5.6.3. ROM-BIOS Sockets

An EPROM socket with 8bit wide data access normally contains the board's AT compatible ROM-BIOS. The socket takes an E82802AC8 EPROM (or equivalent) device. The board's wait-state control logic automatically inserts four memory wait-states in all CPU accesses to this socket. The ROM-BIOS sockets occupy the memory area from C0000H through FFFFFh; however, the board's ASIC logic reserves the entire area from C0000h through FFFFFh for onboard devices, so that this area is already usable for ROM-DOS and BIOS expansion modules. Consult the appropriate address map for the MICROSPACE MSM855 ROM-BIOS sockets.

5.7. CMOS RAM Map

Systems based on the industry-standard specification include a battery backed Real Time Clock chip. This clock contains at least 64Bytes of non-volatile RAM. The system BIOS uses this area to store information including system configuration and initialization parameters, system diagnostics, and the time and date. This information remains intact even when the system is powered down.

The BIOS supports 128Bytes of CMOS RAM. This information is accessible through I/O ports 70h and 71h. CMOS RAM can be divided into several segments:

- Locations 00h - 0Fh contain real time clock (RTC) and status information
- Locations 10h - 2Fh contain system configuration data
- Locations 30h - 3Fh contain System BIOS-specific configuration data as well as chipset-specific information
- Locations 40h - 7Fh contain chipset-specific information as well as power management configuration parameters

The following table provides a summary of how these areas may be further divided.

Beginning	Ending	Checksum	Description
00h	0Fh	No	RTC and Checksum
10h	2Dh	Yes	System Configuration
2Eh	2Fh	No	Checksum Value of 10h - 2Dh
30h	33h	No	Standard CMOS
34h	3Fh	No	Standard CMOS - SystemSoft Reserved
40h	5Bh	Yes	Extended CMOS - Chipset Specific
5Ch	5Dh	No	Checksum Value of 40h - 5Bh
5Eh	6Eh	No	Extended CMOS - Chipset Specific
6Fh	7Dh	Yes	Extended CMOS - Power Management
7Eh	7Fh	No	Checksum Value of 6Fh - 7Dh

CMOS Map

Location	Description
00h	Time of day (seconds) specified in BCD
01h	Alarm (seconds) specified in BCD
02h	Time of day (minutes) specified in BCD
03h	Alarm (minutes) specified in BCD
04h	Time of day (hours) specified in BCD
05h	Alarm (hours) specified in BCD
06h	Day of week specified in BCD
07h	Day of month specified in BCD
08h	Month specified in BCD
09h	Year specified in BCD
0Ah	Status Register A Bit 7 = Update in progress Bits 6-4 = Time based frequency divider Bits 3-0 = Rate selection bits that define the periodic interrupt rate and output frequency.
0Bh	Status Register B Bit 7 = Run/Halt 0 Run 1 Halt Bit 6 = Periodic Timer 0 Disable 1 Enable Bit 5 = Alarm Interrupt 0 Disable 1 Enable Bit 4 = Update Ended Interrupt 0 Disable 1 Enable Bit 3 = Square Wave Interrupt 0 Disable 1 Enable Bit 2 = Calendar Format 0 BCD 1 Binary Bit 1 = Time Format 0 12-Hour 1 24-Hour Bit 0 = Daylight Savings Time 0 Disable 1 Enable
0Ch	Status Register C Bit 7 = Interrupt Flag Bit 6 = Periodic Interrupt Flag Bit 5 = Alarm Interrupt Flag Bit 4 = Update Interrupt Flag Bits 3-0 = Reserved
0Dh	Status Register D Bit 7 = Real Time Clock 0 Lost Power 1 Power
0Eh	CMOS Location for Bad CMOS and Checksum Flags Bit 7 = Flag for CMOS Lost Power 0 = Power OK 1 = Lost Power Bit 6 = Flag for CMOS checksum bad 0 = Checksum is valid 1 = Checksum is bad

0Fh	Shutdown Code
10h	Diskette Drives Bits 7-4 = Diskette Drive A 0000 = Not installed 0001 = Drive A = 360 kB 0010 = Drive A = 1.2MB 0011 = Drive A = 720 kB 0100 = Drive A = 1.44MB 0101 = Drive A = 2.88MB Bits 3-0 = Diskette Drive B 0000 = Not installed 0001 = Drive B = 360 kB 0010 = Drive B = 1.2MB 0011 = Drive B = 720 kB 0100 = Drive B = 1.44MB 0101 = Drive B = 2.88MB
11h	Reserved
12h	Fixed (Hard) Drives Bits 7-4 = Hard Drive 0, AT Type 0000 = Not installed 0001-1110 = Types 1-14 1111 = Extended drive types 16-44. See location 19h. Bits 3-0 = Hard Drive 1, AT Type 0000 = Not installed 0001-1110 = Types 1-14 1111 = Extended drive types 16-44. See location 2Ah.
13h	Reserved
14h	Equipment Bits 7-6 = Number of Diskette Drives 00 = One diskette drive 01 = Two diskette drives 10, 11 = Reserved Bits 5-4 = Primary Display Type 00 = Adapter with option ROM 01 = CGA in 40 column mode 10 = CGA in 80 column mode 11 = Monochrome Bits 3-2 = Reserved Bit 1 = Math Coprocessor Presence 0 = Not installed 1 = Installed Bit 0 = Bootable Diskette Drive 0 = Not installed 1 = Installed
15h	Base Memory Size (in kB) - Low Byte
16h	Base Memory Size (in kB) - High Byte
17h	Extended Memory Size (in kB) - Low Byte
18h	Extended Memory Size (in kB) - High Byte
19h	Extended Drive Type - Hard Drive 0
1Ah	Extended Drive Type - Hard Drive 1

1Bh	Custom and Fixed (Hard) Drive Flags Bits 7-6 = Reserved Bit 5 = Internal Floppy Disk Controller 0 = Disabled 1 = Enabled Bit 4 = Internal IDE Controller 0 = Disabled 1 = Enabled Bit 3 = Hard Drive 0 Custom Flag 0 = Disabled 1 = Enabled Bit 2 = Hard Drive 0 IDE Flag 0 = Disabled 1 = Enabled Bit 1 = Hard Drive 1 Custom Flag 0 = Disabled 1 = Enabled Bit 0 = Hard Drive 1 IDE Flag 0 = Disabled 1 = Enabled
1Ch	Reserved
1Dh	EMS Memory Size Low Byte
1Eh	EMS Memory Size High Byte
1Fh - 24h	Custom Drive Table 0 These 6 Bytes (48 bits) contain the following data: Cylinders 10bits range 0-1023 Landing Zone 10bits range 0-1023 Write Precompensation 10bits range 0-1023 Heads 8bits range 0-15 Sectors/Track 8bits range 0-254
1Fh	Byte 0 Bits 7-0 = Lower 8 bits of Cylinders
20h	Byte 1 Bits 7-2 = Lower 6 bits of Landing Zone Bits 1-0 = Upper 2 bits of Cylinders
21h	Byte 2 Bits 7-4 = Lower 4 bits of Write Precompensation Bits 3-0 = Upper 4 bits of Landing Zone
22h	Byte 3 Bits 7-6 = Reserved Bits 5-0 = Upper 6 bits of Write Precompensation
23h	Byte 4 Bits 7-0 = Number of Heads
24h	Byte 5 Bits 7-0 = Sectors Per Track
25h - 2Ah	Custom Drive Table 1 These 6 Bytes (48 bits) contain the following data: Cylinders 10bits range 0-1023 Landing Zone 10bits range 0-1023 Write Precompensation 10bits range 0-1023 Heads 8bits range 0-15 Sectors/Track 8bits range 0-254
25h	Byte 0 Bits 7-0 = Lower 8 bits of Cylinders

26h	Byte 1 Bits 7-2 = Lower 6 bits of Landing Zone Bits 1-0 = Upper 2 bits of Cylinders
27h	Byte 2 Bits 7-4 = Lower 4 bits of Write Precompensation Bits 3-0 = Upper 4 bits of Landing Zone
28h	Byte 3 Bits 7-6 = Reserved Bits 5-0 = Upper 6 bits of Write Precompensation
29h	Byte 4 Bits 7-0 = Number of Heads
2Ah	Byte 5 Bits 7-0 = Sectors Per Track
2Bh	Boot Password Bit 7 = Enable/Disable Password 0 = Disable Password 1 = Enable Password Bits 6-0 = Calculated Password
2Ch	SCU Password Bit 7 = Enable/Disable Password 0 = Disable Password 1 = Enable Password Bits 6-0 = Calculated Password
2Dh	Reserved
2Eh	High Byte of Checksum - Locations 10h to 2Dh
2Fh	Low Byte of Checksum - Locations 10h to 2Dh
30h	Extended RAM (kB) detected by POST - Low Byte
31h	Extended RAM (kB) detected by POST - High Byte
32h	BCD Value for Century
33h	Base Memory Installed Bit 7 = Flag for Memory Size 0 = 640kB 1 = 512kB Bits 6-0 = Reserved
34h	Minor CPU Revision Differentiates CPUs within a CPU type (i.e., 486SX vs 486 DX, vs 486 DX/2). This is crucial for correctly determining CPU input clock frequency. During a power-on reset, Reg DL holds minor CPU revision.
35h	Major CPU Revision Differentiates between different CPUs (i.e., 386, 486, Pentium). This is crucial for correctly determining CPU input clock frequency. During a power-on reset, Reg DH holds major CPU revision.
36h	Hotkey Usage Bits 7-6 = Reserved Bit 5 = Semaphore for Completed POST Bit 4 = Semaphore for 0 Volt POST (not currently used) Bit 3 = Semaphore for already in SCU menu Bit 2 = Semaphore for already in PM menu Bit 1 = Semaphore for SCU menu call pending Bit 0 = Semaphore for PM menu call pending
40h-7Fh	Definitions for these locations vary depending on the chipset.

5.8. EEPROM Saved CMOS Setup

The EEPROM has different functions, as listed below:

- Backup of the CMOS-Setup values.
- Storing system informations like: version, production date, customisation of the board, CPU type.
- Storing user/application values.

The EEPROM will be updated automatically after exiting the BIOS setup menu. The system will also operate without a CMOS battery. While booting up, the CMOS is automatically updated with the EEPROM values.

Press the **ESC**-key while powering on the system before the video shows the BIOS message and the CMOS will **not** be updated. This is helpful if incorrect parameters are stored in the EEPROM and the setup of the BIOS does not start.

If the system hangs or a problem appears, the following steps must be performed:

1. Reset the CMOS-Setup (to reset the CMOS, disconnect the battery for at least 10 minutes).
2. Press **ESC** until the system starts up.
3. Enter the BIOS Setup:
    a. load DEFAULT values (**F9**)
    b. enter the settings for the environment
    c. exit the setup (**F10**)
4. Restart the system.

The user may access the EEPROM through the INT15 special functions. The system information is read-only and uses the SFI functions. Please refer to the driver/software/BIOS manual 855_BIOS, the chapter on Special Peripherals / Configurations, the Special Function Interface (SFI).

5.8.1. EEPROM Memory for Setup

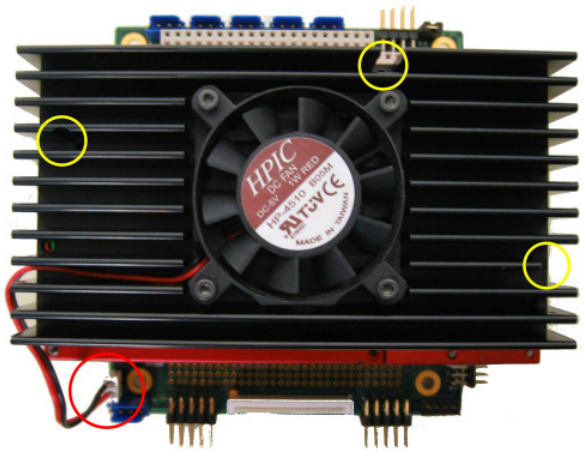
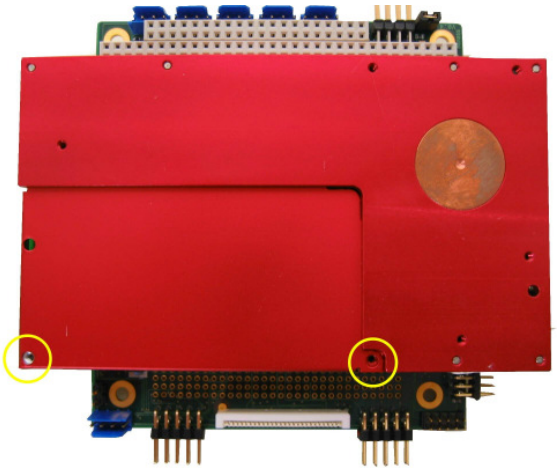
The EEPROM is used for setup and configuration data, stored as an alternative to the CMOS-RTC. Optionally, the EEPROM setup driver may update the CMOS RTC, if the battery is running down and the checksum error would appear and stop the system. The capacity of the EEPROM is 2 kByte.

Organization of the 2048Byte EEPROMs:

Address MAP	Function
0000h	**CMOS-Setup valid (01=valid)**
0001h	**Reserved**
0003h	**Flag for DLAG-Message (FF=no message)**
0010h-007Fh	**Copy of CMOS-Setup data**
0080h-00FFh	**Reserved for AUX-CMOS-Setup**
0100h-010Fh	**Serial-Number**
0110h-0113h	Production date (year/day/month)
0114h-0117h	1. Service date (year/day/month)
0118h-011Bh	2. Service date (year/day/month)
011Ch-011Fh	3. Service date (year/day/month)
0120h-0122h	Boot errors (Auto incremented if any boot error occurs)
0123h-0125h	Setup Entries (Auto incremented on every Setup entry)
0126h-0128h	Low Battery (Auto incremented every time the battery is low, EEPROM -> CMOS)
0129h-012Bh	Startup (Auto incremented on every power-on start)
0130h	Reserved
0131h	Reserved
0132h/0133h	BIOS Version (V1.4 => [0132h]:= 4, [0133h]:=1)
0134h/0135h	BOARD Version (V1.5 => [0124h]:=5, [0125h]:=1)
0136h	BOARD TYPE (‘M’=PC/104, ‘E’=Euro, ‘W’=MSWS, ‘S’=Slot, ‘C’=Custom, ‘X’= smartCore or smartModule)
0137h	CPU TYPE: (01h=ELAN300/310, 02h=ELAN400, 05h=P5, 08h=P3, 09h=ELAN520, 10h=P-M).
0200h-03FFh	**Reserved**
0200h-027Fh	Reserved
0400h-07FFh	**Free for Customer use**

5.9. Memory & I/O Map

5.9.1. Replacement of the SODIMM-DDRAM

	MSM855 and SM855 with heat sink **Step 1:** Remove the fan connection x12 on the MSEBX855. Remove the 3 screws from heat sink and dismantle the heatsink. **Screw Type:** Cylinder hexagon socket type screw M2x6mm /BN7 DIN912 ISO 4762 **Tool:** Hexagon head socket wrench no. 1.5
	**Step 2:** Remove the 2 screws from the SODIMM cover and dismantle the cover ***very carefully***. Slide the cover to the side and gently lift it away from the casing. **Screw Type:** Cylinder hexagon socket type screw M2x4mm /BN11 DIN912 ISO 4762 **Tool:** Hexagon head socket wrench no. 1.5
	**Step 3:** Press the memory holder sideways and click the module out.

	Completely dismantled parts.

5.9.2. System I/O Map

5.9.2.1. Fixed IO Address Space

IO Address	Size	Target
00h-1Fh	32	DMA controller
20h-2Dh	14	Interrupt controller
2Eh-2Fh	2	LPC SIO
30h-3Dh	14	Interrupt controller
40h-43h	4	8254 compatible timer
4Eh-4Fh	2	LPC SIO
50h-53h	4	8254 compatible timer
60h-66h (even)	4	8254 compatible timer
61h-67h (odd)	4	NMI controller
70h-77h	8	RTC controller
80h-91h	18	DMA controller
92h	1	Reset controller
93h-9Fh	13	DMA controller
A0h-B1h	18	Interrupt controller
B2h-B3h	2	Power management
B4h-BDh	10	Interrupt controller
C0h-DFh	32	DMA controller
F0h	1	Depends on configuration
F8h-FFh	8	Reserved
170h-177h	8	IDE controller
1F0h-1F7h	8	IDE controller
376h	1	IDE controller
3F6h	1	IDE controller

5.9.2.2. Variable IO Address Space

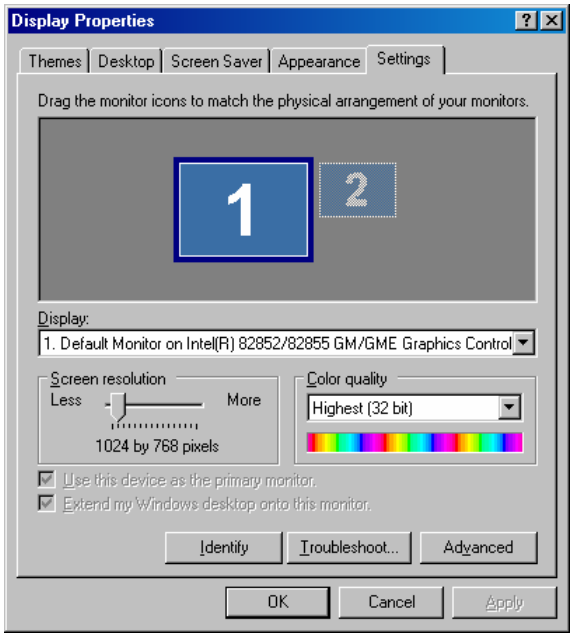
The variable IO address space depends on the BIOS settings. The following ranges are with default setup values loaded.

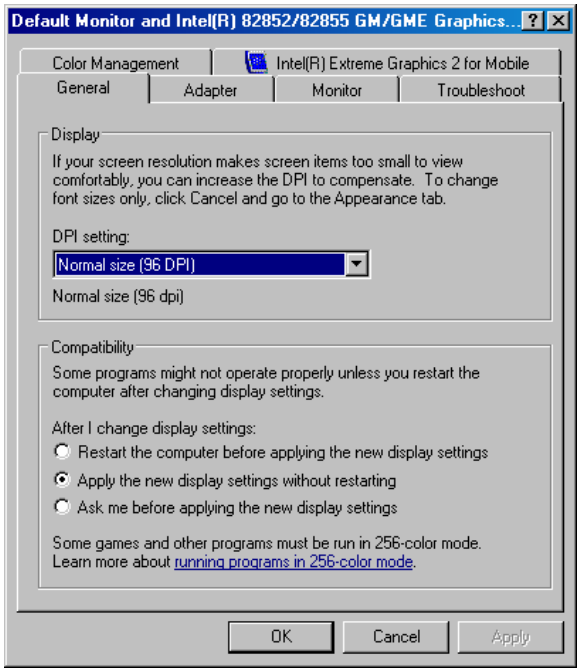
IO Address	Size	Target
000h-0FFh	256	Fixed IO address space
274h-277h	4	ISAPNP
279h-279h	1	ISAPNP
295h-296h	2	SuperIO
2F8h-2FFh	8	Serial port (COM2)
378h-37Fh	8	Printer port (LPT1)
3B0h-3BBh	12	Graphic controller
3C0h-3DFh	32	Graphic controller
3F0h-3F7h	8	Floppy controller
3F8h-3FFh	8	Serial port (COM1)

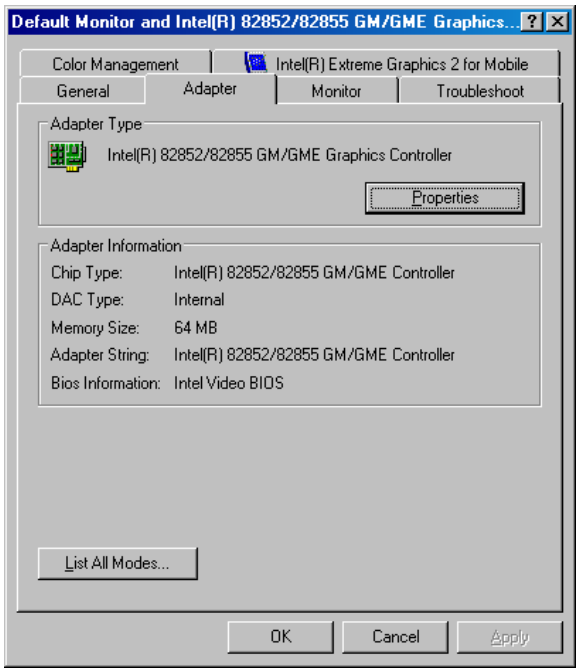
5.10. VGA / LCD

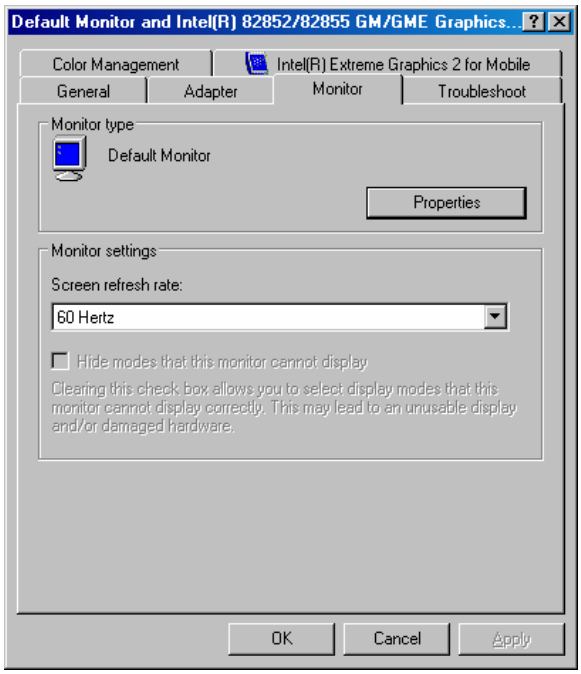
Start / Control Panel / Appearance and Themes / Display

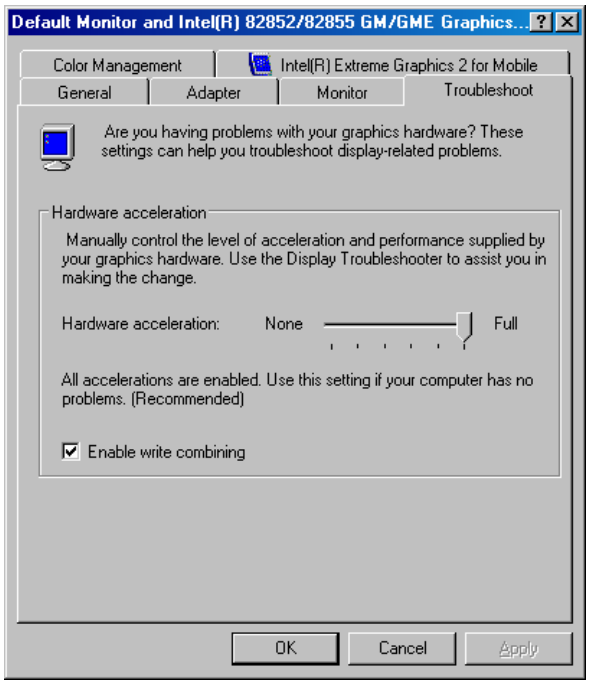
Register Settings:

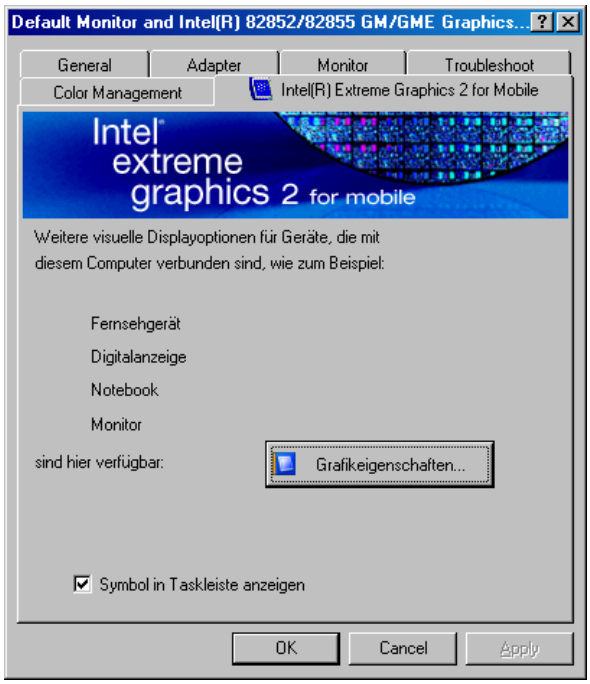


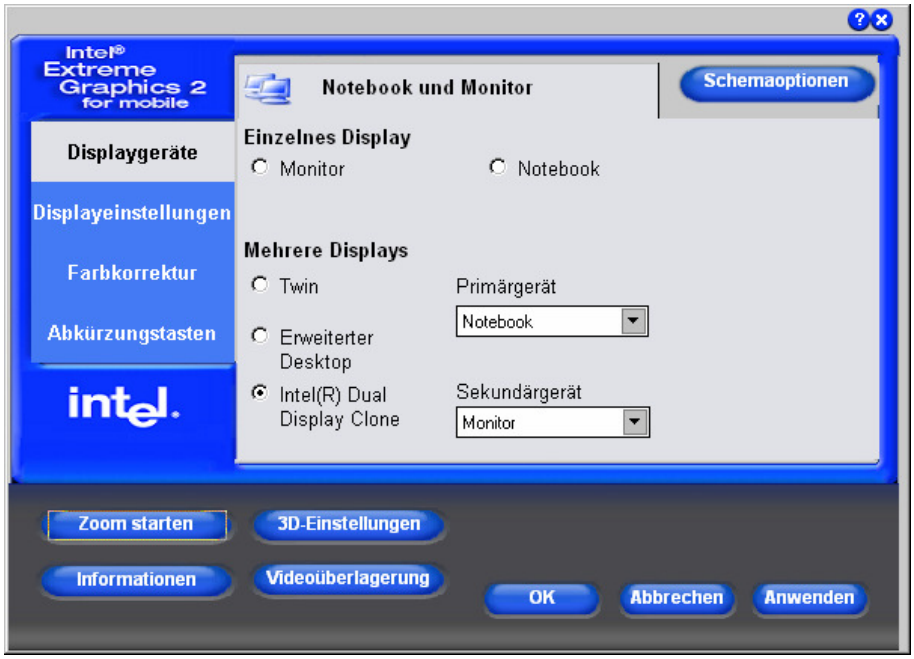












Attention!

If there is no picture after changing the values in the menu "DISPLAY PROPERTIES ➔ Settings" or if the system was started without a monitor connected:

Press the following key combination to get a picture again:

CTRL+ALT+ **Fx**

Where **Fx** is:

F1 = VGA
F2 or F3 = SVIDEO
F4 = DVI

We recommend changing the settings in the Intel graphics menu.

5.11. LVDS-Display

There are various LCD-panels available with a 6bit-LVDS interface which can be directly adapted to the LVDS-interface of the 855GME video controller.

The LVDS interface is composed of:

3x2 LVDS Datalines (differential)
1x2 LVDS Clockline (differential)
Backlight Power = 5V / DCMain
LCD Power = 3.3V / 5V

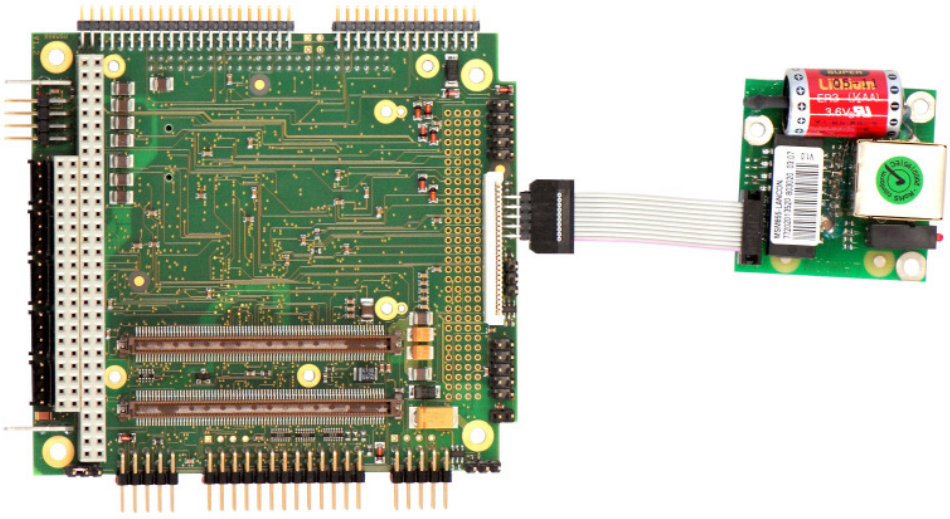
Here is a list of LVDS-Panels:

Display Part No.	Size	Resolution	Colors	Luminance	Power	Remarks
LVDS 18bit						
Toshiba						
LTM06C310	6.3”	1024x768	262k	150 cd/m3	3W	Tested, limited availability
LTM10C306L	10.4”	1024x768	262k	200cd/m3	3W	Tested
SIEMENS I-SFT						
G23916-B65-H068	10.4”	1024x768	262k	1000cd/m3	20W	
NEC						1)
NL10276BC24-13	12.1”	1024x768	262k/16M	400cd/m3		8/6bit LCD 1)
NL8060BC31-28D	12.1”	800x600	262k	350cd/m3		1)
NL10276BC26-17	10.4”	1024x768	262k			1)
NL10276BC16-01	8.4”	1024x768	262k/16M			8/6bit LCD 1)
NL10276BC12-02	6.3”	1024x768	262k/16M			8/6bit LCD 1)
SANYO-TORISAN						
TM121XG-02L01	12.1”	1024x768	262k	150cd/m3		
TM100SV-02L02	10”	800x600	262k	170cd/m3		
LG-Philips LCD						
LP104S5	10.4”	800x600	262k	170cd/m3		-T with 300cd/m3
LB150X06	15.0”	1024x768	262k	250cd/m3		

To use NEC Panels, please ask the manufacturer for any application notes.

5.12. LAN / Ethernet

5.12.1. LAN Cable Connection



RJ45 connector 10BaseT (IEEE 802.3i), 100BaseTX (IEEE 802.3u):

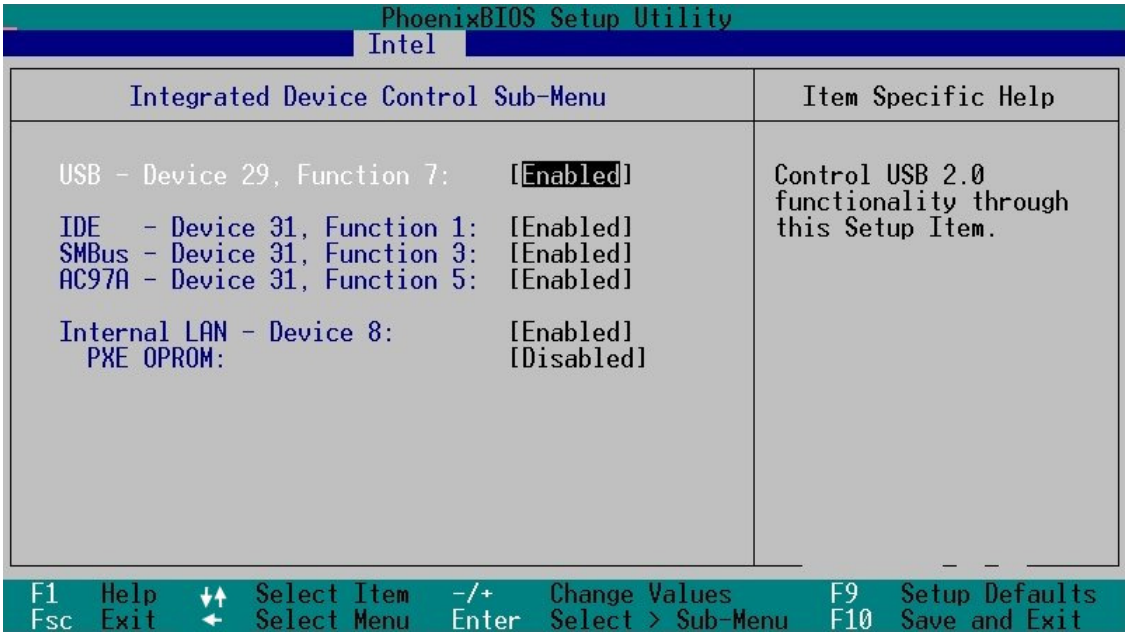
MDI-Pin	EIA/TIA 568A colors (wire/line)	Pin	Twisted Pair
TX+	White / Green	1	3
TX-	Green	2	3
RX+	White / Orange	3	2
GND ..		4	1
GND ..		5	1
RX-	Orange	6	2
GND ..		7	4
GND ..		8	4

Cabling: Do not exceed 100 meters (328 feet)
Has a quality of at least CAT5, though S/FTP or STP CAT6 would be better
Be sure to have a well balanced shield/ground concept

5.12.2. Boot from LAN

The integrated LAN boot option in the BIOS supports only the PXE LAN boot.

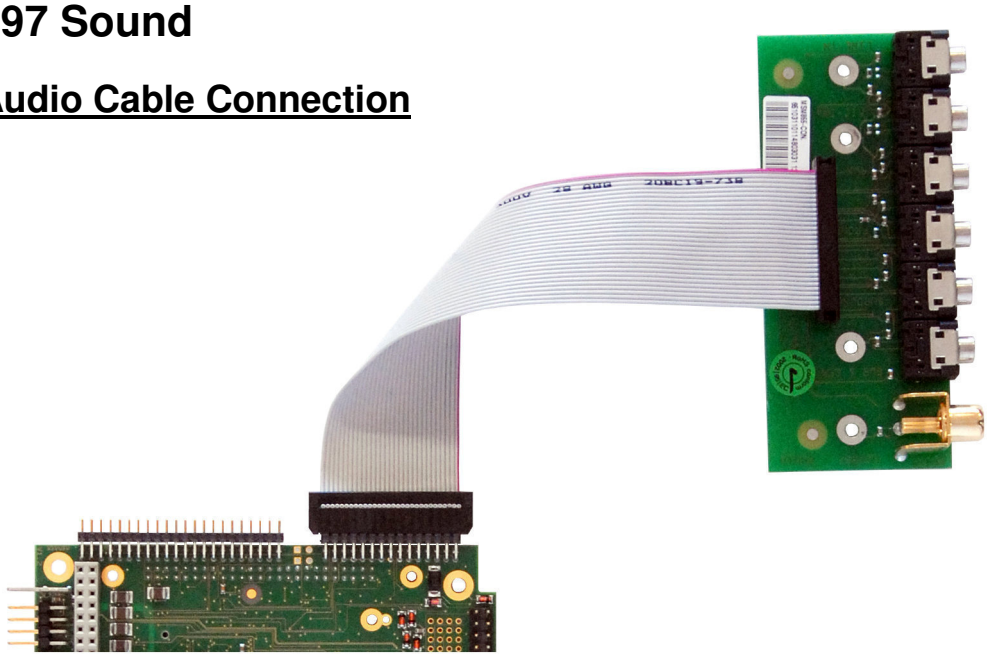
Enable the PXE OPROM function in the BIOS setup:



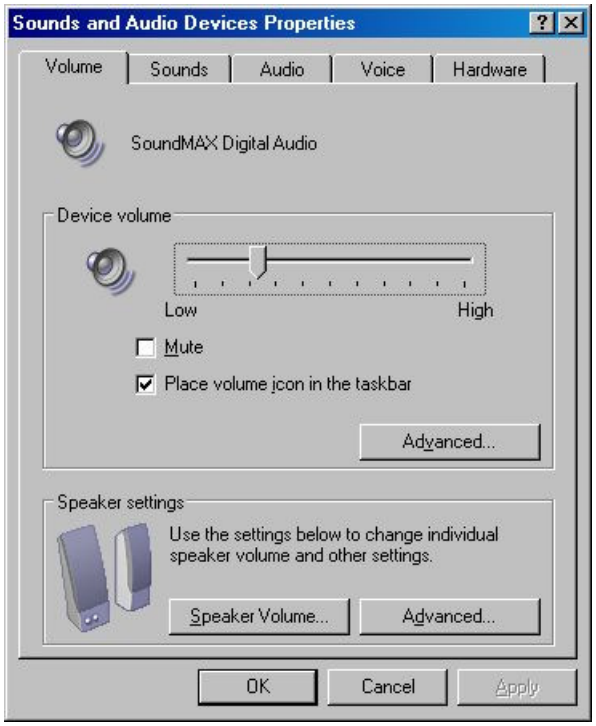
After enabling this feature, **Save**, **Exit** and **Reboot**. To boot from LAN, re-enter the BIOS setup and select the “IBA FE Slot 0240” as the first boot device in the boot order.

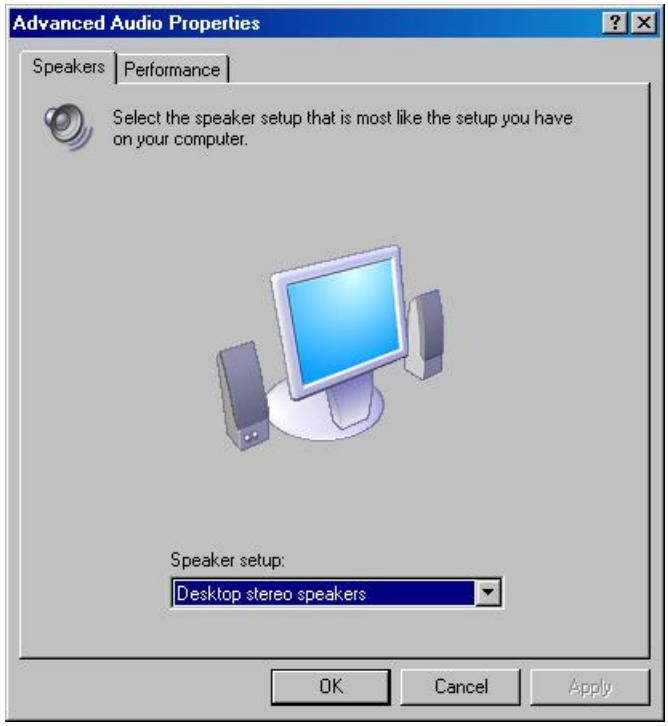
5.13. AC97 Sound

5.13.1. Audio Cable Connection



5.13.2. Sound Settings





5.14. SpeedStep Performance Control

The Pentium-M improved the SpeedStep mechanism by adding a third power scheme in addition to the low-power and the full-performance modes. This new mode is called adaptive mode, and allows the frequency and voltage to switch according to the CPU activity. The CPU uses a low-power mode by default, but when its activity increases, it switches itself very quicky into full-performance mode. This new power scheme is very pleasant to use, because it allows full CPU speed only when needed. Of course, power consumption depends on the CPU activity, and the more the CPU is used, the more it consumes power.

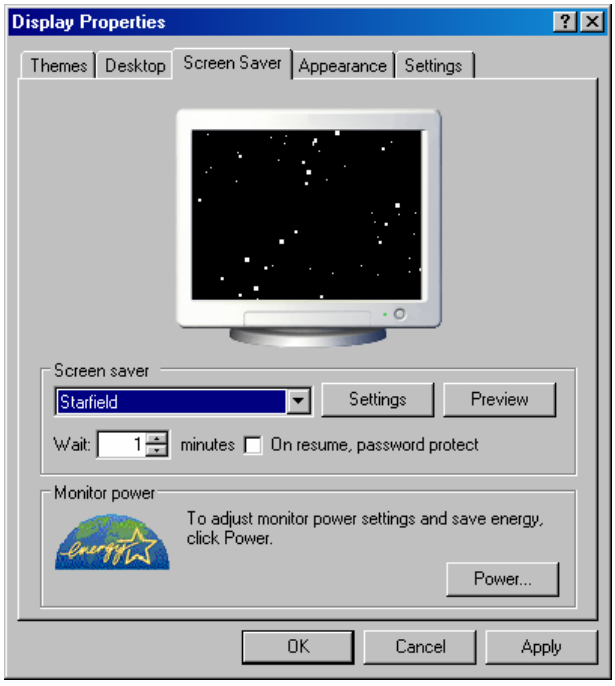
Windows XP Power Schemes	**AC Power** **(Frequency example: mobile Pentium-M 1.6 GHz)**
Home/Office Desktop	None (1.6 GHz Always)
Portable /Laptop	Adaptive (600 MHz <...> 1.6 GHz)
Presentation	Adaptive (600 MHz <...> 1.6 GHz)
Always On	None (1.6 GHz Always)
Minimal Power Management	Adaptive (600 MHz <...> 1.6 GHz)
Maximum Battery	Adaptive (600 MHz <...> 1.6 GHz)

CPU performance is heavily dependent on the choice of power scheme in the system control

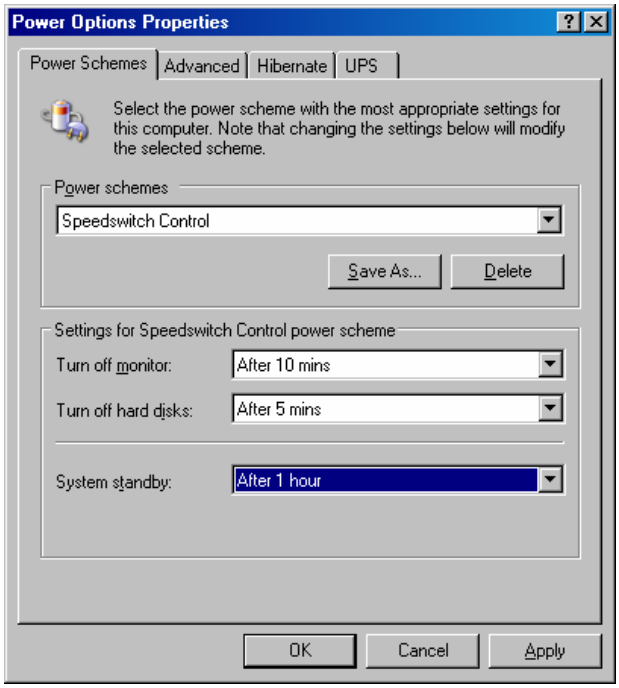
5.14.1. Set up Power Management

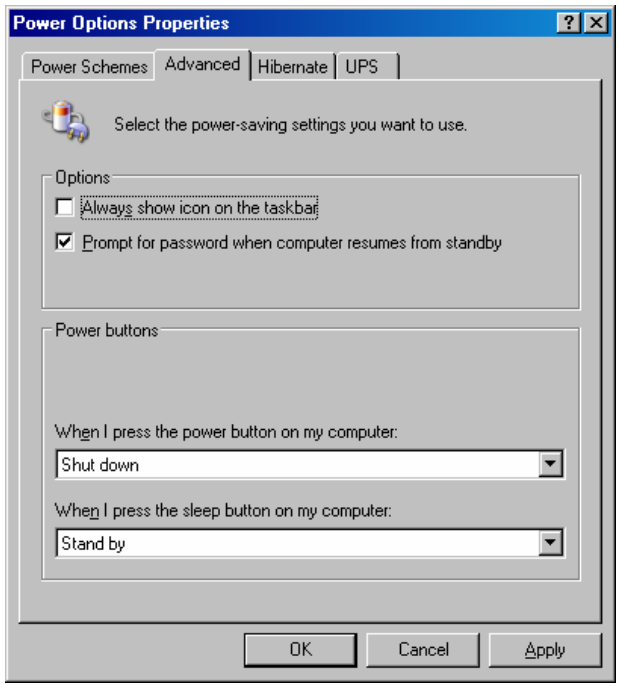
Start / Control Panel / Appearance and Themes / Display

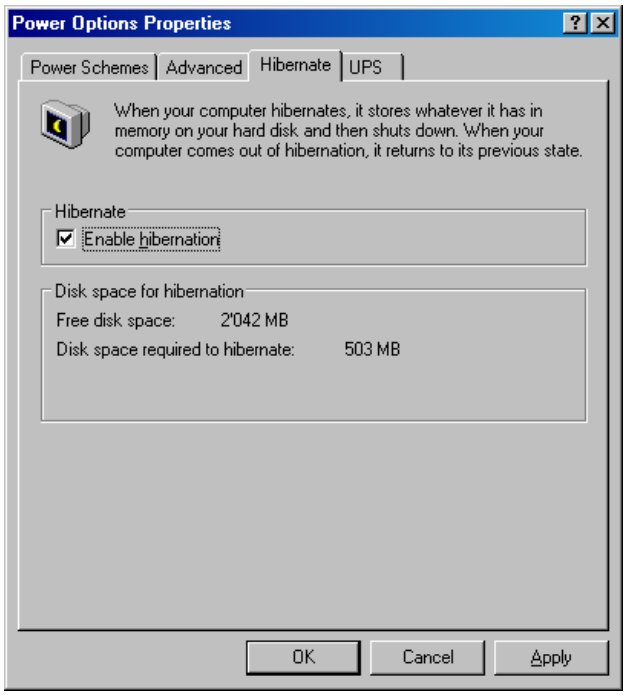
Go to the Register Screen Saver:



Press the Power Button


Power Options Properties
Power Schemes
Advanced
Hibernate
UPS
Select the power scheme with the most appropriate settings for this computer. Note that changing the settings below will modify the selected scheme.
Power schemes
Speedswitch Control
Save As...
Delete
Settings for Speedswitch Control power scheme
Turn off monitor:
After 10 mins
Turn off hard disks:
After 5 mins
System standby:
After 1 hour
OK
Cancel
Apply


Power Options Properties
Power Schemes
Advanced
Hibernate
UPS
Select the power-saving settings you want to use.
Options
Always show icon on the taskbar
Prompt for password when computer resumes from standby
Power buttons
When I press the power button on my computer:
Shut down
When I press the sleep button on my computer:
Stand by
OK
Cancel
Apply


Power Options Properties
Power Schemes
Advanced
Hibernate
UPS
When your computer hibernates, it stores whatever it has in memory on your hard disk and then shuts down. When your computer comes out of hibernation, it returns to its previous state.
Hibernate
Enable hibernation
Disk space for hibernation
Free disk space: 2'042 MB
Disk space required to hibernate: 503 MB
OK
Cancel
Apply

6. DESCRIPTION & LOCATION OF THE CONNECTORS

Connector	Structure	Pin	Grid	Angle
J1	USB Port1	4	RM2.54	180°
J2	USB Port0 (preparation for Wakeup from USB)	4	RM2.54	180°
J4	Floppy disk	26	FFC	180°
J5	COM2 RS232C	10	RM2.54	90°
J6	COM1 RS232C	10	RM2.54	180°
J7	LPT1 Printer port	26	RM2.54	90°
J8	Utility (KB,MS,Battery,Reset,Sp.)	10	RM2.54	90°
J9	IrDA	4	RM2.54	
J10	Ext.Temp. Sensor (manufacturer's use only)	2		
J11	Ext.Temp. Sensor (manufacturer's use only)	2		
J12	PCI-Bus PC/104+	120		
J15	VGA interface (RGB,H&V-Synch,I2C)	10	RM2.54	180°
J16	ATX-Mainswitch (toggle)	3	RM2.54	180°
J21	ATA-IDE primary	44	RM2.00	90°
J22	ISA-Bus PC/104	104		
J23	USB Port3	4	RM2.54	180°
J24	USB Port2	4	RM2.54	180°
J25	USB Port5	4	RM2.54	180°
J26	USB Port4	4	RM2.54	180°
J27	POD (manufacturer's use only)	14	RM2.00	180°
J29	LAN (LAN, LED, Battery)	10	RM2.00	90°
J30	Sound (3xStereo, MIC, Line)	30	RM2.00	90°
J33	LAN (LAN, LED) ★	10	RM2.00	180°
J34	Factory test	14	RM2.00	
X7	Optional CompactFlash	50	CF	
X8	Power input (Main Input)	8	RM2.54	90°
X11	LVDS, DVO channel B, DVO channel C	50	RM2.00	180°
X12	FAN-Power Output (5V/GND)	2	RM2.54	180°
X13	FAN-Power Output 1 (5V/FANPWM/GND)	3	RM2.54	180°
X14	Power Input GND			90°
X15	Power Input VCC 5V			90°
X16	FAN-Power Output 2 (5V/FANPWM/GND)	3	RM2.54	180°

★ only available on the MSM855B2

Different connectors on board version 0.4

Connector	Structure	Pin	Remarks	Angle
J16	ATX-Mainswitch (toggle)	2	RM2.54	
X8	Power Input (Main Input)	8	RM2.54	
X9	LVDS Interface	20	RM2.00	
X10	DVO channel B	26	RM2.00	
X11	DVO channel C	26	RM2.00	

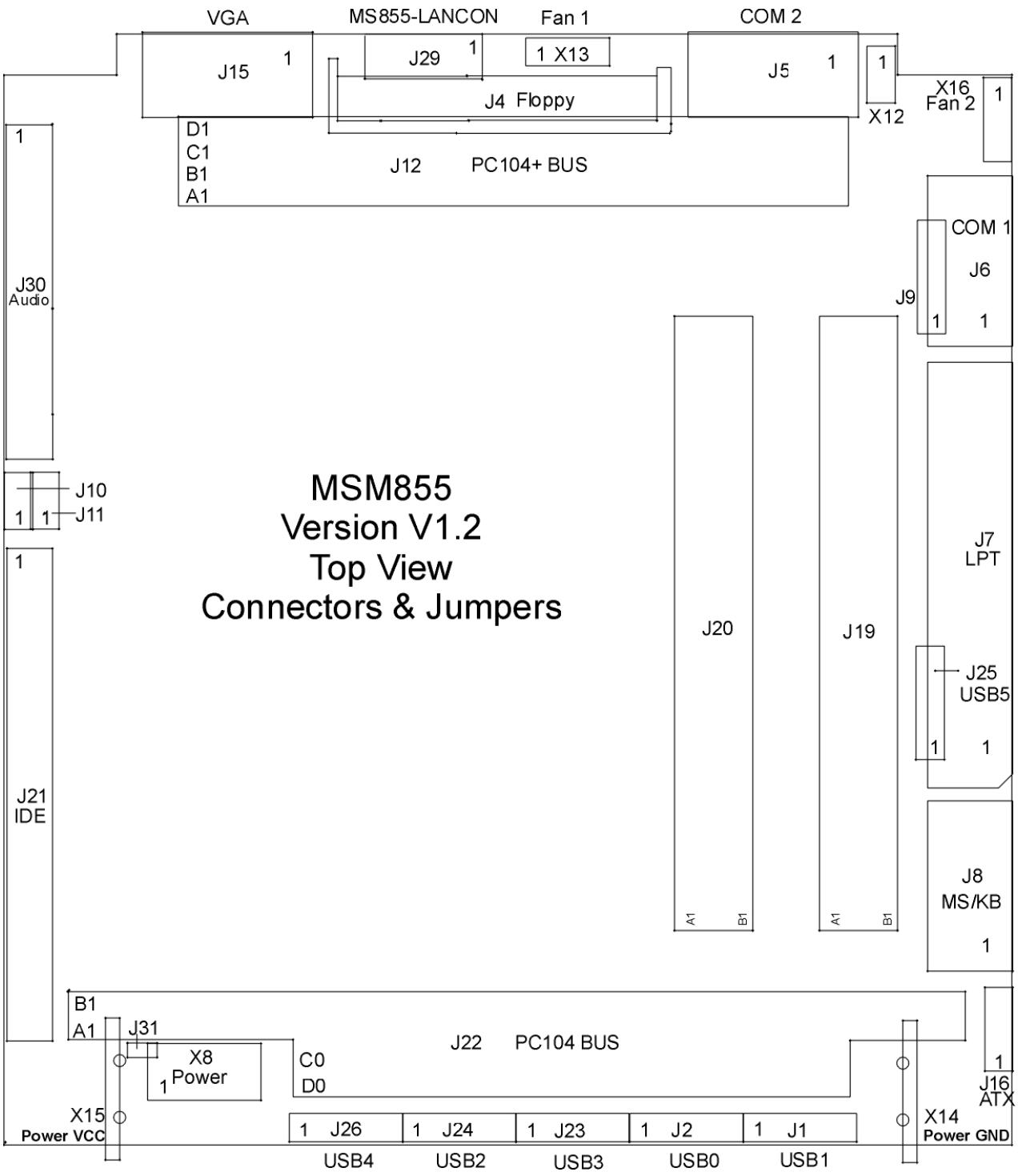
Also refer to Chapter 13, Previous Product Versions

Remarks:

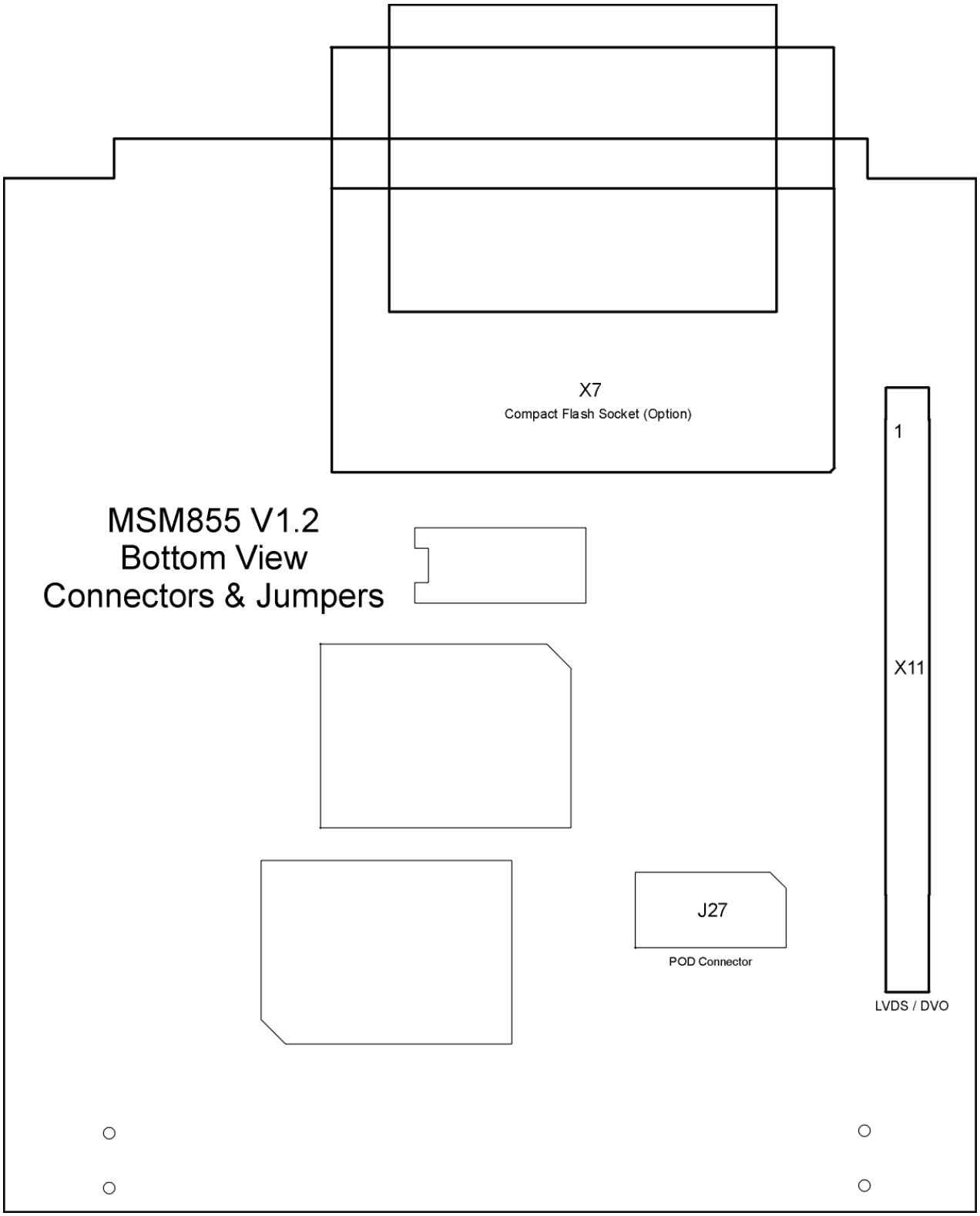
J16 is used to start up the computer system.

90° angle =		180° angle (straight) =	

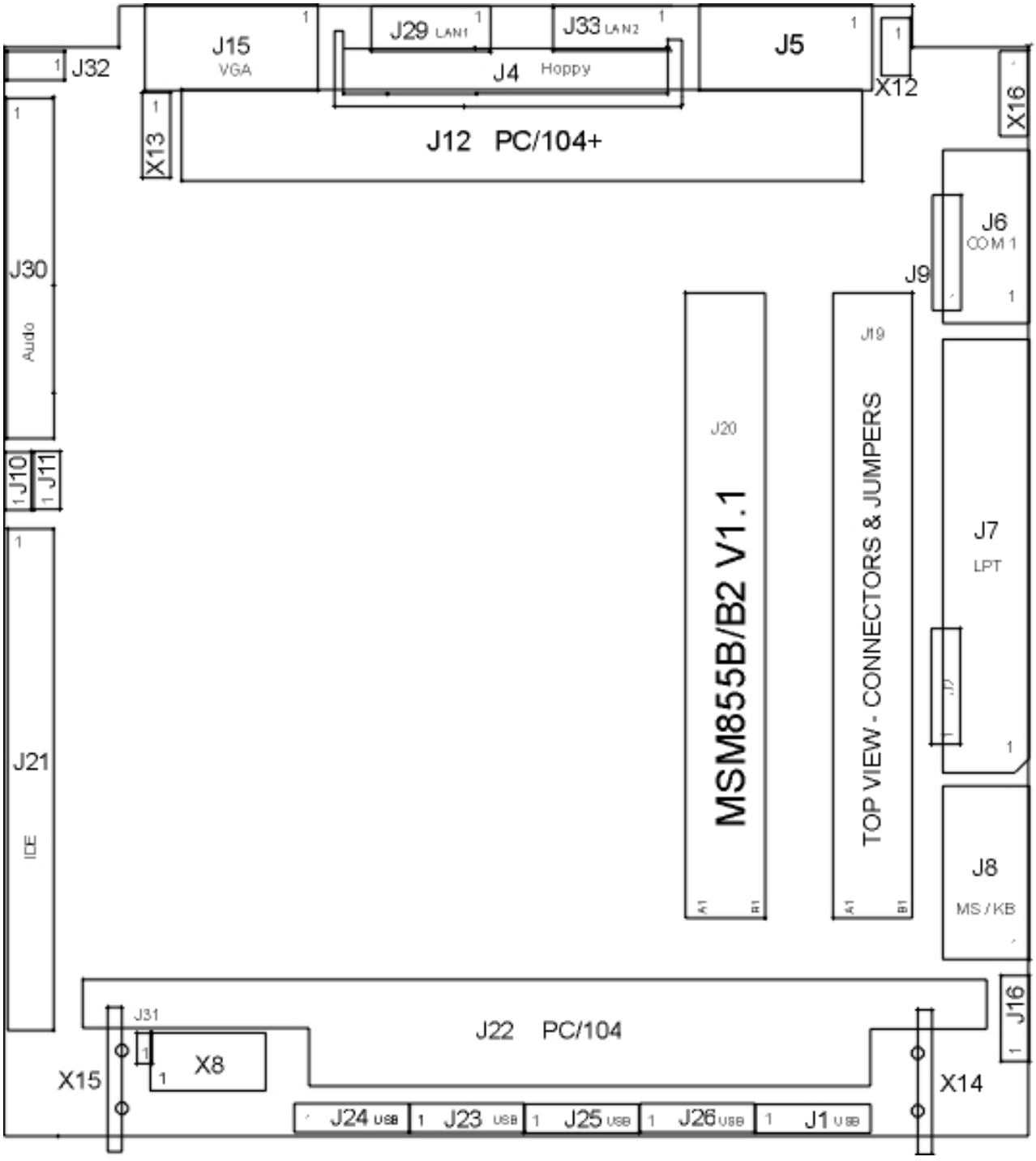
6.1. Top Side of the MSM855 V1.2/V1.3



6.2. Bottom Side of the MSM855 V1.2/V1.3



6.3. Top Side of the MSM855B/B2 V1.1



6.4. Top Side of the MSM855B/B2 V1.1

The bottom of the MSM855B/B2 is indentical to the bottom side of the MSM855 V1.3.

Standard MSM855

X8 Power Supply (J31 = closed)

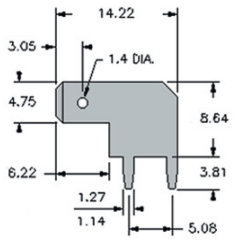
Pin	Signal	Pin	Signal
1	GND	2	Main supply +5V
3	Main switch (= J16 pin1)	4	(+12V)
5	SMBUS DAT	6	SMBUS CLK
7	GND	8	Main supply +5V

Remarks:

- Main switch is **low** active and internally pulled up to 3.3V.
- 12V are not used for onboard functions; only wired to PC/104bus.
- The Main supply is the only external (5V) supply used for this system.

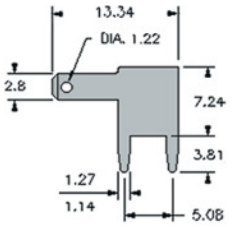
or

X14 Power Supply GND (mounting tab 4.75mm)



Pin	Signal	Info
1	GND	www.compona.ch PartNr. 236 713-1

X15 Power Supply VCC (mounting tab 2.8mm)



Pin	Signal	Info
1	Main supply +5V	www.compona.ch PartNr. 236 712-1

Customized MSM855 with HLV input

High Level Voltage-Input (5V-24V)

Supply for the MSM855 baseboard only:

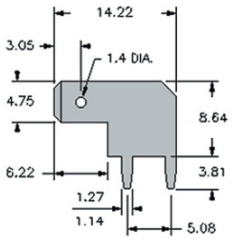
X8 Power Supply with J31 open (HLV-Input)

Pin	Signal	Pin	Signal
1	NC	2	5V
3	Main switch (= J16 pin1)	4	(+12V)
5	SMBUS DAT	6	SMBUS CLK
7	NC	8	5V

Supply for the SM855 (5V-24V):

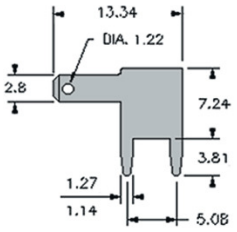
X14 Power Supply GND (mounting tab 4.75mm) with J31 open (HLV-Input)

Pin	Signal	Info
1	GND	www.compona.ch Part Nr. 236 713-1



X15 Power Supply VCC (mounting tab 2.8mm) with J31 open (HLV-Input)

Pin	Signal	Info
1	Main supply 5-32V	www.compona.ch Part Nr. 236 712-1



Attention!

The board, CPU and all peripherals will be destroyed if voltage between 5 and 24V is supplied through X14/X15 with Jumper J31 closed! The warranty will also be void! You must check J31 before connecting power to the system!

J1 USB 1 Connector
J2 USB 0 Connector (not assembled on the MSM855)
J23 USB 3 Connector
J24 USB 2 Connector
J25 USB 5 Connector (not assembled on the MSM855B/B2)
J26 USB 4 Connector

Pin	Signal
1	VCC5
2	USB-Px-
3	USB-Px+
4	GND

Remarks:
Use twisted pair USB cables for USB V2.0 compatibility.

Components assembled on MSM855	Dubox 4 pole	Nr. 246 562
Cable	Dubox 4 pole	Nr. 246 552
Crimp Contacts	Dubox	Nr. 246 513

Contact: www.compona.ch

J4 Floppy Disk Interface Connector

FD26: Pin	Signal	Function	in/out
1	VCC	+5V	
2	IDX	Index Pulse	in
3	VCC	+5V	
4	DS2	Drive Select 2	out
5	VCC	+5V	
6	DCHG	Disk Change	in
10	M02	Motor On 2	out
12	DIRC	Direction Select	out
14	STEP	Step	out
16	WD	Write Data	out
17	GND	Signal grounds	
18	WE	Write Enable	out
19	GND	Signal grounds	
20	TRKO	Track 0	in
21	GND	Signal grounds	
22	WP	Write Protect	in
23	GND	Signal grounds	
24	RDD	Read Data	in
25	GND	Signal grounds	
26	HS	Head Select	out

J5 Serial Port COM2

Header onboard	D-SUB connector	Signal
Pin 1	Pin 1	DCD
Pin 2	Pin 6	DSR
Pin 3	Pin 2	RxD
Pin 4	Pin 7	RTS
Pin 5	Pin 3	TxD
Pin 6	Pin 8	CTS
Pin 7	Pin 4	DTR
Pin 8	Pin 9	RI
Pin 9	Pin 5	GND
Pin10		open

J6 Serial Port COM1

Header onboard	D-SUB connector	Signal
Pin 1	Pin 1	DCD
Pin 2	Pin 6	DSR
Pin 3	Pin 2	RxD
Pin 4	Pin 7	RTS
Pin 5	Pin 3	TxD
Pin 6	Pin 8	CTS
Pin 7	Pin 4	DTR
Pin 8	Pin 9	RI
Pin 9	Pin 5	GND
Pin10		open

J7 Printer Port (Centronics)

The printer connector provides an interface for 8bit Centronics printers.

Header onboard	D-SUB connector	Signal
Pin 1	Pin 1	Strobe
Pin 3	Pin 2	Data 0
Pin 5	Pin 3	Data 1
Pin 7	Pin 4	Data 2
Pin 9	Pin 5	Data 3
Pin 11	Pin 6	Data 4
Pin 13	Pin 7	Data 5
Pin 15	Pin 8	Data 6
Pin 17	Pin 9	Data 7
Pin 19	Pin 10	Acknowledge
Pin 21	Pin 11	Busy
Pin 23	Pin 12	Paper end
Pin 25	Pin 13	Select
Pin 2	Pin 14	Autofeed
Pin 4	Pin 15	Error
Pin 6	Pin 16	Init printer
Pin 8	Pin 17	Shift in (SI)
Pins 10, 12, 14, 16, 18	Pins 18-22	Left open
Pins 20, 22, 24	Pin 23-25	GND

J8 Keyboard PS/2/-Mouse Utility Connector

Attention: The speaker must be connected to VCC, to have a low inactive current in the speaker !

Pin	Signal	Pin	Signal
1	Speaker Out	2	Ground
3	Reset In	4	VCC
5	Keyboard Data	6	Keyboard Clock
7	Ground	8	Ext. 3.6V Lithium Battery
9	PS/2 Mouse Clock	10	PS/2 Mouse Data

J9 IrDA Connector

Pin	Signal
1	VCC
2	IRTX
3	IRRX
4	GND

J12 PC/104+ BUS Interface

Pin	A:	B:	C:	D:
1	GND/5.0V KEY2	Reserved	+5	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0*	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1*	AD15	+3.3V
9	SERR*	GND	SB0*	PAR
10	GND	PERR*	+3.3V	SDONE
11	STOP*	+3.3V	LOCK*	GND
12	+3.3V	TRDY*	GND	DEVSEL*
13	FRAME*	GND	IRDY*	+3.3V
14	GND	AD16	+3.3V	C/BE2*
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3*	VI/O	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0*	GND	REQ1*	VI/O
24	GND	REQ2*	+5V	GNT0*
25	GNT1*	VI/O	GNT2*	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD*	+5V	RST*
29	+12V	INTA*	INTB*	INTC*
30	-12V	Reserved	Reserved	GND/3.3V KEY2

Notes:

1. The shaded area denotes power or ground signals.
2. The KEY pins are to guarantee proper module installation. Pin-A1 will be removed and the female side plugged for 5.0V I/O signals and Pin-D30 will be modified in the same manner for 3.3V I/O. It is recommended that both KEY pins (A1 and D30) be electrically connected to GND for shielding. ***DLAG boards have them as NC***

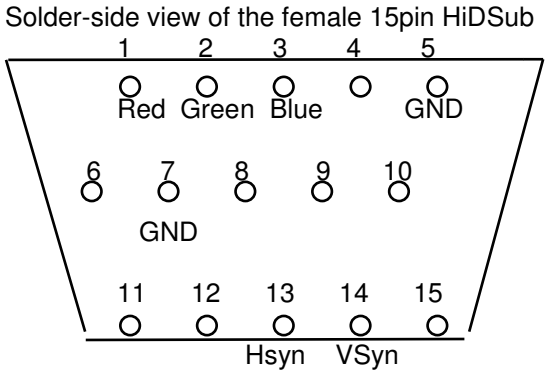
Signals Used Onboard (not for external use):

IRQ3, IRQ4	COM1/2
IRQ7	LPT1
IRQ6	FD
IRQ14	HD
IRQ12	PS/2 Mouse
IRQ13	Coprocessor
TC	FD
DACK2 and DRQ2	FD

J15 VGA Monitor (CRT-Signals)

J15 Header		15 pins HiDensity DSUB	
10 Pin -M	Signal	Pin	Signal
Pin 2	VGA Red	1	Red
Pin 4	VGA Green	2	Green
Pin 6	VGA Blue	3	Blue
Pin 8	Horizontal Synch	13	H-Synch
Pin 9	Vertical Synch	14	V-Synch
		5 + 11	Bridged
Pin 1	Ground	5, 6, 7, 8	Ground
Pin 3	NC		
Pin 5	NC		
Pin 7	DDC-Data	12	DDC- Data
Pin 10	DDC-Clock	15	DDC- Clock

The VGA-CRT signals from J15 must be wired to a standard VGA HiDensity DSub connector (female):
The LCD signals must be wired panel specific.



J16 Main-Switch Connector 3pin

Pin	Signal	Pin	Signal
1	Main Switch *	2	GND
3	Power Button **		

* **J16** Default Setting: closed by a jumper between Pins 1 and 2. If this jumper is closed until the main supply powers up, the computer system will start with a boot sequence.

If you want to use a push button to start the system:
If this jumper is open until the main supply powers up, the board does not start. You must connect a push button (Main Button) to Pins 1-2. After pushing the main button, the board will start. (If you press the Main Button for more than 4 seconds, the power will be switched off.)

** if you want to use the PWRBTN signal (i.e., in W2k or XP) you must connect another push button to Pins 2-3 of the **J16** jumper to shut down the Windows OS by pressing the push button.

Note…
After the system is shut down with the Power Button, to restart the system the Main Button (connected to Pins 1-2) must be used.

The PWRBTN signal is ***low*** active and internally pulled to 3.3V.

J21 IDE Interface

Pin	Signal	Pin	Signal
1	Reset (active low)	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	(keypin) NC
21	NC	22	GND
23	IOW (active low)	24	GND
25	IOR (active low)	26	GND
27	IORDY	28	ALE / Master-Slave
29	DACK	30	GND
31	IRQ14	32	IOCS16 (active low) NC
33	ADR1	34	NC
35	ADR0	36	ADR2
37	CS0 (active low)	38	CS1 (active low)
39	LED (active low)	40	GND
41	VCC Logic	42	VCC Motor
43	GND	44	NC

J22 PC/104 BUS Interface

Pin	A:	B:	C:	D:
0			Ground	Ground
1	IOCHCK	Ground	SBHE	MEMCS16
2	SD7	RESET	LA23	IOCS16
3	SD6	+5V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	NC	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	(-12V)	LA18	IRQ14
8	SD1	0WS	LA17	DACK0
9	SD0	+12V	MEMR	DRQ0
10	IOCHRDY	Ground NC	MEMW	DACK5
11	AEN	SMEMW	SD8	DRQ5
12	SA19	SMEMR	SD9	DACK6
13	SA18	SIOW	SD10	DRQ6
14	SA17	SIOR	SD11	DACK7
15	SA16	DACK3	SD12	DRQ7
16	SA15	DRQ3	SD13	+5 Volt
17	SA14	DACK1	SD14	MASTER
18	SA13	DRQ1	SD15	Ground
19	SA12	REF	Ground	Ground
20	SA11	SYSCLK		
21	SA10	IRQ7		
22	SA9	IRQ6		
23	SA8	IRQ5		
24	SA7	IRQ4		
25	SA6	IRQ3		
26	SA5	DACK2		
27	SA4	TC		
28	SA3	ALE		
29	SA2	+5V		
30	SA1	OSC		
31	SA0	Ground		
32	Ground	Ground		

J29 LAN Interface Connector

MSM855:

Pin	Signal	Pin	Signal
1	TDN (LAN TX-)	2	TDP (LAN TX+)
3	RDN (LAN RX-)	4	RDP (LAN RX+)
5	LAN-LED Activity	6	3.6V-RTC Lithium Battery Input
7	GND	8	VCC3 (+3.3V)
9	LAN-LED Speed	10	LAN-LED Link

Remarks:

- Pins 1-4 must be connected to a 100/10-BASE-T transformation for isolation.
- Pins 5, 8, 9 and 10 are used to connect 3pc LAN LED's.
  Each LAN-LED-signal must be terminated with a 330 Ohm resistor.
- Pins 6 & 7 are used to connect the RTC-Battery.

MSM855B/B2:

Pin	Signal	Pin	Signal
1	LAN TX-	2	LAN TX+
3	LAN RX-	4	LAN RX+
5	LAN-LED Activity	6	NC
7	GND	8	VCC3 (+3.3V)
9	LAN-LED Speed	10	LAN-LED Link

J30 Sound Interface Connector

Pin	Signal	Pin	Signal
1	CD Input Left	2	GND for CD
3	CD Input Right	4	AUX-Line Input Left
5	GND for AUX	6	AUX-Line Input Right
7	LINE Input Left	8	GND for LINE
9	LINE Input Right	10	GND for MIC1
11	MIC1 Input	12	GND for MIC2
13	MIC2 Input	14	MONO Input
15	Output Suround Left	16	GND
17	Output Suround Right	18	GND
19	Output Front Left	20	GND
21	Output Front Right	22	GND
23	Output Center	24	GND
25	Output Subwoofer	26	GND
27	SPDIF Output	28	Jack-sense 0 (Front-sense)
29	Jack-sense 2 LineIn)	30	Jack-sense 3 (MIC-sense)

J33 LAN Interface Connector

Only on the MSM855B2:

Pin	Signal	Pin	Signal
1	LAN TX-	2	LAN TX+
3	LAN RX-	4	LAN RX+
5	LAN-LED Activity	6	NC
7	GND	8	VCC3 (+3.3V)
9	LAN-LED Speed	10	LAN-LED Link

X11 LVDS / DVO on board version V1.0

Pin	Signal	Pin	Signal
1	DVO_C_CLK	2	DVO_C_CLK#
3	GND	4	DVO_C_BLANK#
5	DVO_C_D0	6	DVO_C_D1
7	DVO_C_D10	8	DVO_C_D11
9	DVO_C_D2	10	DVO_C_D3
11	DVO_C_D4	12	DVO_C_D5
13	DVO_C_D6	14	DVO_C_D7
15	DVO_C_D8	16	DVO_C_D9
17	DVO_C_FLDSTL	18	DVO_C_HSYNC
19	DVO_C_VSYNC	20	DVO_BC_CLKINT
21	DVO_DVIC	22	DVO_DVID
23	GND	24	DVO_MI2C
25	DVO_MI2D	26	DVI_REF
27	VCC15	28	VCC15
29	VCC3S	30	VCC3S
31	DVO_detect	32	DVO_reset#
33	VCC5S	34	VCC5S
35	VCC12	36	LVDS_BKLC
37	LVDS_BKLEN	38	LVDS_VDDEN
39	GND	40	LVDS_CLKAM
41	LVDS_CLKAP	42	GND
43	LVDS_YAM	44	LVDS_YAP0
45	LVDS_YAM1	46	LVDS_YAP1
47	LVDS_YAM2	48	LVDS_YAP2
49	LVDS_YAM3	50	LVDS_YAP3

Detailed signal description:

Signal	LVDS_CLKAM [ICLKAM]
Description	Output, LVDS, voltage: 1.25V±225mV Channel A differential clock pair output (compliment): 245-800 MHz.

Signal	LVDS_CLKAP [ICLKAP]
Description	Output, LVDS, voltage: 1.25V±225mV Channel A differential clock pair output (true): 245-800 MHz.

Signal	LVDS_BKLC [PANELBKLTCTL]
Description	Output, CMOS LVDS LCD Flat Panel Backlight Brightness Control: This signal is used as the Pulse Width Modulated (PWM) control signal to control the backlight inverter.

Signal	LVDS_BKLEN [PANELBKLTEN]
Description	Output, CMOS LVDS LCD Flat Panel Backlight Enable: This signal is used to enable the backlight inverter (BLI).

Signal	LVDS_VDDEN [PANELVDDEN]
Description	Output, CMOS LVDS LCD Flat Panel Power Control: This signal is used enable power to the panel interface.

Signal	LVDS_YAP0..3 [IYAP[3:0]]
Description	Output, LVDS, voltage: 1.25V±225mV Channel A differential data pair 3:0 output (true): 245-800MHz.

Signal	LVDS_YAM0..3 [IYAM[3:0]]
Description	Output, LVDS, 1.25V±225mV Channel A differential data pair 3:0 output (compliment): 245-800 MHz.

X12 FAN-Power Supply, 2pin

Pin	Signal	Pin	Signal
1	VCC5	2	GND

X13 FAN-Power Supply 1, 3pin

Pin	Signal	Pin	Signal
1	GND	P2	VCC12V **
3	FAN1IN*	* for future use / ** only if 12V on X8 pin 4	

X16 FAN-Power Supply 2, 3pin

Pin	Signal	Pin	Signal
1	GND	2	VCC12V **
3	FAN2IN*	* for future use / ** only if 12V on X8 pin 4	

7. JUMPER LOCATIONS ON THE BOARD

The following figures show the location of all jumper blocks on the MSM855 board. The numbers shown in the figures are silk screened on the board so that the pins can easily be located. This chapter refers to the individual pins for these jumpers. The default jumper settings are written in **bold**.

Be careful: some jumpers are soldering bridges; you will need a miniature soldering station with a vacuum pump.

Settings written in bold are defaults!

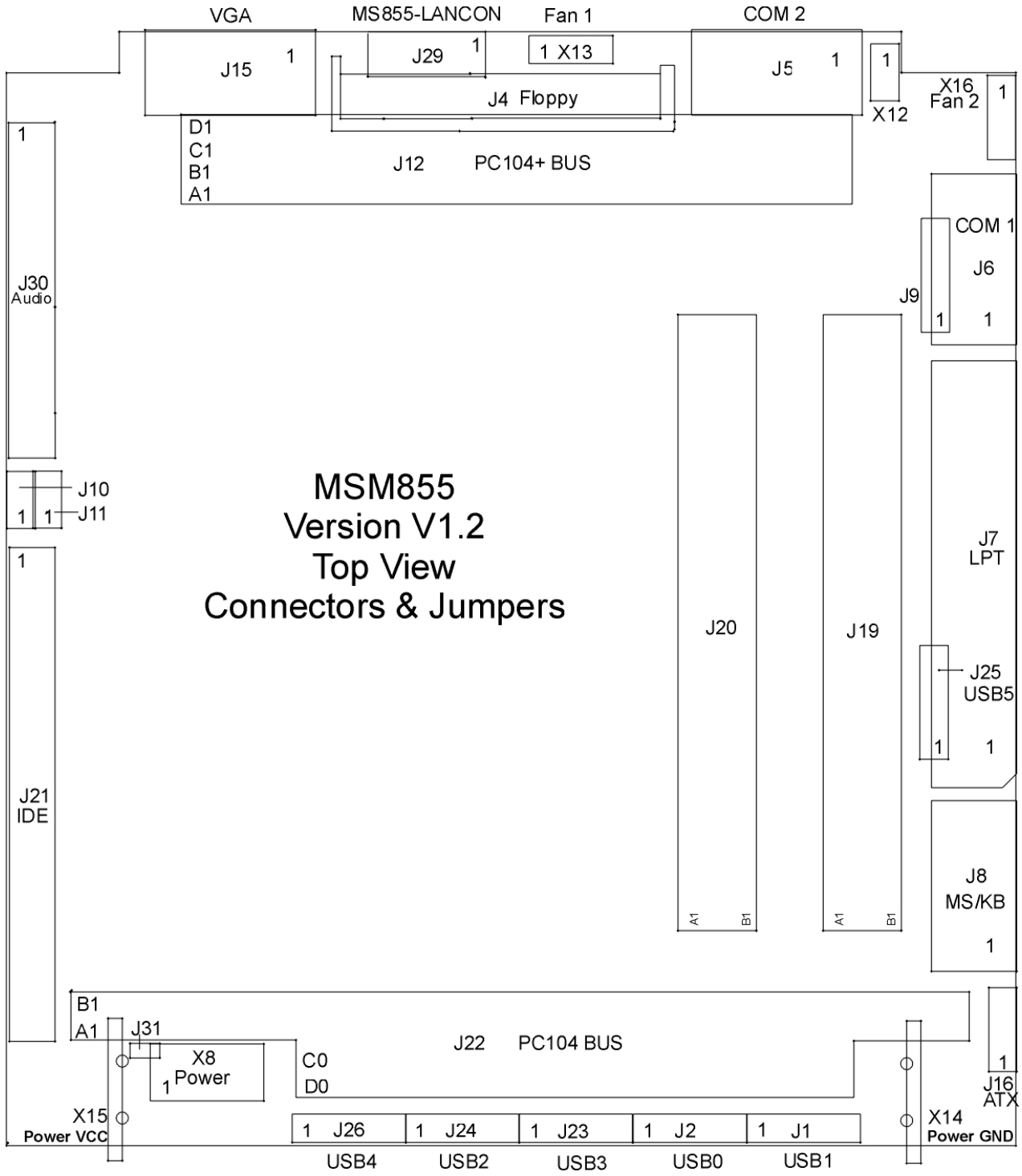
Jumper	Structure	1-2 / open	2-3 / closed	Remarks
J16	Main switch manually set	**1-2 = Automatic power on**	2-3 = ATX-Switch (push button) must be connected to GND (press button for boot up)	
J10	Only for manufacturer's use			
J11	Only for manufacturer's use			
J32*	LAN onboard function	**Enabled**	Disabled	

* only available on the MSM855B/B2

For the jumpers of board Version 0.4 please refer to Chapter 13, Previous Product Versions.

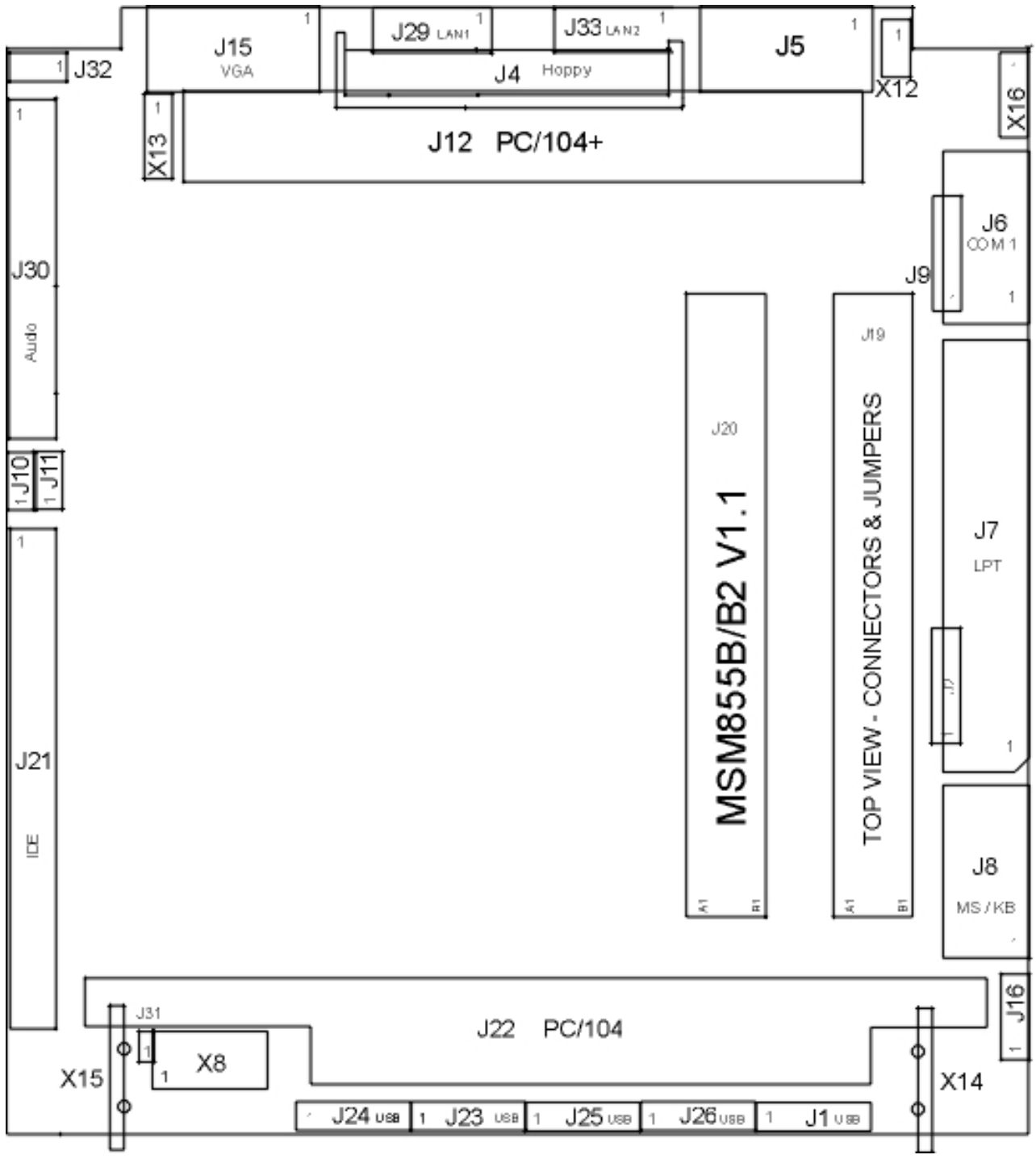
7.1. The Jumpers on the MSM855

MSM855 V1.2 / V1.3 – Top View



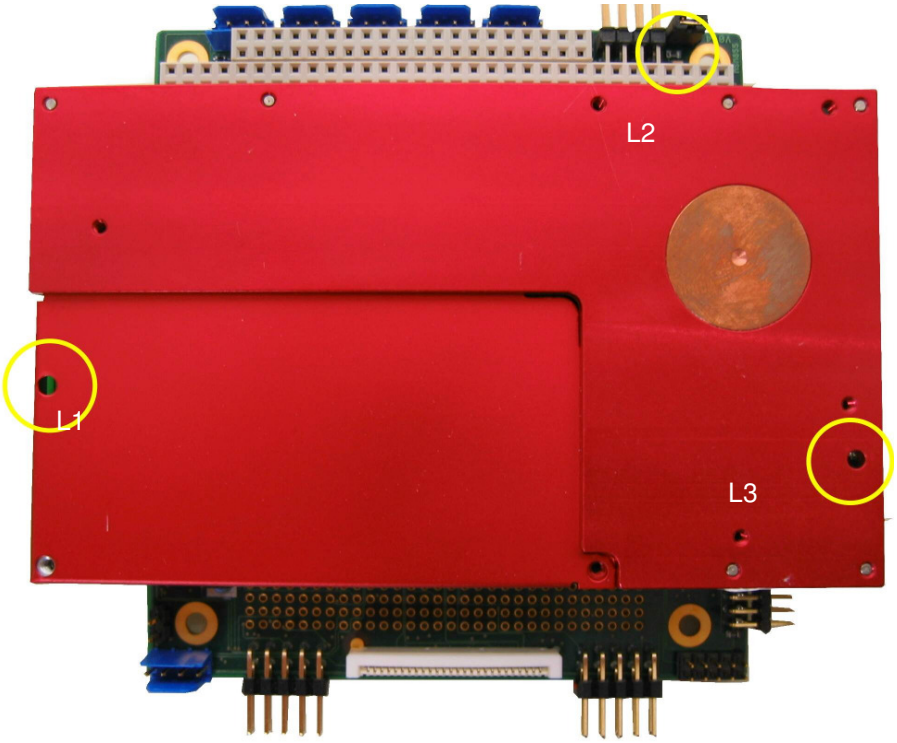
7.2. The Jumpers on the MSM855/B2

MSM855B/B2 V1.1 – Top View

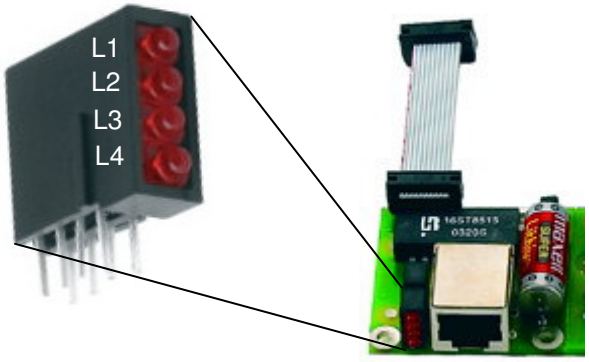


8. LED CRITERIA

LED	Color	Function
L1	Green	Run OK located in the SM855 cover
L2	Red	Hard disk activity located near the power supply connector
L3	Green	SM855 waiting for start (led blinks)



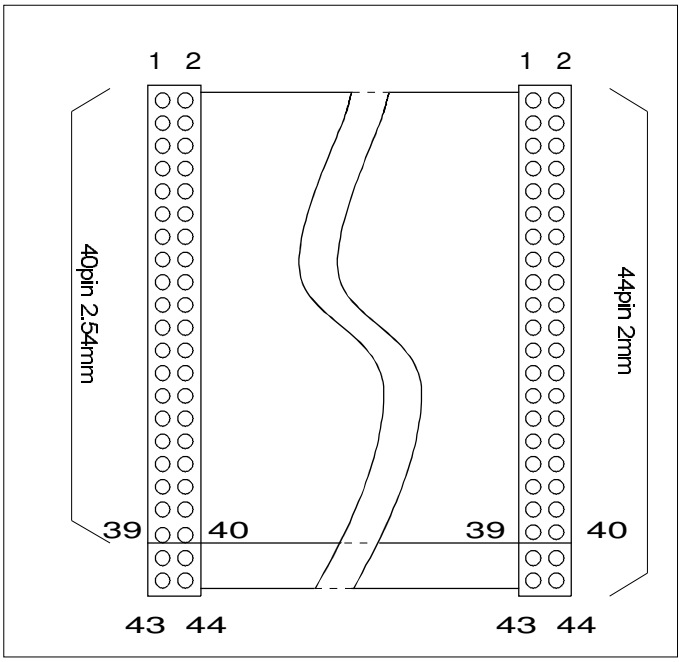
LED	Color	Function
L1	Red	Power
L2	Red	LAN Link
L3	Red	LAN Speed (100MB = lights / 10MB = no light)
L4	Red	LAN Activity



9. CABLE INTERFACES

9.1. The Hard Disk Cable 44pin

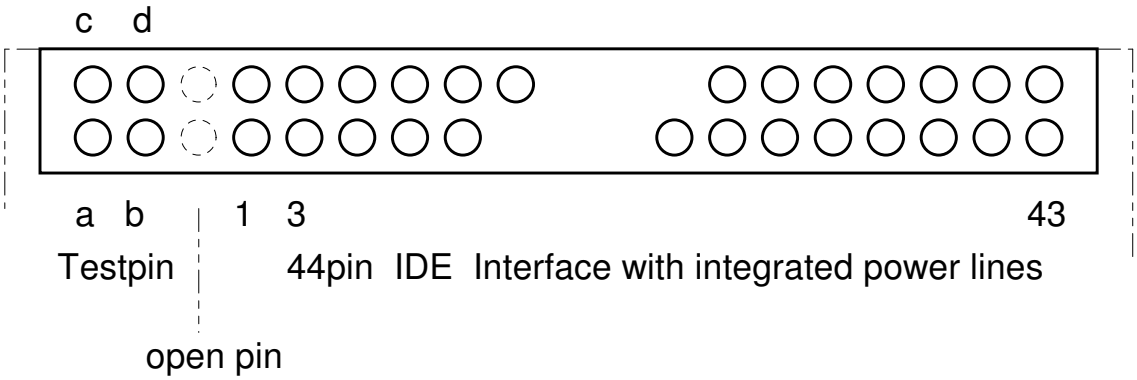
IDT Terminal for Dual Row (2.00mm grid) and 1.00mm flat cable; 44pins = 40pins signal and 4pins power.



Maximum length for the IDE cable is 30cm.

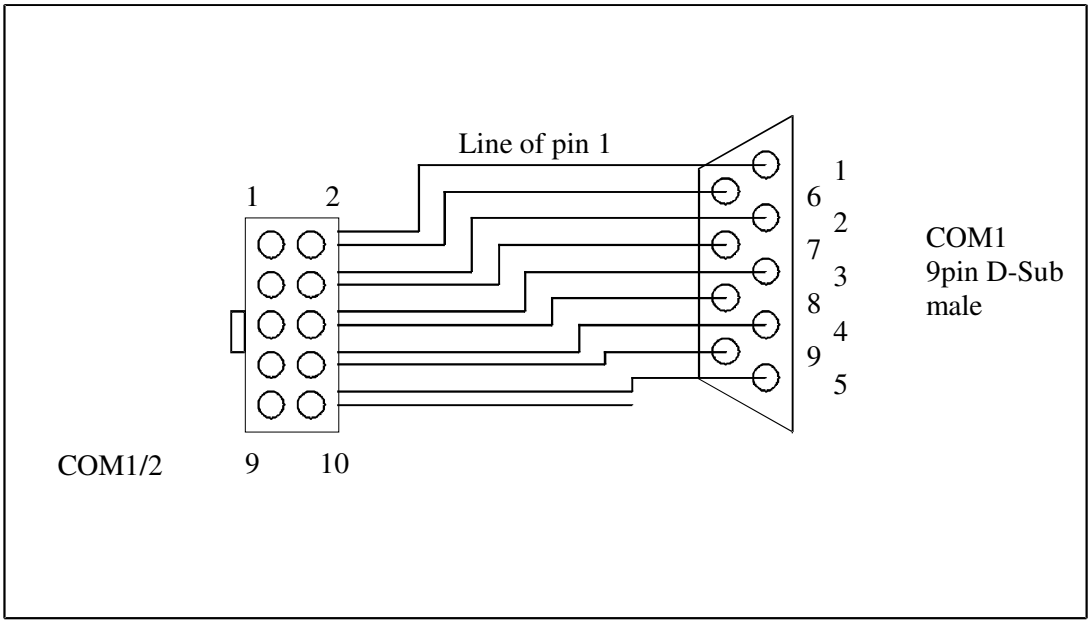
Attention!
Check the Pin 1 marker of the cable and the connector before you power-on. Refer to the technical manual of the installed drives because a wrong cable will immediately destroy the drive and/or the MICROSPACE MSM945 board. In this case the warranty is void! Without the technical manual you may not connect this type of drive.

The 44pin IDE connector on the drives is normally composed of the 44 pins, 2 open pins and 4 test pins, 50 pins in total. Leave the 4 test pins unconnected.



9.2. The COM 1/2 Serial Cable

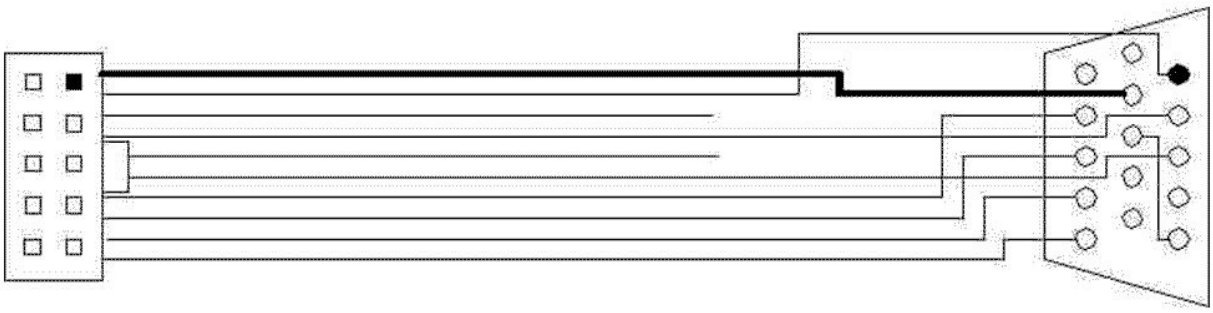
DT terminal for dual row 0.1" (2.54 mm grid) and 1.27 mm flat cable.



Attention!

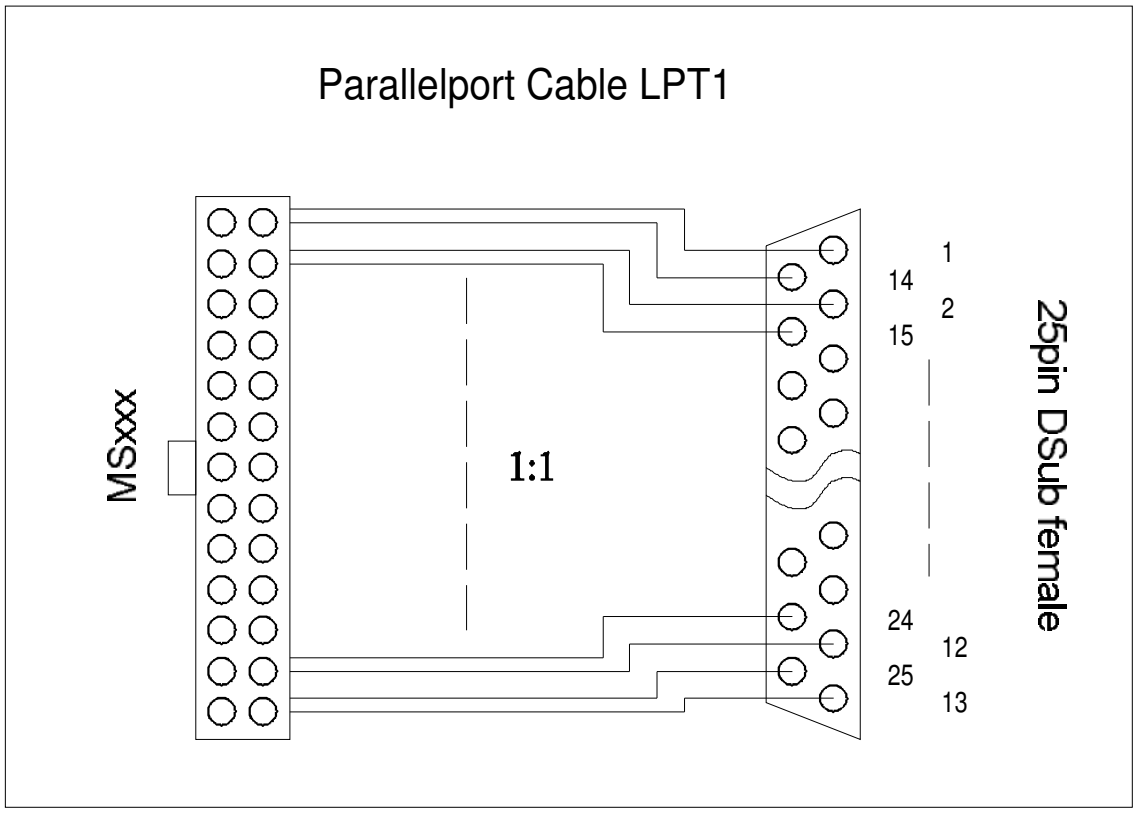
- Do not short circuit these signal lines.
- Never connect any pins on the same plug or to any other plug on the MICROSPACE MSM945. The +/- 10Volts will destroy the MICROSPACE core logic immediately**. In this case the warranty is void!**
- Do not overload the output; the maximum output current converters: 10mA

9.3. VGA Cable



9.4. The Printer Cable (P4)

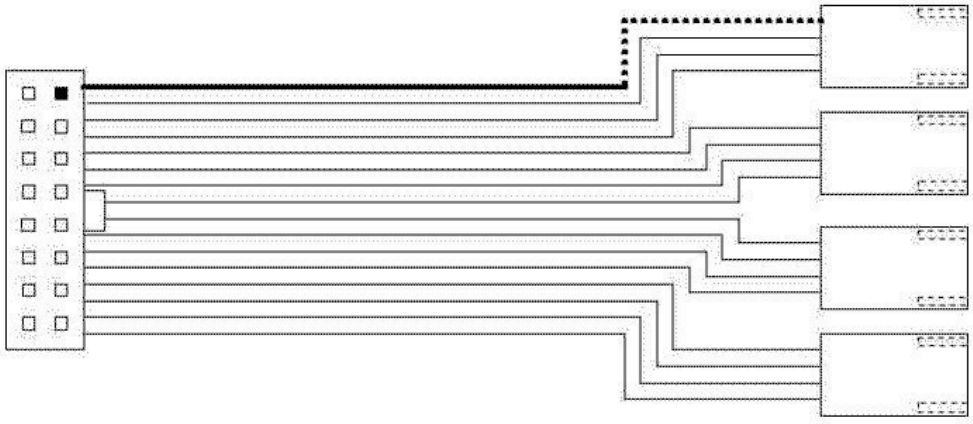
IDT terminal for dual row 0.1" (2.54mm grid) and 1.27 mm flat cable



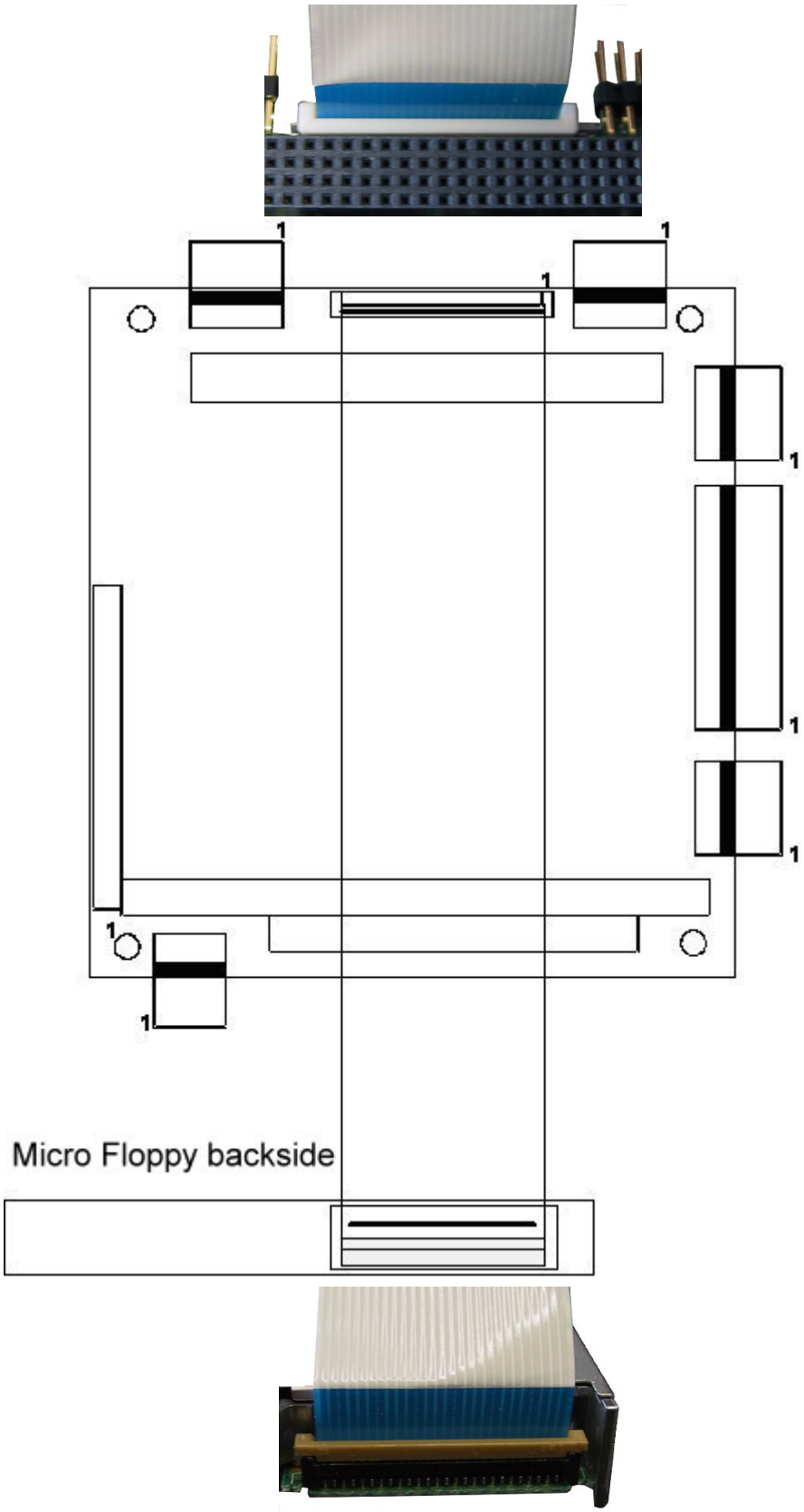
Attention!

- Maximum length of this cable is 6 meters.
- Prevent short-circuits.
- **Never apply power to these signals, the MICROSPACE MSM945 will be destroyed.**

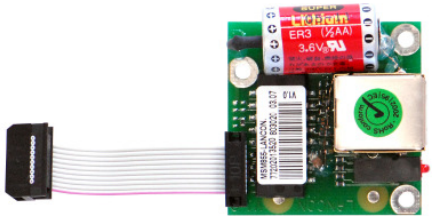
9.5. USB Cable



9.6. The Micro Floppy Cable



9.7. The LAN Interface Cable (RJ45)



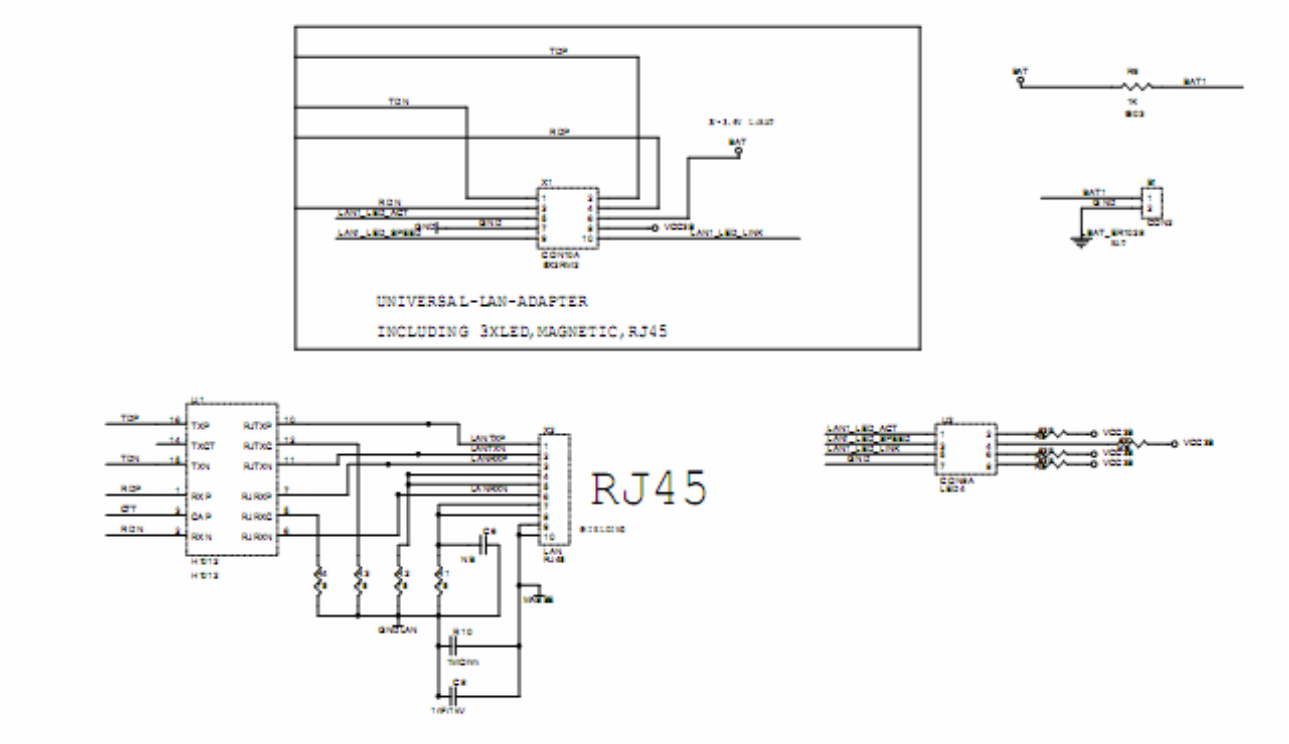
This picture shows the MSM855-LANCON.

RJ45 connector 10BaseT (IEEE 802.3i), 100BaseTX (IEEE 802.3u):

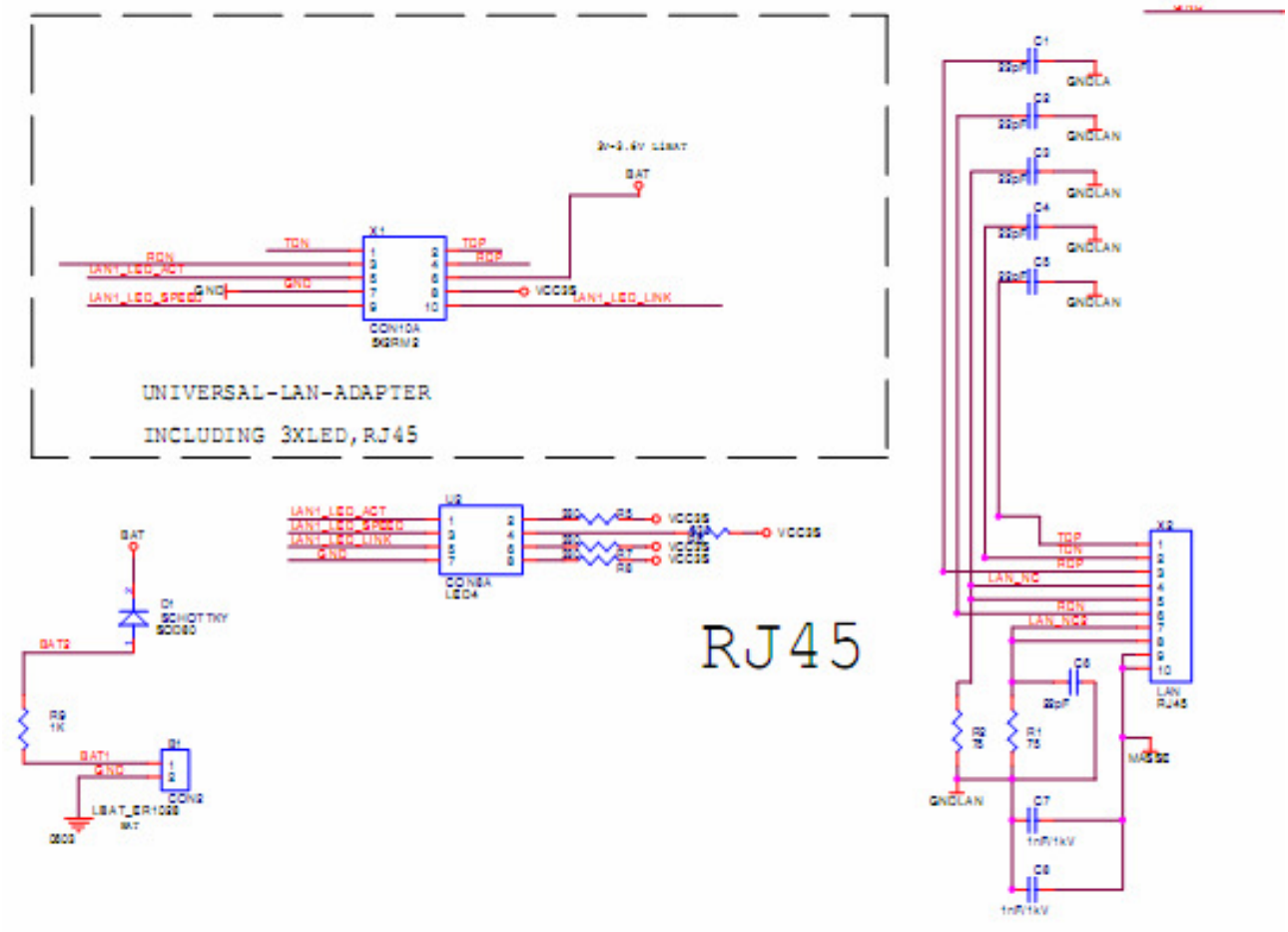
MDI-Pin	EIA/TIA 568A Colors (wire/line)	Pin	Twisted Pair
TX+	White / Green	1	3
TX-	Green	2	3
RX+	White / Orange	3	2
GND ..		4	1
GND ..		5	1
RX-	Orange	6	2
GND ..		7	4
GND ..		8	4

Cabling: Do not exceed 100 meters (328 feet)
Has a minimum quality of CAT5, preferably S/FTP or STP CAT6
Be sure to have a well balanced shield/ground concept

9.7.1. MSM855 LANCON



9.7.2. MSM855B/B2 LANCON



10.THERMAL SPECIFICATIONS

10.1. Thermal Analysis for Case Integration

Since the integrated heat sink is uni-directional, the airflow must be exactly in the direction of the heat rails. If possible, mount the board vertically, so that the heat rails are up/down. In this case, the self produced airflow is about 3m/sec.

Pay particular attention when mounting the PC-product in a fully enclosed case/box. The thermal energy will be stored in the inner room of this environment.

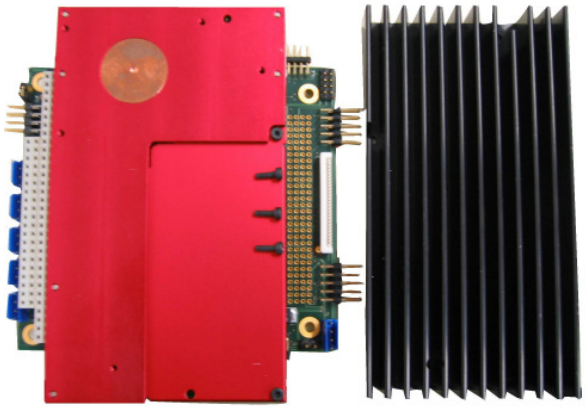
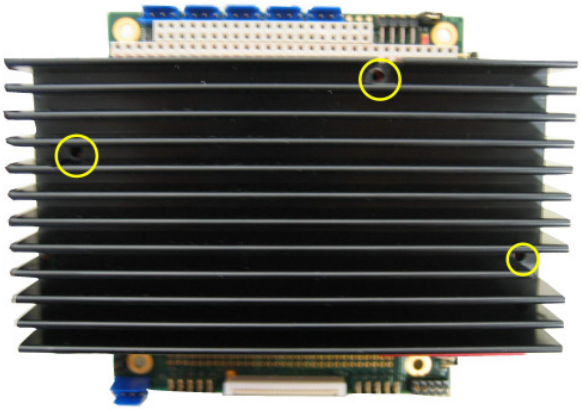
If the case has a fan:

- The hot air must be exchanged with cool air from outside using a filtered fan.
- The hot air must be cooled with a heat exchanger.

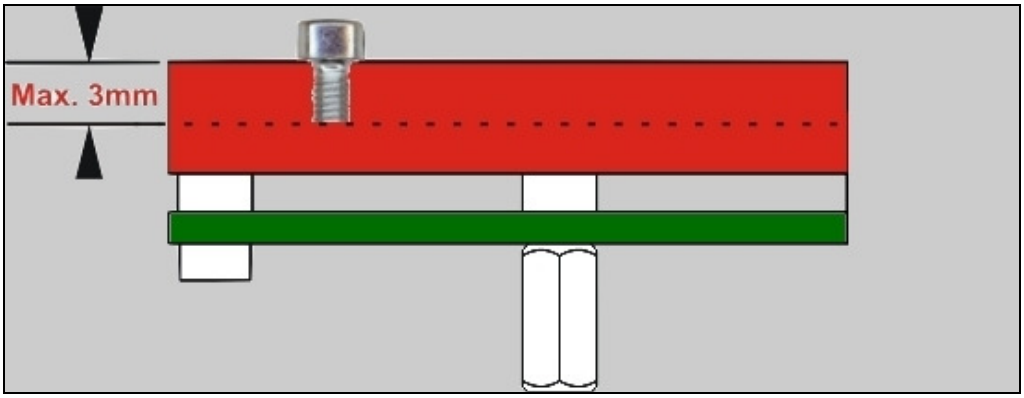
If the case has no fan or opening to exchange the hot air:

- The heat sink of the CPU must be mounted directly to a heat sink integrated in the case. The thermal energy does not go through the air; the heat will be conducted directly through the alloy of the heat sink to the outside.
- Diminish the thermal energy production by reducing the CPU performance, i.e. by using the 600MHz clock only.

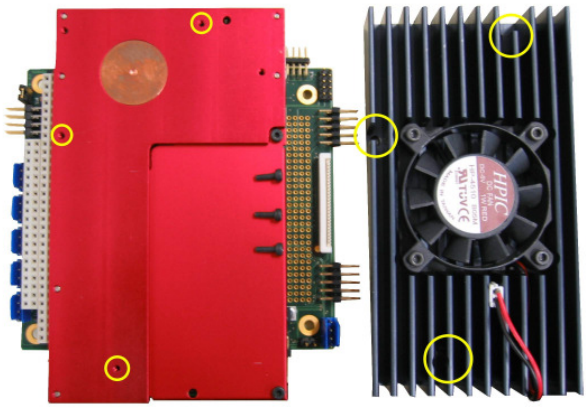
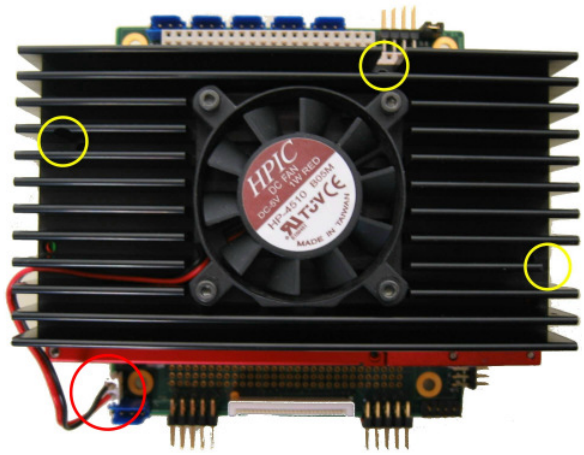
10.2. Assembly of the Passive Heat Sink

	Photo of basic SM855 with passive heat sink and 3 screws. **Step 1:** Put the passive heat sink onto the SM855.
	**Step 2:** Attach the heat sink with 3 screws. *Screw Type:* Cylinder hexagon socket type screw M2x6mm BN7 DIN 912 ISO 4762 / www.sfsunimarket.biz *Tool*: Hexagon head socket wrench no. 1.5

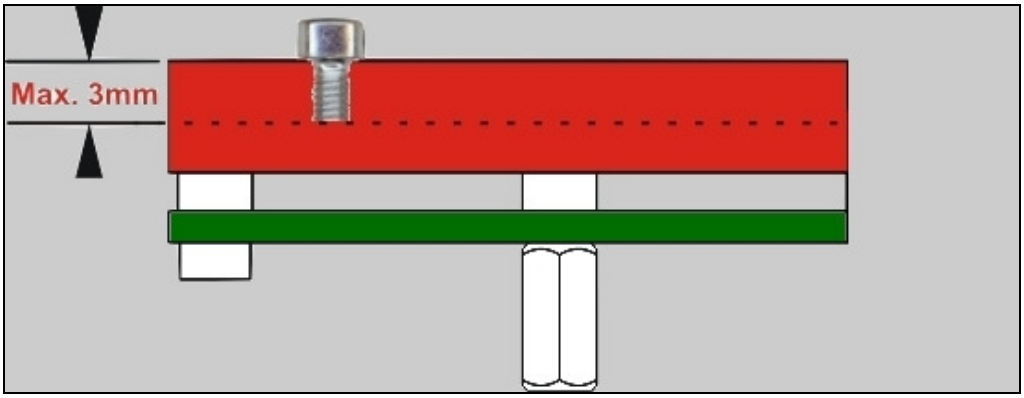
Attention!
When using an active/passive heat sink that is not from DLAG, be very careful!
The maximum depth the screws can go into the product is 3mm or the smartModule will be destroyed!



10.3. Assembly of the Active Heat Sink

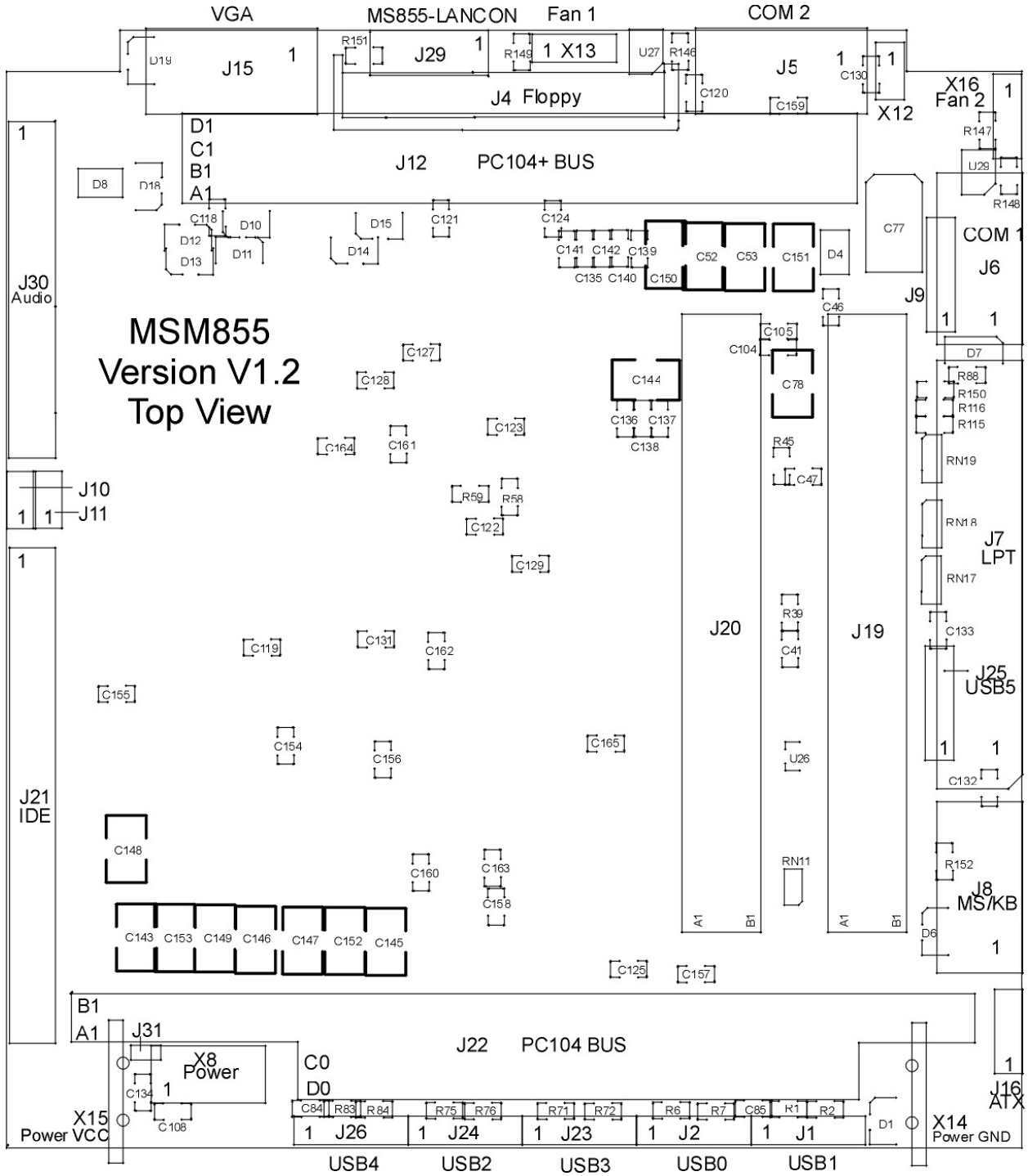
	Photo of basic SM855 with active heat sink and 3 screws. **Step 1:** Put the heat sink onto the SM855.
	**Step 2:** Attach the heat sink with 3 screws. *Screw Type:* Cylinder hexagon socket type screw M2x6mm BN7 DIN 912 ISO 4762 / www.sfsunimarket.biz *Tool:* Hexagon head socket wrench no. 1.5 **Step 3:** Plug the fan into the electrical connection.

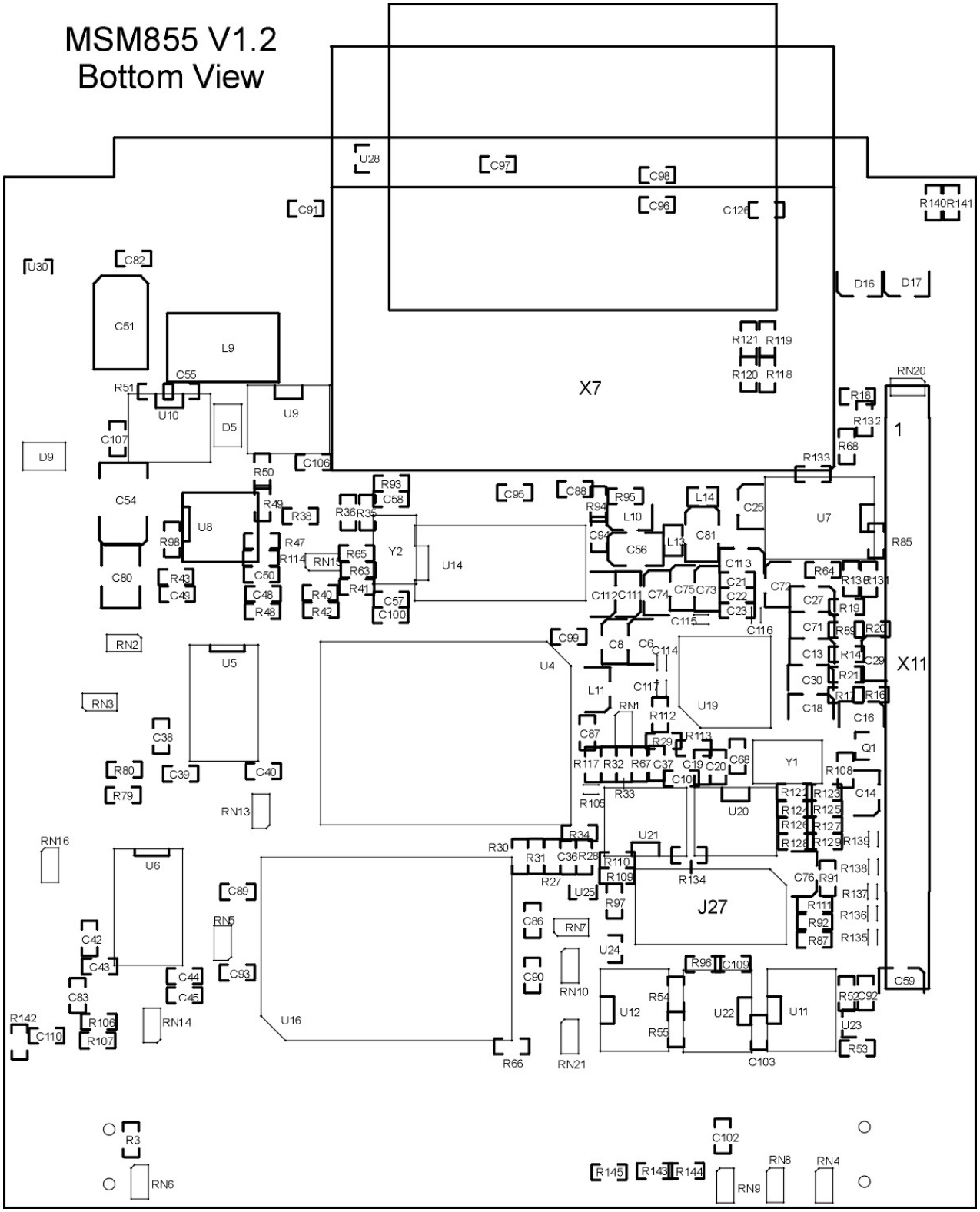
Attention!
When using an active/passive heat sink that is not from DLAG, be very careful!
The maximum depth the screws can go into the product is 3mm or the smartModule will be destroyed!



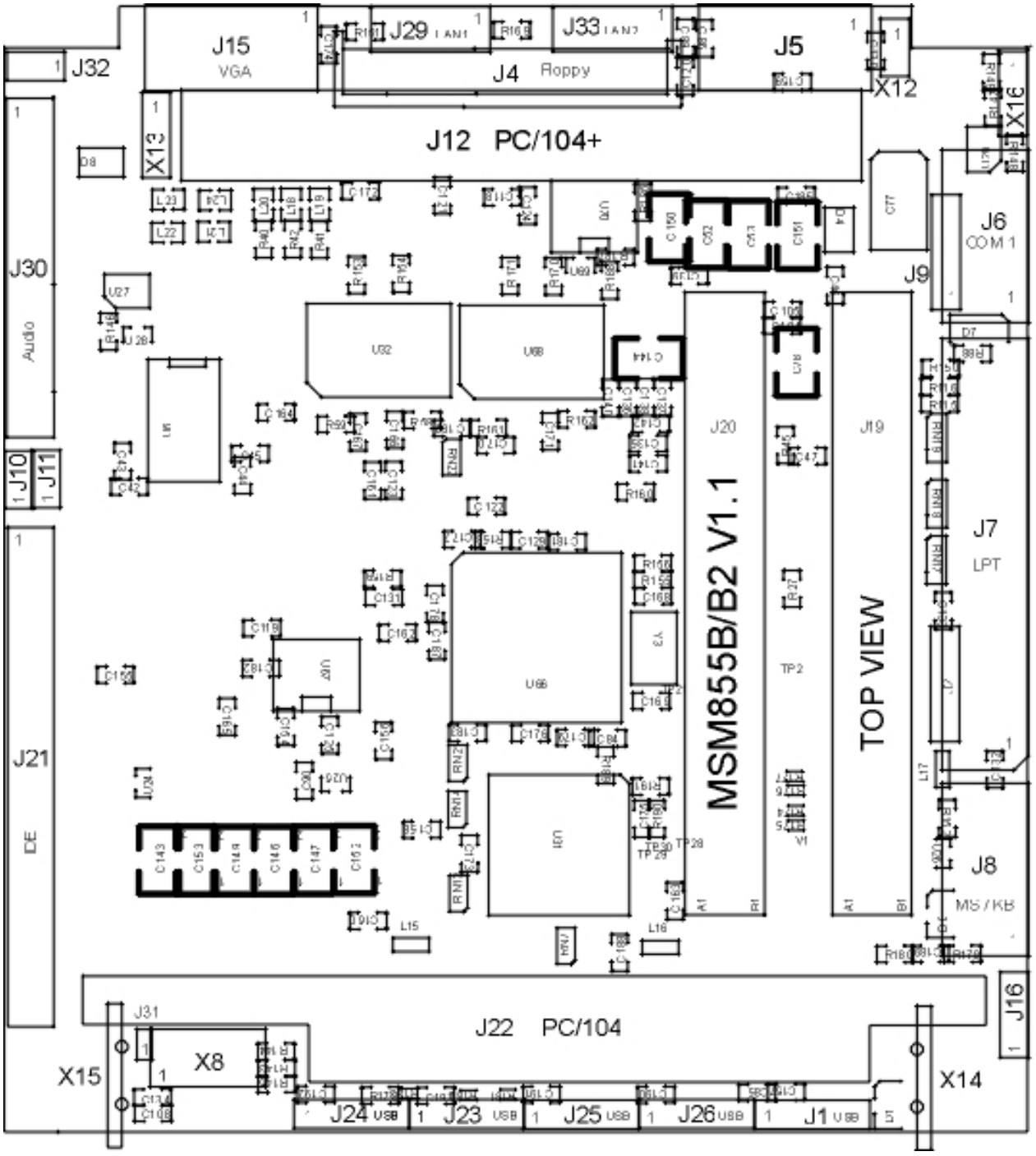
11. ASSEMBLY VIEWS

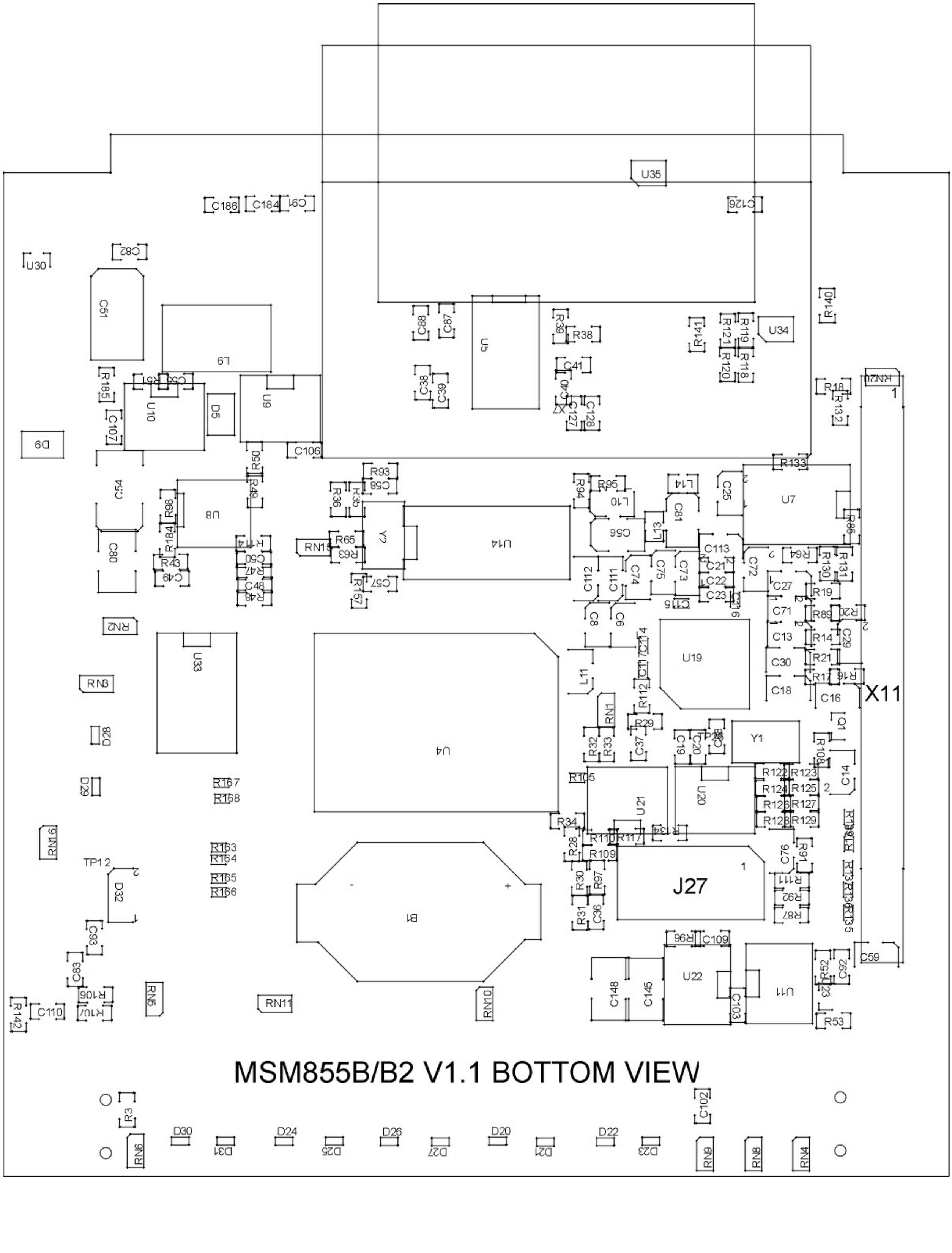
11.1. MSM855 V1.2 / V1.3




MSM855 V1.2
Bottom View
X7
X11
J27
U28
C97
C98
C96
C126
R140
R141
C91
U30
C82
C51
L9
C55
R51
U10
D5
U9
C107
D9
C106
R50
C54
U8
R49
R38
R36
R35
R93
C58
R98
R47
R114
RN15
R65
R63
R41
Y2
U14
C80
R43
C49
C50
C48
R48
R40
R42
C57
C100
C95
C88
R95
R94
L10
C94
C56
L13
C81
L14
C25
U7
R85
C113
C112
C111
C74
C75
C73
C21
C22
C23
C72
R64
R13
C27
R19
C115
C116
C71
R89
R20
C99
C8
C6
C114
C13
R14
C29
C30
R21
L11
C117
U19
R16
C18
C16
RN1
R112
C87
R29
R113
Q1
R117
R32
R67
C37
C19
C20
C68
Y1
R108
C10
R33
R105
R123
C14
R124
R125
R126
R127
R128
R129
R139
U20
U21
R30
R31
C36
R28
R110
R109
R27
U25
R97
R134
R138
C76
C91
R137
R111
R92
R136
R87
R135
U24
R96
C109
C59
C86
RN7
C90
RN10
R54
U12
U22
U11
R52
C92
U23
R53
R55
C103
R66
RN21
U16
RN5
C89
C93
C42
C43
C44
C45
C83
R142
C110
R106
R107
RN14
U6
RN16
RN13
C38
C39
C40
R80
R79
RN3
U5
RN2
U4
R3
RN6
C102
R145
R143
R144
RN9
RN8
RN4
D16
D17
R121
R119
R120
R118
RN20
R18
R132
R68
R133
1

11.2. MSM855B/B2



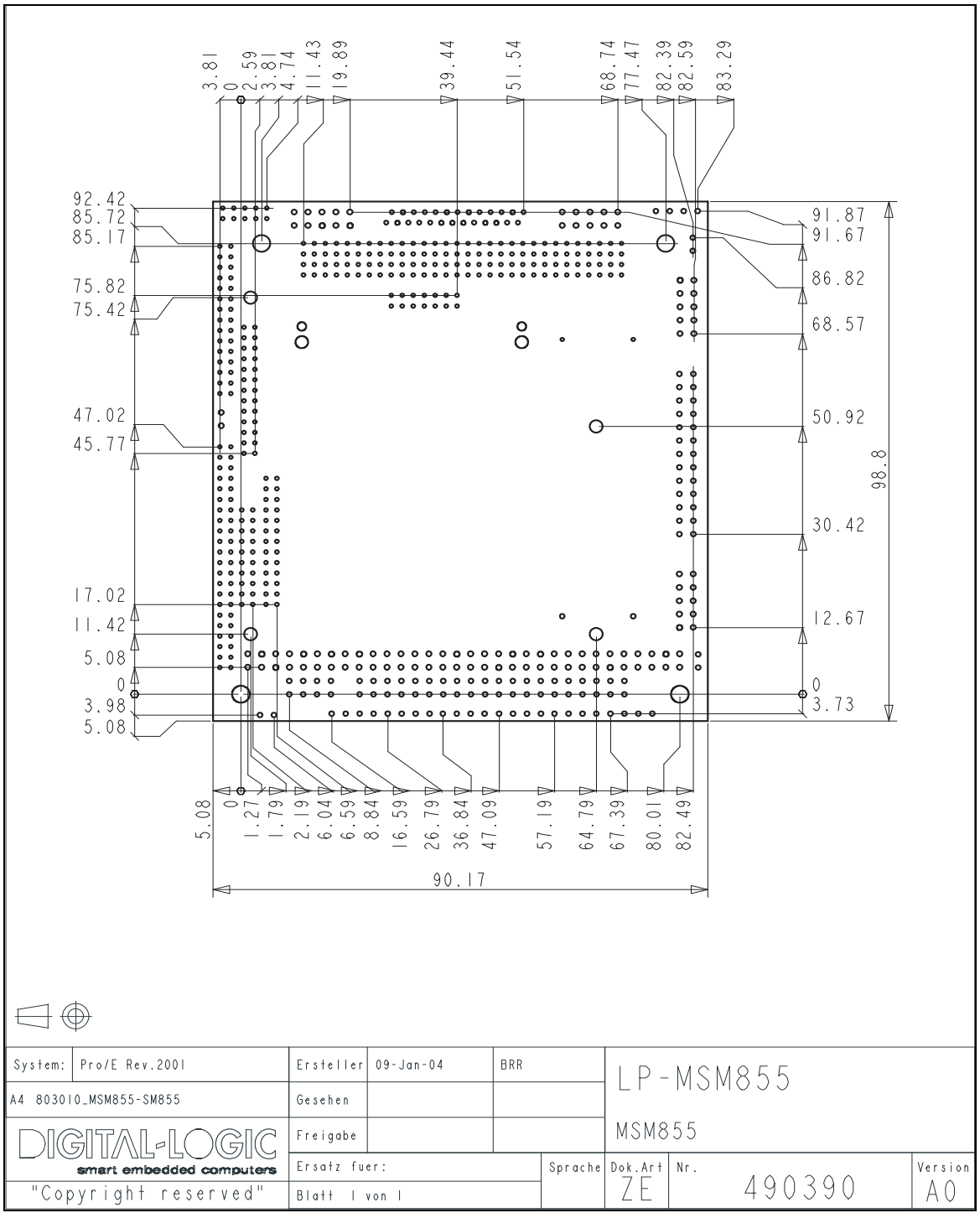

MSM855B/B2 V1.1 BOTTOM VIEW
X11
J27
U4
U14
U19
U7
U21
U20
U22
U33
U35
U34
U30
Y1
B1
D30
D24
D26
D20
D22
RN6
RN9
RN8
RN4
C102
R3

12.Q&A – QUESTIONS & ANSWERS

Problem	Solution
There is no picture after changing values in the menu "DISPLAY PROPERTIES ➔ Settings".	You must press the following key combination to get a picture again: CTRL+ALT+ **Fx** **Fx:** F1 = VGA F2 or F3 = SVIDEO F4 = DVI We recommend changing the settings in the Intel graphics menu: "DISPLAY PROPERTIES ➔ Settings ➔ Advanced ➔ Intel ➔ Device Properties"
Strange behavior of the system during the boot-up of the OS or while using the system.	Enter the BIOS setup and set the primary IDE channel to "user" (instead "auto"). Change the value "Ultra DMA Mode" = "2"
After changing the hardware to a newer revision or version with the IHC4, Windows gives a blue screen during the boot-up.	You must install Windows again (a new installation of the OS).
	***Note…*** To have better sound quality configure the "Sound" as follows: 1. Enter the Menu Settings 2. Enable the "AUX" input in the playback device area 3. Mute the following inputs: AUX, CD-Player, Phone, Line IN

13.PREVIOUS PRODUCT VERSIONS

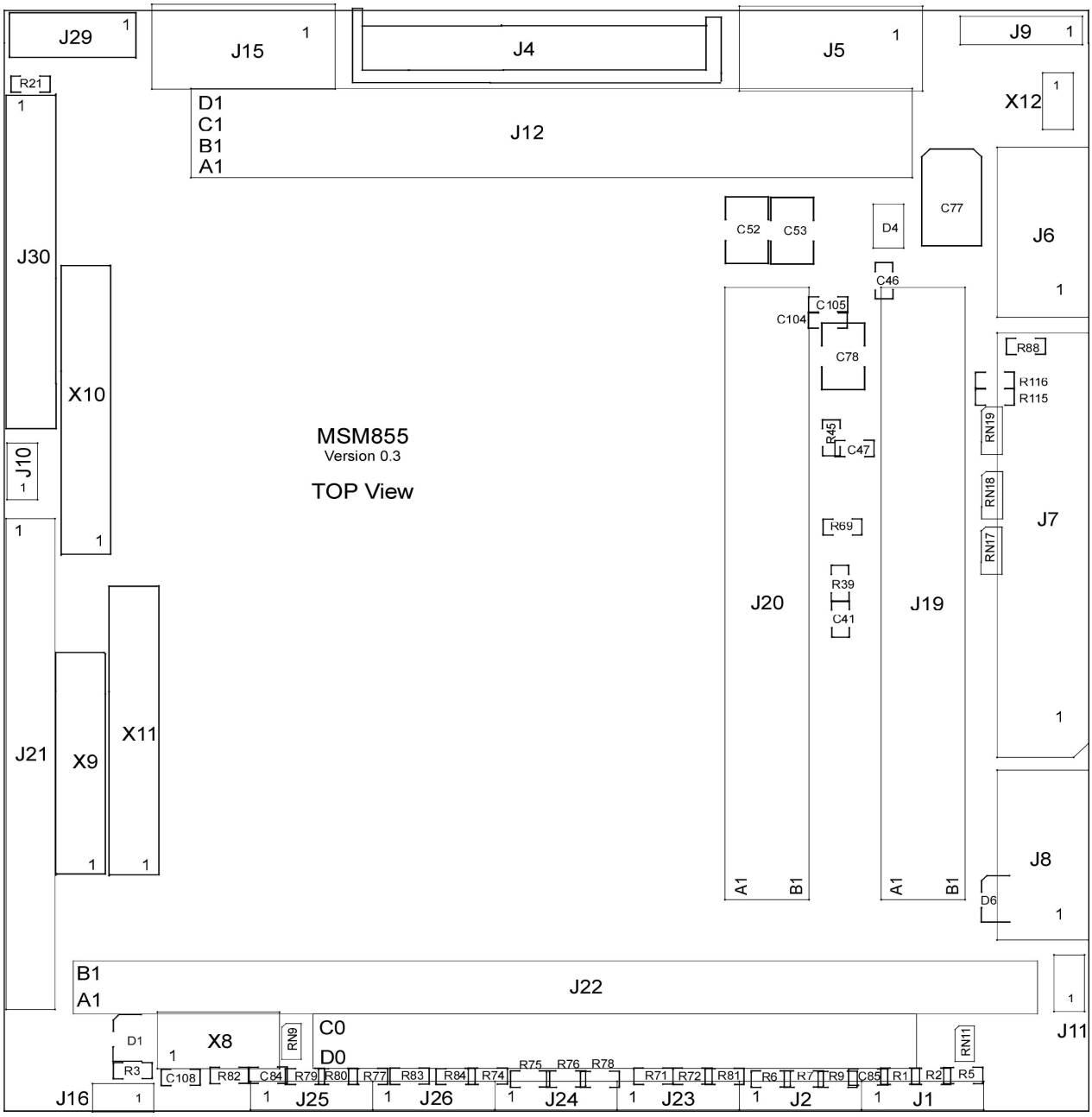
13.1. Mechanical Drawing V0.3/V0.4



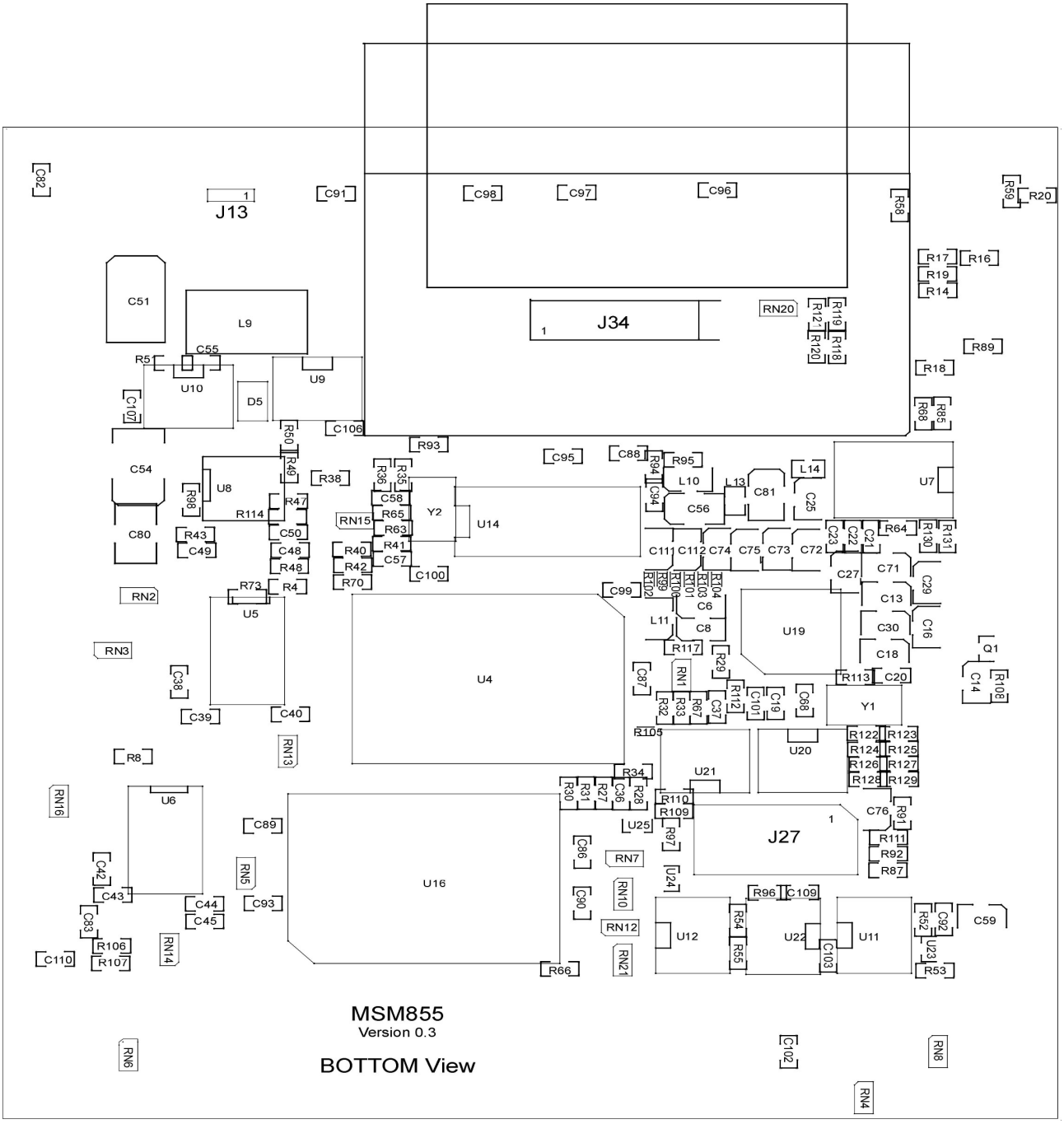
13.2. Assembly Views

13.2.1. MSM855 V0.3 / V0.4

13.2.1.1. Top View

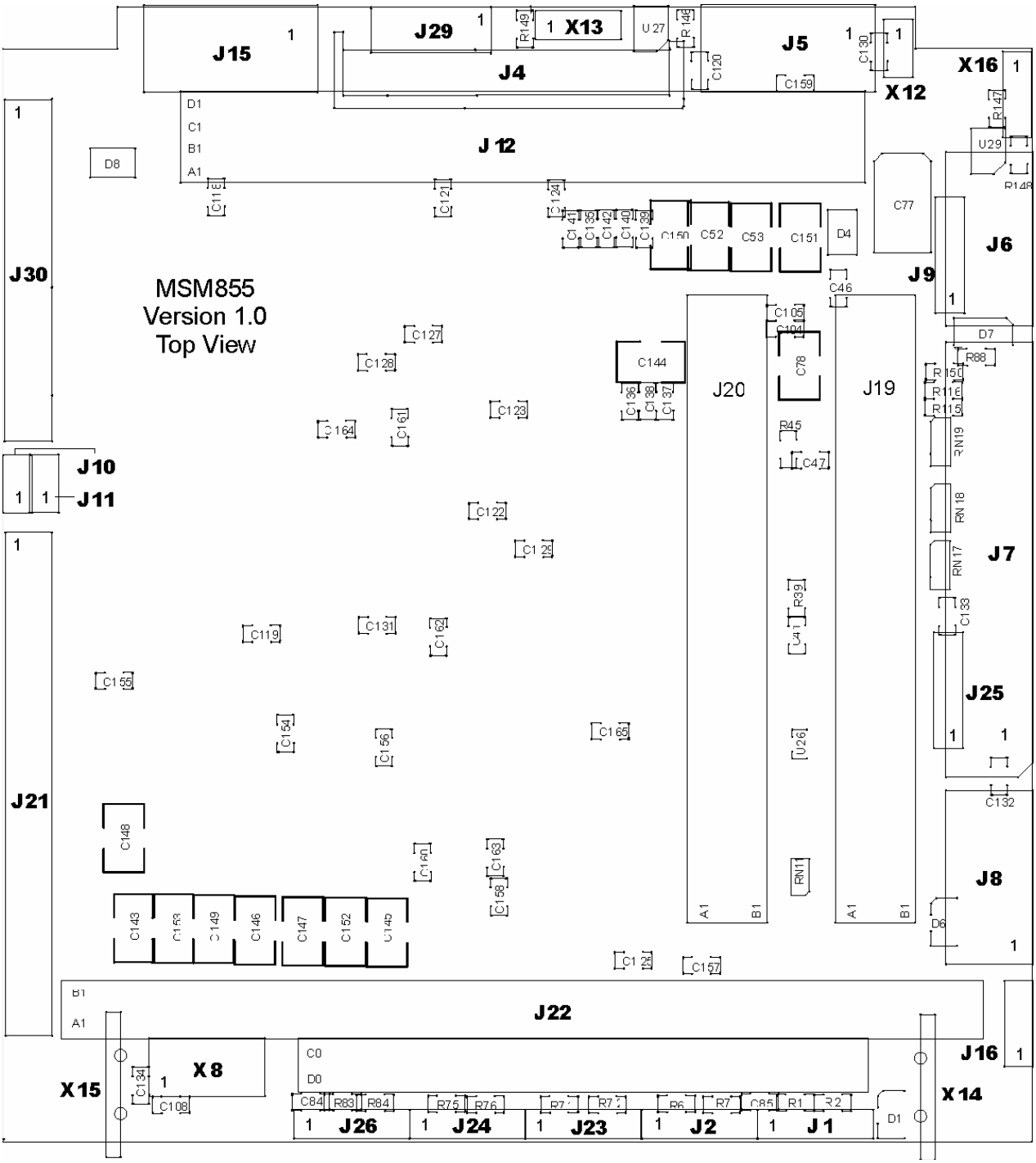


13.2.1.2. Bottom View

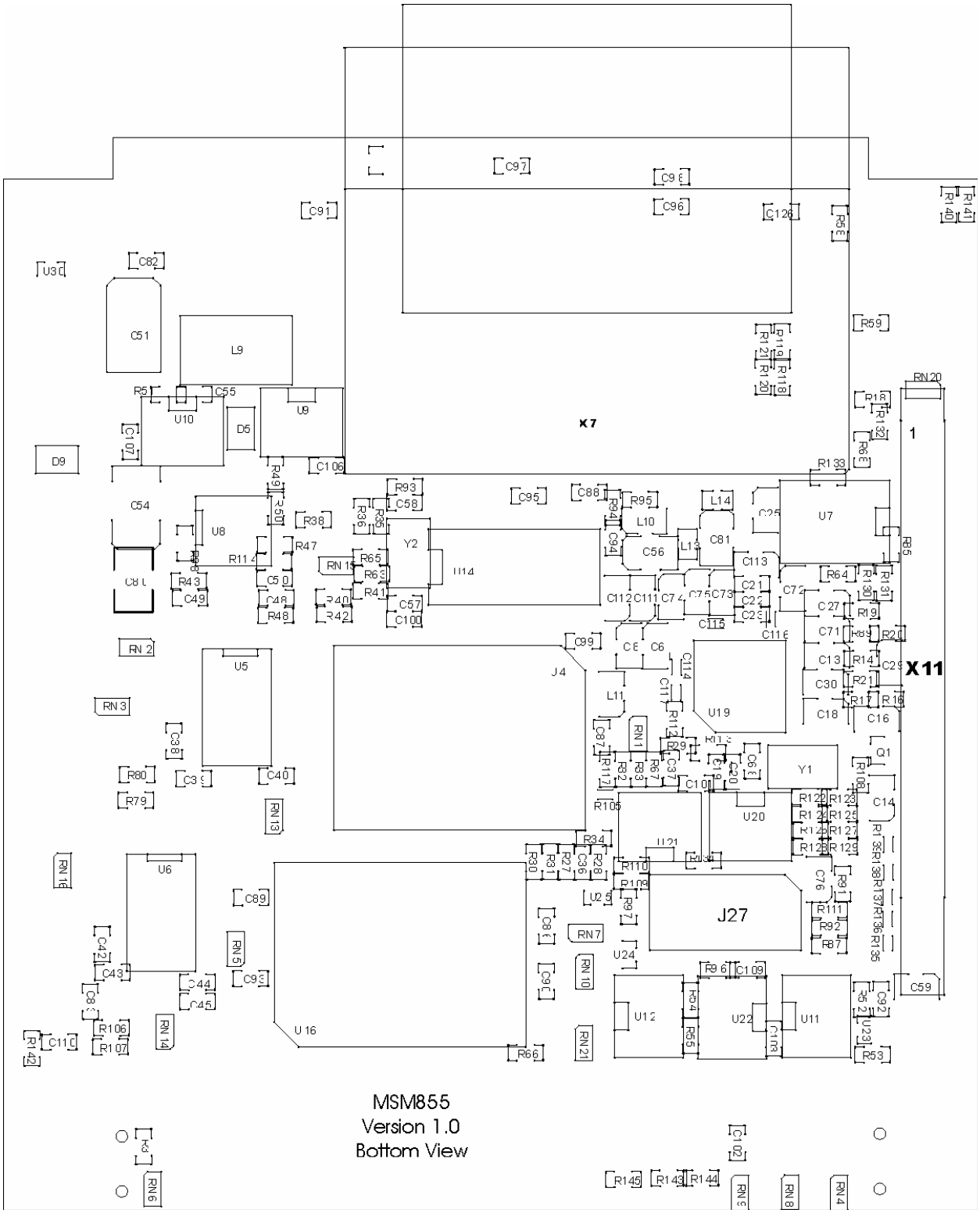


13.2.2. MSM855 V1.0 / V1.1

13.2.2.1. Top View



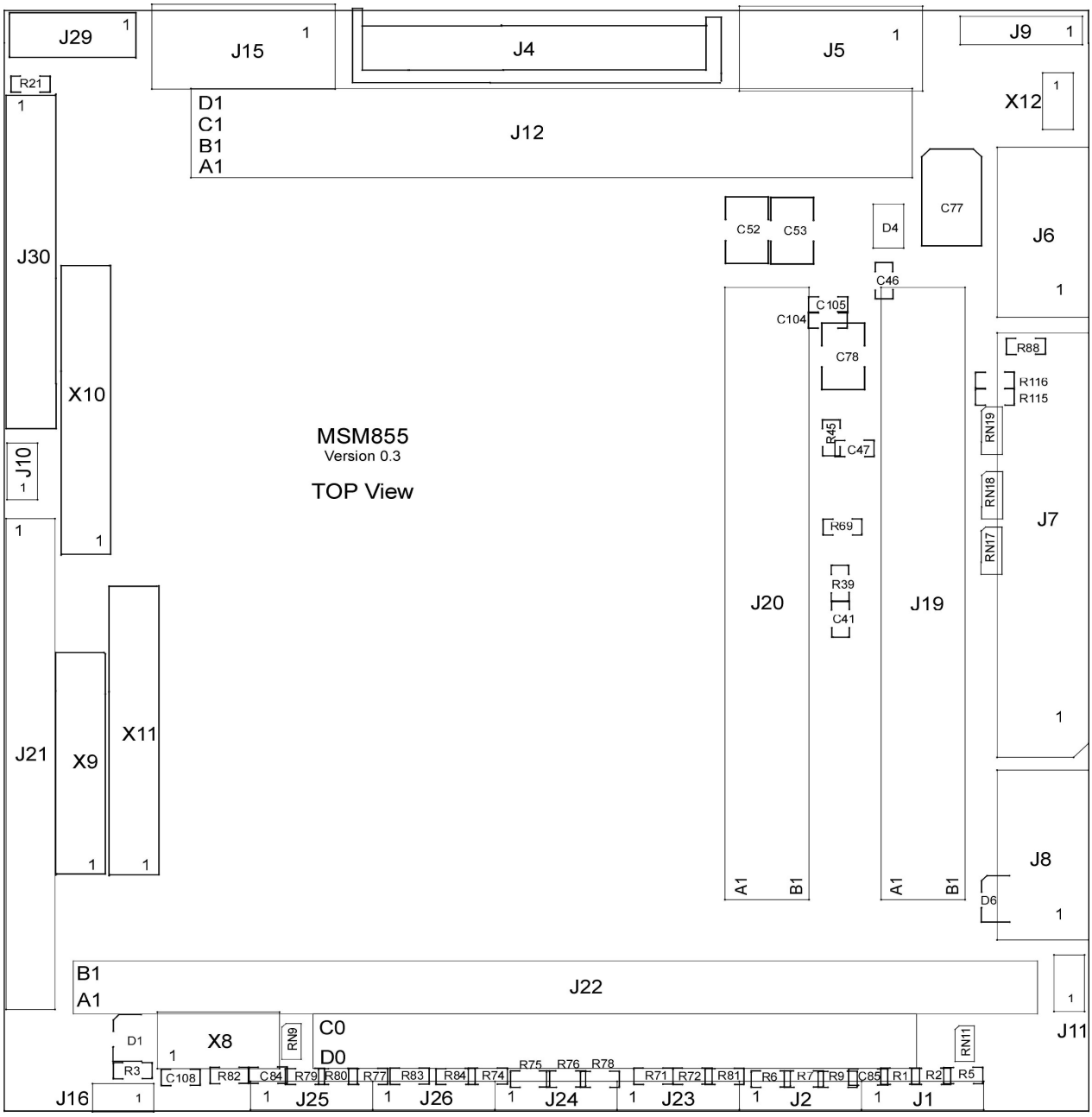
13.2.2.2. Bottom View



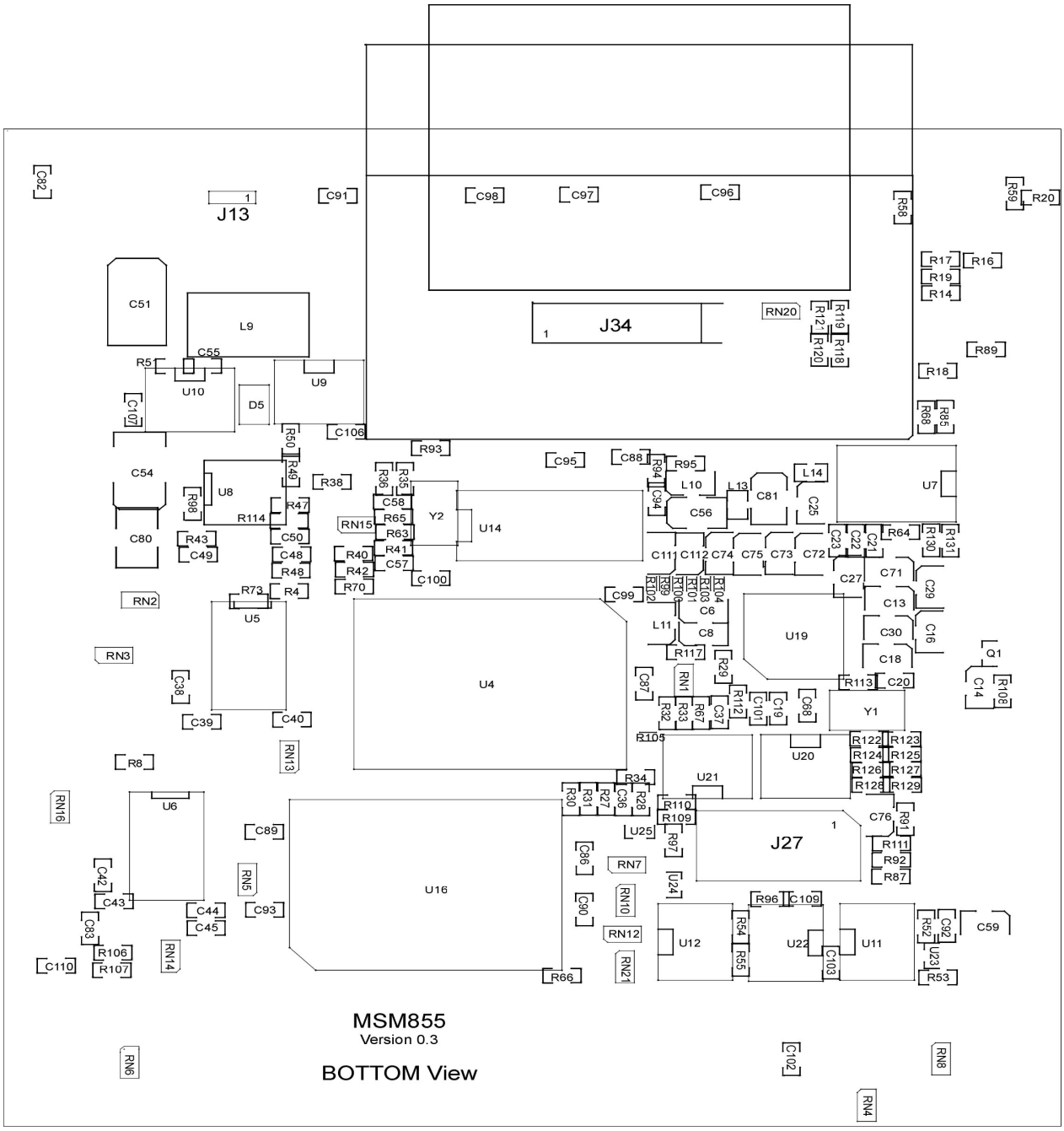
13.3. Connectors & Jumpers

13.3.1. MSM855 V0.3 / V0.4

13.3.1.1. Top View

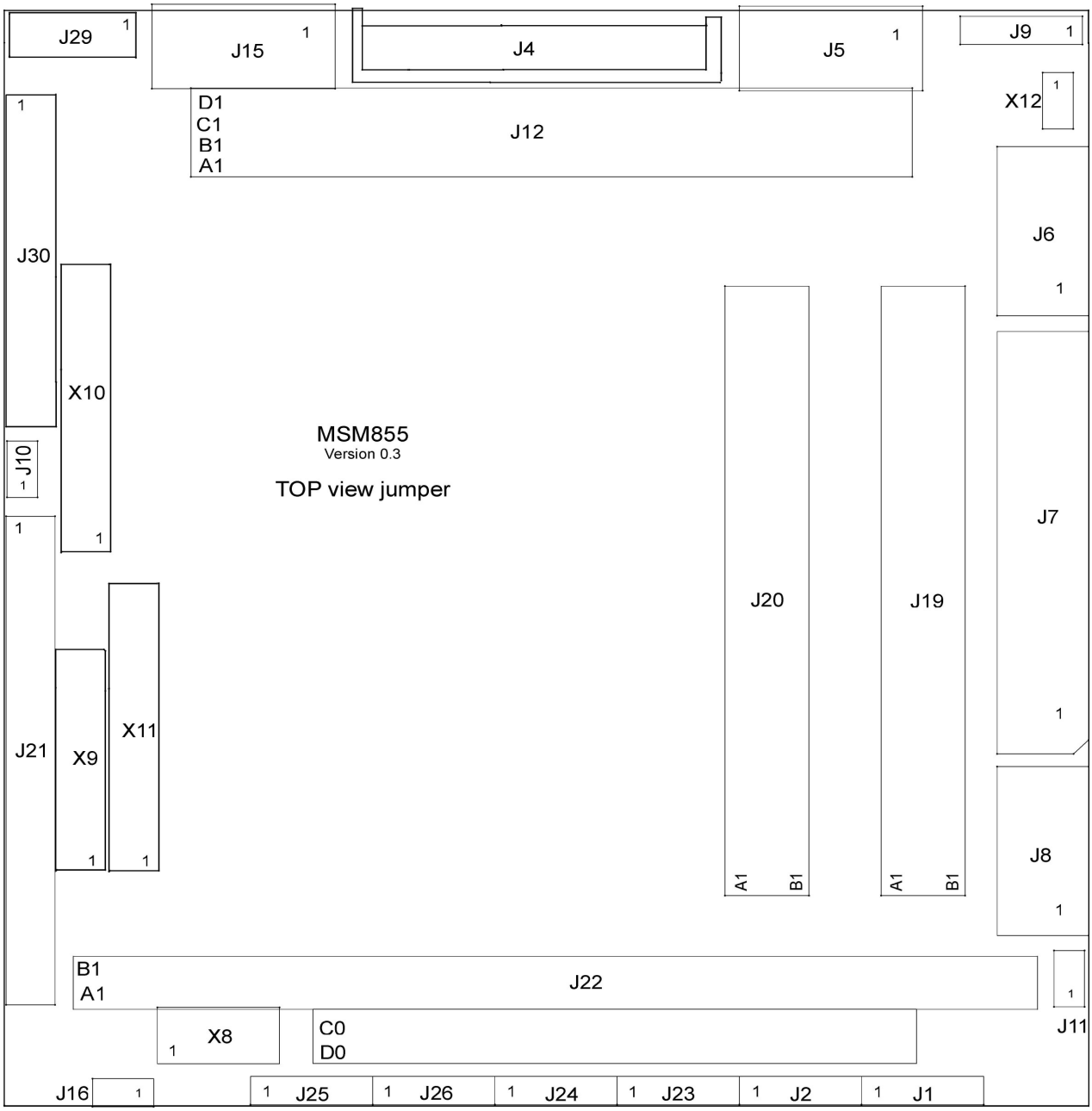


13.3.1.2. Bottom View

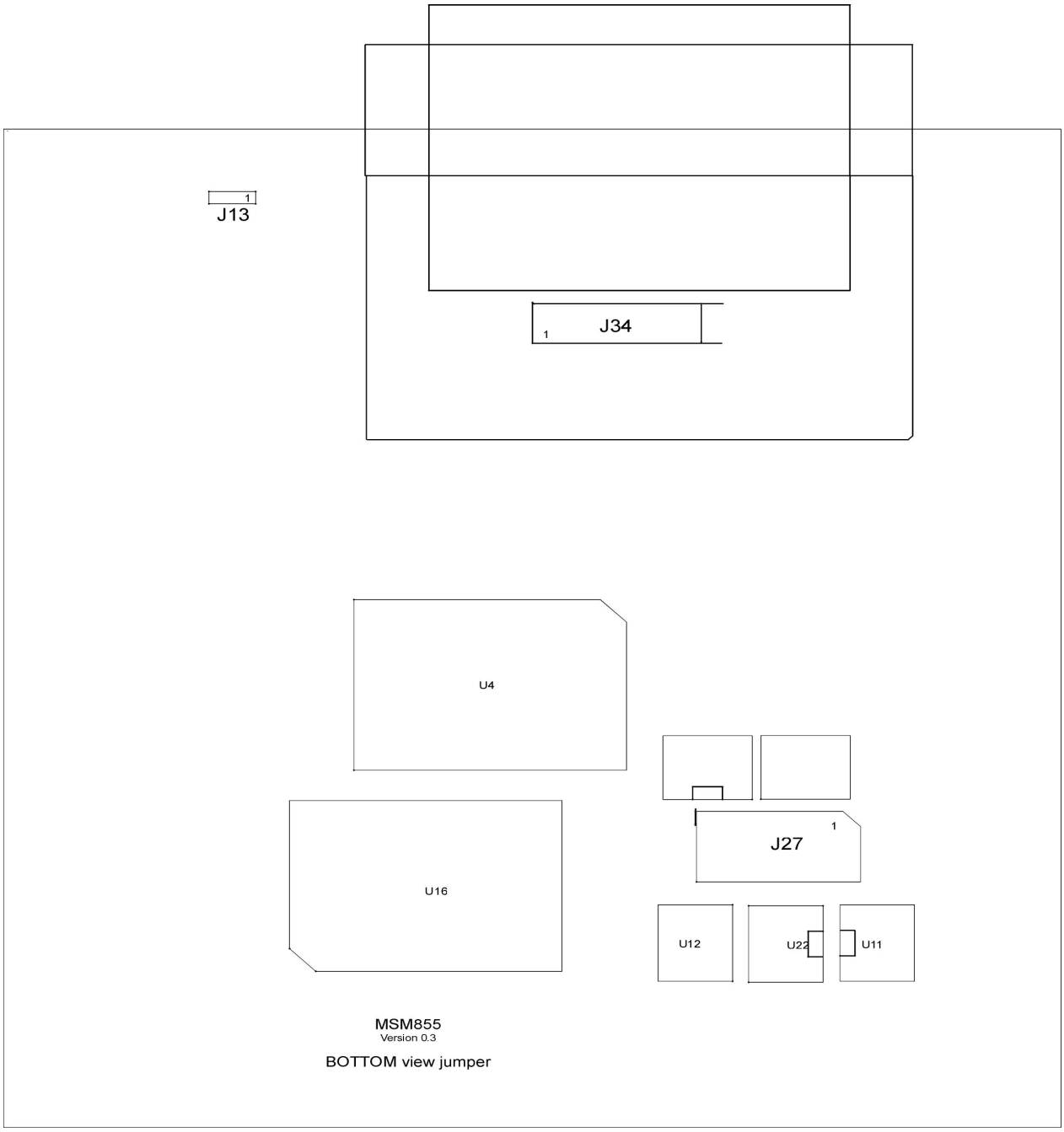


13.3.2. MSM855 V0.3 / V0.4 – Jumpers only

13.3.2.1. Top View

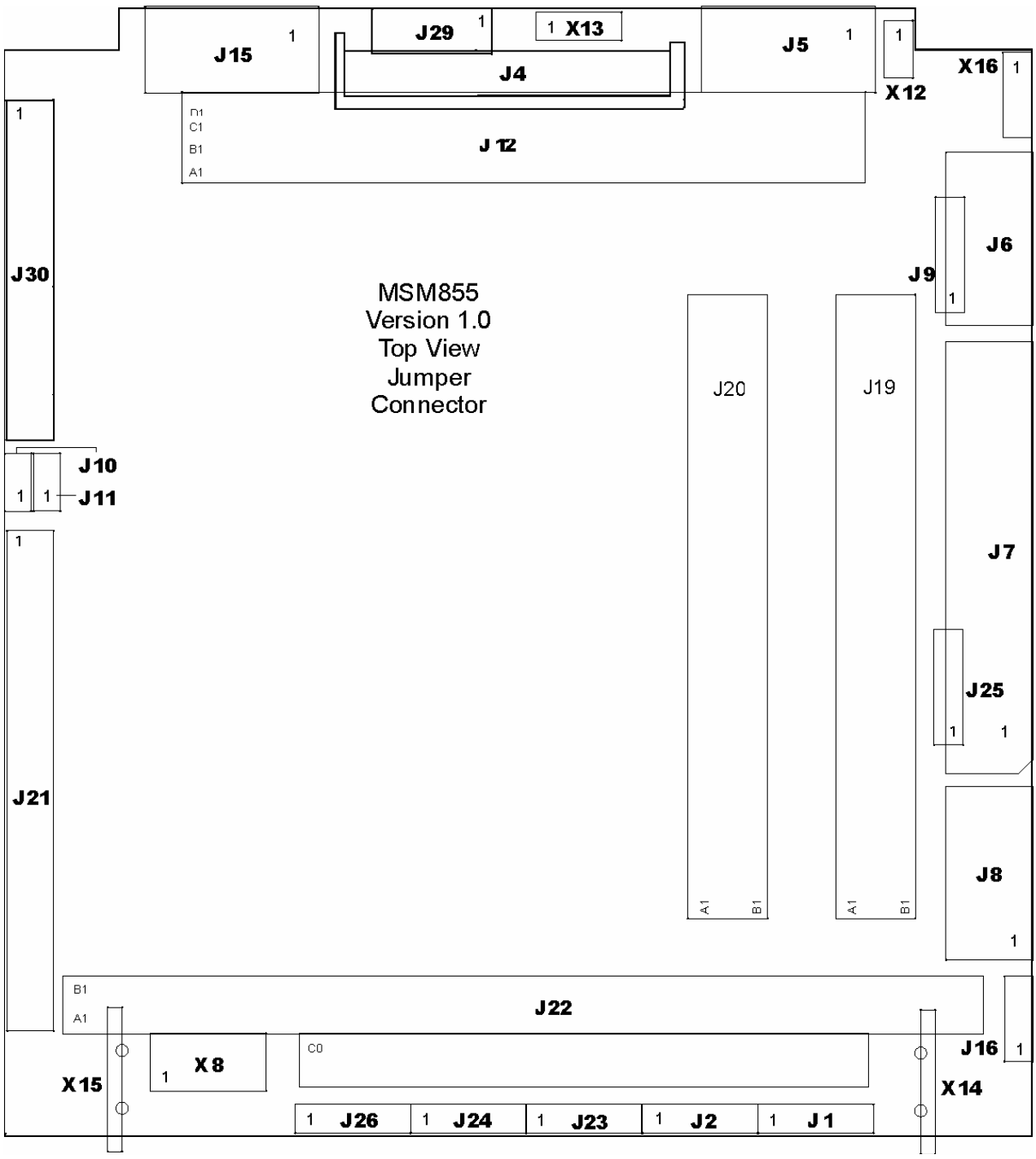


13.3.2.2. Bottom View

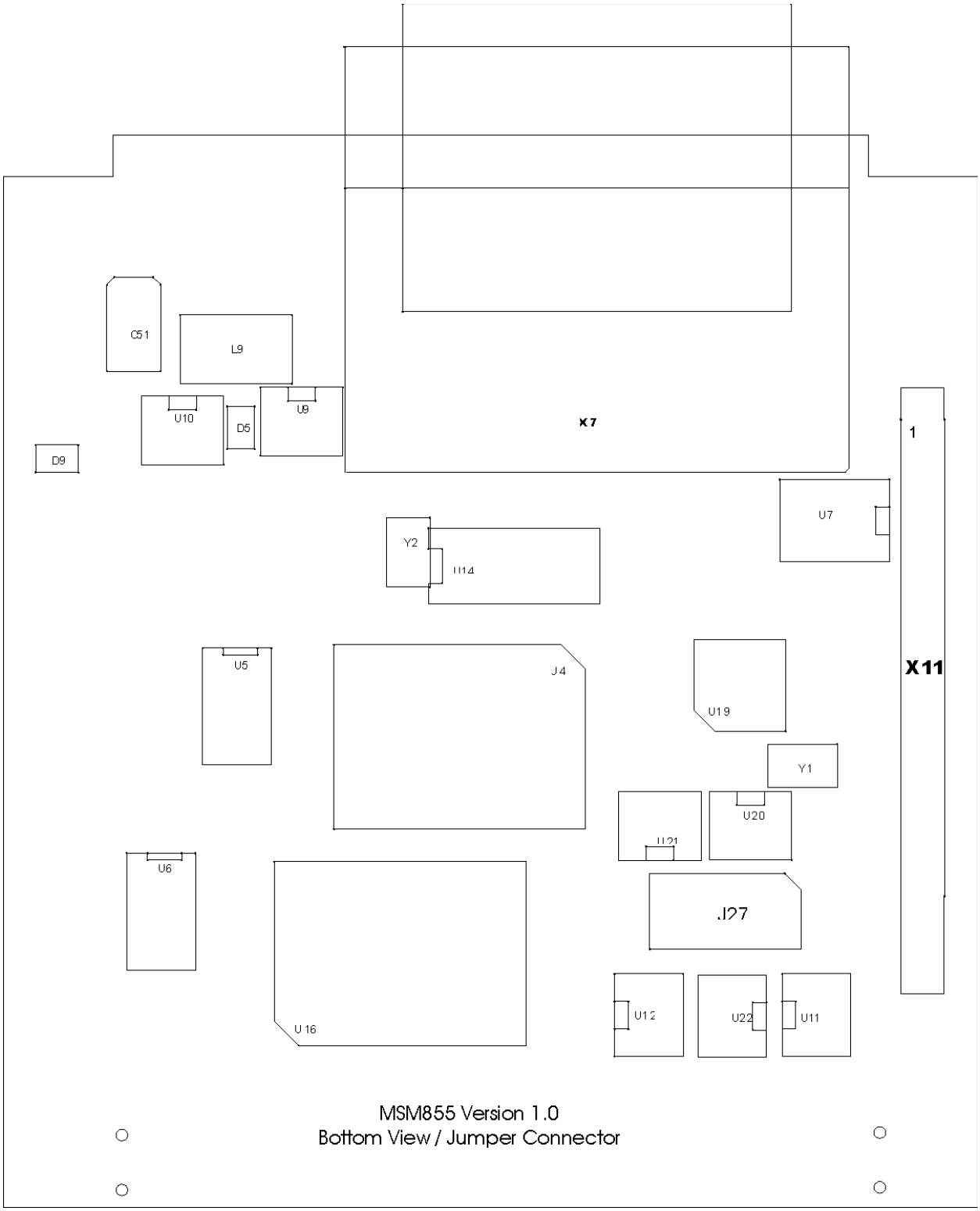


13.3.3. MSM855 V1.0 / V1.1

13.3.3.1. Top View



13.3.3.2. Bottom View



13.4. Description of the Connectors for V0.4

Note…
Only the following connectors are different to the newer board version. All other connectors are the same. Therefore, please refer to Chapter 6 for the other connectors.

J16 Main Switch Connector, 2pin

Pin	Signal	Pin	Signal
1	Main Switch	2	GND

- Used for connecting the ATX–compatible toggle switch (momentary close between Pins 1 and 2).
- If this jumper is closed until the main supply powers up, the computer system starts by booting.
- If this jumper is open until the main supply power up, then Pin1 (ATX-switch) must be tied to the ground (Pin 2) to start the computer system (this is the ATX-function).

X8 Power Supply

Pin	Signal	Pin	Signal
1	GND	2	Main supply +5Vo
3	Main switch (=J16 Pin1)	4	+12V
5	Reserved for AC-Present	6	Reserved for PWRBTN
7	GND	8	Main supply +5V

Remarks:

- The Main Switch is **low** active and internally pulled up to 3.3V.
- PWRBTN signal is **low** active and internally pulled up to 3.3V.
- 12V are not used for onboard functions, only wired to the PC/104bus.
- The Main Supply is the only external (5V) supply used for this system.

X9 LVDS Interface

Pin	Signal	Pin	Signal
1	LVDS_CLKAM	2	LVDS_CLKAP
3	NC	4	NC
5	LVDS_BKLC	6	LVDS_BKLEN
7	LVDS_VDDEN	8	NC
9	LVDS_YAM0	10	LVDS_YAM1
11	LVDS_YAM2	12	LVDS_YAM3
13	LVDS_YAP0	14	LVDS_YAP1
15	LVDS_YAP2	16	LVDS_YAP3
17	NC	18	NC
19	VCC3S	20	GND

X10 DVO Channel B

Pin	Signal	Pin	Signal
1	DVO_B_CLK	2	DVO_B_CLK#
3	DVO_B_BLANK#	4	DVO_B_D0
5	DVO_B_D1	6	DVO_B_D10
7	DVO_B_D11	8	DVO_B_D2
9	DVO_B_D3	10	DVO_B_D4
11	DVO_B_D5	12	DVO_B_D6
13	DVO_B_D7	14	DVO_B_D8
15	DVO_B_D9	16	VCC3S
17	DVO_B_FLDSTL	18	DVO_B_HSYNC
19	DVO_B_VSYNC	20	DVO_BC_CLKINT
21	DVO_DDC	22	DVO_DDD
23	GND	24	DVI_REV
25	NC	26	DVO_Detect

X11 DVO Channel C

Pin	Signal	Pin	Signal
1	DVO_C_CLK	2	DVO_C_CLK#
3	DVO_C_BLANK#	4	DVO_C_D0
5	DVO_C_D1	6	DVO_C_D10
7	DVO_C_D11	8	DVO_C_D2
9	DVO_C_D3	10	DVO_C_D4
11	DVO_C_D5	12	DVO_C_D6
13	DVO_C_D7	14	DVO_C_D8
15	DVO_C_D9	16	VCC3S
17	DVO_C_FLDSTL	18	DVO_C_HSYNC
19	DVO_C_VSYNC	20	DVO_BC_INTR#
21	DVO_DVIC	22	DVO_DVID
23	GND	24	DVI_REF
25	NC	26	DVO_Detect

13.5. Description of the Jumpers for V0.4

Note…
Only the following connectors are different to the newer board version. All other connectors are the same. Therefore, please refer to Chapter 7 for the other jumpers.

Settings written in bold are defaults!

Jumper	Structure	open	closed	Remarks
J13	PCI-IO voltage select	1-2 = 5V	2-3 = 3.3V	
J16	Main switch set manually	ATX-Switch (on X8 Pin6) must be closed for boot-up	Automatic power-on	

14.INDEX

T

U

V

W