

ADSP-CM408F Distribution Automation Solution

smartgrid@excelpoint.com.cn

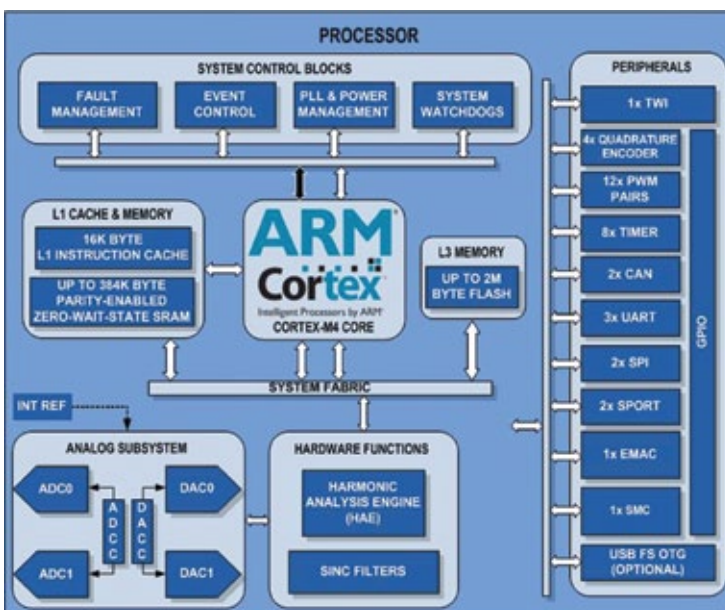
ADSP-CM40 PROCESSOR BRIEF

The ADSP-CM408F Mixed-Signal Control Processor integrates dual high precision 16 bit ADCs and an ARM® Cortex-M4™ processor core with floating-point unit operating at 240 MHz core clock frequency and integrating 384KB of SRAM memory, 2M byte of flash memory, and accelerators and rich peripherals, such as CAN/Ethernet/SINC/HAE which is optimized for distribution automation control, motor control, photo-voltaic (PV) inverter control and other embedded control applications.

ADSP-CM40X PROCESSOR ADVANTAGE

- 16k Bytes L1 Cache : Up to 384kBytes SRAM, and 2Mbytes Flash
- Up to 24chs or 16chs SAR ADC input, and 2 R-String DAC
- HAE harmonic analysis engine
- 10/100M Ethernet MAC
- USB On-the-Go (OTG)
- 2chs CAN 、 3chs UART 、 2chs SPI

ADSP-CM40X FUNCTION DIAGRAM



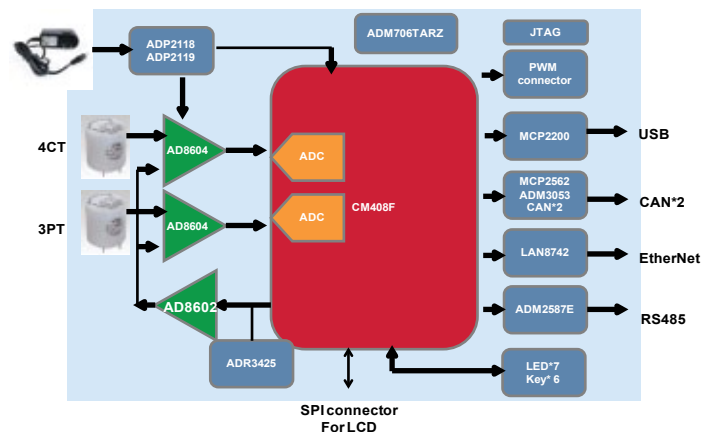
SOLUTION INTRODUCTION

Just to help end customer to evaluate the performance, and develop the products base on ADSP-CM40X processor, Excelpoint R&D center design this distribution automation solution. ADSP-CM408F integrates two independent SAR ADC core. solution connect with voltage transformer (PT) and current transformer (CT) from hardware design, and simultaneous sampling with 3 phases voltages input, currents input and harmonic analysis from software design. The solution is very useful for the designer of middle-low voltage protection, distribution automation system and power quality analysis system.

In this solution, open below ports :

- 7chs analog inputs with ADC input (A\B\C 3phase voltage, current, and N current)
- 1ch frequency input
- 1 UART to USB port (with MCP2200)
- 1 USB OTG
- 1 RS485 interface (with ADM2587E)
- 1 RS232 interface (with ADM3232E and ADUM1402)
- 2 CANs (with ADM3053 and MCP2562)
- 1 Ethernet interface (with LAN8742)
- 4 pairs PWM interface
- 1 SINC input interface
- 1 SPI and 1 I2C interface
- 7 LEDs and 6 keys
- 30 GPIO

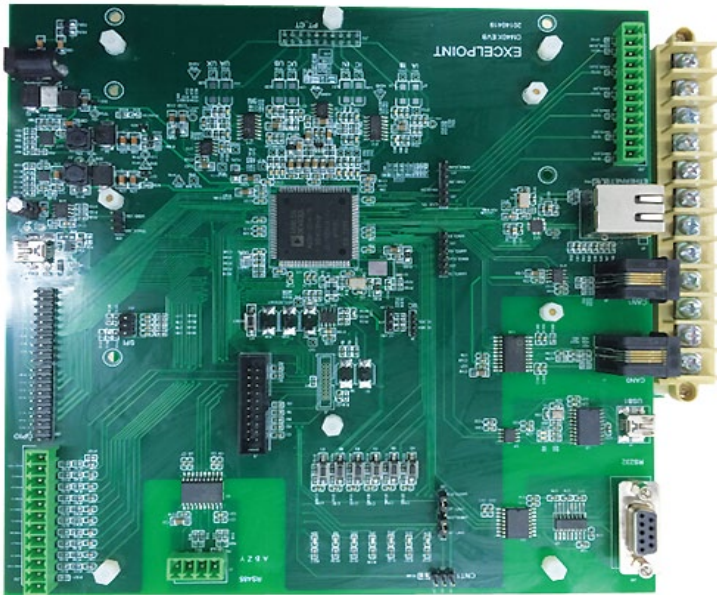
SOLUTION DIAGRAM



SOLUTION FEATURES

The solution is based on the mini level system for distribution automation. Precision 3chs voltage PT, 3chs current CT and one ch N phase output to $\pm 10V$ signal. It is set up signal condition circuit with AD8604 to be suitable for 0 to 2.5V input, which is integrated ADC required by ADSP-CM408F. Two dependent ADC cores make sure the simultaneous sampling for voltage and current input. End customer designer can design the algorithm for protection and measurement application in distribution automation system. Most of the interfaces such as RS485, RS232, CAN, SPI, I2C, USB, it is easy for the data transfer in system. End customer also can design AD740X Sigma-Delta module input to SINC filter, which is integrated in ADSP-CM408F, and is easy isolated DC signal input. HAE is functional for 56 times harmonic analysis (based on 50Hz fundamental wave) from internal ADC input or SINC module input. The result from HAE, it is output to PC software by USB or RS232 interface.

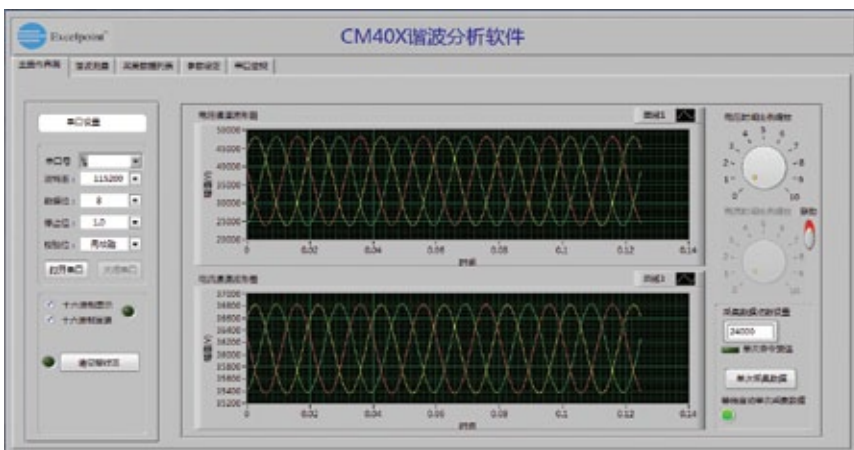
SOLUTION INCLUDES CPU CORE BOARD AND PT/CT BOARD



CORE CPU BOARD AND PT/CT BOARD



PC SOFTWARE SYSTEM



ADSP-CM40X software system is functional with wave display, sampling data display, harmonic analysis result display, parameter set up, serial port data monitor and others. When you evaluate integrated ADC performance, it is easy to check the performance, such as spectrum, SNR, ENOB and others.

Please visit :
<http://www.excelpoint.com.cn/ADIsite/ADSP-CM408F.html>



Excelpoint Systems (H.K.) Limited
 Excelpoint International Trading (Shanghai) Co., Ltd

www.excelpoint.com.cn
 E-mail: smartgrid@excelpoint.com.cn

Hong Kong (852) 2503-2212	Shanghai (86) 21 2220-3188	Beijing (86) 10 6580-2113	Chengdu (86) 28 8652-7611	Guangzhou (86) 20 2838-3068	Nanjing (86) 25 8689-3130
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