

Mu.Psi - EK

Real Time DSP Kit
Signal Processing - Rapid control
Numerical communications



Control, instrumentation

Motorola DSP56309 24 bits 80-100 MIPS

256Kbytes Flash EEPROM

102Kbytes RAM

2 x 12 bit ADC 0 - 800ks/s

2 x 12 bit DAC 0 - 1Ms/s

6 DMA channels, 5 interrupts

RS232, 16 bits parallel port, 3 x timers

2 x synchronous serial ports, JTAG

FIBULA: Integrated Development Environment

Textual macro language for fast and easy application development

Know-how from :



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Specification

Motorola DSP56309 processor

24bit - 100MIPS
102ko RAM (P 20k × 3o, X 7k × 3o, Y 7k × 3o)
fix point processor
48bit fractional arithmetic
6 DMA channels
3 timers, 1 parallel port, 3 serial ports

AD1 & AD2 inputs

2 analog-to-digital converters
800ks/s - 12bit - ±2.5V
50Ω BNC connections

DA1 & DA2 outputs

2 digital-to-analog converters
1Ms/s - 12bit - ±4.096V
50Ω BNC connections

RS232 serial port

8bit - 1 stop - no parity
from 4800 to 38400 bauds
on DB9F (modem type serial cable)

Supply (from HM8001-2)

+5V/150mA
+12V/150mA
-12V/160mA
≈ 5W

Operating conditions

0°C to +40°C
max. relative humidity 80%

Dimensions (without multipoint connector)

W135mm × H68mm × D228mm

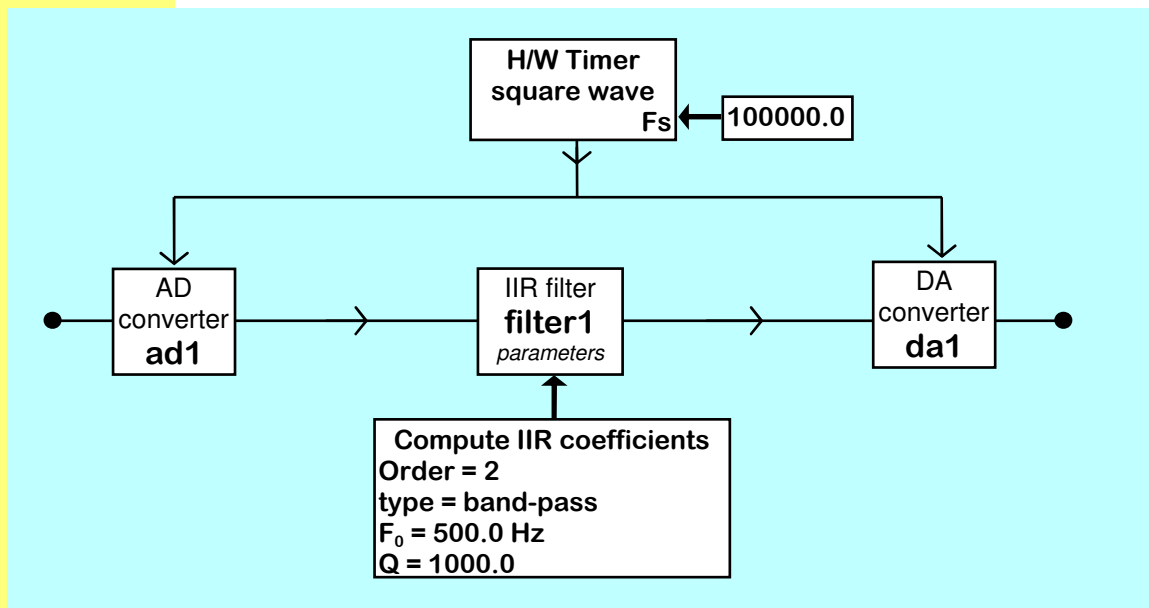
Weight

about 550g

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Textual macro language

To get this function...



... you just have to type this :

```

cn      ad1,filter1_in      ; define connections
cn      filter1,da1        ;
loop   ada      1e5        ; wait for sample, Fs=100KHz
iir2   filter1,bp,500.0,1000.0,abs ; do IIR filter, absolute f0
goto   loop                ; run infinite loop
    
```

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Textual macro language

Up to 200 macro functions available

Input / Output

Analog polling
 Analog interrupt
 Analog DMA
 PWM polling
 PWM interrupt
 RS232 polling
 RS232DMA

Timers

Single shoot
 Periodic
 Fractional

String handling

F-data to decimal string
 I-data to decimal string
 I-data to hex
 Decimal to F-data

Signal generators

Saw tooth, Triangle
 Rectangle, Pulse
 Sine / Cosine
 Random uniform, gaussian

Filters

1st order IIR lp, hp
 2nd order IIR lp, bp, hp, bs
 Nonlinear
 FIR filters
 LMS adaptative FIR

Boolean

Flag set, clear, toggle
 Jump on (no) flag
 Test-clear-and-jump
 Wait-and-clear

Arithmetic

Gain
 Sum of weighted inputs
 Multiply, divide

Functions

Trigonometric
 Polynomial
 Square root, Log, Decibel
 Table read / interpolate 1D
 Table read / interpolate 2D

Complex signals handling

Complex multiply
 Complex exp. generator, c. PLL
 Hilbert Transformer
 Spectrum analyzer dB, power, amplitude

Control

Delay
 Schmitt trigger
 Linear PID
 Neural network
 1D, 2D Piecewise linear adaptative Model
 1D, 2D Polynomial adaptative Model

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