Figure 1. NEC BusinessMate 386/20

Specifications

Processor
- Intel 80386 8/20MHz

Memory
- 2MB standard, expands to 10MB or 16MB

I/O Expansion Slots
- Five 8 or 16 bit slots
- Two 8 bit only slots

Diskette Drive
- 1.2MB, 5.25'' or 1.44MB drive optional

Integrated Features
- Diskette drive controller
- No IDE interface
- One Parallel port
- Two RS-232C serial ports.
- PS/2 Mouse and Keyboard

Internal Expansion Bays
- Two 5.25'' half height accessible bays
- Three 5.25'' half height internal bays

I/O Architecture (Bus s supported)
- ISA

Power Supply
- 237 Watt

Diagnostics
- Normal Post Diags performed on Power UP of system.
- For Diags use Test & Diagnostics utility disk from NEC.
- Troubleshoot according to errors found during test.

CMOS Access
- QAPlus/FE

Tools and Software Requirements
- 2 PT Phillips screwdrivers
- Needle nose pliers
- Diags and formatted blank diskette
- Anti-static wrist strap

Jumper/Switch Settings

System Board -- SW1 SWITCH SETTINGS

Switch	Setting	Function
1	OFF *	Unit ID
2	OFF *	Unit ID
3	OFF *	Unit ID
4	OFF	Reserved
5	ON *	Test mode off
	OFF	Test mode on
6	ON *	0 wait state
	OFF	1 wait state

* Default

System Board -- SW2 SWITCH SETTINGS

Switch	Setting	Function
1	ON *	Display is color
	OFF	Display is monochrome
2	ON	FDC port addr., secondary assign
	OFF *	FDC port addr., primary assign
3	ON *	Turn on diskette drive controller
	OFF	Turn off diskette drive controller
4	ON *	Turns on serial port COM2
	OFF	Turns off serial port COM2
5	ON *	Turns on serial port COM1
	OFF	Turns off serial port COM1
6	ON *	Turns on parallel port
	OFF	Turns off parallel port
7	ON *	Turns on math coprocessor
	OFF	Turns off math coprocessor
8	ON	Math coprocessor 80387
	OFF *	Math coprocessor 80287
9	OFF*	Reserved
10	OFF *	Reserved

* Default

System Configuration, Intel 80287 CKM Set

Jumper	Setting	Function
19C1	1-2 *	Setting is 8, 10 MHz
	2-3	Setting is 5.3 MHz

* Default

System Configuration, Intel Selection

Jumper	Setting	Function
19C2	1-2 *	Setting is 8, 10 MHz
	2-3	Setting is 5.3 MHz

* Default

System Configuration, CPU Operation Mode

Jumper	Setting	Function
14L2	1-2 *	Address pipeline mode
	2-3	Address non-pipeline mode

* Default

Jumper/Switch Settings (Continued)

System Configuration, 8284 Input Clock Selection

Jumper	Setting	Function
19C3 or	1-2 *	Setting is 10 MHz
27f1	2-3	Setting is 5.3, 8 MHz

* Default

System Configuration, Diskette Drive Type

Jumper	Setting	Function
23G1	1-2 *	Normal diskette drive type
	2-3	Special diskette drive type

* Default

System Configuration, Manufacturing

Jumper	Setting	Function
11L1	Jumped	Manufacturing switch on
	Unjumped *	Manufacturing switch off

* Default

System Configuration, Test Mode

Jumper	Setting	Function
19A1	Released *	Test Mode Off
	Locked	Test Mode On

* Default

System Configuration, G9ZNH HD Controller

Jumper	Setting	Function
W1	1-2 *	HS3 selects for 16 head drives.
W2	Unjumped *	Wait state option
W3	1-2 *	Primary board addressing
W4	1-2 *	Controller output drivers disabled by firmware.
W5, W6	Unjumped *	Address bus control option
W7, W8	Unjumped *	Cntrl processor mode selected
W9	Unjumped *	Enable Caching
W10	Unjumped *	Diagnostic register non-latched.

* Default

System Configuration, G8BUT HD Controller

Jumper	Setting	Function
W14	Unjumped *	Select translation mode
W15	Unjumped *	Cache enable
W18	Jumped *	Mode Select

* Default

System Configuration, VGB (G8BYL) Video Controller

Jumper	Setting	Function
S1	1 - 2 *	High Res - 132 Column
	2 - 3	Feature Connector
S2	1 - 2 *	16 Bit BIOS ROM data path
	2 - 3	8 Bit BIOS ROM data path
S3	1 - 2	Enable Slot Sense / 16 bit transfer
	2 - 3 *	Disable Slot Sense / 8 bit transfer

* Default

System Configuration, G8ABH Video Controller

Jumper	Setting	Function
S1	2 - 3 *	Selects address 3XX
	1 - 2	Selects address 2XX
S2	UP *	Advanced Color / High Resolution
	DOWN	All other displays
S3, S4	S3:2-3 * S4:1-2 *	Selects ROM type 27256
	S3:2-3 S4:2-3	Selects ROM type 27512
	S3:1-2 S4:1-2	Selects ROM type 27128
S6	2 - 3 *	Selects 132 columns
	1 - 2	Selects feature connector
S7	3 - 7 *	Selects 31ms cycle for mouse
	1 - 5	Selects 8ms cycle for mouse
	2 - 6	Selects 15ms cycle for mouse
	4 - 8	Selects 61ms cycle for mouse
S8	1 - 5 *	Select IRQ051 for mouse
	2 - 6	Select IRQ041 for mouse
	3 - 7	Select IRQ031 for mouse
	4 - 8	Not Used
S9	2 - 3 *	Disables emul. of CGA, MDA, Herz
	1 - 2	Enables emul. of CGA, MDA, Herz.
S10	2 - 3 *	Disables 400 line mode
	1 - 2	Enables 400 line mode **
S11	2 - 3 *	Selects ROM BIOS linear mode.
	1 - 2	Selects ROM BIOS paged mode.
S12	2 - 3 *	Selects ROM BIOS linear mode.
	1 - 2	Selects ROM BIOS paged mode.
S13	2 - 3 *	Disables Parallel mouse cntrlr.
	1 - 1	Enables Parallel mouse cntrlr.

* Default   ** Only available w/NEC Adv. Monitor or MultiSync

AGB Plus/AGB As Primary Display Board
Switch 5 Switch Settings

S5-1	S5-2	S5-3	S5-4	Configurations
On	Off	Off	On	40 x 25 color
Off	Off	Off	On	80 x 25 color
Off *	On *	On *	Off *	Advanced color, High-Res
On	On	On	Off	Advanced color, emulation
On	Off	On	Off	Mono w/other 40x25 color
Off	Off	On	Off	Mono w/other 80x25 color

* Default

AGB Plus/AGB As Secondary Display Board
Switch 5 Switch Settings

S5-1	S5-2	S5-3	S5-4	Configurations
On	On	On	On	40 x 25 color
Off	On	On	On	80 x 25 color
Off *	Off *	On *	On *	Advanced color, High-Res
On	Off	On	On	Advanced color, Emulation
On	On	Off	On	Mono w/other 40x25 color
Off	On	Off	On	Mono w/other 80x25 color

* Default

Special Notices:

- Ctl -Alt (+or -) changes clock speed.
- NEC hard drive 300 & 140 (ESDI type) are not compatible with the NEC 80 & 130 (ESDI type) hard drives because of incompatible translate modes.
- MS-DOS 3.3 or higher and a hardware system setup program is needed for ESDI support
- Warning: Circuit boards may retain a charge for a few seconds.
- All switch settings will not take place until system is repowered

Removal Procedures

Before beginning removal complete the following steps:
1. Turn off the computer and any peripheral devices.
2. Disconnect AC power cord from outlet and system.
3. Disconnect all peripheral devices from the computer.
4. Discharge any static with static strap to chassis.

System Cover
1. Remove the screw holding top plate to unit's rear panel.
2. Remove the top cover plate by lifting up and off.
3. Remove three screws securing cover to the back of unit.
4. Remove three screws that fasten cover to top of system.
5. Pull the cover outward, then lift up to remove cover.

Front Panel
1. Locate the three metal tabs with screws on the front left metal frame for the chassis.
2. Remove the three screws holding these metal tabs to the chassis frame
3. While holding the bezel below the drive bays, pull on the left side of the bezel with force and pull outward from the frame. Next slide bezel to left to clear the right side.

Field Replaceable Units

Memory	OEM Part	IBM Part
G8BSM 2MB memory	136-007897-611A	67H9110
512KB memory exp. brd.	136-005873-001A	67H9091
512KB memory exp. mod.	136-005873-002A	67H9092
4MB memory exp. board	136-007954-250A	67H9114
8MB memory exp. board	136-008174-656A	67H9119

Controller	OEM Part	IBM Part
G9ZNH- ST506 HD cntrlr.	808-865892-002A	69H5453
G8CDQ- ST506 HD cntrlr.	808-865892-007A	62H1455
G8AGB- ESDI HD cntrlr.	808-865892-004A	48H2562

Internal Hard Drive	OEM Part	IBM Part
42MB, 3.5'', IDE HD	136-008174-426A	67H9116
80MB, 5.25''' IDE HD	136-007954-223A	67H9113
300MB, 5.25'', ESDI HD	136-008174-621A	67H9117

System Boards	OEM Part	IBM Part
G8BUJ- System Board	158-050129-000	67H9688

Diskette Drives	OEM Part	IBM Part
5.25'', 360KB Floppy	136-005869-002A	67H9088
3.5'', 720KB Floppy	136-006372-424A	67H9094
5.25'', 1.2MB Floppy	136-007892-207A	47H8595
3.5'', 1.44MB Floppy	136-007954-222A	67H9112

Video Boards	OEM Part	IBM Part
Adv. graphics board plus	136-006793-A	47H8585
Advanced graphics board	136-005872-A	67H9090
G9XZT-Color graphics bd.	136-005871-A	67H9089
G8BYL video grahpics bd.	136-008076-A	47H8600

Cables	OEM Part	IBM Part
5'' HD B cable	808-840069-011A	47H9817
5'', ESDI HD, signal cable	808-840656-005A	67H2180
COM1/COM2 relay cable	808-840649-001A	47H9824
Printer port relay cable	808-840648-010A	47H9823

Miscellaneous	OEM Part	IBM Part
Lithium Battery, (6v)	804-020612-001A	55H1254
Power Supply (237 Watt)	808-865745-001A	49H5539
Keyboard PS/2 style	808-866923-005A	47H9970