# OLEA® COMPOSER - T222 Starter Kit for SKAI® 3 LV
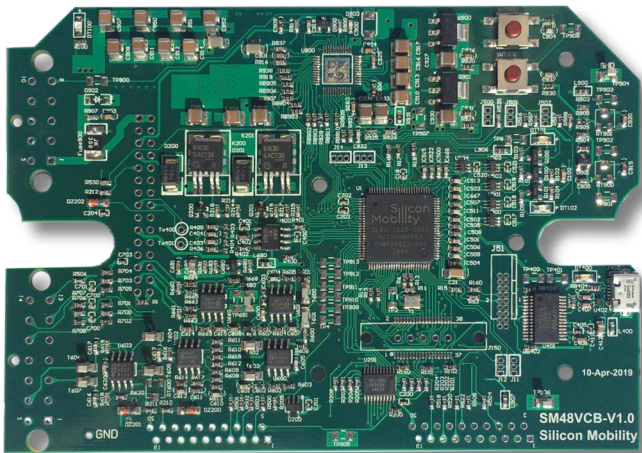
A jump start solution for 10kW-50kW / 24V-160V PMSM and WRPM electric motor control using the best of Silicon Mobility's OLEA® technologies with SEMIKRON SKAI® 3 LV inverter module.

The starter kit includes:

- OLEA® T222 FPCU based reference control board
- OLEA® APP INVERTER Pre-flashed
- Vehicle Dependent Software demo code
- Post build measurement, configuration, calibration and firmware update GUI software.
- User's guide for fast setup

## Turnkey control solution for low voltage system

OLEA® COMPOSER - T222 for SKAI® 3 LV Starter Kit is a complete control solution for low voltage electric motor. jIt is based on OLEA® technologies and tuned for the SEMIKRON SKAI® 3 LV MOFSET inverter module. The kit is composed of a control board, delivered as reference design, shapped and featured to match the inverter housing and electrical requirements. The board is powered by OLEA® T222 FPCU pre-flashed with OLEA® APP INVERTER, the Silicon Mobility's electric motor and inverter control application, customized specifically for the inverter module. The kit enables fast prototyping and development of any industrial or automotive application. It is delivered with a demonstration version of a vehicle dependent software including a scheduler and communication/interface stacks for the measurement, configuration and calibration of the system. It includes numerous configurable safety mechanisms for faults detection and reactions such as overcurrent, overvoltage, overtemperature.

The Starter Kit comes with board schematic, user's guide and CAN-based user control interface for Windows.

## Highly configurable control software
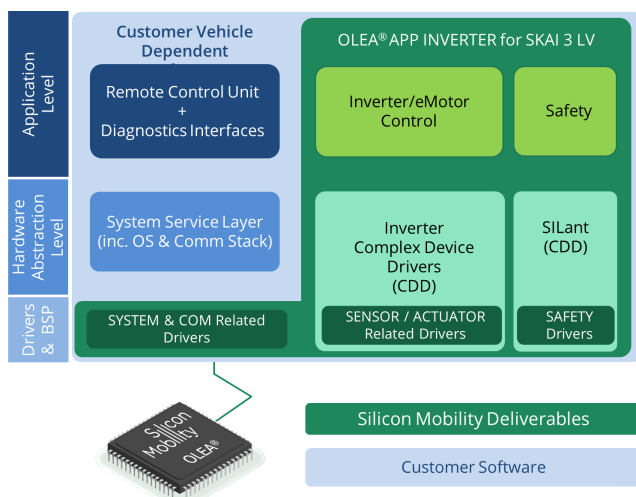


OLEA® APP INVERTER main features:

- PMSM and WRSM motors
- Axial and Radial Flux motors
- Control of 3 phases motors
- Configurable number of pole pairs
- Flux weakening and Id/Iq Decoupling
- Field Oriented Control
- Space Vector PWM modulation
- Speed or Torque regulation
- Integrated position tracking loop from the resolver SIN/COS signals
- Numerous visibility status including temperature and position
- Numerous control parameters for fine configuration/calibration
- Safety protections such as overcurrent, overtemperature, overvoltage.

# OLEA® COMPOSER - T222 SKAI3 Board Features
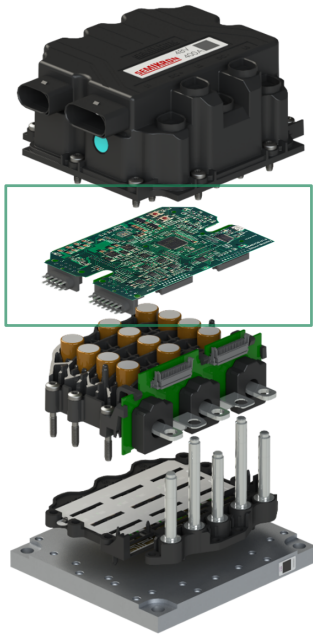


## Inverter Control
- Silicon Mobility OLEA T222 FPCU
- System Basis Chip (power regulation and watchdog)

## Vehicle Interface
- 2 x CAN FD (Flexible data rate interface up to 8Mbit/s)
- 1x LIN 2.21
- Battery supply

## Motor Interface
- Resolver winding
- Incremental encoder
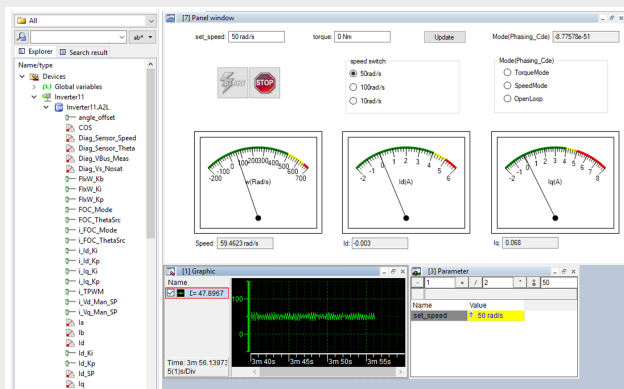- 2 x motor temperatur sensors

## Inverter module interface
- Phase voltage and current (U,V,W)
- PWM Gate Driver Phases (U,V,W)
- Reset and Error signals
- PCB & power module temperatures

## Developper interface
- 1 x SWD interface (debug)
- 1 xTrace Port Unit interface Up to 100MB/s (real time debug and measure interface)
- 3 x potentiometers
- 4 x LEDs
- 2 x buttons

# Calibration



Calbriation of OLEA APP INVERTER with CANape from VECTOR

The control, calibration and measurement of OLEA® APP INVERTER parameters is possible either using Silicon Mobility Graphical User's Interface delivered with the Starter Kit or using Vector CANape.

Silicon Mobility GUI is interfaced via USB and/or CAN port using CAN XCP protocol.

OLEA® APP INVERTER DE supports Vector CANape and Vector CAN interface (VN1610/VX1000) using CAN XCP protocol.

# From Starter Kit to Custom System Application Development
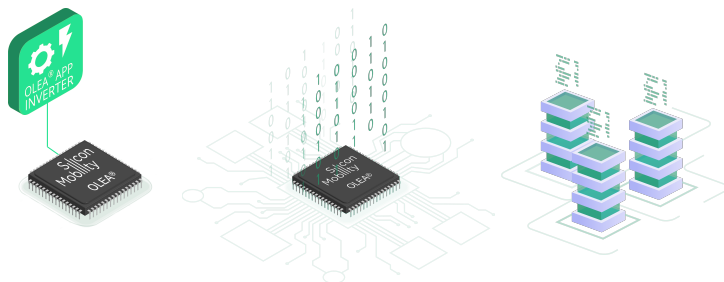


OLEA® APP INVERTER    OLEA® COMPOSER    OLEA® LIB INVERTER

OLEA® APP INVERTER for SKAI 3 LV is accesible as an object code to be interfaced with defined APIs to the vehicle dependent software.

For customers willing to develop their control software, Silicon Mobility proposes OLEA® COMPOSER and OLEA® LIB, a model based design framework using MATLAB SIMULINK with software building blocks auto-code generation.