

**89C2051 Programming unit Quick Reference**

**Standard Settings**

- Normal operation
- Erase, Program on (May be verified)
- Security operation Erase, Prog, Lock on (Reads as 'Blank')

**LED Status Indication**

- Red/Grn on - Idle
- Red/Grn flash - Blank
- Grn solid - Good data
- Red flash - Bad chip
- Red solid - data, not CKS'd, or failed prog

**Test & Programming**

To Test an AT89C2051, insert it in the socket and push "TEST". LEDs indicate the device status.

To Program, set dipswitches and download the file. Test and verification is automatic. LEDs indicate the programming result.

**Serial Protocol**

Downloaded files should be Intel<sup>™</sup> Hex format, Serial at 9600 Baud, 8 data bits, 2 stop bits, no parity.

Typical commands:  
Mode COM1:9600,N,8,2  
Copy Myfile.hex COM1

**Operation notes**

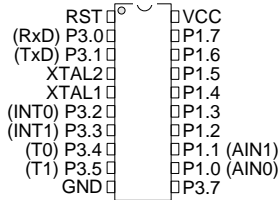
Position the AT89C2051 with pin 1 to the top left of the socket. Use only the DC power source supplied with your unit. Do not operate the device where there is a danger of short circuit. Do not write to the same byte twice in a Hex file. Operate at the Serial settings specified - 2 stop bits is important. Other dipswitch combinations are valid - ALL OFF is verify chip.

**AirBorn**  
**ELECTRONICS**

Phone (61) (2) 9925 0325  
Fax (61) (2) 9922 4483  
P O Box 1491, North Sydney,  
NSW 2059, Australia

**89C2051 Microprocessor Quick Reference**

**89C2051 Pinout**



TOP VIEW

**89C2051 Features**

8051 instruction set & I/O: 8051 serial, timers, interrupts. 128 bytes RAM, 2k FLASH Program memory, 2.7-6v Vcc. Ports P1.0,P1.1 have no pullups and feed an analog comparator "AIN" internally read on P3.6.

**8051 Mnemonics**

<b>add</b> a,Rn	<b>and</b> a,Rn	mov a,Rn	push Di	jc Rel
add a,Di	and a,Di	mov a,Di	pop Di	jnc Rel
add a,@Ri	and a,@Ri	mov a,@Ri	xch a,Rn	jb Bi,Rel
add a,#dat	and a,#dat	mov a,#dat	xch a,Di	jnb Bi,Rel
<b>addc</b>	and Di,a	mov Rn,a	xch a,@Ri	jbc Bi,Rel
<b>subb</b>	and Di,#dat	mov Rn,Di	xchda,@Ri	acall Addr
	<b>orl</b>	mov Rn,#d		ret
	<b>xrl</b>	mov Di,a	<b>clr</b> c	reti
<b>inc</b> a		mov Di,Rn	clr bit	ajmp Addr
inc Rn		mov Di,Di	<b>setb</b>	jmp @a+DP
inc Di	clr a	movDi,@Ri	<b>cpl</b>	jz Rel
inc @Ri	cpl a	mov Di,#da		jnz Rel
<b>dec</b>	rl a	mov @Ri,a	<b>anl</b> c,Bi	cjne a,Di,Rel
	rlc a	mov@Ri,Di	anl c,/Bi	cjnea,#Da,Rel
inc dptr	rr a	mov@Ri,#d	<b>orl</b>	cjneRn,#D,Rel
mul ab	rrc a	movDPTR,#d		cjne@Ri,#Da,Rel
div ab	swap a	movca@a+DP	mov C,Bi	djnz Rn,Rel
da a	nop	movca@a+PC	mov Bi,C	djnz Di,Rel

**AirBorn**  
**ELECTRONICS**

Phone (61) (2) 9925 0325  
Fax (61) (2) 9922 4483  
P O Box 1491, North Sydney,  
NSW 2065, Australia

**89C2051 Programming unit Quick Reference**

**Standard Settings**

- Normal operation
- Erase, Program on (May be verified)
- Security operation Erase, Prog, Lock on (Reads as 'Blank')

**LED Status Indication**

- Red/Grn on - Idle
- Red/Grn flash - Blank
- Grn solid - Good data
- Red flash - Bad chip
- Red solid - data, not CKS'd, or failed prog

**Test & Programming**

To Test an AT89C2051, insert it in the socket and push "TEST". LEDs indicate the device status.

To Program, set dipswitches and download the file. Test and verification is automatic. LEDs indicate the programming result.

**Serial Protocol**

Downloaded files should be Intel<sup>™</sup> Hex format, Serial at 9600 Baud, 8 data bits, 2 stop bits, no parity.

Typical commands:  
Mode COM1:9600,N,8,2  
Copy Myfile.hex COM1

**Operation notes**

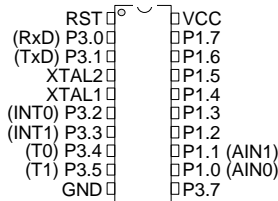
Position the AT89C2051 with pin 1 to the top left of the socket. Use only the DC power source supplied with your unit. Do not operate the device where there is a danger of short circuit. Do not write to the same byte twice in a Hex file. Operate at the Serial settings specified - 2 stop bits is important. Other dipswitch combinations are valid - ALL OFF is verify chip.

**AirBorn**  
**ELECTRONICS**

Phone (61) (2) 9925 0325  
Fax (61) (2) 9922 4483  
P O Box 1491, North Sydney,  
NSW 2065, Australia

**89C2051 Microprocessor Quick Reference**

**89C2051 Pinout**



TOP VIEW

**89C2051 Features**

8051 instruction set & I/O: 8051 serial, timers, interrupts. 128 bytes RAM, 2k FLASH Program memory, 2.7-6v Vcc. Ports P1.0,P1.1 have no pullups and feed an analog comparator "AIN" internally read on P3.6.

**8051 Mnemonics**

<b>add</b> a,Rn	<b>and</b> a,Rn	mov a,Rn	push Di	jc Rel
add a,Di	and a,Di	mov a,Di	pop Di	jnc Rel
add a,@Ri	and a,@Ri	mov a,@Ri	xch a,Rn	jb Bi,Rel
add a,#dat	and a,#dat	mov a,#dat	xch a,Di	jnb Bi,Rel
<b>addc</b>	and Di,a	mov Rn,a	xch a,@Ri	jbc Bi,Rel
<b>subb</b>	and Di,#dat	mov Rn,Di	xchda,@Ri	acall Addr
	<b>orl</b>	mov Rn,#d		ret
	<b>xrl</b>	mov Di,a	<b>clr</b> c	reti
<b>inc</b> a		mov Di,Rn	clr bit	ajmp Addr
inc Rn		mov Di,Di	<b>setb</b>	jmp @a+DP
inc Di	clr a	movDi,@Ri	<b>cpl</b>	jz Rel
inc @Ri	cpl a	mov Di,#da		jnz Rel
<b>dec</b>	rl a	mov @Ri,a	<b>anl</b> c,Bi	cjne a,Di,Rel
	rlc a	mov@Ri,Di	anl c,/Bi	cjnea,#Da,Rel
inc dptr	rr a	mov@Ri,#d	<b>orl</b>	cjneRn,#D,Rel
mul ab	rrc a	movDPTR,#d		cjne@Ri,#Da,Rel
div ab	swap a	movca@a+DP	mov C,Bi	djnz Rn,Rel
da a	nop	movca@a+PC	mov Bi,C	djnz Di,Rel

**AirBorn**  
**ELECTRONICS**

Phone (61) (2) 9925 0325  
Fax (61) (2) 9922 4483  
P O Box 1491, North Sydney,  
NSW 2065, Australia