



GaN Motors...Smaller, Faster, More Precise

eGaN® FETs and ICs provide the small size, light weight, and precision control that brushless DC (BLDC) motors require for applications such as robotics, eMobility, industrial automation, and drones. EPC offers a variety of modular demonstration boards and kits to evaluate the performance advantages of gallium-nitride FETs and ICs for motor drive applications. With GaN inverters, motors can become more efficient due to higher PWM frequency, smaller dead time and usage of ceramic capacitors in place of electrolytic capacitors.

Motor Drive Demo Boards

EPC91104 - 14 A_{RMS} 3-Phase Motor Drive Inverter

- Wide input DC voltage range 14 V – 80 V
- 14 A_{RMS} / 20 Apk
- Featured GaN Device: EPC23104 ePower Stage IC
 - 11 mΩ maximum $R_{DS(on)}$, 100 V maximum device voltage

EPC91104

75 x 72 mm

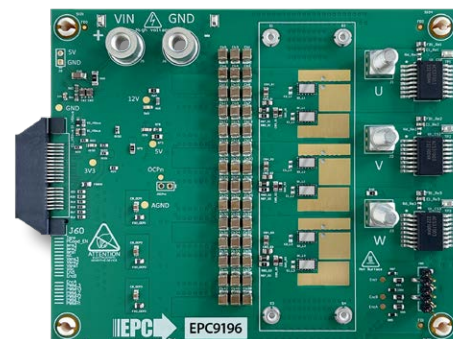


EPC9196 - 25 A_{RMS} 3-Phase Motor Drive Inverter

- Wide input DC voltage range 30 V – 170 V
- 25 A_{RMS} / 35 Apk
- Featured GaN Device: EPC2304 eGaN FET
 - 5 mΩ maximum $R_{DS(on)}$, 200 V maximum device voltage

EPC9196

130 x 100 mm

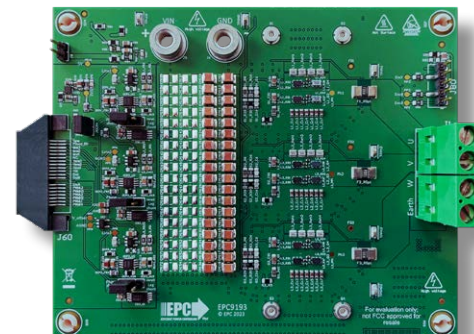


EPC9193/9193HC - 30 A_{RMS} / 40 A_{RMS} 3-Phase Motor Drive Inverter

- Wide input DC voltage range 14 V – 65 V
- EPC9193: 30 A_{RMS} / 45 Apk
- EPC9193HC: 40 A_{RMS} / 60 Apk
- Featured GaN Device: EPC2619 eGaN FET
 - 4.2 mΩ maximum $R_{DS(on)}$, 100 V maximum device voltage

**EPC9193/
EPC9193HC**

130 x 100 mm

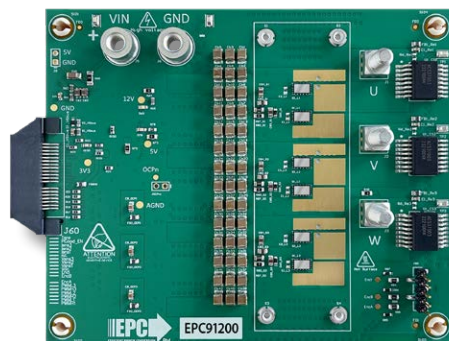


Motor Drive Demo Boards *(continued)*

EPC91200 - 40 A_{RMS} 3-Phase Motor Drive Inverter

- Wide input DC voltage range 30 V – 130 V
- 40 A_{RMS} / 60 Apk
- Featured GaN Device: EPC2305 eGaN FET
 - 3 mΩ maximum $R_{DS(on)}$, 150 V maximum device voltage

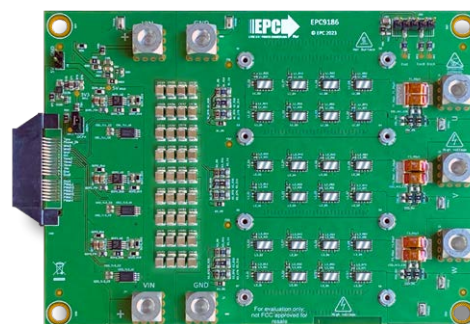
EPC91200
130 x 100 mm



EPC9186 - 150 A_{RMS} 3-Phase BLDC Motor Drive Inverter

- Wide input DC voltage range 14 V – 80 V
- 150 A_{RMS} / 200 Apk
- Featured GaN Device: EPC2302 eGaN FET
 - 1.8 mΩ maximum $R_{DS(on)}$, 100 V maximum device voltage

EPC9186
135 x 100 mm



Controller Interface Boards

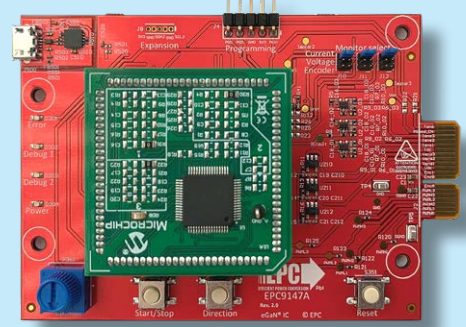
The power boards can be paired with each EPC9147 mating board. This allows the designer to use mainstream microcontroller official development boards, leveraging existing resources for quick development.

EPC9147A – Motor Drive Controller Interface Board – Microchip DSP

The **EPC9147A** board is an interface board that accepts the Microchip MA330031-2 Plug-In-Module (PIM), and is fitted with the dsPIC33EP256MC506 Digital Signal Processor (DSP), and interfaces to a 3-phase eGaN FET/IC motor drive inverter board. This interface board allows users to utilize the existing Microchip motorBench® Development Suite resources to program the PIM that controls a motor powered by an eGaN FET/IC 3-phase inverter using sensorless field orientated control with space vector pulse width modulation.

The EPC9147A includes a standard Microchip compatible programming port (J4), I²C expansion port (J8) and, a 40-pin card edge connector (J2) that interfaces the PWM, analog feedback signal, errors states and 3.3 V power to the motor drive inverter board.

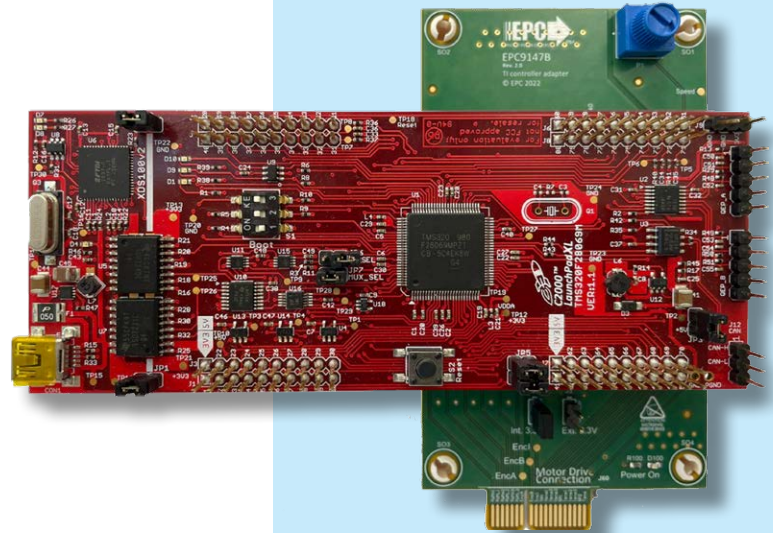
EPC9147A



EPC9147B – Motor Drive Controller Interface Board – Texas Instruments LAUNCHXL

The **EPC9147B** is an interface board that accepts the TI LAUNCHXL development kit, such as the F28379D, or the F28069M, that features the TI C2000 microcontroller, and connects to a compatible 3-phase eGaN® FET/ IC motor drive inverter board, as it can be seen in the photo to the right. This interface board allows users to utilize the existing TI InstaSPIN_UNIVERSAL GUI resources together with EPC-dedicated files to program the controller board and control a motor powered by an eGaN FET/IC 3-phase inverter using sensor-less field oriented control and space vector pulse width modulation.

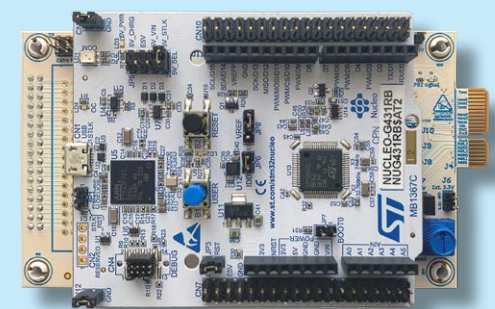
EPC9147B



EPC9147C – Motor Drive Controller Interface Board – ST Micro DSP

The **EPC9147C** board is an interface board that accepts the STMicroelectronics STM32 NUCLEO-G431RB motor drive development board, and is fitted with the STM32G431RBT6 ARM Digital Controller, and interfaces to a 3-phase eGaN FET/IC motor drive inverter board. This interface board allows users to utilize the existing STMicroelectronics Integrated Development Environment resources to program the controller board that controls a motor powered by an eGaN FET/IC 3-phase inverter using sensor-less field oriented control with space vector pulse width modulation.

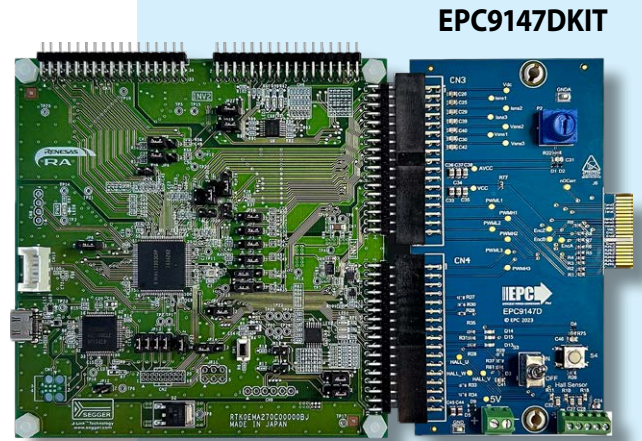
EPC9147C



Controller Interface Boards *(continued)*

EPC9147D – Motor Drive Controller Interface Board – Renesas RA6T2/RA4T1 Controller Board

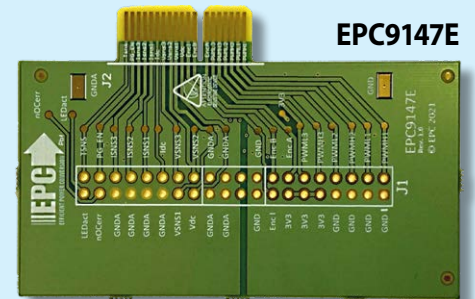
The **EPC9147D** is an interface board that permits connection of the Renesas controller Board RTK0EMA270C00000BJ, equipped with an RA6T2 microcontroller, to a compatible 3-phase eGaN® FET/ IC motor drive inverter board. The interface board allows users to utilize the existing Renesas Motor Workbench together with dedicated files to program the Renesas controller board to control a motor with an EPC eGaN®FET/IC 3-phase inverter.



EPC9147E – Motor Drive Controller Interface Board – Generic

The **EPC9147E** board is an interface board that interfaces to a 3-phase eGaN FET/IC motor drive inverter board. This interface board allows users to connect to a custom controller of choice using fly wires or ribbon cable. It can also be used to for debug by probing control signals.

The EPC9147E is not sold separately, it ships with the motor drive kits.



For More Information

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or your local sales representative

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