



# Evaluation Kit for FS50R07W1E3\_B11A

## EASYKIT AUX DRIVES

The Evaluation Kit “EASYKIT AUX DRIVES” is a DC/AC inverter system for the Easy Automotive Power Module FS50R07W1E3\_B11A. It is designed for driving 3ph motors up to 5kW from DC supply voltages < 450V. The documentation includes the circuit design, layout data, etc. and enables an accelerated start towards your air conditioning compressor (HVAC), oilpump, or similar auxiliary drives applications in your xEV system.

Two simple steps are required before the system is ready for evaluation:

- Mount system on a cooling plate
- Connect 8–18V/2A supply, < 450V HV supply and a 3ph induction machine (or alternative load)

The required steps and control modes are explained in detail in the documentation.

### Key Features

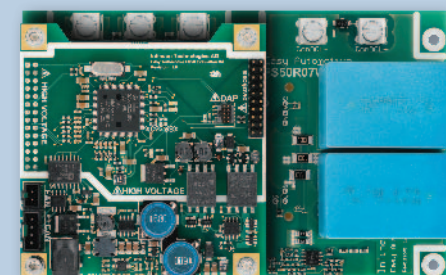
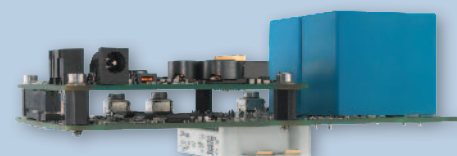
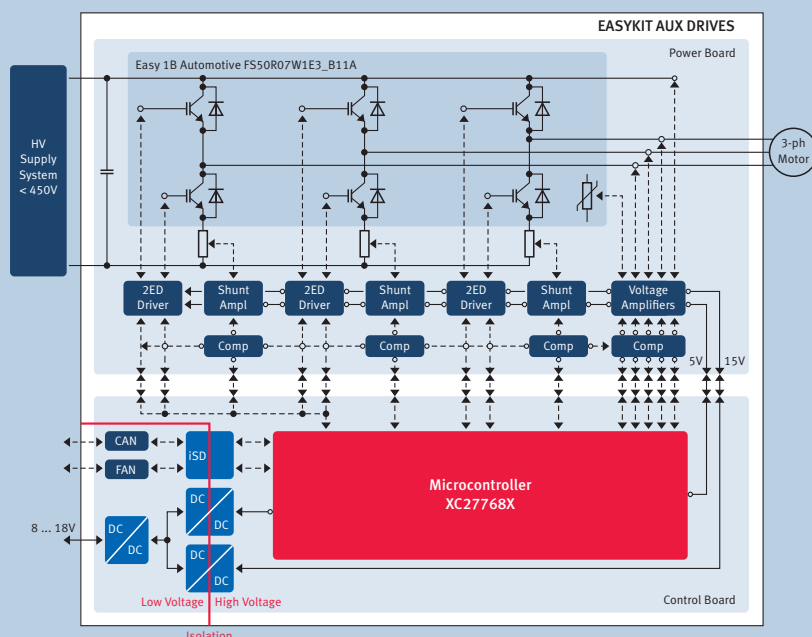
- Evaluation Kit based on Easy 1B automotive package
- Inverter for 3ph induction machines
- Up to 450V DCL voltages
- Over current and short circuit detection
- DCL overvoltage and under voltage lockout
- 3x low side current sensor
- 3x phase voltage and 1x DCL voltage sensor
- Module DCB temperature sensor (via NTC)
- Control PCB temperature sensor (via NTC)
- HighSpeed CAN Communication (1MBit/s)
- Optional PWM controlled 15V FAN output (< 400 mA continuous)
- 3 Implemented Operating Modes
  - Mode1: motor running, fixed output frequency
  - Mode2 (Jumper): CAN controlled mode
  - Mode3 (Jumper): Single pulse switching test

Part	Description
FS50R07W1E3_B11A	Easy 1B Automotive B6-bridge with IGBT3 and Emitter Controlled Diode 3 650V/50A
2ED020I12FA	EiceDriver™ 2A Dual Channel Gate Driver
SAK-XC2768X	16/32-bit Single-Chip Microcontroller
TLE8250G	CAN Transceiver
BSO604NS2	Dual 55V, 35mΩ OptiMOS™
TLE7274-2D	5V LDO linear voltage regulator
T7509 <sup>1)</sup>	SMD Gate Driver Supply Transformers 1:1.1; 5mm clearance/creepage
B32776G4406+000 <sup>1)</sup>	450V 40μF MKP foil DCL Capacitor

1) Components from TDK/Epcos: design-solutions@epcos.com

### Evaluation Kit includes

- Power Board
- Control Board
- CD (Documentation, Software, Design Files)



# Evaluation Kit for F4-50R07W1H3\_B11A

## EASYKIT DCDC

The Evaluation Kit "EASYKIT DCDC" is a DC/DC converter system for the Easy Automotive Power Module F4-50R07W1H3\_B11A. It is designed to power 14V loads up to 170A from a high voltage supply net.

The F4-50R07W1H3\_B11A is a cost efficient solution for automotive applications based on HighSpeed IGBT3 and Rapid Diode 650V, which is driven in the Full Bridge Phase Shift ZVT converter topology at 100kHz.

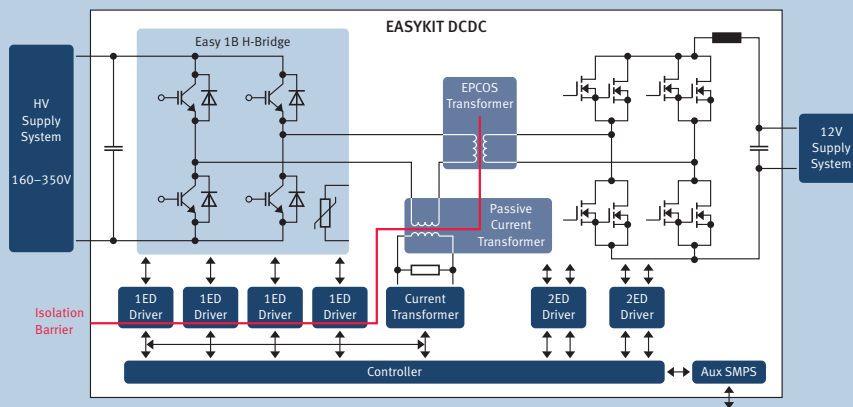
Two simple steps are required before the system is ready for evaluation:

- Mount system on a cooling plate
- Connect 8–18V/2A supply, < 350V HV supply and a 14V/< 170A load

The required steps and control modes are explained in detail in the documentation.

Part	Description
F4-50R07W1H3_B11A	Easy 1B Automotive H-Bridge with High Speed IGBT3 and Rapid Diode 650V
1ED020I12FA	EiceDriver™ 2A Single Channel Gate Driver
IPB180N08S4-02	80V 2.2mΩ OptiMOS™ in TO263-7
2ED020I12FA	EiceDriver™ 2A Dual Channel Gate Driver
CeraLink™ SP/PF <sup>1)</sup>	PressFIT Ceramic Ripple Suppressor $V_{max} = 450V$ ; $C_{eff} = 10\mu F$
T6973 <sup>1)</sup>	3kW Phase Shift ZVT Transformer 9:1
T7509 <sup>1)</sup>	SMD Gate Driver Supply Transformers 1:1.1; 5mm clearance/creepage
T7078 <sup>1)</sup>	SMD Current Sense Transformer 1:100; 5mm clearance/creepage
T7921-51 <sup>1)</sup>	Output Inductor $L = 2.1\mu H$ ; $I_{sat} = 170A$

1) Components from TDK/Epcos: design-solutions@epcos.com

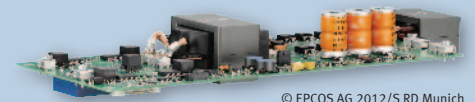


### Key Features

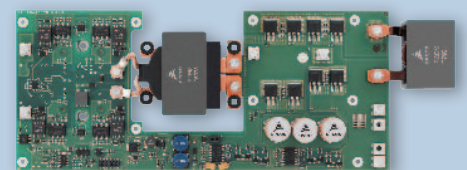
- Evaluation Kit based on Easy 1B automotive package
- Isolated 100kHz Full Bridge Phase Shift Converter
- Excellent cost/performance ratio due to HighSpeed IGBT3 and Rapid Diode
- Low system BOM (e.g. no resonating inductance, no active components in sec side snubber, ...)
- Synchronous Rectification
- Wide Input Voltage Range (160 ... 350V with 9:1 transformer)
- Output currents up to 170A @14V
- Up to 93% efficiency incl. all aux supplies
- High efficiency over wide operating conditions (temperature, output current, input voltages)

### Evaluation Kit includes

- DC/DC converter board
- CD (Documentation, Software, Design Files)



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**Before using the EasyKITs please read and understand the manual and safety warnings carefully.**

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