

# CoAction Hero Microcomputer

## 1 Product Description

The CoAction Hero Microcomputer is a microcontroller board pre-installed with [CoActionOS](#). The board features:

- NXP LPC1759 Microcontroller
  - ARM Cortex M3 Processor
  - Up to 120MHz CPU Clock
  - 512KB Flash, 64KB RAM
- 1MB Flash Storage (CoActionOS Filesystem)
- Micro USB Device Connector (For Programming, Debugging, and Installing Applications)
- Two 20 Pin Headers for Easy Prototyping
- 31 Pin Expansion Header

## 2 Resources

- [Getting Started with CoActionOS](#)
- [CoActionOS API Documentation](#)

## 3 Block Diagram and Pin Description

Figure 1: Block Diagram

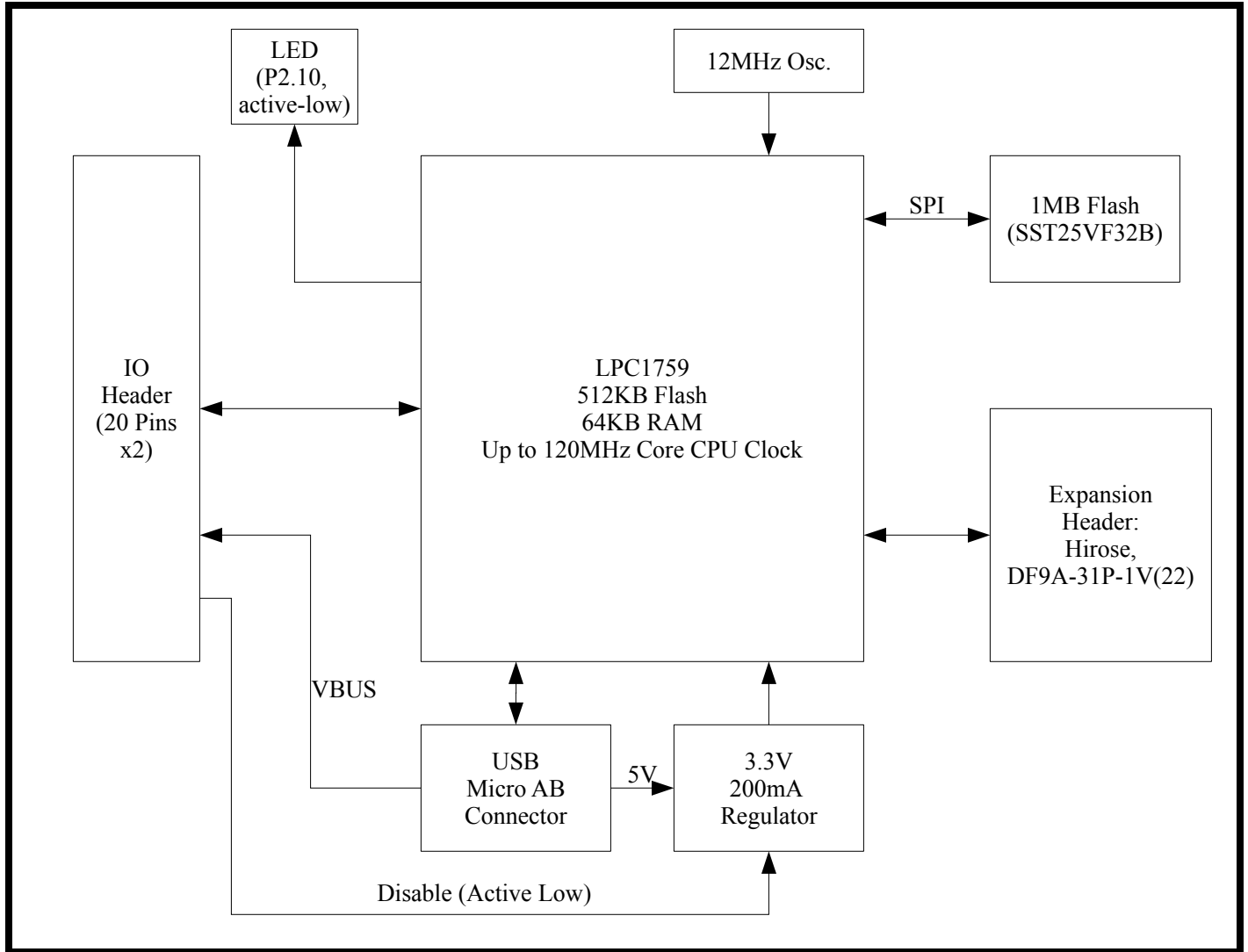


Figure 2: Pin Diagram

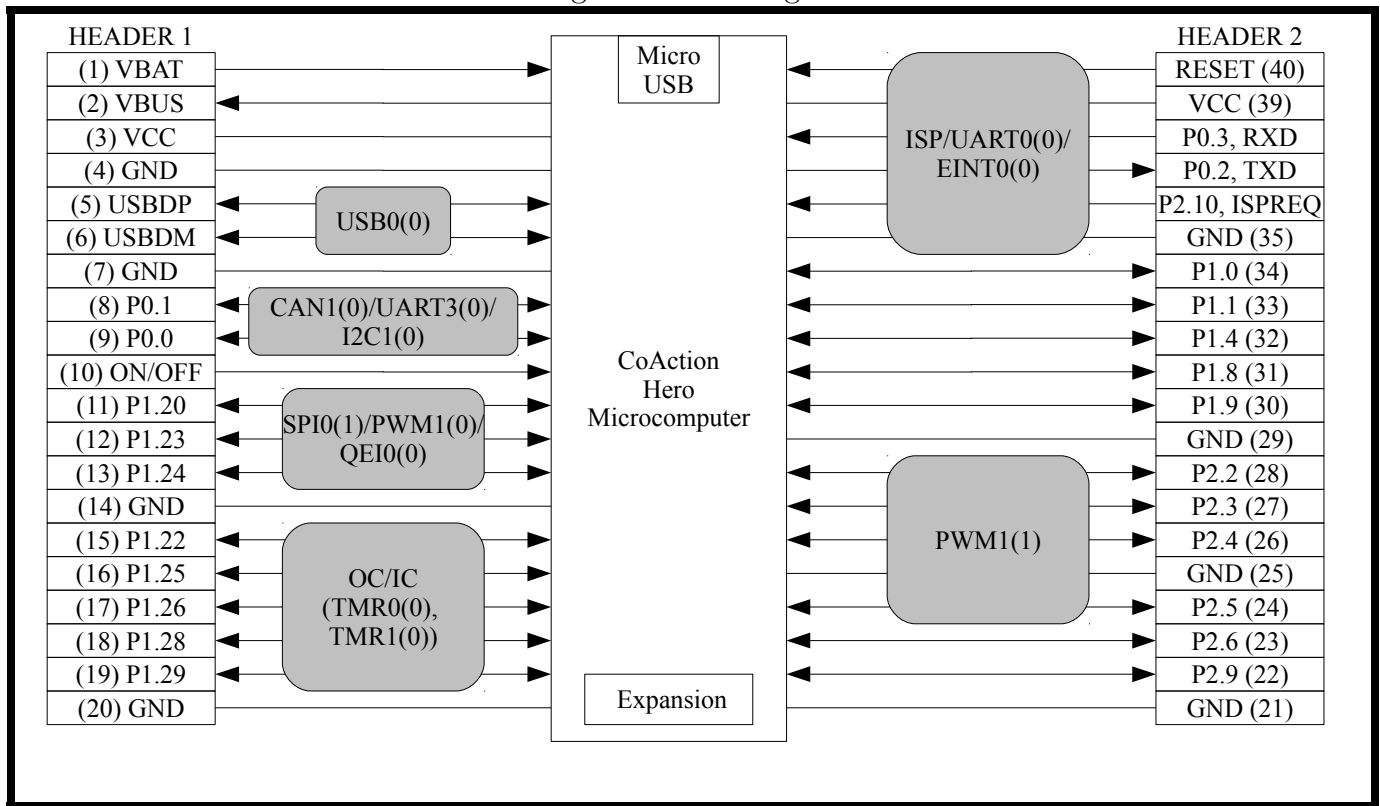


Table 1: Pin Description

<b>HEADER 1</b>				
<b>Pin</b>	<b>Name</b>	<b>Usage</b>	<b>Description</b>	
1	VBAT	VBAT (RTC Battery)	Connect to 3.3V backup battery or leave unconnected	
2	VBUS	USB VBUS	Connect to 5V or VBUS if not using on-board USB connector	
3	VCC	VCC (3.3V)	Connect to 3.3V if not using on-board regulator (ie pin 10 is 0V)	
4	GND	GND	Connect to ground	
5	USBDP	USB Data	Connect to USB data plus if not using on-board USB connector	
6	USBDM		Connect to USB data minus if not using on-board USB connector	
7	GND	GND	Connect to ground	
8	P0.1	TD1/RXD3/SCL1	User pins for serial bus (CAN1(0)/UART3(0)/I2C1(0)) or GPIO	
9	P0.0	RD1/TXD3/SDA1		
10	ON/OFF	Power Enable	Apply 0V to disable on board 3.3V, 200mA regulator or leave unconnected	
11	P1.20	SCK0/PWM1.2/MCI0	User pins for SPI0(1), PWM1(0), QEI0(0) or GPIO	
12	P1.23	MISO0/PWM1.4/MCI1		
13	P1.24	MOSI0/PWM1.5/MCI2		
14	GND	GND	Connect to ground	
15	P1.22	MAT1.0	User pins for TMR1(0), TMR0(0), PWM1, or GPIO	
16	P1.25	MAT1.1		
17	P1.26	CAP0.0/PWM1.6		
18	P1.28	MAT0.0/PCAP1.0		
19	P1.29	MAT0.1/PCAP1.1		
20	GND	GND	Connect to ground	
<b>HEADER 2</b>				
<b>Pin</b>	<b>Name</b>	<b>Usage</b>	<b>Description</b>	
40	RESET	RESET	Pins for in-circuit serial programming; can be used as UART, EINT, ADC, or GPIO when not programming	
39	VCC	VCC		
38	P0.3	RXD0/ADC0.6		
37	P0.2	TXD0/ADC0.7		
36	P2.10	EINT0/ISPREQ		
35	GND	GND	User pins for GPIO	
34	P1.0	GPIO		
33	P1.1			
32	P1.4			
31	P1.8			
30	P1.9	User pins for GPIO or PWM1(1)		
29	GND		GND	Connect to ground
28	P2.2		PWM1.3	
27	P2.3	PWM1.4	User pins for GPIO or PWM1(1)	
26	P2.4	PWM1.5		
25	GND	GND	Connect to ground	
24	P2.5	PWM1.6	User pins for GPIO or PWM1(1)	
23	P2.6	PCAP1.0		
22	P2.9	GPIO	User pin for GPIO	
21	GND	GND	Connect to ground	

Figure 3: Expansion Diagram

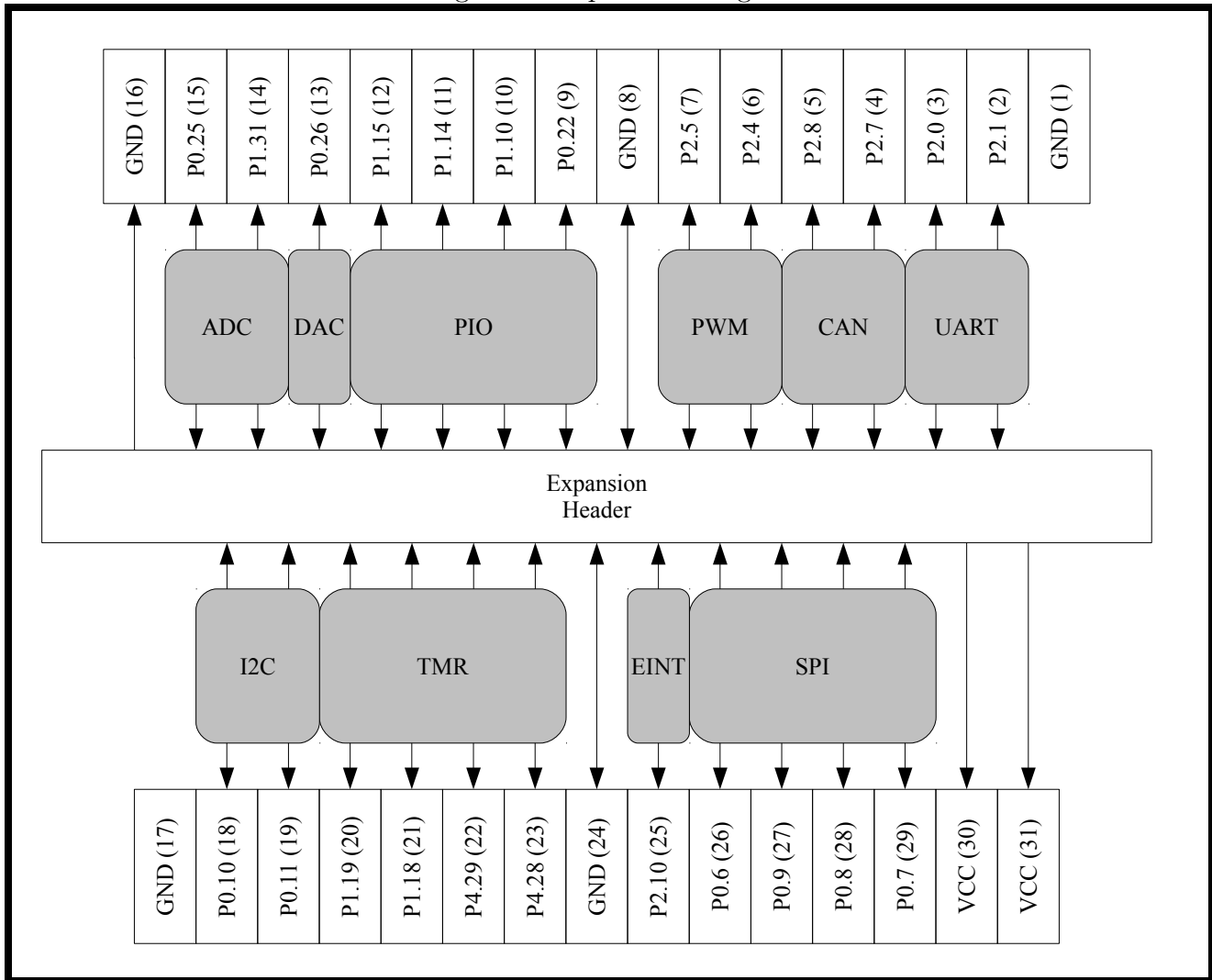
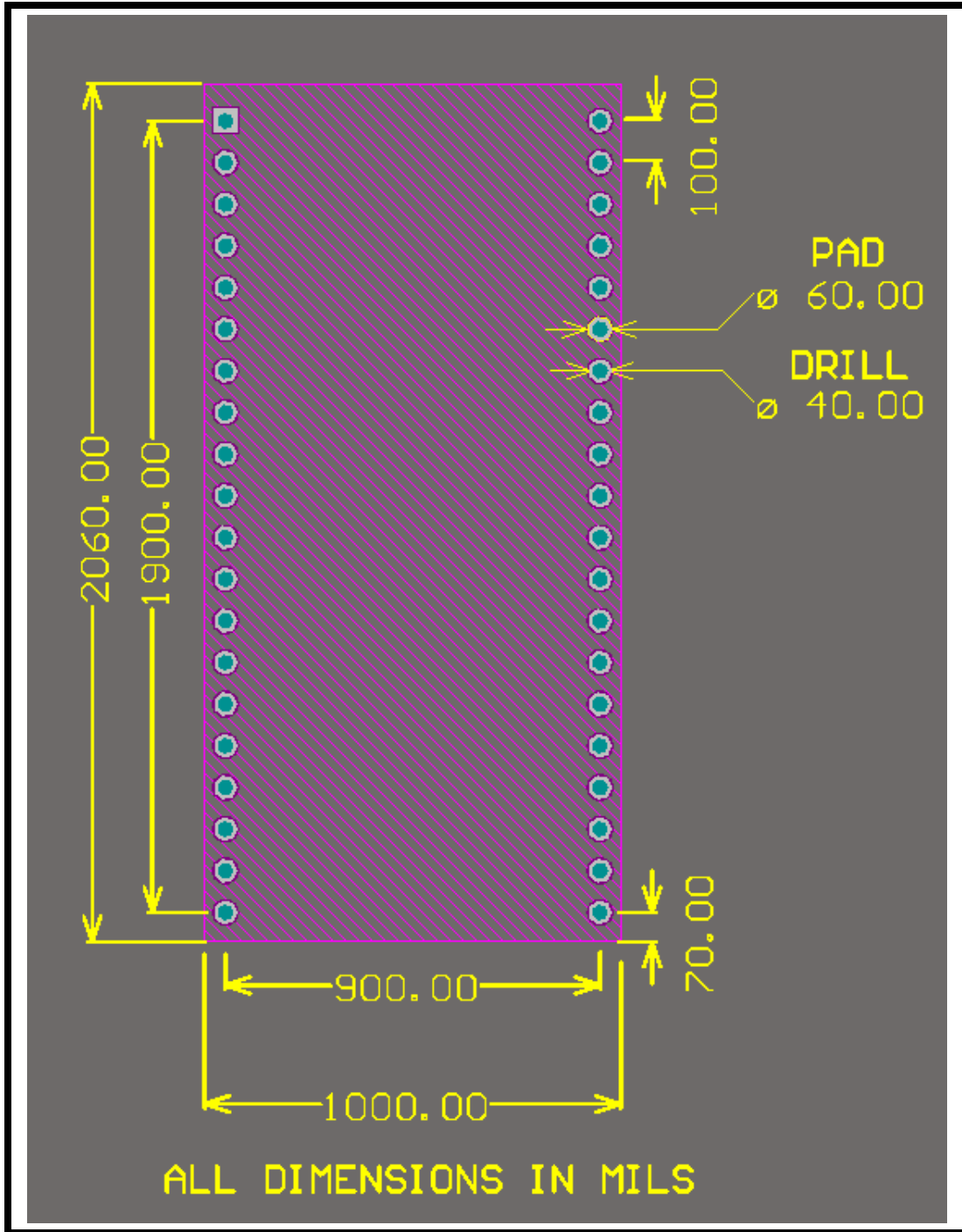


Table 2: Pin Description

<b>Expansion Port</b>			
<b>Pin</b>	<b>Name</b>	<b>Expansion Name (Channel)</b>	<b>Port/Pin Assignment</b>
1	GND	GND	NA
2	P2.1	UART RXD Master	1/0
3	P2.0	UART TXD Master	
4	P2.7	CAN RD Master	2/0
5	P2.8	CAN TD Master	
6	P2.4	PWM0 (4)	1/1
7	P2.5	PMW1 (5)	
8	GND	GND	NA
9	P0.22	PIO0	NA
10	P1.10	PIO1	
11	P1.14	PIO2	
12	P1.15	PIO3	
13	P0.26	DAC	0/0
14	P1.31	ADC0 (5)	
15	P0.25	ADC1 (2)	
16	GND	GND	NA
17			
18	P0.10	I2C SDA	2/0
19	P0.11	I2C SCL	
20	P1.19	IC1 (5)	1/0
21	P1.18	IC0 (4)	
22	P4.29	OC1 (1)	2/1
23	P4.28	OC0 (0)	
24	GND	GND	NA
25	P2.10	EINT	0/0
26	P0.6	SPI CS	1/0
27	P0.9	SPI MOSI	
28	P0.8	SPI MISO	
29	P0.7	SPI SCK	
30	VCC	VCC	NA
31			

## 4 Dimensions

Figure 4: Dimensions



## 5 Electrical Characteristics

Table 3: Electrical Characteristics

Power	VCC		2.7	3.3	3.6	V
	FCPU (MHz)	Program	Typical	Typical	Typical	Units
ICC	12	None	13.1	13.2	12.7	mA
	12	while(1){}	16.5	16.6	16.1	
	48	None	28.5	28.6	28.8	
	48	while(1){}	41.7	41.7	41.8	
	96	None	44.1	45	45	
	96	while(1){}	62.1	70.7	70.7	
	120	None	51.9	55	55	
	120	while(1){}	NA	86.6	86.7	
	NA	hibernate()	1.1	0.7	1.1	
	NA	powerdown()	0.7	0.3	0.3	

Expansion header manufacturer, part number: Hirose, DF9A-31P-1V(22)

Expansion header mating products: DF9A-31S-1V(22), DF9-31P-1V(32)

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