

## KickStart 2 Quick Reference Card

KickStart 2 Switches		
Switch	Name	Ref
SW1-1.4	EPROM A18..15	Table 2.2 Page 9
SW1-5,6	EPROM SZ1,0	Never Change See Table 2.2 & Page 10
SW1-7	Hardware Bypass	Default is ON See Page 10
SW1-8	Power Detect	Default is OFF See Page 10
SW2-1	Err Tst#: Hex Display Mode	Shows POST during boot See Table 3.3 Page 19
SW2-2	Pause	See Table 3.3 Page 10
SW2-3	Loop: Loop on Test (LOT)	See Table 3.3 Page 10
SW2-4	LoopErr: Loop on Error (LOE)	If ON will loop on 1st failure...
SW2-5	StopErr Stop on Error (SOE)	See Table 3.3... Page 19
SW2-6	LogCOM1	ON-log results to COM1 See Table 3.3 Page 19
SW2-7	LogLpt1	ON-log results to Lpt1 See Table 3.3 Page 19
SW2-8	Remote	ON-run in remote mode See Table 3.3 Page 19
SW3 1..8	Test 7..0	To set test number See Table 3.2 Page 19
SW4	Reset	See Table 3.3 Page 19

Meaning and Use of LEDs		
LED	Color	Meaning Use
Power: +5V -5V +12V -12V	Red Green Yellow Bright red	On if power supply output is within 5% or 2.5% (see description for power level switch SW1-8). Watch LEDs after switching power on, and during heavy disk and memory usage. If any LED goes out or flickers, the supply is bad and should be replaced to avoid data loss.
Hex Display	2 Red digits	These show the POST or KickStart 2 test currently being or just executed. If no status LEDs (below) are on, it is a POST test. If the Extended Test LED is on, the hex display shows a KickStart 2 test number; otherwise it shows an error number.

Meaning and Use of LEDs		
LED	Color	Meaning Use
Test Running	Green	On if KickStart 2 is running a test and the test is active. Turned on at start of test; turned off when test and all loop passes have finished and test has stopped. If Looping LED is on and Running is off, the test is looping repeatedly on the failing test because StopErr (stop on error) and LoopErr (loop on error) are both on, and the Fail LED will also be on.
Extend-ed Test	Yellow	On if the KickStart 2 hex display is showing a KickStart 2 test number. Off if it is showing a POST code or an KickStart 2 test error code.
Test Fail	Red	On if a KickStart 2 test just failed; off it just passed. The Fail LED stays on or off throughout the duration of the next test. When it is on, the error code is available to the hex display, provided the Err Tst# switch is on.
Looping	Amber	KickStart 2 is running a test or batch of tests repeatedly in a loop. If the Fail LED is on and LoopErr switch is on, the test is looping on the failing individual test, but not an entire batch of tests.
Reset	Red	Normally Off. On if the reset signal on the system bus is active. This will happen if the processor issues reset, or if you press the front panel reset button (if one is there and wired to the motherboard), or if you press KickStart 2 reset button (and J2 J3 is wired to motherboard reset as described in the installation chapter). Power supply can activate reset (via POWERGOOD signal) if it detects its own voltages to be out of tolerance.

Power LED Threshold Levels					
SW1-8 →		OFF	OFF	ON	ON
Voltage	LED	-5%	+5%	-2.5%	+2.5%
+5VDC	Red	+4.75	+5.25	+4.875	+5.125
-5 VDC	Green	-5.25	-4.75	-5.125	-4.875
+12 VDC	Yellow	+11.4	+12.6	+11.7	+12.3
-12 VDC	Bright Red	-12.6	-11.4	-12.3	-11.7

Diagnostic Test Numbers and Names	
Test #	Test Name
00	No test
01	80x86 8Central Processor (CPU)
02	80x87 Math Coprocessor (MPU)
03	CMOS Real Time Clock
04	Speaker
06	8259 Interrupt Controller
07	8253 4IRQ0
08	8250 16450IRQ4
05	8237 DMA Controller
10	Data Line Test
11	Parity Test
12	March Test
13-17	Galrow Test 1 through Galrow Test 5
18	Refresh Toggle
19	Refresh Bandwidth
1A	Refresh Rate
1B	Extended Memory Test
1F	CRT RAM
24	Video Mode
20	84-Key
21	101-Key
30	Format Random
31	Write Random
32	Read Random
33	Seek Random
34	Format Entire
35	Write Read Random
39	Format Random
3A	Write Random
3B	Read Random
3C	Write Read CompareEntire
3D	Write Read CompareTrack 0
3E	Format Entire (Interleave = 2)
3F	Park Heads
50	Data Line
51	Asynchronous I O
58	Data Line
59	Command Line
5A	DATA to STATUS
5B	DATA to COMMAND
5C	Toggle Line
90	Western Digital WD 8003 family

Diagnostic Test Numbers and Names	
Test #	Test Name
91	3-COM EtherCard
92	Novell NE 1000 family

Diagnostic Test Error Codes and Meanings		
Code	Meaning	Comment or Corrective Action
<b>KickStart 2 Self-Test</b>		
01	KickStart 2 initialization error	KickStart 2 cannot execute its own hardware test, indicating a memory or I Ospace conflict in the system. Recheck DIP switches SW1 and SW2, and orremove other expansion cards from the system.
02	KickStart 2 hardware test error	Some KickStart 2 component is broken. Possible (but unlikely) I O space conflict. If this error occurs in a known-good computer, contact KickStart 2 technical support.
<b>CPU Test</b>		
04	CPU register test failed	The 8088 or 80x86 CPU failed its register test. This is extremely unlikely, since the CPU must be running to get this far. It is more likely that the CPU is running at a clock speed faster than it is rated. Replace CPU.
<b>Math Coprocessor Test</b>		
08	Math coprocessor test failed	The 8087, 80287, or 80387 math chip failed to function properly. This may be due to running at a speed greater than rated, or a bad bus interface resetcircuit. Replace math chip. If problems persist, check its socket.
<b>Refresh Test</b>		
09	No RAM refresh toggle	The refresh signal is not changing states. This represents a catastrophic failure because DRAM loses its memory without refresh. Repair replacerefresh circuit.
0A	RAM refresh rate out of limits	Refresh is not working within the + -5.3% bandwidth specified by IBM for the AT. This can cause memory errors and undetected data loss. Many clones intentionally use a slower refresh rate, and they will therefore fail this test even though there is no danger of data loss.
0B	Real Time Clock error	The RTC is not properly timing an event. Replace the RTC chip.

Diagnostic Test Error Codes and Meanings		
Code	Meaning	Comment or Corrective Action
<b>RAM Test</b>		
0C	RAM data compare error	The test could not verify data at a given memory address. This is most likely due to the absence of a memory chip, or chips. Re-check DIP SIMMinstallation for arrangement, jumpers, orientation. Look at the error message for the failing address data, and replace chip if necessary.
0D	RAM even parity error	A parity error has occurred at the address in the error message, although the data is correct. This is due to a bad RAM chip, or running the system at too high a clock speed for the parity circuit. Replace the offending DRAM chip if possible, or run the system at a slower speed.
0E	RAM odd parity error	
0F	Address conflict error	Data was written to one address that was intended for another address. The message shows both addresses. Suspect a bad DRAM external RAS CASline or internal address line, bad socket, cold solder joint, running the DRAM too fast, or a bad address multiplexer. Swap RAM chips; if symptoms change, suspect bad DRAM chip. If bad addresses are a power of 2 apart (e.g., 32K, 64K, 128K) look for floating address line by comparing levels. If bad addresses are a sum of two multiples of 2 (e.g., 24K, 48K, 96K), look for two shorted lines. Check at the DRAM chip itself, and the address multiplexer.
<b>8253 (XT) or 8254 (AT) Timer Test</b>		
10	8253 4timer controller failed	The test cannot access the system timer at 40h. Replace it.
<b>Speaker Test</b>		
	Speaker doesn't beep (no error display given)	The speaker is driven from timer channel 2, but does not respond. Check the timer. Check that the speaker is connected. Check the speaker gate control works by examining circuit in 'Loop on Error' mode.

Diagnostic Test Error Codes and Meanings		
Code	Meaning	Comment or Corrective Action
2F	Can't disable IRQ with I/O Channel printer serial port data	The test cannot remove an interrupt from the I/O channel. Either a conflict exists on the I/O channel or the input to the 8259 is faulty. Remove all cards from the system. If problem remains, look for Serial Parallel on motherboard, then replace 8259.
<b>Keyboard Test</b>		
34	Keyboard Error	A key error occurred. Rerun test, then replace Keyboard.
<b>Printer Port Test</b>		
x8	Command port error	These errors show expected versus received data. A conflict exists with another adapter or two printer ports interrupts, or running the port at too high a bus speed. Replace port circuitry or reconfigure the port.
x9	Status port error	
xA	Control port error	
xB	Data port error	
xC	Driver toggle error (can't turn on/off port driver)	
<b>Serial Port Test</b>		
x0	Framing error	A conflict exists with another adapter or two serial ports interrupts, or running the port at too high a bus speed. Reconfigure the port. If still failing, replace 8250 16450 serial chip, or RS-232C RS-422 driver receiver.
x1	Overrun error	
x2	Parity error	
x3	Data error	
x4	Transmit timeout error	
x5	Receive timeout error	Note: These tests require a loopback plug on the port tested. Errors 4x are COM1 (3F8, IRQ4), 5x for COM2 (2F8, IRQ3), 6x for COM3 (3E8, IRQ4), 7x for COM4 (2E8, IRQ4).
<b>Video Test</b>		
x8	6845 registers failed	These tests check video adapter base registers. Errors 6x are for mono (I/O address 3B0), and 7x are for color (3D0). EGA is tested at 3C0h, in addition to its mono or color mode.
x9	Other latches, registers failed	
xA	Video memory error	
xB	Extended EGA VGA registers failed	

Diagnostic Test Error Codes and Meanings		
Code	Meaning	Comment or Corrective Action
<b>8237A DMA Controller Test</b>		
18	Controller failed	The test cannot read/write the DMA controller. Replace it.
19	Page register failed	The DMA Page register, which controls Address lines 16-19 during DMA, does not work. Replace it.
1A	8-bit RAM-to-RAM transfer failed	The test cannot move a block of data from one area of memory to another via DMA. Suspect faulty bus transceiver, or strange motherboard design (some properly functioning motherboards cannot pass this test).
1B	8-bit RAM-to-I/O transfer	
<b>Programmable Interrupt Controller (8259A) Tests</b>		
20	Interrupt mask register incorrect	The test cannot read/write the mask register. Replace the 8259A.
21	Unexpected ISR bit set	There is an unexpected Interrupt In Service bit set. Insert JumpStart BIOS, and retry test. If the problem remains, replace the 8259A.
22	Can't clear ISR bit	The test cannot clear an In Service Request. Replace the 8259A.
23	Unknown fatal failure	There is an unexpected failure. Rerun test with JumpStart BIOS installed. If still fails, replace the 8259A.
24	No interrupt occurred	No interrupt occurred from the timer. Check timer, and then replace the 8259A.
28	Can't disable parity circuit	The test cannot disable the parity circuit for testing. Check Parity circuit.
29	NMI not received	The test did not receive a requested NMI. Check NMI circuit.
2A	Unexpected NMI	The test received an unexpected NMI. Check NMI circuit.
2B	Interrupt pending bit not cleared	The Interrupt pending bit was not cleared as the interrupt was removed. Replace 8259A.
2C	Wrong interrupt source	Replace 8259A.
2D	Wrong priority	Replace 8259A.
2E	Interrupt pending bit not set after reset	Replace 8259A.

Diagnostic Test Error Codes and Meanings		
Code	Meaning	Comment or Corrective Action
<b>Floppy Drive Tests</b>		
80	Read failure	Check cables between drive and controller circuit, and power supply cable going to drive. Possibly drive ID jumpers or cable type are incorrect. Replace the floppy controller card or interface chip. Possible problem with interrupt controller.
81	Write failure	
82	Format failure	
83	Seek failure	
86	RAM request error	
8C	Interrupt timeout	
<b>Hard Disk Tests</b>		
x1	Read failure	Check cables between drive and controller circuit, and power supply cable going to drive. Possibly drive ID jumpers or cable type are incorrect. Replace the disk controller card or interface chip. Possible problem with interrupt controller.
x2	Write failure	
x3	Format failure	
x4	Compare failure	
x5	Drive(s) not present	
x7	Unsuccessful info request	Note: Errors Cx are for drive 0 (C:), and Dx are for drive 1 (D:)
<b>CMOS Real Time Clock Test (AT only)</b>		
F1	System not initialized or checksum err	Check or replace the CMOS RAM RTC battery or chip.
F2	RTC RAM write/read failure	

SW1 - EPROM Address and Window Size				
SW1 Switch Setting				Meaning
SW1-1	SW1-2	SW1-3	SW1-4	EPROM Start Address
Off	Off	Off	Off	F8000
Off	Off	Off	On	F0000
Off	Off	On	Off	E8000
Off	Off	On	On	E0000
Off	On	Off	Off	D8000
Off	On	Off	On	D0000 (default)
Off	On	On	Off	C8000
Off	On	On	On	C0000
SW1-5	SW1-6	Window Size		
Off	Off	256K		
Off	On	128K		
On	On	32K (default)		

Diagnostic Testing Strategy	
Symptom	Problem Action
POST code shows or BIOS beeps more than once, but no display	Troubleshoot circuit based on BIOS beeps POST code; refer to BIOS and POST codes topics in this chapter, and check with BIOS manufacturer for meaning of beeps. May need to install or correct the setup and installation of video adapters to correct the beep problem. Check the monitor function and adjustment. Replace failing component as indicated by POST code; use JumpStart BIOS if you are unsure of POST codes.
BIOS beeps more than once, also get display	Troubleshoot circuit based on nature of display. If disk problem, ensure disk drives and controller are installed and connected properly, disk is low-level formatted properly, boot disk is high-level formatted properly for operating system being used, and current correct operating system is on boot disk. If you are unsure, install JumpStart BIOS and run tests from KickStart 2.
BIOS beeps once, but no display	Monitor is not connected, is off, or needs to be adjusted brighter. Connect it to the video adapter and switch it on, ensure brightness and contrast adjustments are correct.
BIOS beeps once and displays, but something doesn't seem right	Run comprehensive system, hard drive, and floppy drive diagnostic and calibration software as necessary. Contact Landmark for information on products available to help with problems.
Power LEDs are on, but KickStart 2 shows error via screen, LED, or POST codes.	Look up POST code in the POST code table for your BIOS. Contact BIOS manufacturer for more information as needed. Use JumpStart BIOS that comes with KickStart 2 for accurate POST code definition. Replace indicated bad component.
Display ok, no POST code, system boots but doesn't run right	Run KickStart 2 diagnostics from KickStart 2 menu. Refer to KickStart 2 diagnostic test error codes and troubleshooting tips in this chapter, and replace the faulty component.
No POST code, system boots, KS2 menu does not start	82C601 Conflict. Computer system not using port 80 for POST codes.

Diagnostic Testing Strategy	
Symptom	Problem Action
Nothing happens at all	Power is off. Plug into wall and switch on power to all system components and look for power light on front of computer; listen for fan running inside computer. Smell and look for signs of burning. If the fan is off, replace power supply, otherwise continue. Open the computer and install KickStart 2 in accordance with instructions in the Installation chapter.
Power and fan are on but nothing happens at all	Power supply disconnected from motherboard. Plug power supply connectors in. Be sure the correct plugs are on the correct power jacks; refer to table in Technical Information chapter for reference. If plugged in, check the power LEDs on KickStart 2. Make sure the KickStart 2 Reset LED is off. Listen for the fan changing pitch or power LEDs flashing on and off (anything but steady on is bad).
Fan changing pitch	Incoming power is varying, typical during peak load times. Consider buying an uninterruptable power supply that prevents brown-out or black-out. A cheap supply in your computer can damage components or allow data faults to occur without your knowing it. Some high-quality supplies have a fan that changes speed as temperature increases or decreases, and fan-pitch changes are no concern.
KickStart 2 power LED(s) off or flashing	Power supply is bad or power is bad to the expansion slot containing KickStart 2. Try KickStart 2 in other slots. If LEDs still off/flashing, replace the supply.
Power LEDs on, but: Reset LED on; or KS2 won't run remote tests; or no BIOS beeps, no POST codes, no display	Major motherboard circuits dead. Look at failing POST code on KickStart 2, and troubleshoot corresponding circuit; see POST code tables in this manual, or check with BIOS manufacturer. To be sure, install JumpStart BIOS on motherboard first. You may need to replace data or address bus chip, CPU, or clock chip, in that order. Refer to motherboard chipset type in this chapter.