ELECTRONIC

MOBILITY

ELECTRONICS for MOBILITY

CLIMATE COMMITMENT

ELECTRONICS for MOBILITY

masermic

ELECTRONICS

State of the art electronic systems for Mobility applications from concept till serial production, in a close partnership with the market needs and climate commitment strategies. Smart Mobility electronic technology for changing times: Control, Power, Communications, Comfort and Infotainment.

ENGINEERING & PRODUCTION

HARDWARE

Electronic hardware engineering for Masermic´s standard products as well as for custom solutions based in specific requirements.

SOFTWARE

Wide range of software solutions for control & power electronics.

R & D

We drive the R&D outcomes to the most advanced Mobility applications.

ELECTRONICS

Standard & Custom solutions electronics.

ENGINEERING

Experienced engineering team as well as advanced hardware & software tools.

PRODUCTION

Integral electronic manufacturing from the Process Engineering till Maintenance.

RELIABILITY

Electronics systems developed under Automotive standards.

MAINTENANCE SERVICE

Hardware and Software maintenance services.

ELECTRONICS for MOBILITY

SCOPE CAPABILITIES

Specifications — **Engineering** — **Homologation** — **Manufacturing** — **Technical Support** — **Innovation**

Electronic systems for automotive applications from concept till serial production :

⇒ Masermic standard products.
⇒ Custom solutions.

ELECTRONIC ENGINEERING
ELECTRONIC MANUFACTURING

ELECTRONIC SYSTEMS FOR MOBILITY

STANDARDS COMPLIANCE BASED IN THE SPECIFIC APPLICATIONS NEEDS.

CONTROL ELECTRONICS   **POWER ELECTRONICS**   **COMMUNICATIONS**   **SOFTWARE**

Lloyd's Register

Certificate of Approval

This is to certify that the Management System of:

Microelectrónica Maser, S.L.

Pol. Kurutz Gain, 6A, 20850 Mendaro, Gipuzkoa, Spain

has been approved by LRQA to the following standards:

ISO 9001:2015

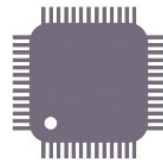Gilles Bessiere - Area Technical Manager

Issued by: Lloyd's Register Quality Assurance España, S.L.U.

for and on behalf of: Lloyd's Register Quality Assurance Limited

Current issue date: 21 February 2019
Expiry date: 10 March 2022
Certificate identity number: 10174267

Original approval(s):
ISO 9001 – 11 March 2010

Approval number(s): ISO 9001 – 0038050

The scope of this approval is applicable to:

Design, manufacturing and commercialization of electronic products for, automation, energy, environmental, transport and health sectors

UKAS
MANAGEMENT
SYSTEMS
001

Lloyd's Register Group Limited, its affiliates and subsidiaries, including Lloyd's Register Quality Assurance Limited (LRQA), and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.
Issued by: Lloyd's Register Quality Assurance España, S.L.U., EO.C/ Princesa, 29, 1º 28008 Madrid Spain for and on behalf of: Lloyd's Register Quality Assurance Limited, 1 Trinity Park, Bickenhill Lane, Birmingham B37 7ES, United Kingdom

AUTOMOTIVE SPICE®

CE

Masermic participates in the principal R&D framework programs in Basque Country, Spain and Europe, driving the R&D outcomes to the most advanced Mobility applications.

Masermic has a skilled and experienced engineering team as well as advanced hardware & software tools to develop state of the art electronic systems.
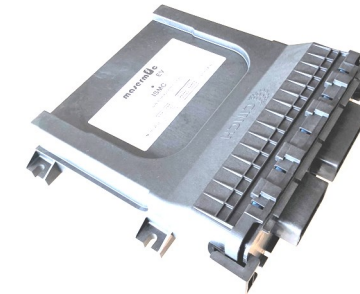
MOBILITY

iADAsys : Autonomous & Assisted driving software/hardware module based in Deep Learning technology.

iACTIVE : Electronics printed and embedded in plastic materials.

iSMC : Electronic power/control module for 2 BLDC motors.

Project: **ECU modules**
Technology: Train Electronics
Scope :   Engineering & Manufacturing
Customer: CAF

Project: **INTEGRAL DOORS CONTROL**
Technology: Automotive Electronics.
Scope :   Engineering & Manufacturing
Customer: ASTON MARTIN

Project: **WINDSCREEN**
Technology: Automotive Electronics.
Scope :   Engineering & Manufacturing
Customer: ORIBAY Automotive Group

Project: **ADAS Systems**
Technology: Automotive Electronics.
Scope :   Engineering & Manufacturing
Customer: IRIZAR Group

Project: **ELECTRIC WHEELS MOTORS POWERING & CONTROL**
Technology: Automotive Electronics.
Scope :   Engineering & Manufacturing
Customer: DONFANG YANGTSE_CHINA

Project: **POWER WINDOW**
Technology: Automotive Electronics.
Scope :   Engineering & Manufacturing
Customer: JAGUAR

Project: **POWER WINDOW**
Technology: Automotive Electronics.
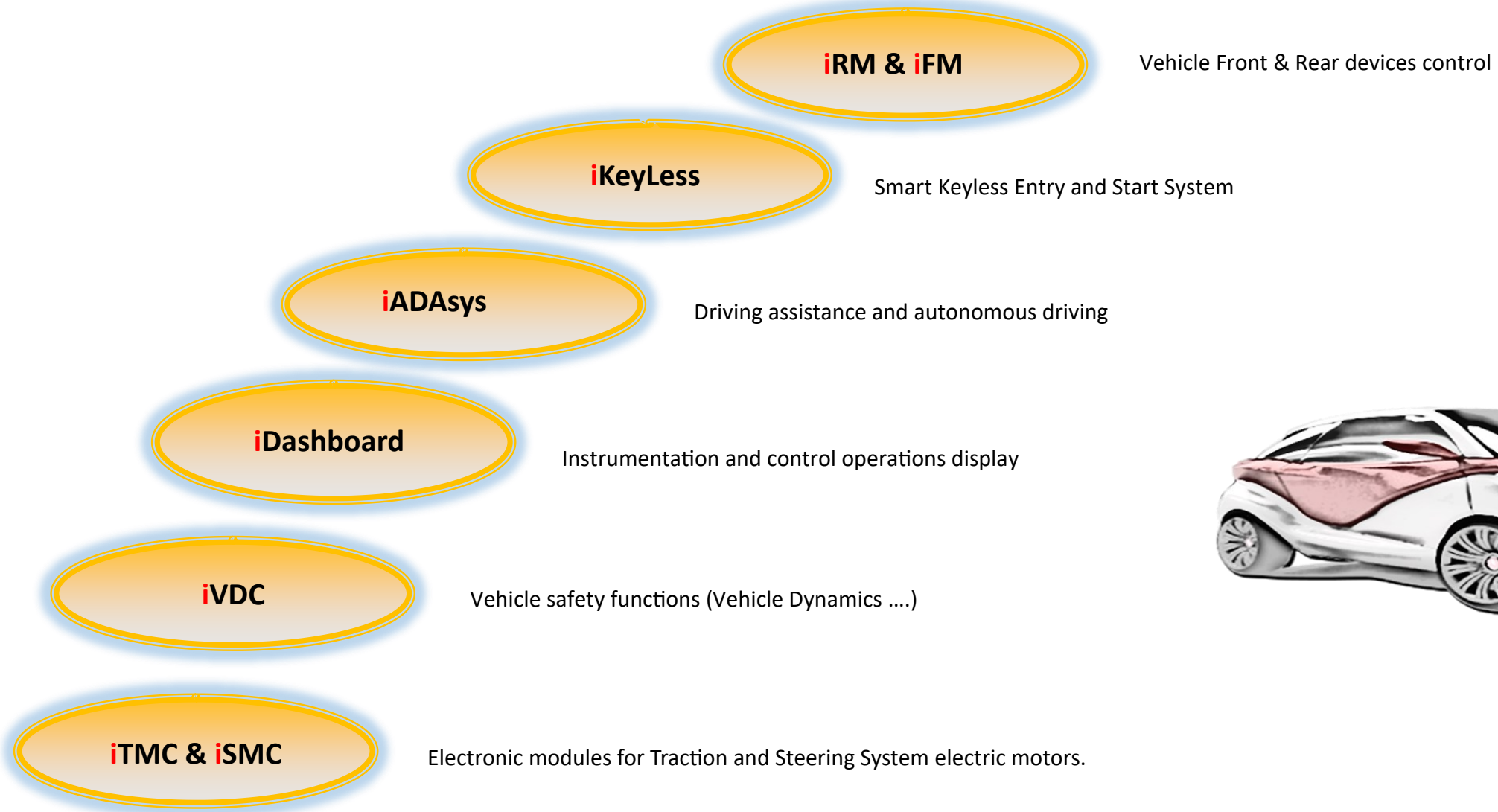**Scope :**   Engineering & Manufacturing
Customer: SEAT-VOLKSWAGEN

masermic

RELIABLE ELECTRONICS HARDWARE & SOFTWARE SYSTEMS FOR MOBILITY

iRM & iFM — Vehicle Front & Rear devices control

iKeyLess — Smart Keyless Entry and Start System

iADAsys — Driving assistance and autonomous driving

iDashboard — Instrumentation and control operations display

iVDC — Vehicle safety functions (Vehicle Dynamics ….)

iTMC & iSMC — Electronic modules for Traction and Steering System electric motors.

⟩⟩ iTMC

Power & Control ECU for PWM & PMSM motors. Power Train Traction Motor applications.

The iTMC Power & Control ECU is an advanced solution for Sinusoidal or Trapezoidal control for 4-Quadrant PWM and PMSM motors, allowing remote : positioning, speed and torque control via CANBUS commands.

Encoder / Hall   Power Supply   CAN Bus

HARDWARE :

◊ Power Supply _ Control : 12 / 24 VDC
◊ Power Supply _ Power : 330 VDC
◊ 1 power output up to 8KW for PMSM motors
◊ 1 Incremental encoder input
◊ 1 Absolute encoder input
◊ 1 Hall sensor input
◊ PWM 15 Khz
◊ Sensor Speed range : Up to 10K RPM
◊ 2 Digital inputs _ 2 Analogic inputs
◊ CANBUS com _ up to 1MBs
◊ Regenerative braking system option
◊ Operation temperature range : -20ºC to + 85ºC

SOFTWARE :

◊ User interface
◊ Parameters configuration (Autotuning)
◊ Calibration
◊ Main parameters monitoring and diagnostics
◊ CANBUS Commands

iTMC

PMSM Motor

masermic

>> **iSMC**

I/O Dig_Ana
Encoder / Hall

Power Supply

CAN Bus

Power & Control ECU for PMSM & BLDC motors. Steering System Motors applications.

The iSMC Power & Control ECU is an advanced solution for PMSM & BLDC motors, allowing remote : positioning, speed and torque control via CANBUS commands.

HARDWARE :

◊ Power Supply : 12VDC Redundant /24/48 VDC

◊ 2 power outputs for 2 PMSM - BLDC motors. Redundant topology.

◊ Max. Output Current : 15 A & 10 A , see versions

◊ Max. Peak Current : 25 A & 20 A , see versions

◊ 2 encoder / hall sensors inputs

◊ PWM : Up to 15 Khz

◊ Sensor Speed range : 10K RPM

◊ 4 Digital Inputs _ 2 Analogic inputs

◊ Interface : CANBUS _ up to 1MBs

◊ Operation temperature range : -20ºC to + 85ºC

SOFTWARE :

◊ User interface

◊ Parameters configuration (Autotuning)

◊ Calibration

◊ 2 motors simultaneous control

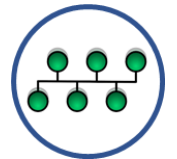◊ Main parameters monitoring and diagnostics

◊ CANBUS Commands

iSMC

PMSM & BLDC motors

iVDC

ECU for the vehicle safety functions (Vehicle Dynamics , ...)

◊ **Vehicle dynamics management**

◊ **Powertrain management**

◊ **Braking System Management**

◊ **Driving Interface: Steering Wheel, Throttle, Joystick, SmartPhone, ADAS**

◊ **Communications Gateway**

HARDWARE :

◊ Power Supply : 12 / 24 VDC redundant

◊ Dual core microp certified for safety applications

◊ 4 x CANBUS com _ up to 1MBs)

◊ 1 x FLEXRAY com

◊ 2 Accelerometer & 2 Gyroscope

◊ 1 Incremental encoder input

◊ 1 Torque sensor input

◊ 10 Analogic inputs _ 3.3Vdc / 5 Vdc

◊ 5V@100ma output for sensor power supply

◊ Operation temperature range : -20ºC to + 85ºC

SOFTWARE :

◊ User interface

◊ Parameters configuration

◊ CANBUS & FLEXRAY Commands

◊ Matlab / Simulink supported

FLEXRAY   CANBUS   Analog Inputs   Digital IOs

iVDC
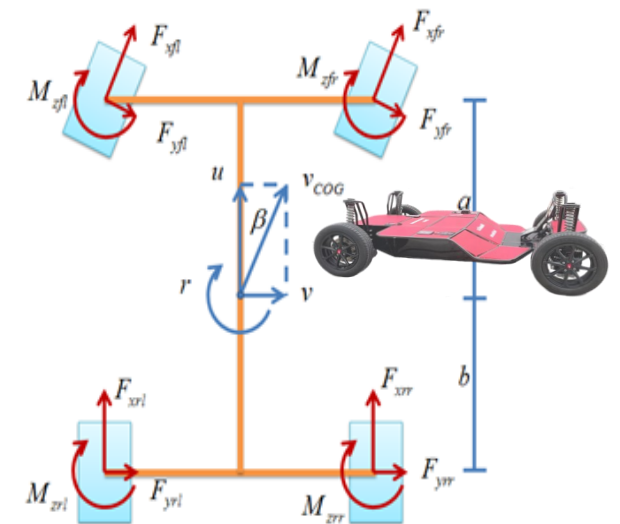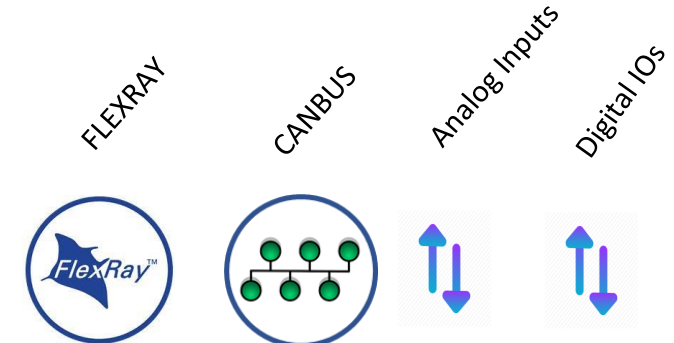
iDashboard

Dashboard for vehicle instrumentation and control operations display. Interface with passengers and V2V _ V2I communication.

Configurable modular dashboard systems based in 3 main screens :

- **Cluster : Main vehicle parameters. Speed, odometer , …..**

- **Infotainment: Radio, navigation, ……..**

- **Comfort : Climate control, mirrors setting , …….**

Modular Dashboard

V2V & V2I Communications

Smartphone & Tablet interface

HARDWARE :

- ◊ Up to 3 screens :
  - Cluster / Infotainment / Comfort
- ◊ Electronic Control:
  - Up to 2 ECU
- ◊ Local Communications :
  - CANBUS & FLEXRAY
- ◊ Interface Communications :
  - GPRS / WIFI / RF
  - 4G ,eCall

SOFTWARE :

- ◊ User interface.
- ◊ CANBUS & FLEXRAY Commands.

iADAsys

Images capture for the execution of algorithms based on Deep Learning technologies for ADAS applications to support vehicle assistance and autonomous driving.
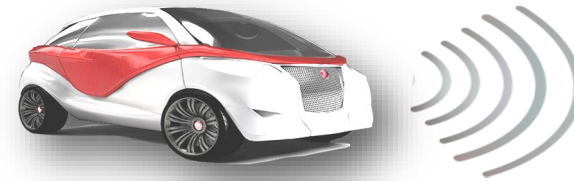
iADAsys_ ECU Module.

Images and Data management . CAN bus interface with the vehicle ECUs.

◊ CPU: Quad ARM® Cortex® A53 cores at up to 1.3 GHz core frequency

◊ 1x Cortex M4 Core for real time processing

◊ Deep Learning Algorithms

◊ Safety: FCCU and FCCU output supervision unit

◊ Security & Encryption: CSE-FL & AES-128

◊ Image Cognition: 2x APEX2-CL Dual 32-bit array with 2x32 compute units

◊ Ethernet: 1x MII/RGMII

◊ Serial:2x MIPI-CSI: 2x4 lanes, up to 1.5 Gbps

iADAsys_ Advanced Driving Assistance

◊ **Obstacle detection: vehicles, pedestrians, bicycles, etc.**

◊ **Traffic Signals detection**

◊ **Custom solutions**

HARDWARE :

◊ Sensor: Up to 3 CMOS

◊ Type : Color

◊ Format : 1/2.7"

◊ Temp range: -40ºC / 105ºC

◊ Resolution:_ 1312*828 pixels

◊ Application : ADAS

iKeyLess

SMART KEY LESS SYSTEM for access control , safety and vehicle start/stop function.

Turnkey solution , based in a complete mechatronic solution and advanced software.

PEPS : Passive Entry Passive Start electronic unit.

- ◊ 6 LF + Immobilizer .
- ◊ Encryption based in AES128
- ◊ RF Antenna (Rx / Tx)
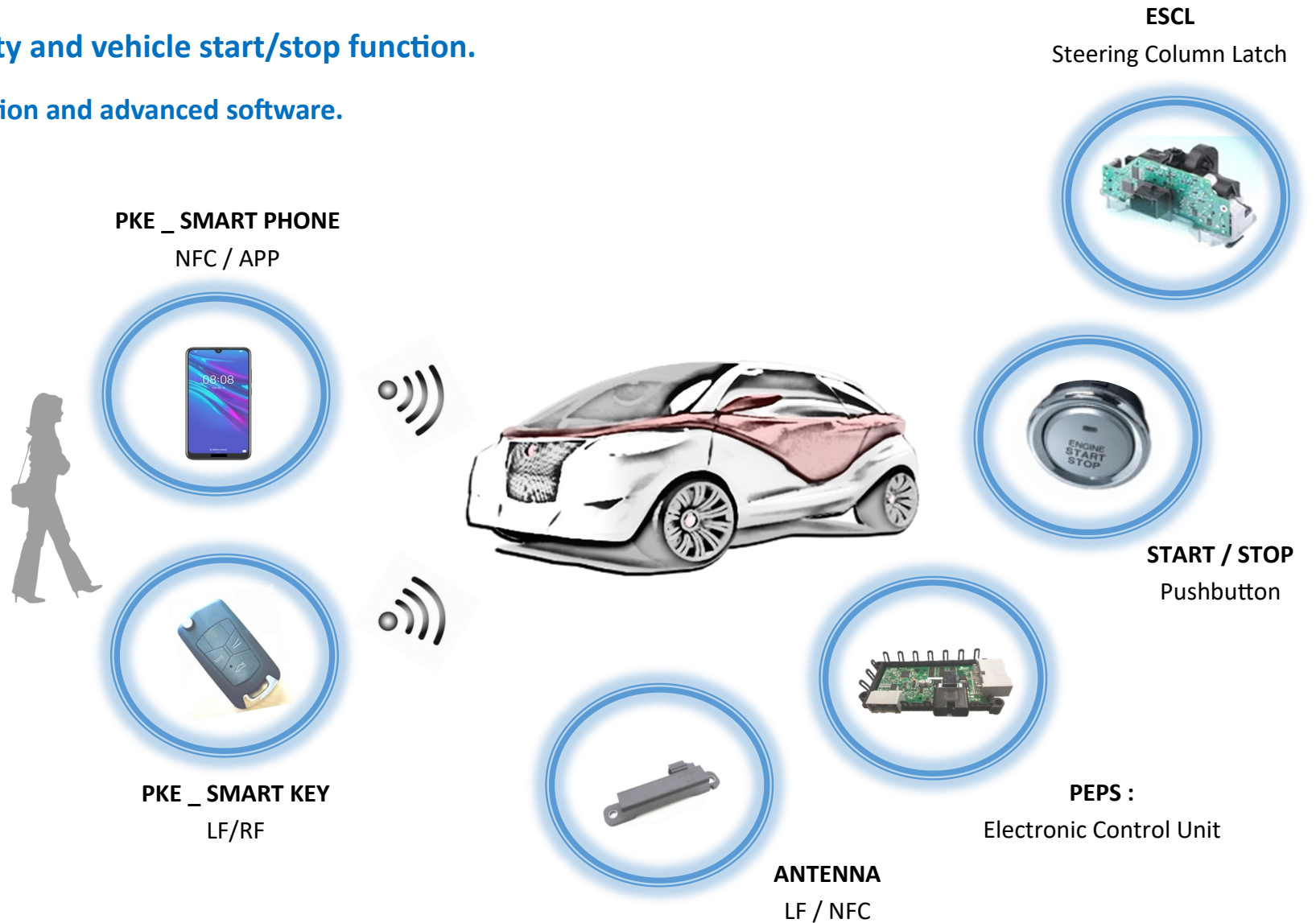- ◊ Smart Switch Input (Anti wet)

PKE : Remote Smart Key.

- ◊ 3D LF Coil
- ◊ Motion Sensor
- ◊ Smart Switch Input (Anti wet)

ANTENNA :LF & NFC antenna.

ESCL : Steering Column mechanical latch.

START / STOP : Pushbutton.

ESCL
Steering Column Latch

PKE _ SMART PHONE
NFC / APP

START / STOP
Pushbutton

PKE _ SMART KEY
LF/RF

ANTENNA
LF / NFC

PEPS :
Electronic Control Unit

>> **iRM**

ECU for the vehicle rear devices control .

Digital and analogic devices control concerning the rear side of the vehicle.
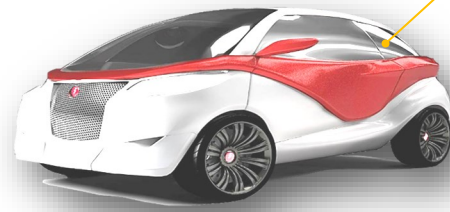
Digital Inputs

CANBUS

HARDWARE :

◊ Power Supply : 12 VDC

◊ CANBUS com _ up to 1MBs

◊ Up to 10 Digital outputs

◊ Up to 10 Digital inputs

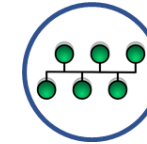**iRM**

SOFTWARE :

Application management.

◊ Rear vehicle lights
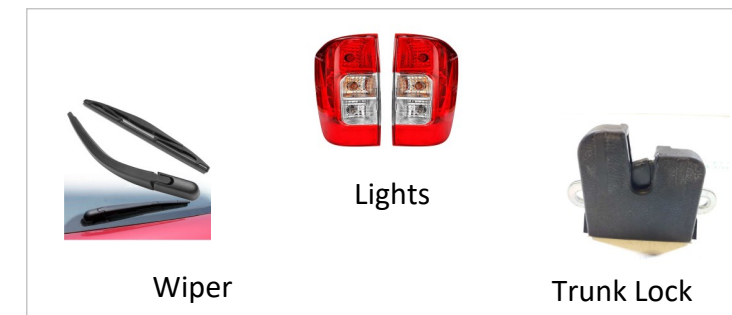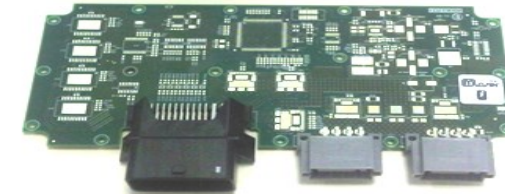
◊ Rear trunk

◊ Rear wiper

Wiper

Lights

Trunk Lock

≫ ≫ **iFM**

ECU for the vehicle front devices control .

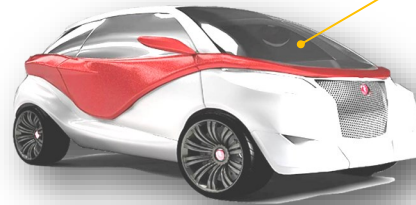**Digital and analogic devices control concerning the front side of the vehicle.**

Digital Inputs   CAN Bus

HARDWARE :

◊ Power Supply : 12 VDC

◊ CANBUS com _ up to 1MBs

◊ Up to 30 Digital outputs

◊ Up to 10 Digital inputs

iFM

SOFTWARE :

Application management.

◊ Front vehicle lights

◊ Front wiper

◊ Water Pump

Lights

Wiper   Water Pump
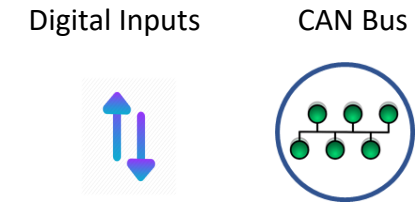
ELECTRONIC

MOBILITY

ELECTRONICS for MOBILITY

CLIMATE COMMITMENT

Masermic
Polígono Kurutz Gain 6 A
20850 Mendaro—Gipuzkoa
Spain
Tel: +34943742669
info@masermic.com
www.masermic.com

Masermic_Mobilty_200128_v5.2