th>Industry</th>
<th>Functionality</th>
<th>Service Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Automotive</strong></td>
<td>Theft management</td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Crash alert / emergency call</td>
<td>Safety</td>
</tr>
<tr>
<td></td>
<td>Breakdown &amp; roadside assistance</td>
<td>Safety</td>
</tr>
<tr>
<td></td>
<td>Mobile app</td>
<td>Management</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td>Accurate insurance premium</td>
<td>Driving behaviour</td>
</tr>
<tr>
<td></td>
<td>Crash reconstruction</td>
<td>Driving behaviour</td>
</tr>
<tr>
<td></td>
<td>Crash alert / emergency call</td>
<td>Safety</td>
</tr>
<tr>
<td></td>
<td>Breakdown &amp; roadside assistance</td>
<td>Safety</td>
</tr>
<tr>
<td></td>
<td>Mobile app / web portal</td>
<td>Management</td>
</tr>
<tr>
<td><strong>Fleet</strong></td>
<td>Asset management</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Support and maintenance</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Theft management</td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Vehicle diagnostics</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Driving style</td>
<td>Driving behaviour</td>
</tr>
<tr>
<td></td>
<td>Crash alert / emergency call</td>
<td>Safety</td>
</tr>
</tbody>
</table>

Better services, deeper relationships

IoT applications of all kinds are having a noticeable impact on the employee and customer experience. As businesses increasingly look at building IoT into their products and services, certain sectors will naturally take the lead in revolutionising how they engage with their customers, among them automotive (through the connected car).

Crucially, these are ongoing services: periodic maintenance reminders, anti-theft tracking or OTA (over-the-air) updates. This is an opportunity to build a relationship with customers that previously disappeared the moment they drove off the forecourt.

Vodafone Automotive hardwares guarantee the full reliability of the data and enhance the driving experience

The new design approach of our telematics platforms is a response to rapidly changing and growing market needs: vehicle manufacturers, public authorities and insurance companies have expressed their intention to use telematics to monitor green driving, improve road safety and offer tailored insurance policies. Just to name a few of the high number of applications that can be developed.

The reliability of the gathered data is a clear requirement: this depends on the quality of integration of the unit in the vehicle. This is where the core competences of Vodafone Automotive lies, thanks to the long-term partnership with vehicle manufacturers and the ability of its highly skilled engineers to follow the global telematics technology evolution and integrate it. To be an efficient gateway enabling a variety of value added services, totally open to different server infrastructures created for different needs, we have standardised our interfaces.
SCD3X – Vodafone Smart Communication Device & Easy Fit
The state-of-the-art telematics technology
SCD3X & Easy Fit are the ideal products to enable insurance telematics, fleet management services and stolen vehicle recovery. This telematics product enables theft management and, insurance and fleet telematics services:
- Automatic crash notification through external Event Recorder
- SOS - breakdown call and assistance services (option)
- Driving behaviour and driving score
- Vehicle management and monitoring features through mobile and web applications
- Stolen vehicle recovery

SPD1X – Vodafone Self Powered Device
A smart solution against vehicle theft
Vodafone Self Powered Device (SPD) is a compact, easy to fit and cost-effective device, ideal for stolen vehicle recovery services. Powered by its own battery, with an active life of up to two years, Vodafone SPD is small enough to be concealed even on motor bikes, powerful enough to track large industrial equipment, and cost effective, which enables unit installation on every fleet vehicle.

Product data, depending on the model

<table>
<thead>
<tr>
<th>Nominal operating voltage (VDC)</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage range (VDC)</td>
<td>9 to 16</td>
</tr>
<tr>
<td>Control unit operating temperature (°C)</td>
<td>-40 to +85</td>
</tr>
<tr>
<td>Back-up battery temperature (°C)</td>
<td>-20 to +65</td>
</tr>
<tr>
<td>Max current consumption (mA) (fully operational)</td>
<td>&lt; 100</td>
</tr>
<tr>
<td>Min current consumption (mA) (crash detection &amp; reconstruction enabled - GSM reachable)</td>
<td>&lt; 5</td>
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<tr>
<td>Dimensions (mm)</td>
<td>80 x 60 x 25</td>
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<td>Weight (g)</td>
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<td>Waterproof rating</td>
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<tr>
<td>Quantity per shipping package</td>
<td>24</td>
</tr>
<tr>
<td>Warranty</td>
<td>24 months</td>
</tr>
</tbody>
</table>

Key Features
- Embedded state-of-the-art GPS receiver and GSM/GPRS
- Embedded accelerometer for system wake-up
- Embedded GSM/GPRS and GPS antennas
- Backup battery (3000mAh Ni-MH - 7.2V)
- Optional external event recorder module
- Optional emergency button
- Optional external relay to enable remote engine lock
- Optional Driver Card for automatic driver recognition
- Input for optional connection of an external alarm system
- Automatized calibration of the Event Recorder
- Built-in led for auto-diagnosis
- System health check

Benefits at a glance
- Reliable
  - State-of-the-art technology
  - Backup battery
- Embedded
  - Requires professional installation which grants protection against tamper
- Simple
  - Small sized box
  - Easy to hide
  - Easy to fit
- Automatic
  - Crash alert
  - Auto-diagnosis
  - System health check

Product data, depending on the model

<table>
<thead>
<tr>
<th>Dimensions (mm)</th>
<th>55x70x30</th>
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</thead>
<tbody>
<tr>
<td>Weight (g)</td>
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<tr>
<td>Non rechargeable battery</td>
<td>3.6V/6600mAh (Li-SOCI2)</td>
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<td>Waterproof rating</td>
<td>IP66</td>
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<td>Origin</td>
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<td>Quantity per shipping package</td>
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</tr>
<tr>
<td>Warranty</td>
<td>24 months</td>
</tr>
</tbody>
</table>

Key Features
- Self powered wireless telematics unit
- OPERATES THROUGH NON RECHARGEABLE INTERNAL BATTERY
- Compact design and waterproof housing (IP66)
- Embedded GPS and GSM/GPRS modules
- Integrated GPS and GSM antennas
- Embedded secure global Vodafone M2M SIM card
- Set-up and configuration via sms
- Magnetic switch (reed relay) for power on and reset
- Embedded led for system diagnostic
- System health check
- Light socket for optical fibre
- Temperature sensor

Benefits at a glance
- Reliable
  - Wakes up once or more per day for two minutes
  - GSM cell ID location if GPS signal is lost
- Versatile
  - Protects cars, motorcycles, boats, construction equipment etc.
  - Works as standalone or in addition to the main telematics unit for increased security
- Cost Effective
  - Battery life of 12/24 months, depending on wake up mode frequency
Solutions for the connected car

WSD – Vodafone Windscreen Device
Driving behaviour, crash reconstruction and emergency services, all in one

WSD platform is specifically designed for the insurance telematics and aftermarket segment. It enables telematics services including:

- Driving behaviour
- Crash reconstruction
- Emergency services
- Breakdown call
- Low vehicle battery/backup battery alert
- Theft tracking on demand only—visible device not ideally suited for theft management

**Product data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Nominal operating voltage (VDC)</td>
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<tr>
<td>Operating voltage range (VDC)</td>
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<tr>
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<td>-40 to +85</td>
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<tr>
<td>Back-up battery temperature (°C)</td>
<td>-20 to +65</td>
</tr>
<tr>
<td>Max current consumption (mA) (fully operational)</td>
<td>&lt; 100</td>
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<tr>
<td>Min current consumption (mA) (crash detection &amp; reconstruction enabled - GSM reachable)</td>
<td>&lt; 5</td>
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<td>Dimensions (mm)</td>
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</tr>
<tr>
<td>Warranty</td>
<td>24 months</td>
</tr>
</tbody>
</table>

**Key Features**

- Bi-directional hands-free voice communication with volume adjust function
- Automatic crash notification and alert
- Voluntary and Forced SOS emergency condition notification and alert by dedicated SOS button
- Embedded state-of-the-art GPS receiver and GSM/GPRS
- Embedded accelerometer for circuit sleep-to-wake-up use
- Embedded event recorder for crash analysis applications
- Optional external relay to enable remote engine lock
- Powerful backup battery to sustain 15 minutes + of Voice call after vehicle impact and provide supply in the event of tamper of the vehicle battery
- Built-in LED for self-diagnostic
- System health check
- Driver cards for authorised driver recognition (with RX mounted) as accessories

**Benefits at a glance**

- Reliable
  - Backup battery
  - System health check
  - SOS notification
- Versatile
  - Can be plugged on a variety of vehicles
  - Accessories up-scale for additional protection
- Simple
  - Easy to fit
- Automatic
  - Crash notification
  - Self-diagnostic

Drive your future
Connect your car today
Vodafone OBD1X and Plug & Drive
The smallest devices for UBI, Fleet and Aftermarket needs

Vodafone OBD1X and Vodafone Plug & Drive are the latest high-performance telematics platforms designed for the insurance, fleet and aftermarket needs. They are extremely compact and very easy to install on a large variety of vehicle as they are connected directly to the OBD port of the vehicle. Both devices can be used in combination with dedicated user friendly application.

Functionalities include, depending on the model:
- Trip recording
- Driving behaviour
- Crash detection and reconstruction
- Breakdown calls
- Stolen Vehicle Recovery on demand
- Fraud prevention
- Automatic calibration of the accelerometer
- Vehicle monitoring & diagnostic function

Product data

**Vodafone OBD Bluetooth**

<table>
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<th>Value</th>
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<td>Nominal operating voltage (VDC)</td>
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<tr>
<td>Operating voltage range (VDC)</td>
<td>9 to 16</td>
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<tr>
<td>Operating temperature (°C)</td>
<td>-40 to +85</td>
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<tr>
<td>Back-up battery temperature (°C)</td>
<td>-20 to +60</td>
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<tr>
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<td>Weight (g)</td>
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<tr>
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<tr>
<td>Waterproof rating</td>
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<td>Origin</td>
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<tr>
<td>Warranty</td>
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</table>

**Vodafone Plug & Drive**

<table>
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<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
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<td>Nominal operating voltage (VDC)</td>
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<tr>
<td>Operating voltage range (VDC)</td>
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<tr>
<td>Control unit operating temperature (°C)</td>
<td>-40 to +85</td>
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<td>Back-up battery temperature (°C)</td>
<td>-20 to +65</td>
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<tr>
<td>Dimensions (mm)</td>
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<td>Max current consumption (mA) (fully operational)</td>
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<td>Min current consumption (mA) (crash detection &amp; reconstruction enabled; GSM reachable)</td>
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<tr>
<td>Weight (g)</td>
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<tr>
<td>Internal backup battery</td>
<td>Lithium Battery 3,7 V</td>
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<td>Waterproof rating</td>
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<td>Origin</td>
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<td>24</td>
</tr>
<tr>
<td>Warranty</td>
<td>24 months</td>
</tr>
</tbody>
</table>

Key Features

- Embedded 3-axis accelerometer
- Embedded Bluetooth component using smartphone GPS and GSM capabilities or state-of-the-art GPS receiver and GSM/GPRS modem
- Integration with end user smartphone (iOS and Android)
- Plug & Play device
- External flash memory M25PE80 1 Mbyte
- Reads vehicle’s VIN number
- Built-in LED for self-diagnostic

Benefits at a glance

**Simple**
- Small sized box
- Easy to fit

**Reliable**
- Wakes up once a day (Plug & Drive only)
- AID GPS (Assisted GPS) for first fix

**Versatile**
- Can be plugged on a variety of vehicles

**Automatic**
- Update with OTAP (over the air provisioning) without uninstalling the product
- Crash alert

Start your journey with Vodafone

Vodafone Automotive is uniquely positioned to help you to take advantage of our innovative products to differentiate your business from competition and to improve the customer experience.

To find out more about our telematics hardware solutions, please contact sales@vodafoneautomotive.com or visit automotive.vodafone.com.