Application Brief

Never stop thinking

Dual Motor Drive Application Kit

Scalable Solution for High Voltage Field Oriented Control (FOC) and Power Factor Correction (PFC)

THE KIT IS BUILT around the two novel Infineon MCU's, namely the XC878 and the XE164F MCU both capable of running Field Oriented Control (FOC) and Power Factor Correction (PFC).

Coming along with optimized motor control software as well as a digitally isolated real time monitoring tool, the kit offers an easy-to-use reference platform. The power stage is capable of driving two Permanent Magnet Synchronous Motors (PMSM) independently.

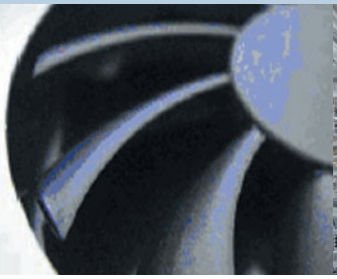
The Application Kit is a consumer drive evaluation platform to evaluate the performance of real time capabilities of the Infineon microcontrollers. It offers designers a shorter time-to-market for energy efficient motor control designs targeting excellent torque dynamics, reduced noise and high system reliability.

Benefit of FOC and PFC

Advanced motor control techniques are increasingly being used in consumer and industrial drives owing to the growing design focus on higher efficiency, better dynamic response and reduced audible noise. The digital PFC enables to design relatively small application board with very efficient conversion. Additionally with no load, it consumes very little power. Overall this leads to significant cost savings compared to traditional PFC.
In order to enable rapid development of cost-effective designs, Infineon offers a FOC Motor Drive Application Kit for up to two motors and digital Power Factor Correction (PFC).

Complete Package Including

- Software package including source code
- Simultaneous control of two PMSM with sensor less FOC & digital PFC with XE164
- Sensorless FOC & digital PFC with XC878
- V/f control of induction motors for quick evaluation
- Free toolchain for XC878 and XE164 including compiler and debugger
- Digital isolated real time monitoring tool (USB to JTAG and CAN bridge)
- DAvE compatible software packages
- Suitable for Windows 98/2000/XP



Ordering Code

- KIT_AK_2MOTORDRIVE_V1

Key Features

- XC878 with vector computer
  - 2 independent PWM units
  - Fast ADC with <200ns sample time
- XE164 Real Time Signal Controller with MAC unit
  - 3 independent PWM units
  - 2 independent fast ADCs with <200ns sample time
- Power board 110V - 230V AC, 8A
  - Inverter A with 900W - 1800W
  - Inverter B with 100W - 200W
- Boost converter for Power Factor Correction (PFC)
- Using Infineon IKCS17F60 CIPOS 17A, 6ED003L06 gate driver, SPD04N50C3 MOSFETs, IDT08S60 SiC diode, SPA15N60C3 MOSFETs, CoolSET™ ICE3B0565 power supply and TLE 4264 LDO

Applications

- PMSM and Induction motors in:
  - Air conditioning
  - Industrial drives
  - Fans, blowers
  - Pumps
  - White goods

www.infineon.com/2MotorDrive

Dual Motor Drive Application Kit

Scalable Motor Control Solutions using XC800 and XE166 Families

XC866-1FR	XC866-2/4FR	XC886/888 → Vector Computer	XC878 → Enhanced Vector Computer	XE164 → MAC Unit
PWM Unit with Hall Sensor	PWM Unit with Hall Sensor	PWM Unit triggers ADC	Two PWM Units trigger ADC	Three PWM Units trigger two ADC Units
Block Commutation	Block Commutation	Field Oriented Control sensorless	Field Oriented Control sensorless + digital PFC	Dual Motor Field Oriented Control sensorless + digital PFC

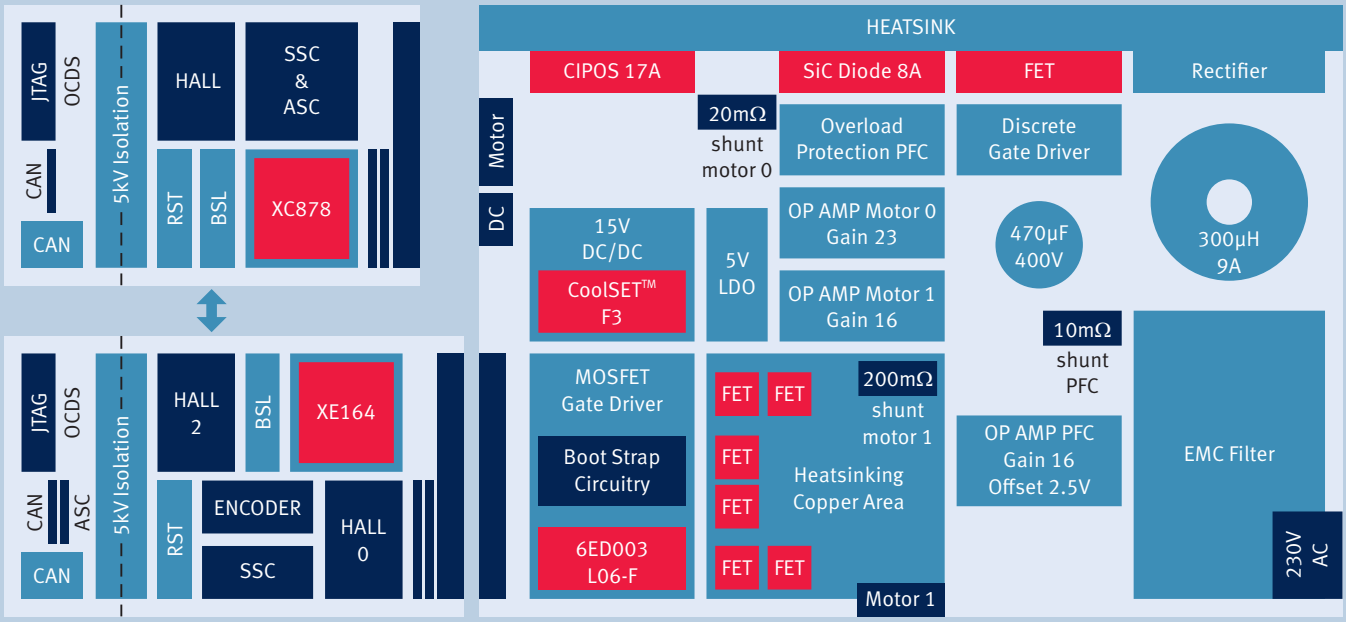
8-bit MCU XC878

- Cost-effective 8-bit µCs with 16-bit motor-control performance
- Built-in vector computer for Field Oriented Control
- Powerful motor control peripheral set: CAPCOM6 and 10-bit ADC
- Up to 64kB Flash
- Up to 3kB RAM
- LQFP-64

16-bit MCU XE164F

- High performance 16-bit µCs with MAC unit supporting single cycle 16 x 16bit multiplication and add
- Powerful motor control peripheral set
- 3x CAPCOM6 modules
- 2x 10-bit ADC modules
- Up to 768kB Flash
- Up to 82kB RAM
- LQFP-100

Application Board



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