Control Units

Technical Specification

DUMAREY
Energineering your future

The mobility sector is undergoing a fundamental shift, with software and hardware innovation becoming central to future transportation. The emergence of software-defined vehicles (SDVs), centralised computing, and intelligent control systems is reshaping how vehicles are both developed and experienced. In this new paradigm, software has become a core product in its own right.

In this evolving landscape, Dumarey Group is focused on creating the foundational technologies for this change. Building on our established expertise in propulsion and vehicle control systems, we are developing modular software platforms and next-generation control units. Our role is to provide the robust, sophisticated engineering that enables connected, efficient, and sustainable mobility for the future.

Our approach combines OEM-level technical excellence with a more agile and responsive partnership. This enables us to streamline development processes, reducing both time and cost to market.

We provide our partners with a comprehensive support, grounded in a disciplined approach:

- Guiding projects through the entire product
- Employing the Scaled Agile Frame work (SAFe) to ensure disciplined and efficient development.
- Ensuring all designs are under pinned bu robust Functional Safety and Cybersecurity principles.
- Building true collaborative partnerships, working alongside our customers to achieve their goals

PRODUCTS

Engine control unit (Electronic Platform)

The Electronic Platform (EP) is an Engine Control Unit designed to provide adaptable and tailored solutions for developing new propulsion and energy technologies. Its modular architecture offers the flexibility required during platform development, allowing for efficient integration and adaptation as project requirements evolve.

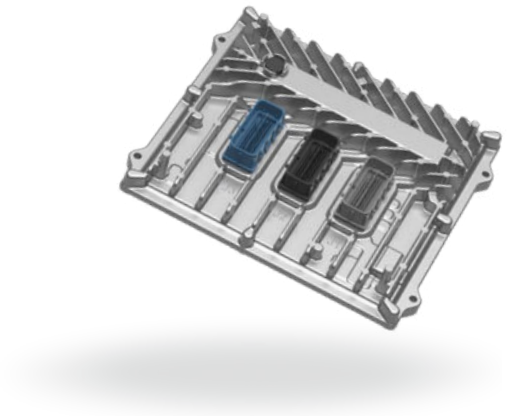
Built to the rigorous AUTOSAR standard, it ensures a foundation of high-quality, reliable performance.

Key features:

- Infineon 32-bit multicore microcontroller (@300MHz), rated ASIL-D/SIL-3
- Supports multi-fuel strategies with up to 12x DI and 6x PFI injector drivers.
- Multi-fuel handling capability.

Comprehensive communication interfaces:

- 4x CAN, 3x LIN, 1x Ethernet
- Customisation available for both hardware and software to meet specific application needs
- AUTOSAR compliant



About Electronic Platform

Reference Standards:

Operating Voltage: ISO 16750-2 (12V/24V).
Operating Temperature: ISO 16750-4 K code (-40 +105 °C ambient temperature).
Vibration: ISO16750-3 / chassis installed.
EMC: ISO 11452-4, IEC CISPR 25, ISO 10605, ISO 7637-2/3

Environmental:

- Operating Voltage:
  6V / 16V @12V system
  10V / 32V @24V system
- Operating Temperature:
  -40°C to +105°C (T Ambient)
- Environmental Class:
  IP6K9K (hydrophobic breather membrane on housing)
- Load Dump (max 350ms): 34V @12V system
  58V @24V system

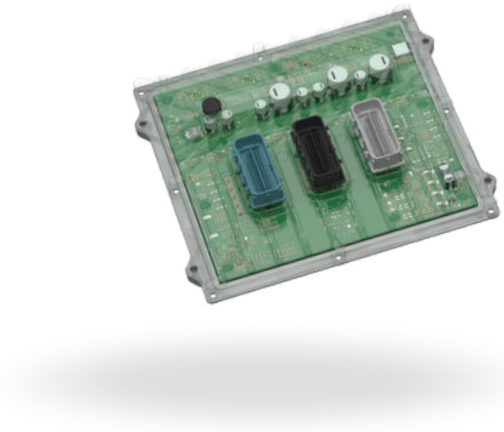
MCU: Infineon AURIX™ TC399X (6 cores, 300 Mhz; 16MB Flash; 2048kB RAM)

Housing Dimension: 279 x 242 x 48 mm

Housing Material: AN AC 47100 alloy (sealed housing with Gore-Tex membrane; internally AC coupled with Power GND)

Total weight: 1.2 kg

Connection System: Molex MX123 family (J1: 73 ways J2: 66ways J3: 73ways)



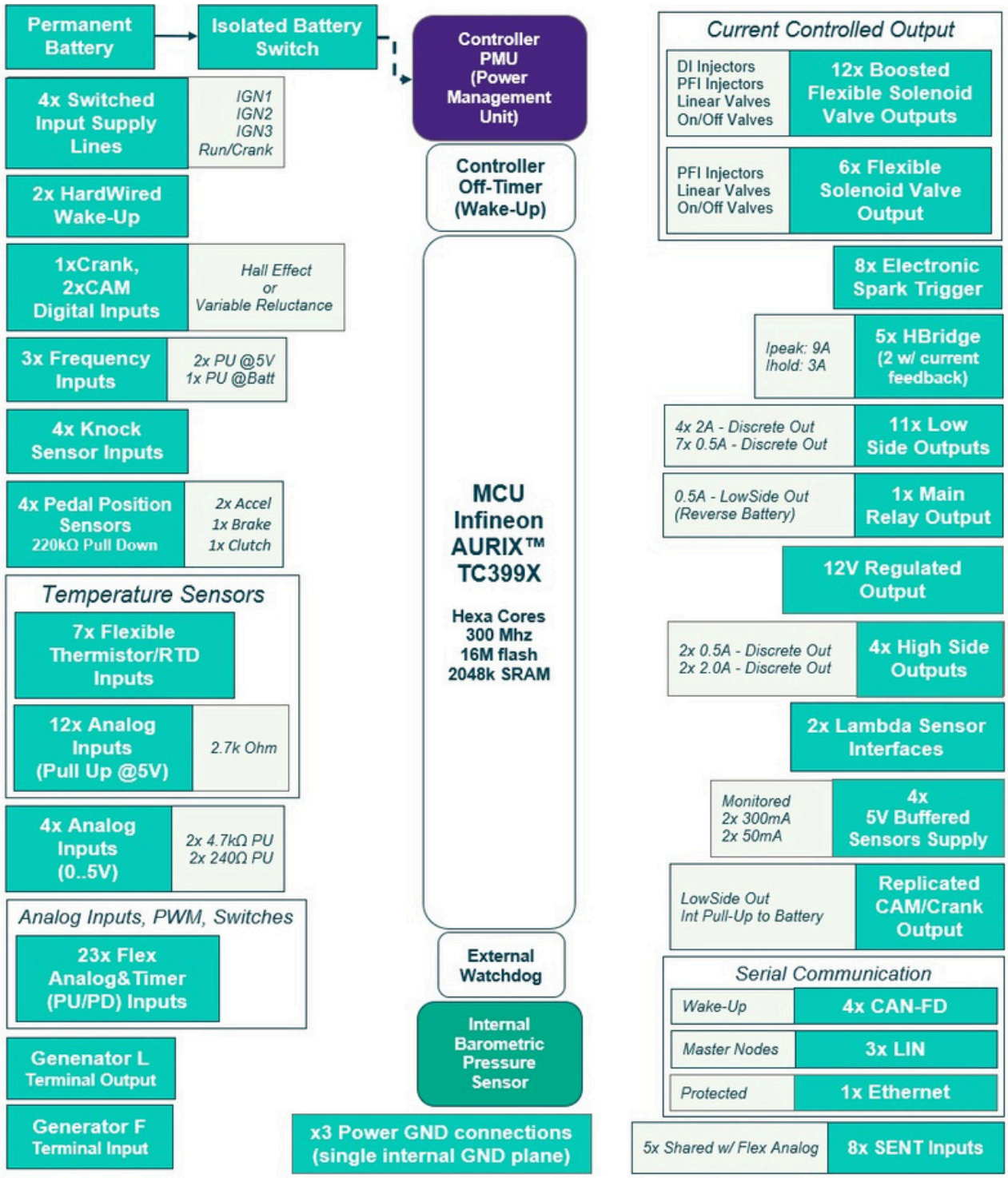
Technical Specifications

Buffered Sensor Supply Outputs
2x 5V, 50mA current load
2x 5V, 300mA current load
Boosted Flexible Solenoid Valve Control (driver banket x2)
Up to 12x HV injectors (DIInjectors–DCDC up to 65V)
Solenoid Flexible Valve Control Outputs
Up to 6x Pressure Control Valve with current recirculation
Low Side Outputs
4x discrete LS output (load current: 2A)
7x Discrete LS output (load current: 0.5A)
Replicated CAM
Replicated Crank
1x reverse battery protected LS output (Load Current: 0.5A)
2x UHEGO sensor heater driver
High Side Outputs
4x discrete output (Load Current: 0.5A/2.0A)
Full H-Bridge
5x full H-Bridge outputs (Hold current: 3A / Peak current: 9A) - 2 with current feedback

Technical Specifications

Analog Inputs
20x standard analog inputs (4x 220kΩ PD; 12x 2.7kΩ PU; 2x 4.7kΩ PU; 2x 240Ω PU)
23x flexible analog/timer input (Pull-up/Pull-down)
7x flexible thermistor inputs
Frequency Digital Inputs
2x CAM (Digital Sensor or Variable Reluctance)
1x Crank (Digital Sensor or Variable Reluctance)
3x spare (2x Pull-up @5V; 1x Pull-up @Vbatt)
Other Inputs
Up to 8 SENT
2x UHEGO
1x High Speed Mass Air Flow
Internal Sensors
1x barometric pressure
1x microprocessor temperature
Communication
4x CAN_FD
3x LIN
1x Ethernet (protected)

Block diagram



Software Features

- Inputs and outputs handling software architecture allows specific implementation based on customer requirements.
- Diagnostics and services infrastructure flexible architecture supporting customer specific implementation.
- Detailed software documentation to support engine calibration activities.
- Software developed according to AUTOSAR standard allowing easy integration of 3rd party software modules with possible custom interface layer for 3rd party non AUTOSAR based modules.

Input and Output managment		
Accelerator Pedal Positioning management	Crank and CAM Sensor Control and diagnostics	Barometric Sensor reading and diagnostics
Direct Fuel Injection control and diagnostics	Diesel Rail pressure and temperature sensor	Diesel Metering Unit/ Pressure Regulator
Intake/Exhaust sensor management and diagnostics	Engine coolant Temperature sensor reading and diagnostics	Engine Oil pressure sensor reading and diagnostics
Fuel filter pressure sensors reading and electrical diagnostics	Engine Oil temperature sensor reading and diagnostics	
J1939 diagnosis message (DM1, DM11) and datastream management		
CAN communication management		

Software Features

Engine Control Strategies			
Power moding management	Low voltage management	Engine Mode detection	Engine position and engine synch
Combustion set point and coordinator	Combustion transient management	Thermal and Oil Management (Coolant temperature, Engine Oil temperature model)	
Injection management and feedback monitoring	Fuel Rail Pressure Control and Diagnostics		
Torque Chain (Arbitration, Loss calculation, Remedial action, limiter, reserve)		Engine control speed management	
Overspeed			
Electrical diagnosis and remedial actions			
Controller Malfunction Remedial Actions (including engine shut off minimization)			

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DUMAREY

Dumarey Group NV
Steenweg Deinze 35 in B-9810 Nazareth-De Pinte
Phone: +32 333 9000

www.dumarey.com