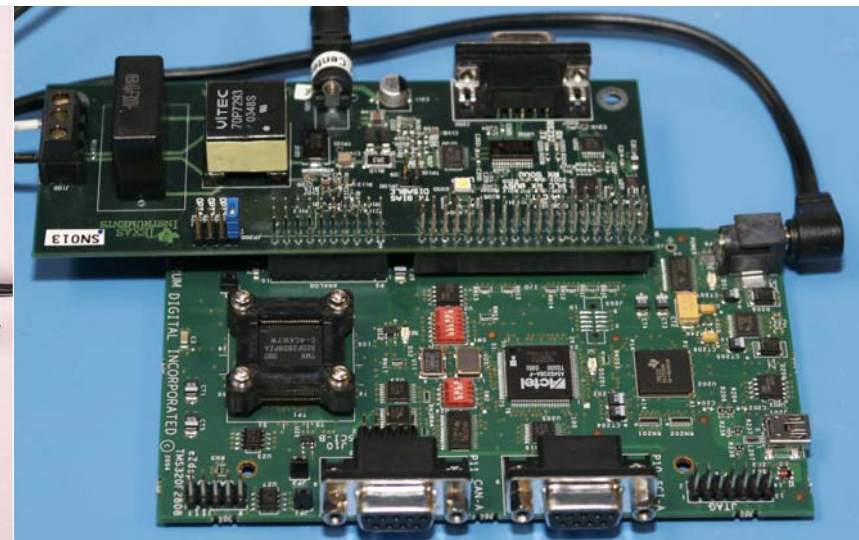
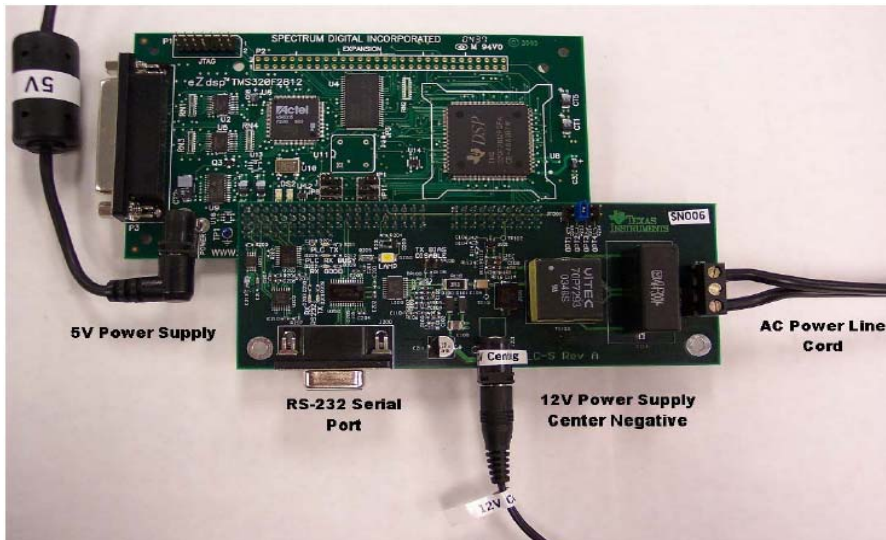


Obtaining C2000™ Power Line Communication Adaptor Cards

SPRT391

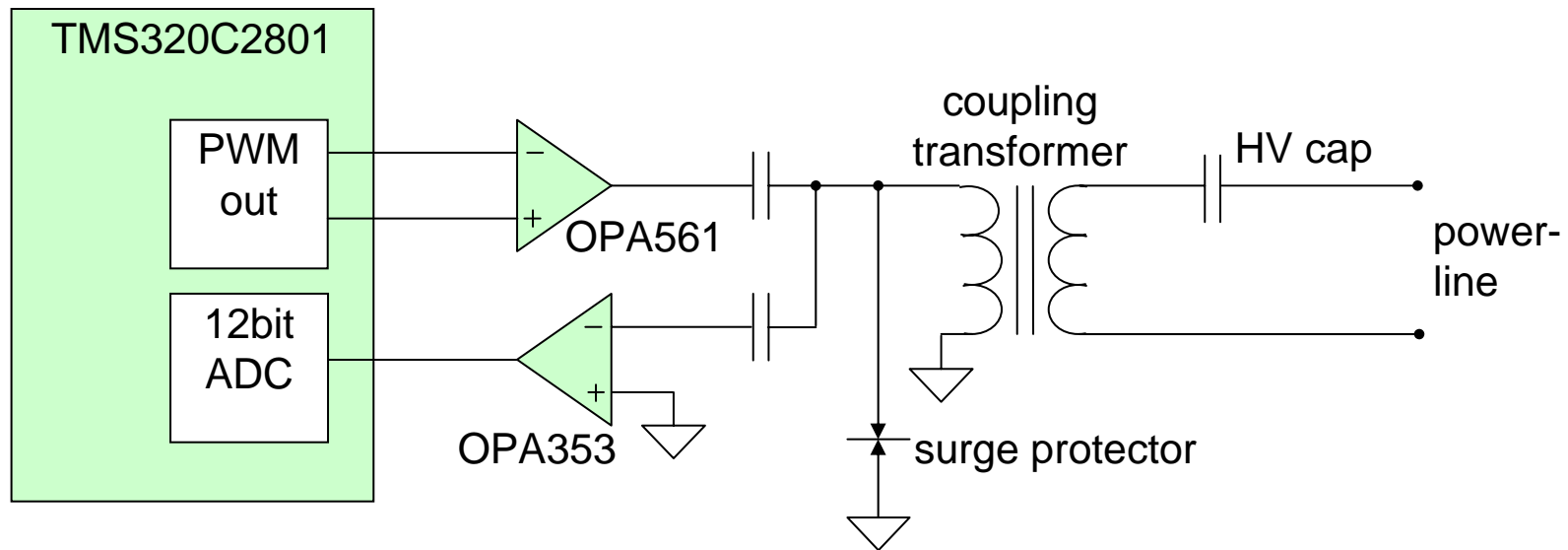
TI C2000 PLC Solutions

- TI PLC demos ready to present to customers (F28xx).
- They include all necessary software and documentation.
- Two software versions for different modulation schemes exist:
 - Binary Phase Shift Key (BPSK) (F2812 based).
 - Frequency Shift Key (FSK) (F2801 based).



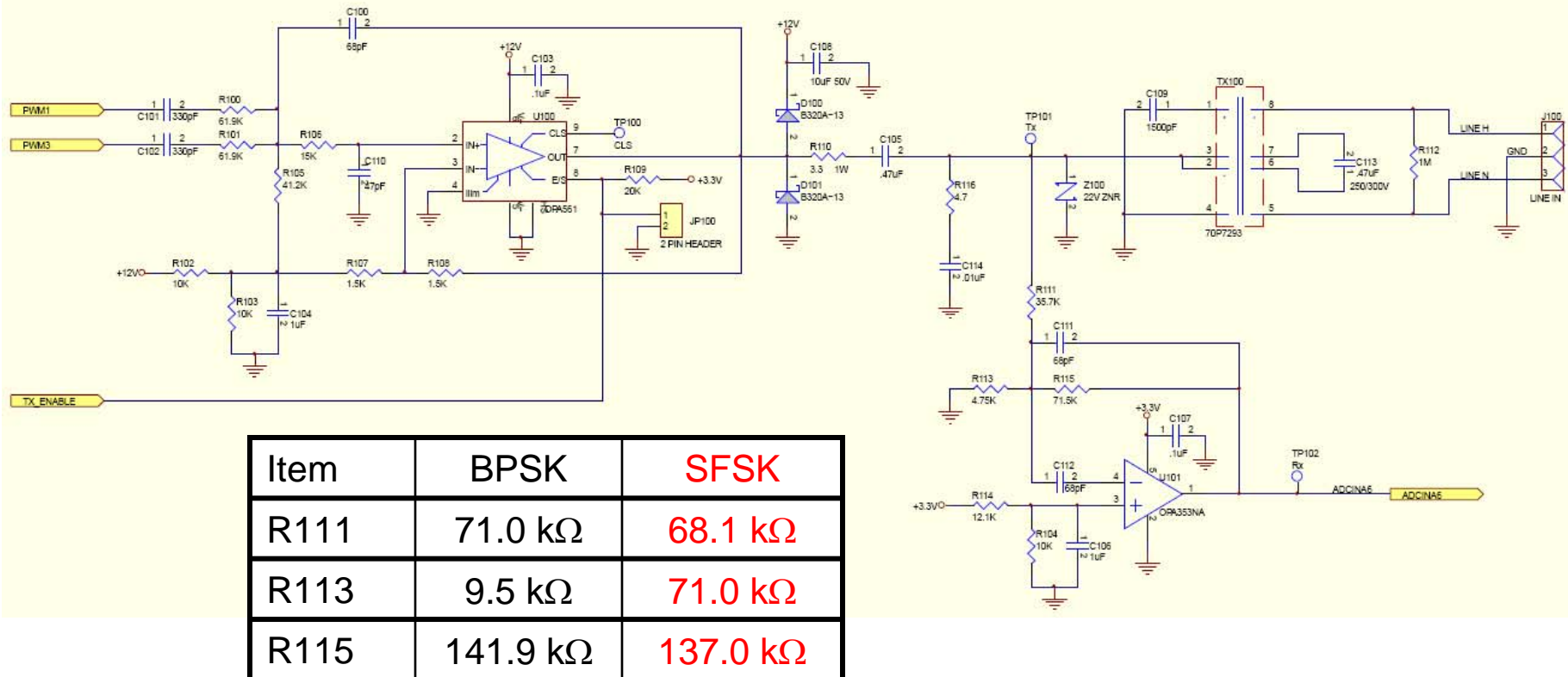
TI C2000 PLC Solutions – DSP Part

- Complete solution with 3 main parts only – all available from TI!
- Low-cost achievable when using F2801/C2801.
- Scalability is key for future evolution.
- Other functions/tasks can be integrated, too (Lighting control, PFC,...).

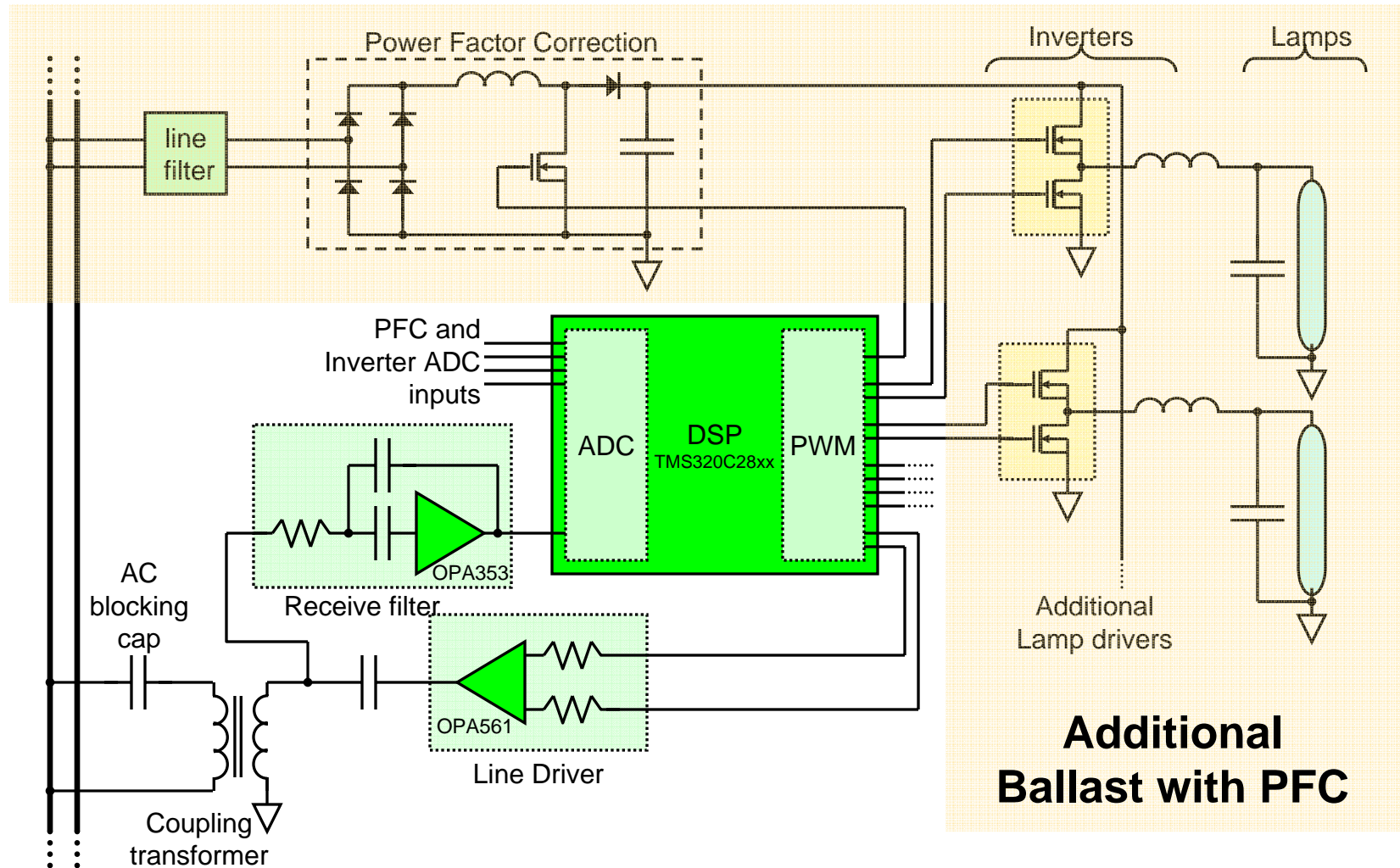


TI C2000 Solutions – Analog Part

- Solution consists only of 2 amplifiers besides the DSP!
 - TI OPA561 is used as a line driver and to filter the PWM signal.
 - TI OPA353 is used to filter the incoming signal (active bandpass).
 - A coupling circuit with protection is shown on the right hand side.



Additional Features for C28x™ PLC-Modems



Entire PLC/Ballast system uses just 3 ICs: DSP, line driver and low noise amplifier!

Memory Requirements – PLC Demo

- RAM consumption (BPSK demo):
 - ~10 k words of memory of which are ~5 k words data (RAM).
- No limitations with:
 - More than 10 k words of RAM:
 - F2812, F2811, F2810 and F2808.
- Code in ROM/Flash memory:
 - F2806 (10 k words RAM, 32 k words Flash/ROM), if non time-critical code is run from ROM or flash memory.
 - C2801 (6 k words RAM, 16 k words ROM). Possible if code is executed from ROM.

F2801 Resource Allocation – FSK

Resource	Total available	Used by PLC algorithm	Free for additional functions
MIPS	100	~ 40	~ 60
Flash	32 KB	12 KB	20 KB
RAM	12 KB	5 KB	7 KB
ADC Channels	16	1	15
PWM Channels	8	2	6
SCI	1	1	0
SPI	2	0	2
GPIO	32	3	29

BPSK Demo Hardware Resource Usage

USED IN REAL APPLICATION		
Function	Registers	Pins
PLC Tx Waveform		
Tx+ output	CMP1	PWM1
Tx- output	CMP2	PWM3
Polarity control	ACTRA	
Period register	T1PR	
Tx Bias Enable		GPIOA11
ADC Rx Input		
ADC Input	ADCIN6	ADCINA6
Period register	T2PR	
USED ONLY FOR DEMO BOARD		
Function	Registers	Pins
LED Intensity		
PWM output	CMP5	PWM9
Period register	T3PR	
RS-232 Interface		
Serial Data Tx		SCITXDA
Serial Data Rx		SCIRXDA
RTS		GPIOF0
CTS		GPIOF1
Status LEDs		
Rx Good		GPIOA8
Rx Busy		GPIOA9
Tx		GPIOA10
Option Jumpers		
Opt1		GPIOB9
Opt0		GPIOB10
Opt2		GPIOB11
Opt3		GPIOB12

Short-Term Proposal for Customers

Actions	Reasons	Owner
Purchase two F2808 eZdsp kits, sign the PLC SW license agreement http://focus.ti.com/docs/toolsw/folders/print/tmdsezs2808.html	Getting familiar with CCS Prepare the SW donation	Customer
Delivery of two tested FSK/BPSK extension boards Contact: Please contact Your TI Local Sale Representative	Mount a full communication kit	TI
Delivery of the complete SW FSK/BPSK project (after licensing agreement)	Speed-up the development	TI
Organize a 28xx training session	Speed-up the development	Customer & TI