

# CCM

COMES Control Module



**COMES**  
ELECTRONIC CLIMATE CONTROL

# CCM

## COMES Control Module

The CCM is a unique product that combines a wide range of customization possibilities with the latest technology on the market. This device could control either the HVAC system or the complete thermal management system, including batteries and electrical engine.

The available versions range from the standard configuration to the full automotive one.

This device allows you to manage the following aspects:

- To control the HVAC/Thermal Management systems with fully customizable strategies and algorithms;
- To control customer specific systems, upon request;
- To control loads in high/low side up to 500mA, with diagnostics on each output;
- To communicate via CAN-Bus (J1939 full stack available upon request, other protocols upon request with configurable baud rate, UDS supported upon request, Network Management supported upon request, sleep function available/wake up via CAN capable);
- To communicate via LIN, master or slave adaptable;
- To connect multiple ECUs to allow input/output extensions upon request;
- To generate multiple PWM signals to drive specific equipment as electronic blower controller, electric compressors, condenser fans, electric heaters etc.

### GENERAL PERFORMANCE, ELECTRICAL AND ENVIRONMENTAL TESTS

Operating Voltage Range: 9÷32VDC  
Operating Temperature Range: from -40°C to 85°C  
Storage Temperature Range: from -40°C to 90°C  
Dust/Water Resistance: IP4X  
Electromagnetic Compatibility according to UNECE Regulation No.10  
Low power consumption available, up to 100uA at 24V during sleep mode  
Automotive-certified active components (optional: all electrical components automotive-certified)

### STANDARD INPUTS/OUTPUTS

- 12 Digital outputs with diagnostics for underload/overload
- 12 Analog inputs 10bit
- 3 Digital inputs
- 2 Linear outputs or PWM with Feedback, up to 3 capable
- 1 CAN BUS up to 1Mbit/s
- 1 LIN BUS Master or slave

### INPUTS/OUTPUTS UPON REQUEST

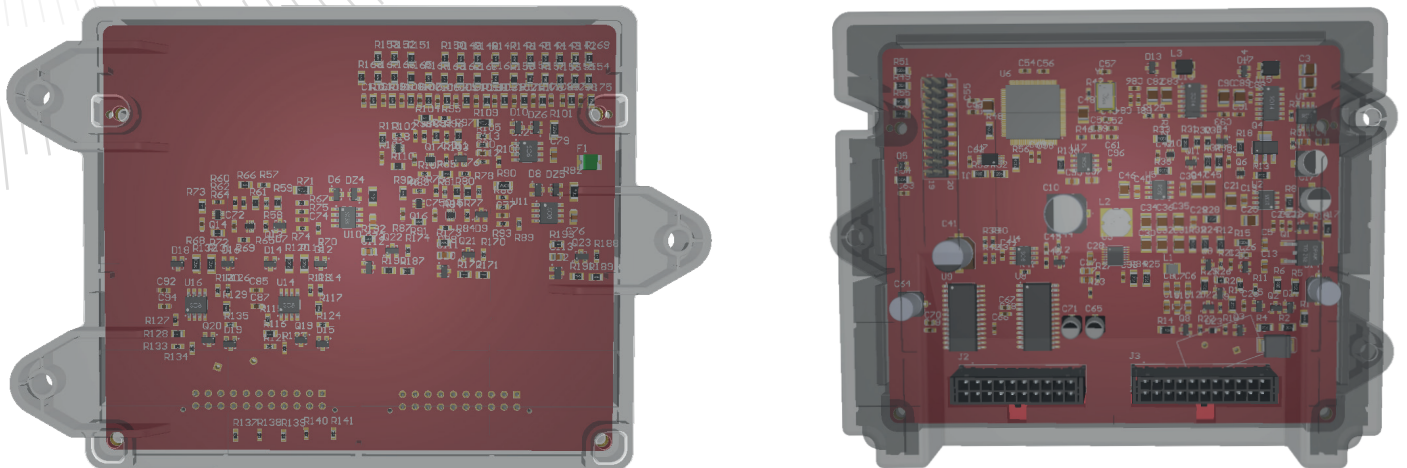
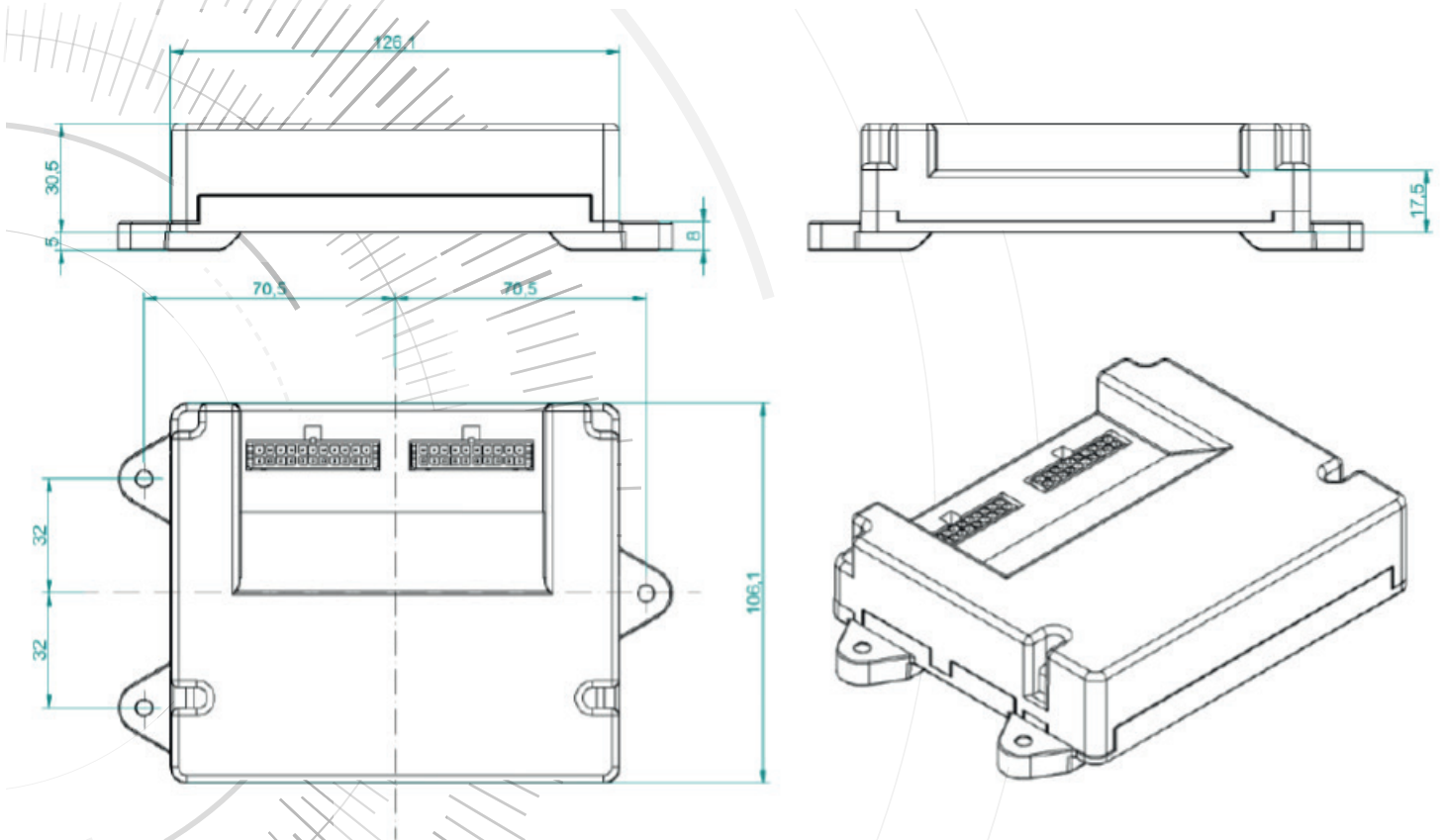
- 1 additional CAN BUS
- 1 additional LIN BUS
- 3 additional digital inputs
- 1 additional PWM



## ADDITIONAL FEATURES:

- Application FW adaptable to different systems, fully parametrized and customizable for HVAC or customer equipment
- UDS-compliant bootloader if required, adaptations on protocol if required
- Based on the 32-bit Arm® Cortex®-M4F S32K14 MCU 512KB Program Flash Memory
- Security options available as seed/key authentication, upon request
- Customized COMES tooling for flashing application FW onto ECU via CAN BUS and USB-CAN BUS adapter
- Specific customer interface with security access available upon request
- Customized and adaptable diagnostic CAN BUS interface, graphics and log capable to fully monitor ECU behavior, parameters, faults etc.
- Optional: AUTOSAR® BSW (with or without RTE), XCP protocol compliant

## MECHANICAL DIMENSIONS





**COMES** Electronic Climate Control  
Via Don Fracassi 25/27  
20008 Bareggio - Milano - Italy

P +39 02 90361787  
E [info@comesclima.it](mailto:info@comesclima.it)  
W [www.comesclima.it](http://www.comesclima.it)