MAKING GLOBAL CONNECTIONS
Overview
Lumen Group

Lumen specialise in the design and manufacture of a vast array of automotive products designed to improve driving safety and comfort. With new and exciting programs under development, Lumen looks forward to a future of safer and more enjoyable motoring. Various products are developed by the Lumen R&D and Engineering teams according to customer using global contacts and strategic partners in Asia, Europe, The United States of America and South Africa. With over 30 years experience in the Automotive Industry, Lumen understands customer requirements and can tailor solutions for any vehicle architecture. Lumen prides itself on being fast and flexible in meeting customer’s needs.

Lumen key advantages:

- OEM quality regardless of volumes or target applications
- Ongoing support throughout the product life cycle
- Program delivery management from conception until the end of life of the product
- Flexible, reliable, and the ability to provide customised solutions
- Access to global resources in design, sourcing and logistics

Direct Customer Support Services

Lumen can provide customers with full black box systems and program support. Lumen has been pre-selected by a number of customers to manage and deliver complex Black Box programs. From concept, design, manufacture, testing & validation through to job 1 delivery. Various levels of program support are supplied by Lumen including full time in house Engineering support at the customers facility. Support includes CAD design, product development and validation programs. Lumens commitment to program excellence is renowned throughout the industry.

Sales Locations:

- Lumen Australia (Head Office and Design Centre)
- Lumen New Zealand - Auckland
- Lumen Europe - Warsaw
- Lumen Europe – Frankfurt
- Lumen China – Beijing
- Lumen North America – Michigan
- Lumen Special Cables - Pinetown
- Lumen Thailand – Rayong
- Swann Electronics – Melbourne

Manufacturing and Distribution Locations:

- Lumen Australia - Melbourne
- Lumen Europe - Warsaw
- Lumen Taiwan – Taipei
- Lumen Taiwan - Taichung
- Lumen China – Beijing
- Lumen Special Cables - Pinetown
- Lumen Thailand – Rayong
- Swann Electronics – Melbourne

Logistics

Streamlined logistics are provided through the utilization of advanced warehousing and stock management systems including regular report generation and automated order monitoring. Lumen is fully equipped to handle a diverse range of customer ordering requirements, and can improve product delivery lead-times through the use of online supply chain management systems. Lumen direct ship products from the point of manufacture to customers all over the world.
Global Partners

Locations:
- Australia
- Taiwan
- USA
- China
- Thailand
- New Zealand
- South Africa
- Poland
- Germany
MAJOR CUSTOMERS WORLDWIDE
Lumen’s customers are some of the world’s leading companies located around the world. Lumen work on customised projects as per the customer requirements and have developed solid long term relationships built on providing innovation and quality.
Products

Product Range:
- Cable Assemblies
- Plastic Components
- Vehicle Safety Systems
- Vehicle Lighting
- Body Electronics
- Infotainment
- Wireless Systems

CABLE ASSEMBLIES
- Trailer harnesses
- Cruise Control harnesses
- Auxiliary Lighting harnesses
- Security and Safety harnesses
- Audio and Power filter harnesses
- LP Gas system harnesses
- Vehicle main body harnesses
- Bus Harnesses
- Airbag Harnesses
- Forklift Harnesses
- Caravan/RV Air Conditioner Harnesses

PLASTIC COMPONENTS
- Custom moulded connectors
- Front Grille assemblies
- Rear Fascia Escutcheons
- Mobile Phone Mounting Platforms
- Sensor housings
- Switch surrounds and bezels

VEHICLE SAFETY SYSTEMS
- Front / Rear / Corner Parking Sensors
- Reversing Cameras
- Blind Spot Detection (BSD) Systems

VEHICLE LIGHTING
- Driving light systems
- Daytime Running Lamps (DRL)
- Lamp Control ECUs
- Headlamp Flasher Controllers
- Emergency vehicle lighting ECUs
- LED lamp assemblies
- Trailer lighting control modules
- Interior Illumination
- Underbody and Tub Illumination
- Caravans/RV

BODY ELECTRONICS
- Dual Battery Systems
- CAN Interface ECUs
- Vehicle Alarm and Upgrade Packages
- Auxiliary power supplies

INFOTAINMENT
- Bluetooth® Hands-free phone kits
- iPod Integration kits
- Rear Seat Entertainment Systems
- Audio switching modules

WIRELESS SYSTEMS
- Wireless Control Systems
Cable Assemblies

CABLE ASSEMBLIES
Lumen specialise in the design and manufacture of peripheral harnesses which integrate with the vehicle’s main body harness.

Lumen supply a vast array of harnesses as a 1st or 2nd tier supplier to the automotive, industrial and agricultural industry.

By utilising strong alliances with the major connector and terminal manufacturers, Lumen are able to provide customers with access to a wide variety of connectors from all around the world, in the best possible turnaround times.

Lumen are an authorised distributor for Sumitomo Wiring Systems connectors in Australia and New Zealand, and an authorised export agent for European produced Sumitomo Wiring Systems components.

Lumen design and manufacture wiring harnesses according to IPC/WHMA-A-620A requirements. Prototypes and low volume wiring harnesses requiring fast turnarounds are produced at the Lumen Head Office Technical facility.

Large volume wiring harnesses are produced at our TS16949 certified wiring harness facility in Tainan, Taiwan.

Lumen have internal facilities for rapid harness validation including crimp integrity, cross section analysis, insertion/retention force testing and other mechanical and electrical validation equipment.

Examples of current Cable Assemblies include:
- Trailer harnesses
- Cruise Control harnesses
- Auxiliary Lighting harnesses
- Security and safety harnesses
- Audio and Power filter harnesses
- LP Gas system harnesses
- Vehicle main body harnesses
- Forklift main body harnesses
- Bus Harnesses
- Airbag Harnesses
- Forklift Harnesses
- Caravan/RV Air Conditioner Harnesses
Plastic Components

PLASTIC COMPONENTS

In order to provide genuine accessory products with original equipment styling, Lumen can custom tailor plastic mouldings to complement the vehicle’s interior or exterior.

Lumen’s internal design team facilitate quick turnaround on designs and rapid prototypes. Mould flow analysis and internal validation facilities support high quality deliverables and minimise the time to production.

Examples of customised plastics:

- Front Grille Assemblies – Provide vehicle customisation.
- Integrated Phone Holder – Cup Holder Insert
- Rear Fascia Escutcheons – improve the presentation of the rear fascia after towbar installation.
- Sensor housings – integrate a variety of sensors seamlessly with the vehicle interior/exterior.
- Switch surrounds – allows for accessory products to be fitted using OE styled switches.

Current plastic moulded parts include:

- Custom moulded connectors
- Front Grille assemblies
- Rear Fascia Escutcheons
- Mobile Phone Mounting Platforms
- Sensor housings
- Switch surrounds and bezals
- PCB Enclosures
- LED lamp assemblies
Vehicle Safety Systems

FRONT, CORNER AND REAR PARKING SENSORS
Lumen offer a range of parking sensor solutions.

Advantages of Lumen Parking sensors include:
- Sensors painted to match vehicle body colour
- Semi-digital and fully-digital sensors available
- Various sensor housings including quick-fit insert, L-shape, and angled sensors
- Plug-and-play wiring harnesses
- Customized fitment instructions and templates
- High Signal to Noise Ratio
- CAN Interfaces available
- Many disable options including speed, gear, park brake, trailer connect disable.

REVERSING CAMERAS
Lumen offer a diverse range of reversing cameras to suit all vehicles.
Various housings are available using CCD or CMOS image sensors, utilising a slimline design and simple mounting method, whilst providing a fully integrated finish.
Cameras can be integrated with vehicle OEM displays, or supplied with a replacement Video Mirror solution. Wired and wireless connection methods are both available.

INTERIOR MONITORS FOR REVERSING CAMERA
Lumen offer a range of Display-On-Demand Video Mirrors from 2.5” to 4.3” widescreen versions. These are replacement interior rear view mirrors with the added features of Electro-Chromatic (EC) Auto-Dimming function, and behind the glass LCD for reversing camera compatibility. Light sensors on the front and rear of the mirror are used to measure the light intensity of the external environment and adjust the ‘tint’ and brightness of the LCD when reverse gear is engaged.

Best-in-class heat management
Best-in-class reflectivity
Best-in-class uniformity
Best-in-class brightness
No “rainbow effect” from polarised sunglasses
High-glare image washout immunity using LED backlighting.
RADAR BASED WARNING SYSTEMS

Lumen provides 24Ghz radar solutions for blind spot detection applications. These can be tailored to suit any vehicle as an OEM factory-fit, or Genuine Accessory item. After briefly checking the inside and outside mirrors and perhaps a fleeting glance over your shoulder, you are suddenly given a severe fright by the loud hooting as you pull out to overtake. It is easy for a driver to fail to spot a vehicle approaching from behind in the overtaking lane or a vehicle situated in the blind spot next to your car, particularly in heavy traffic on multi-lane freeways.

This is where the Lumen Blind Spot Detection (LBSD) system can take much of the strain off the driver and avoid hazardous situations by monitoring the area that is hard to see.

The Lumen Blind Spot Detection (LBSD) System uses the latest radar technology to continuously monitor the drivers blind spots for nearby vehicles and provide a warning of potential dangers. The LBSD is activated when the vehicle speed exceeds 24 km/h and provides a two stage warning to the driver.

The main features include:

- 24Ghz narrow band radar – suitable for most regions including Europe, USA, Japan, Australia.
- LED warning display available in quick-fit or customised versions.
- Sensor detection range and coverage exceeds ISO17387.
- Solutions are fully customised to suit each vehicle.
Vehicle Lighting

**DRIVING LIGHT SYSTEMS**
Driving Light Assemblies are currently available for various vehicles. For new vehicles, mounting brackets and wiring harnesses are designed for easy plug-and-play connection.

If vehicle-specific OEM switches are available, these can be etched with the desired icon, or custom switches can be designed and manufactured to suit the vehicle.

**DAYTIME RUNNING LAMPS**
Lumen’s range of Daytime Running Lamps are specifically designed to integrate seamlessly with the vehicle’s existing styling.

They feature plug-and-play connections with the vehicle's electrical system and automatically activate, deactivate, and dim their light intensity as required.
EMERGENCY VEHICLE PACKAGES
Lumen provide tailored solutions to emergency vehicle and body builders to cater for all requirements. Packages may include headlamp flasher units, light bars, dual battery systems, in-vehicle intercoms, custom switch assemblies, internal cameras, temperature monitoring, body harnesses and Digital Video Recording (DVR) systems.

Features and Advantages:
- Manufactured in aluminium housings which result in a superior build quality.
- Housings can be customised to suit any vehicle styling.
- Can operate in either Daytime Running mode, or Front Position mode using the same lamp assembly.
- Do not suffer from fogging and are impenetrable by nature’s elements.
- Have been tested extensively in the field to withstand the harshest environmental conditions.
- The entire range of Daytime Running Lamps have an expected lifespan of 50,000 hours with no LED colour variation.
- LED pairs are colour matched to provide consistent LED colour.

UNDERBODY AND TUB ILLUMINATION
Forget about fumbling with flashlights or using your mobile phone, the powerful Tub Lighting System from Lumen will flood your ute’s rear with the sharp glow of high-intensity LED bulbs. Just open the tailgate or press the key remote and the lights will automatically turn on so you can find exactly what you are looking for. This system is compatible with Tonneau covers, canopies and bedliners.
Lumen also offer under-body illumination where super-bright LED's are strategically placed under the car body. These LED’s not only look great but serve an important function and provide fantastic puddle lighting. Both of these systems are plug and play and seamlessly integrated into the vehicles existing wiring harness. The system is activated by the opening of the car door.

INTERIOR ILLUMINATION
The Lumen interior illumination system provides multi coloured ambient light that emanates from the driver and passenger front foot wells, illuminating the car’s interior. The system is activated with your dome lamp enhancing the car’s interior styling, whilst providing better visibility of those hard to see locations at night.
DUAL BATTERY SYSTEMS
The Lumen Auxiliary Battery System was developed for emergency vehicles, 4x4 and tow vehicles. This system provides a secondary power supply for any high-current accessories, without compromising the primary battery charge.
The system allows parallel charging of both primary and secondary batteries when the engine is active, and automatically disconnects the secondary battery depending on ignition status or primary battery voltage.

CAN INTERFACE ECUS
Lumen have the capability to communicate with various vehicle networked systems including High-Speed CAN, Low-Speed CAN, Single-Wire CAN, LIN, UART and other networks.
By utilising existing vehicle networks, accessibility to vehicle information is improved, and product fitment times reduced.
Lumen utilize advanced network analysis packages such as Vector CANalyser, Vector CANoe, and Kvaser LeafCAN to enable bus analysis, simulation and product validation.
VEHICLE ALARM AND UPGRADE PACKAGES

The Lumen alarm system can be used as a stand-alone unit, or as part of an enhancement to the vehicle's existing O.E. vehicle security system.

It enables the detection of cabin intrusion, window breakage, wheels theft, and tampering with battery power supply.

Communications can be provided between the Security Control Module and the vehicle’s BCM, providing information about security events which can be shown on the vehicle’s instrument panel visual display.

To preserve the battery life of the vehicle, the system has very low operating current requirements.

AUXILIARY POWER SOCKET WITH INTEGRATED LIGHTING

Enjoy the benefit of running 12v electrical equipment in the tub whilst on the road with the Lumen 12v Auxiliary Power Socket. The 12v Auxiliary Power Socket gives drivers the opportunity to charge portable fridges, air compressors, camping lights, inverters, and other 12v electrical goods. It also includes a capacitive touch LED light and smart circuit technology.
Infotainment

**BLUETOOTH® HANDS-FREE CAR KITS**

The Lumen in-car phone kits incorporate Bluetooth® Wireless technology and provide highly developed features such as voice control, A2DP Audio streaming, Video display output, and iPod connectivity.

The flexible architecture of the Lumen hands-free car kit allows for integration into all types of vehicle electrical systems, and a customised user interface to integrate seamlessly with the vehicle’s interior.

**Features Available:**

- **DialogPlus** voice control allows for navigation through phone book and menu.
- **Text-to-Speech** functionality.
- **Phone book access** storing up to 1500 entries.
- **Pair and store** 10 different phone books from 10 different phones. Advanced echo cancellation.
- **Passive and High Speed CAN** steering wheel interface. Amplified speaker output for direct speaker drive.
- **Line level mono and stereo outputs** which can interface directly with radio inputs. Telephone mute output.
- **Hard wired iPod interface** for control, charging and displaying iPod information. A2DP stereo streaming.
- **Wireless software update.**
- **Composite video output** to the display (via LVI interface) module. iPod / MP3 Integration kits.

Lumen offer a range of iPod and MP3 integration kits.

**REAR SEAT ENTERTAINMENT**

The Lumen rear seat entertainment cradle creates easy viewing and access for an iPad from the rear seat of most cars or 4WD’s.

The clever design means the cradle can be easily rotated or tilted giving the user multiple viewing angles. This feature helps avoid annoying sun glare and accommodates multiple passengers simultaneously. All functions such as watching movies, surfing the web or doing puzzles are easily accessible while holding the iPad safely in position.

Suitable for iPad 1, iPad 2 and iPad Air.
Audio Switching Modules

Lumen provide switching modules to enable additional devices to be added to the vehicle audio system. These feature solid state switching and configurable settings which can be used to reduce the severity of noise prone accessories already present on the vehicle, or those added as audio accessories.

Wireless Systems

Wireless Control Systems

In order to reduce wiring requirements and decrease fitment times, Lumen is currently developing wireless modules for remote control and switching applications. These devices will allow for bidirectional data transmission from source to destination. Lumen wireless devices are suitable for various applications where fitment times and costs may outweigh product benefits. Examples include wireless "next stop" buttons in bus applications, or front parking sensors where wire harness routing through the firewall may be restricted or time intensive.
Design Capabilities

Lumen utilise a number of design teams working closely together to provide complete white & black box solutions.

The Engineering Team works closely with our customers to develop prototypes, conduct vehicle fitment trials, and design customised product solutions for various applications. The broad range of engineering skills - electrical, electronic, mechanical, CAD design and software - allows Lumen to provide all components and documentation for a complete product solution. Using 3D laser scanning and rapid 3D part prototyping Lumen Engineering is able to produce concept designs for mechanical parts quickly. These technologies also decrease the project risks involved with hard tooling for moulded parts.

The Research and Development Team work closely with our global partners to design new products, research new technologies, and build core technology and capabilities within the company.

The Graphic Design Team are focussed on the design and development of user guides, fitting instructions, and promotional material.

Specific Engineering and Product Development Capabilities Include:

- Electrical and wiring harness design.
- Mechanical brackets and metal component design.
- Injection moulding, plastics, and custom bezel design.
- Electronics design.
- Embedded software design.
- 2D / 3D CAD, and Industrial Design.
- Vehicle fitment and integration capabilities.
- Internal Test Laboratory and validation capabilities.
- In-house rapid prototyping.
- 3D scanning.
- 3D printing.
Services

E-Lab Test Facility

E-LAB is a laboratory which is an entity of Lumen Australia and is located at the Lumen Head Office in Melbourne. Within this facility, our products are tested according to global automotive and customer specific requirements for rapid product validation. Our in-house laboratory allows for timely, accurate and cost effective testing that ensures every product meets our quality requirements. The test facility can also be used by our customers for their own product and/or component validation.

Environmental Tests and Measurements
- Low Temperature Tests in the Temperature range: -10±2°C to -40±2°C.
- High Temperature Tests in the Temperature range: +40±2°C to +200±2°C.
- Temperature and Humidity Combined Tests in the Temperature range: -40±2°C to +150±2°C and Relative Humidity of: ~10±3%RH to 98±3%RH.
- Thermal Shock Tests in the Temperature range -40±2°C to 150±2°C.
- Temperature and Humidity Measurements.

Corrosion Tests
- Neutral Salt Spray (NSS), Acetic Acid Salt Spray (ASS) and Copper Acid Salt Spray (CASS) Tests.

Vibration Tests
- Random and Sinusoidal Vibrations in the Frequency Range 5Hz to 2000Hz.

Mechanical Tests
- Tensile and Compression Testing (0 -490N); Crimp Integrity; Impact and Drop Testing.

Electrical Tests and Measurements
- DC Power Supply Voltage Tests (0 to 60V DC); Fast Transient DC Voltage Supply Tests.
- Dielectric Strength/Withstand Voltage; Insulation Resistance, Dry Circuit Resistance.
- DC Voltage, Current and Resistance Measurements.

EMC Tests
- Electrostatic Discharge Test per EN/IEC61000-4-2
- Pre-compliance Conducted Emissions Testing (150 kHz - 30MHz)

Inspection
- Cross Section Examination of Connector Terminals
- Microscope Examinations

Dimensional Measurements

Paint Tests and Measurements
- Paint adhesion (Cross hatch, X-cut, water bath soak test)
- Non-destructive coating thickness measurement test (Eddy Current Method)
- Colour and Gloss Measurements
Graphic Design

Lumen has a team of Graphic Designers who specialise in Technical Documentation including highly detailed fitting instructions and owner’s manuals, line art, new media solutions and promotional videos and literature.

Some of Our Core Capabilities Include:

- Illustrations for fitting instructions and owner’s manuals
- Graphic Design of packaging, point-of-sale, marketing material and other collateral
Achievements:
BRW Top 50: Most Innovative Companies 2013
GM Best Practices Recognition Award 2012
SAI Global System Excellence Finalist Award 2011
Toyota Kaizen Marathon Gold Award 2009
Victorian Manufacturing Hall of Fame 2008
Toyota Superior TSA Performance 2006
Toyota President’s Supplier Award 2005
Ford Q1 2002

Accreditations:
ISO 9001: since 9th Feb 1998 (Lumen Australia)
ISO 14001: since 17th May 2002 (Lumen Australia)
TS 16949: since 10th Dec 2005 (Lumen Taiwan)
TS 16949: since 30th Aug 2012 (Lumen Australia)
COP E-Mark: Since 14th Jan 2010 (Lumen Australia)
COP E-Mark: Since 6th July 2012 (Lumen Taiwan)

Social Responsibility
Conflict materials
Occupational Health, Safety and Well-Being

Environmental Responsibility
Lumen is committed to strive for the best environmental practices through the implementation of:
ISO 14001: since 17th May 2002
RoHS compliance and SOC-free since Nov 2007
IMDS compliant on selected products: 30th Nov 2007
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