

Table des matières

1 Basics of Monitor Technology.....	2
2 Applicable monitor types.....	4
3 Avoid damage.....	4
4 General principle of BlowUP030 software.....	5
5 installation.....	6
5.1 Installation of BlowUP030 Hardware I.....	6
5.2 Installing the BlowUP030 Hardware II.....	7
5.3 Installation of the software.....	7
5.4 The demo version.....	7
6 Operation of BlowConf.....	8
6.1 The easy way.....	8
6.2 The difficult way.....	10
6.2.1 For all versions.....	10
6.2.2 For the hardware versions.....	12
6.3 The "faster" screen saver.....	13
6.4 The virtual screen.....	14
6.5 Tips and problems while configuring.....	14
7 More problems	16
8 Resolution change in the desktop - the BlowAcc.....	17
9 The programming interface.....	18
10 upgrade.....	19
11 Thanks a lot	19

1 Basics of Monitor Technology

In order for the terms used in this manual to become more comprehensible to all those who are not familiar with electronics and computer technology, we would like to give you a brief introduction to monitor technology.

To display an image on the monitor, the following components are required on the monitor page:

- Screen (Brown tubes)
- High voltage generation
- Horizontal deflection
- Vertical deflection

A high voltage accelerates an electron beam in the picture tube Hires Monitors. This beam produces a bright point when hitting the screen. Although this point can be changed in its brightness, you can not cast a picture on the screen yet.

For this purpose, the beam must be deflected in such a way that it can strike at any point on the ground glass. This task is accomplished by two magnet coils: one can deflect the beam horizontally and the other vertically.

How then is the electron beam deflected with these two magnets in such a way that it shines the entire surface of the picture? The following method has spread worldwide in both the computer and the television: As with writing on paper, you can turn the beam in rows from left to right, with the rows arranged neatly one below the other. If one changes the intensity of the light point on its wandering, light and dark points can be displayed anywhere: the principle of the monochrome monitor is ready. As with writing by hand, one row is done much faster than an entire page, or an entire picture: the horizontal deflection is thus much faster than the vertical one. For example, if you have 400 lines on the screen, then the horizontal deflection must be turned 400 times from left to right, while the vertical only goes from top to bottom 400 times.

If you have a computer connected to the monitor, the computer determines when a line is over. He gives the monitor a signal on a special line, the so-called Hsync (horizontal synchronous) signal. After a very short break, the next line can now be described. Likewise, the computer determines when a picture is finished and the beam is supposed to start up again: For this purpose it gives the so-called Vsync (vertical-synchronous) signal. Since the calculator has all this in his hand, he always "knows" exactly where the ray is at the moment and "tells" the monitor how bright the point just painted should be.

The number of times the horizontal deflection generates a line from left to right is called the horizontal frequency or the line frequency.

For females (in Germany) it is e.g. 15625 Hz (Hertz) that is 15.625 kHz (kilohertz). That means: In the second 15625 lines are described.

The frequency at which the vertical deflection runs from top to bottom is called vertical frequency. Since this also determines how many pictures are displayed or "refreshed" in the second, the vertical frequency also indicates frame frequency or in the English the frame rate or refresh rate.

From the vertical frequency it also depends decisively on whether the human sees the image flicker or not. If, for example, the picture were only written at 10 Hz (10 times a second) from top to

bottom, you could still see how this happens: even the recognition of the picture, let alone its strenuous work were impossible. There are certain limits to the eye, in which the image structure from the top to the bottom is barely perceptible. This starts at about 40 frames per second. However, here is still a strong flicker to see. TV uses 50 Hz interlaced (see below), but only 25 full frames are displayed per second. Normal VGA monitors use 60 fps image sequence, but depending on the individual's receptivity, still a faint is perceptible. The ATARI SM124/144/145 has a frequency of 72 Hz with almost nothing flickering.

Since working on a flickering monitor for a long time causes eye and head

The picture repetition rate (according to a recommendation) should exceed 66 Hz.

Because the electron beam has to be redirected to the beginning at the end of a line or an image, a certain amount of time elapses during which no image information can be accommodated. Otherwise, the jet train would also be visible! These "dark" places in the video signal are called blanking. In addition, at the beginning of a line or a picture, the distraction must first accelerate the beam again. It creates distortions, if you do not love the picture a little later.

Therefore, it happens that e.g. in the ATARI Falcon030 in VGA mode, the resolution 640x480 in a line could actually display 800 pixels, if one did not use 160 "security pixels" for the horizontal beam scan. Likewise, there are 44 invisible lines for the 480 visible lines, which are intended for vertical blanking. On the one hand to produce a uniquely flicker-free image, on the other hand, the graphics hardware of the computer not overloading (at VGA 640 times 480 the Falcon spend 25 million [partially invisible, so] pixels per second, which corresponds to 256 colors 25 megabytes per second!) the interlaced-, taken over to german skip method - was used for the computers, which partly helped already with the television: Man (does not transfer whole pictures, but fields) with a resolution of 624 (0 to 623) lines (standard TV) this means that in the first picture only the lines 0,2,4, ..., 622 are displayed, in the second pass only the lines 1,3, 5, ..., 623, so that now odd and even lines do not exceed A special pulse combination for the deflection system ensures that the odd lines are interspersed between the straight lines: The lines are interlaced the afterglow of the monitor luminescent layer appears to the viewer only one picture. With this trick, the fields can be displayed with twice the frequency, so that the

These flicker especially coarse, monochrome flat disappears. This system has only one catch: details that are only on one field, such as very thin horizontal lines, keep flashing with the normal frequency, which is e.g. on television (50 Hz interlaced, i.e. full 25 Hz pictures) can be seen by moderators with petty or striped jackets. However, the flicker of such small image parts is perceived far less negatively than the flicker of coarse flat. The result: With the interlaced method you can either double the line resolution at the same vertical frequency or double the frequency for the same resolution. Rule of thumb: 80 Hz interlaced flicker far less than 40 Hz non-interlaced!

2 Applicable monitor types

The following monitor types are distinguished in the program and in this guide:

- TV (normal TV or ATARI monitor SCI 224): 50 Hz vertical, 15.625 kHz horizontal, 625 lines in interlaced mode, of which 576 are visible (mostly because of the image coarse less). No fixed number of pixels per line, because analog. Because of the limited bandwidth of a normal television signal, however, more than 640 points are no longer representable for a normal television. Synchronizes mostly only in a certain range on incoming sync pulses.
- SM124 (or the successors SM144 / SM146): Approx. 72 Hz vertical, 35.7 kHz horizontal, in normal ST high mode 896 pixels per line, of which 640 are visible, approx. 500 lines non-interlaced, of which 400 are visible. Stubbornly syncs to incoming signals (see below for warnings).
- VGA monitor (normal / cheap types): Approx. 60 Hz vertical, 31.5 kHz horizontal, normally 524 lines, with the falcon 480 visible, partly interlaced possible. No fixed X-resolution, only the above deflection frequencies result (fixed frequency monitor). Normal VGA monitors synonymous stubbornly synonymous to all incoming frequencies, but since they are not designed for other than 31.5 kHz, changed at best only the image geometry, in the worst case, the monitor is irreparably destroyed! (For warnings see below).
- SVGA monitor: Like VGA monitors, SVGA monitors are fixed-frequency monitors, but they can usually synchronize to several fixed frequencies. For example, horizontal frequencies of 31.5 / 35.2 / 35.5 kHz. Vertical frequencies from approx. 56 to over 60 Hz, but sometimes more. However, some SVGA types can also sync across a range (such as MultiScans). Please read the manual of your monitor to get the exact data!
- MultiScan Monitors: MultiScan Monitors can synchronize to a wide range of vertical and horizontal frequencies. The often used name MultiSync means the same, but is a trademark of NEC TM. Good MultiScan monitors usually have a horizontal range of about 30 to over 50 kHz, and thus can represent a higher line resolution. However, it often lacks the lower range of 15kHz: you can not display the (low) TV resolutions of the Falcon030.

However, there are also eminent multi-channel monitors which can only synchronize to several, but fixed frequencies, so that they could possibly have problems at intermediate frequencies. In the configuration program BLOWCONF. PRG assumes that a MultiScan monitor can display everything. Which frequencies your monitor contracts, should actually be noted in the appropriate manual or on the monitor box.

Wrong frequencies usually do not hurt on such monitors, yet we can not recommend exceeding these limits. However, your monitor may still be much more than specified; Trying out this is your own risk. Notes later.

3 Avoid damage

The program itself can not distinguish between "normal" and thus vulnerable VGA monitors and more likely types of MultiScan!

We can not take any responsibility for any damage or consequences! They are clearly and explicitly used in this manual!

Deviations in the vertical frequency are not as dangerous as they are in the horizontal frequency (here, in most cases, only the picture runs through).

Normal televisions are not so at risk because they only try to synchronize in a limited area and otherwise let the image pass through easily. But you should not get involved in quizzes and avoid inadmissible values!

"True" MultiScan monitors can not be damaged by incorrect settings, because they are high voltage generation and distraction are separated and we just can not synchronize at inappropriate frequencies. Here, therefore, a continuous image has no negative consequences, except that one can not see a stagnant image.

But here too: in BLOWCONF. PRG to restore the initial state: Press Return or Enter or the Undo button.

It must also be avoided to change the monitor type after installation, without the boot program BLOWBOOT. To delete PRG from the AUTO folder. In this case you have to contact BLOWCONF. PRG create a new boot program. See in the next chapter.

Attention! Be sure to read this chapter!

Both normal VGA monitors and the SM124 (and its successor SM144 or SM146) and the SCI 224, the high voltage generation is directly coupled with the horizontal deflection! Thus, if a horizontal frequency is applied that is more than minimally above the nominal frequency (ie > 31.5 kHz or > 35.7 kHz or > 15.6 kHz), it is quite probable that the increased frequency makes the monitor irreparable Damage loses!

You may be able to irreparably destroy your monitor by incorrect or careless handling of the program!

Be sure to read the instructions for use of your monitor and determine if it is a fixed frequency monitor! The configuration program assumes a safe range for VGA monitors from 30.4 kHz to 31.7 kHz; these limit values lead at most to possibly distorted or continuous images, but hardly to damage. If your monitor shows unusual behavior during the configuration (whistling, frayed edges, flickering of the image, crackling, etc.), IMMEDIATELY press the Return, Enter or Undo button. Do not try to reach the UNDO button with the mouse, it could take too long!

4 General principle of BlowUP030 software

The Falcon BlowUP030 system consists of 3 programs: BLOWCONF. PRG, BLOWBOOT. PRG, as well as BLOWACC. PRG / ACC.

With BLOWCONF. First of all, you can set new, already prefabricated resolutions for PRG. This way is the easiest and most convenient for you to start with. You can also configure your own resolution and adapt it optimally to your monitor, as all parameters (naturally within certain limits) are freely adjustable. See above!

BLOWCONF. PRG creates the boot program BLOWBOOT. PRG and copy this into the AUTO folder. This will set the new resolutions when booting and make them known to the VDI graphics system. However, if you hold down a shift key during the boot process, BLOWUP will not activate.

For every color depth (2 colors up to TrueColor) 2 different resolutions can be preselected, which then appear in the desktop at boot time as well as at the resolution change. As usual, you can use the desktop to select a resolution from the menu item Screen Type, only then the new one, configured by them, will be added instead of the original one!

If no new resolution is configured for a color mode, the original will be used. So that you can also use (for compatibility reasons) the normal resolutions, without BLOWBOOT. To remove PRG from the AUTO folder, it is possible to use the program / accessory BLOWACC. PRG / ACC off the new resolutions off and on again, so that the usual resolution is chosen in the resolution change.

In general, say that almost all programs that are already running on the Falcon, synonymous with BlowUP030 work. Exceptions are usually unclean written programs that require fixed resolutions, or games that write directly into the video memory. Of course, the ST-compatible resolutions ST-Hoch, ST-Mittel and ST-Klein remain unchanged!

Numerous programs were successfully tested under BlowUP030, which can not be listed here for reasons of space. But what really pays: We are not a single clean-written program known, which does not run under BlowUP!

7UP	GemView	ORCS
bigForth	Let'em Fly!	Pure C
Camalus 5	MultiTOS	Speedo GDOS
Gemini	NVDI 3.5	Wordplus

In particular, the cooperation with NVDI works splendid, but here is to be noted, BLOWBOOT. PRG necessarily after NVDI in the AUTO folder be mub. And no matter what manuals of other programs say: BLOWBOOT should really be the last program in the AUTO folder ...!

As long as you BLOWBOOT. If you do not delete PRG from the AUTO folder or move it in this folder, its position will not change anymore, even if you use BLOWCONF.PRg a new configuration.

5 installation

For all hardware versions, of course, you have to turn off the Fal-con and the monitor before installation!

5.1 Installation of BlowUP030 Hardware I

Take the silver intermediate plug and insert it between the video output of your Falcon and the monitor adapter, socket in the direction of the Falcon, plug in the direction of the monitor adapter. From the adapter plug go 2 cables, of which heard with the jack in the joystick port 2. This is located under the Falcon, next to the mouse plug. To be able to continue using this joystick port, it

is run through the BlowUP030 hardware so you can use joysticks on the connector of the second cable. As far as the hardware installation.

5.2 Installing the BlowUP030 Hardware II

The silver plug is part of the video output of the Falcon030 and the ATARI monitor adapter (as in the simple version). In this hardware version comes out of the plug a cable with 1 5-pin connector, which is intended for the STE joystick port B on the left side of the housing Falcon.

Unfortunately, this joystick port can not be used anymore.

5.3 Installation of the software

Insert your BlowUP030 original diskette and start the program INSTALL. PRG. In the adjoining dialog box, enter your personal data. Unfortunately, this is what we put in for copy protection reasons.

Keep in mind that if you enter a nonsensical or incorrect name here, you may be depriving yourself of the possibility of a possible update! The original disk itself is not copy protected, but already has an individual serial number!

There are updates, if this should be necessary, of course, at most once on each serial number! So, if somebody copied your original floppy, he could possibly request an update with your serial number and you went blank ...

You can also specify in this dialog box the path on which BlowUP030 should be installed. The default is C: \ BLOWUP.

If you click OK, the installation will be fully automatic. The following files are generated: BLOWBOOT. DAT, BLOWACC. PRG, BLOWCONF. PRG; BLOWCONF. RSC and STANDARD. BCF. The file STANDARD. BCF contains default configurations that you can choose. Do not mess up this file!

The program BLOWACC. PRG. You can rename PRG by renaming it in BLOWACC. Use ACC and copy to the root directory of your boot drive as an accessory.

5.4 The demo version

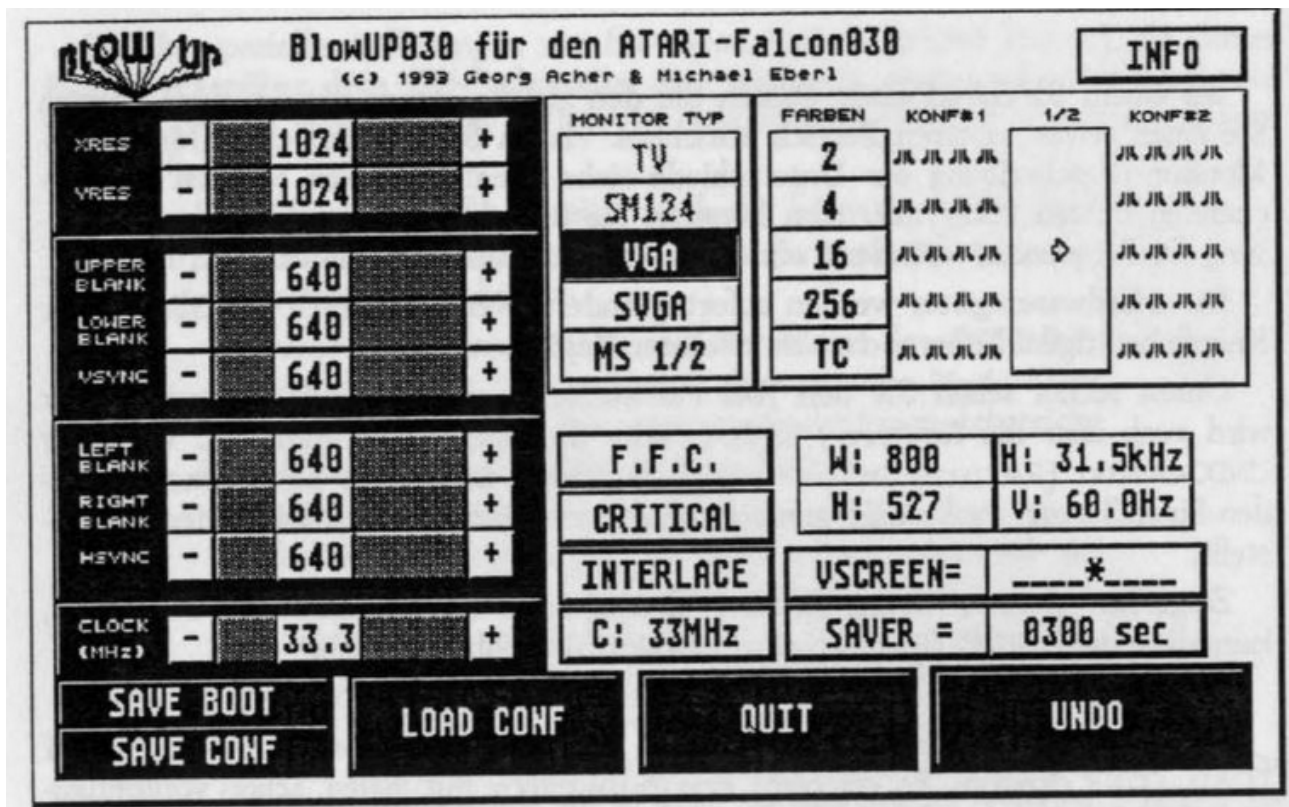
On your original floppy disk you will find in the folder DEMO a soft-only version of BlowUP030 which is reduced in function. This version is public domain, which means you can pass it on to friends and acquaintances at will. Please note that you only pass on the contents of the DEMO folder, not other files on the disk; They would then be guilty of piracy!

The storage of the demo version in mailboxes for non-commercial purposes is strictly permitted. The distribution of the demo version for a price which exceeds the material price (floppy disk, shipping) is strictly forbidden!

6 Operation of BlowConf

If you have not read the warnings in the chapter "Prevention of damage, read it now!

6.1 The easy way



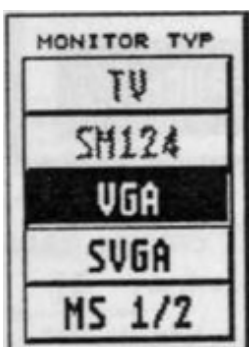
Now start BLOWCONF. PRG and immediately the main menu appears (see picture).

The menu does not appear intentionally (!), As usual, centered, but in the upper left corner. This has the advantage that as much of the box as possible can be seen, no matter how small the resolution becomes when experimenting.

At 320 points in the x-direction, the main menu is unfortunately only partially visible; the main menu, however, is able to move (even beyond the left edge). Just click somewhere on the background of the box, and a drag box will appear, which you can freely position.

Most of the sliders and buttons you see can be left alone. They are only needed if they do not want to configure predefined resolutions themselves.

On the top right you can see the color mode (COLOR MODE) you are currently in.



On the left you will see 5 buttons with the monitor types mentioned above. TV and SM124 are detected automatically and all others are not dialed. However, if you are working with another monitor (even with MultiScans), the default setting is VGA.

The reason for this is that the Falcon030 monitors can only distinguish on the basis of the used intermediate plug, which is the same with VGA, SVGA and MultiScan monitors! As long as this button remains selected, online changes of the parameters are excluded and thus possible damage is prevented.

If you have a regular VGA monitor with fixed frequency, do not choose another monitor type to avoid damage!

With a SVGA monitor, you select the button of the same name, then you can mark a slightly wider area. If, on the other hand, you have a MultiScan monitor (see description of the subscreens above), press the corresponding MS1 / MS2 button. Now you have been able to manipulate real-time, so-to-speak, "live" frequency resolution, without that security queries.

The hardware registers are changed immediately if you press one of the sliders or buttons! More about that in the next chapter.

At the bottom right, you'll see the UNDO button (if you want to colorize). This is also activated via the Return, Enter or Undo button. If the UNDO button (Return / Enter / Undo) is pressed, all previous video settings are made retroactive and the initial state is restored.

If your Monitor no longer displays a poor picture because of incorrect settings, UNDO (Return / Enter / Undo) can be fixed! A defective monitor is naturally defective, because no UNDO helps

To get started, it's best to do a standard resolution by pressing LOAD CONF. A selection box appears with many, already preconfigured resolutions (see illustration).

Lade BlowUP030 Standard-Konfiguration								
RES	U[Hz]	H[kHz]	MONITOR	F A R B E N				
				2	4	16	256	TC
800* 480	61	38.8	VGA	✓	✓	✓		
1120* 960i	62	31.5	VGA	✓	✓	✓		
1152* 912i	62	31.5	VGA	✓	✓	✓		
640* 480	69	35.7	SV124	✓				
896* 480	69	35.9	SV124	✓				
800* 600	56	35.4	SVGA	✓	✓	✓		
480* 600i	88	28.6	MS1					✓
640* 480	75	39.3	MS2	✓	✓	✓	✓	

OK

ABBRUCH

In the first column (under RES) the resolution X times Y, an "i" after it means "interlaced". This is followed by vertical and horizontal frequency.

The following field contains the monitor types suitable for this resolution. VGA means: Specially adapted to normal VGA monitors, MultiScan monitors can of course also represent such, conversely, this is not possible.

To the right of the monitor type is a listing in which color modes this resolution is possible. Because of the high bus load on coarse resolutions, the 256 color mode is not always possible; it would produce false colors and frays.

There are special resolutions only for True Color (65536 colors), since this mode requires twice the bus bandwidth compared to the 256-color mode, so that usually only half of the X-resolution is possible, as in other color modes.

Caution If your monitor does not display a still image after the following action, the frequencies are no longer in the synchronization area.

Then do not try to reach the UNDO button with the mams: the Return, Enter, or Undo buttons do it too! Then consult your monitor manual again because of the frequency ranges!

Please note the following: Since the hardware is not changed, there are some data errors: Right, parts of the image will be repeated (not in monochrome), uninitialized memory areas will be displayed below.

This is really normal and no reason for UNDO!

Now choose a resolution that firstly complies with your monitor and secondly is also possible in the color mode in which you are currently located. Click on the desired resolution, make sure again that you monitor is possible and press OK. If you have selected MSI / MS 2 for the monitor type, the video hardware is already being converted to the new resolution.

This configuration can now be saved by pressing SAVE BOOT. What BLOWBOOT. PRG already in the AUTO folder during the last boot process, so the new resolution can already be used on the next switch in the desktop!

With VGA / SVGA and an incorrect setting, a malfunction will be output and this configuration will not be saved! If all parameters are valid for the set monitor, a program named BLOWBOOT. PRG written in the AUTO folder on your boot drive (usually C :), or an already existing BLOWBOOT. PRG is being updated. If this is not possible, an error message is output.

You can set two different resolutions for each color. Normally, the currently set resolution is saved as resolution 1. This is the default resolution when booting. If you press the button with the arrow to the right of the color buttons, the setting will be saved as resolution 2. This means that you can configure a total of 10 new resolutions. How to conveniently switch between these in the desktop is described in the chapter "Switching resolutions to the desktop".

6.2 The difficult way

6.2.1 For all versions

So far, you have not needed the sliders on the left side yet. However, this will change if you want to create resolutions that are not in the list, and if you use your own monitor to the last extremes.

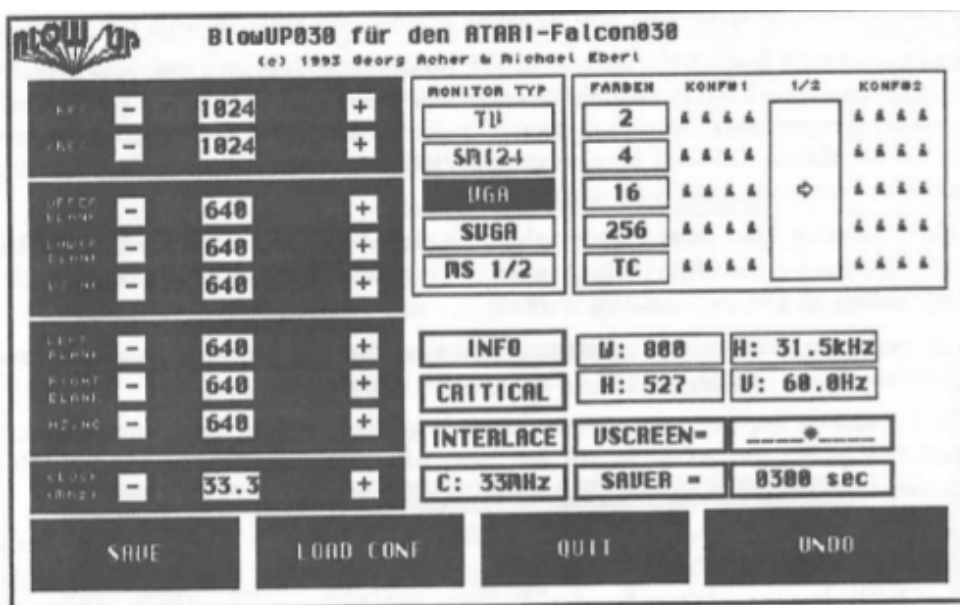
This is only useful with MultiScan monitors, as the frequency range given in the manual is often exceeded by single copies. Damage is actually not to be feared; but since we are (unfortunately) not omniscient, we can of course guarantee nothing!

Also, only with MultiScan monitors is it possible to perform the changes "live" and immediately admire the result. That's why we always start with MultiScan monitors in the following

With the two upper sliders XRES and YRES you simply rotate around the X or Y resolution. The best way is to use the arrow buttons!

You can read the current frequencies that the monitor receives at any time: In the H: field, the horizontal frequency is in kilohertz, in the field V: the vertical frequency is in Hertz.

If the picture suddenly collapses:



NO PANIC!

Simply press Return or Enter, the world is alright again!

Try tweaking the X-resolution with the arrow key until your picture collapses (ATTENTION! ON MULTISCAN MONITORS ONLY, I will not mention this malady in the following, it applies to the rest of this chapter!) and then press Return. Surely you noticed that the refresh rate slowed significantly as the resolution increased.

The reason for this is that the pixel clock, ie the time between two pixels, was constant remained, but the number of pixels was increased. When tasting, you can find that you can not achieve too high a resolution without causing an unbearable flicker. ATARI itself has already provided a possibility to increase the pixel clock of 25 MHz (in the standard VGA resolutions), namely to 32 MHz.

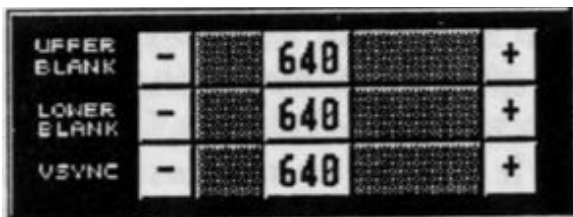
This is exactly what the widespread public domain program "Super78" does, which increases the frame rate in all VGA resolutions on MultiScan monitors to around 78 Hz without affecting the resolution. The same effect can be achieved by pressing the C: 25MHz button. If this button does not exist and instead a button called C: 32MHz exists, you already have a higher pixel clock. Now you can already set higher resolutions with more tolerant frame rates.



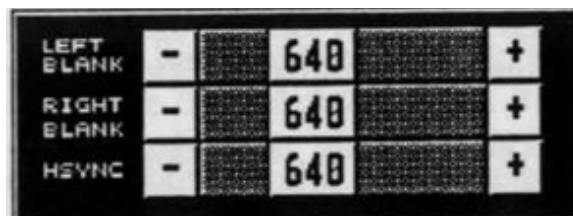
Now try the effect of the interlace Buttons off. If you press it, it will double immediately the Y-resolution; If you lower the Y-resolution to its original value, you will notice that the image is

actually calmer than before! If you do that with the original resolution, you will have a refresh rate of 120 mHz afterwards; darken even the fewest MultiScan monitors are still flawless ...

You also see: Now you can easily go a little further with the resolution. Only thin horizontal lines (such as the boundaries of the buttons) or any background symbols will flicker. (Good to see on the data minimal at the bottom of the screen!) It should be noted that if you want to do image processing, you will mainly be dealing with »real images«. Such images are extremely insensitive to interlaced flame. Images from Photo CDs are specially optimized for interlaced displays; Finally, the original goal for these pictures is the home-style TV with its 50Hz interlaced.



It is now possible to set the position and length of the vertical blanking interval with the next three shorts UPPER BLANK, LOWER BLANK and VSYNC. If you reduce the values for UPPER BLANK, then the refresh rate will increase slightly. However, if the values are reduced too much, whole pixel lines will be swallowed!



You can achieve similar results with the two best shorts LEFT BLANK and RIGHT BLANK for the left and right edges. If one chooses too small values, the screen layout of the Falcon030 usually collapses without warning. In this case, press the UNDO button and do not push this slider so far on the very

first try.

Another tip: If you greatly increase the brightness of the monitor and possibly reduces the contrast, you can see the edges not shown as a dark gray rectangle. Then the reduction of the margins with the sheds is easy to observe!

With the slider HSYNC you can move the picture horizontally.

Attention: Sometimes too small values interlaced will not work properly and will swallow every second line.

The set resolutions take effect on the next boot when you press SAVE BOOT.

If you have created your own resolution that you want to keep track of, then you can add it to the list of standard configurations with SAVE CONF.

6.2.2 For the hardware versions

The same applies here as with the soft-only version, except that the hardware solutions on the two built-in pixel clocks 25 MHz and 32 MHz allow you to select a third external clock that is generated by the intermediate connector.

The Hard I version generates a constant pixel clock of 50 MHz. This bar is useful for all resolutions up to and including 16 colors. However, if you use the external 50 MHz clock in a 256-color resolution, the video chip requests the image data so fast that the main memory of the Falcon can no longer satisfy the requests fast enough: the result is a rather frayed image ,

With the Hard II version you can select the pixel clock freely (ie in increments of 0.3 MHz), the slider CLOCK required is located at the bottom left. Move it to the right to increase the pixel clock. The higher the pixel clock, the higher the resolutions can be meaningfully operated. Logically, the less pixel data the pixel contains, the less pixel color can be seen. The optimum of the Falcon seems to be reached at up to 16 colors and 50 MHz, which can vary slightly with individual Falcon specimens. Should there ever be falcons with higher bus clocks (for example, 18 or 20 MHz are quite possible), then the farthest limit may be pushed further. If you have set the pixel clock so high that disturbances on the screen are constantly visible or if such disturbances even take place in the course of minutes, there is the theoretical danger that the video chip of the Falcon overheats.

So do not select a measure in which the image is distorted. The approximate maximum clock frequency for the individual color resolutions on a typical Falcon (higher clock produces image disturbances):

Anzahl der Farben	maximaler Pixeltakt in MHz
2	50-51
4	50-51
16	50-51
256	33-34
True Colour	33-34

6.3 The "faster" screen saver

"What, another screen saver?" Some people may have thought of in this chapter title. But we have no ordinary schooner, like he is already available dozens of times, installed! Read this Abschmtt and be amazed!

The Falcon030, unlike PC systems, integrates video memory into main memory. This fact has advantages and disadvantages. One of the advantages is that unused memory can be used by programs and that the screen saver is liberal! be moved to the store can (important for flicker-free animations).

The major drawback of this method is that the video chip must fetch its data via the normal system bus, which is not negligibly burdened by it. Already with the standard resolution 640 x 480 in 256 colors, 18 megabytes per second must be transported. This value can increase significantly in higher resolutions with BlowUP030; 25 MB per second are not uncommon.

Now it would be a clear advantage for the computing speed of the CPU, if this load could be switched off at least temporarily. During such a shutdown we would of course not see a picture: So we went to the BlowUP030 screen saver.

As you probably suspect now, this simply turns off the complete video output and the video chip no longer requests data from the main memory. Of course, they do not see any Enterprise on the screen, no stars or fireworks ...

For "knowing": The vertical blank interrupt is emulated, but only rarely called. You can clearly see this on the flack of the floppy or hard disk LED. Some programs got problems with these "artificial" VBlank interrupts.

In BlowConf you can use the schooner with the Activate button SAVER, next you can the time to shut down in seconds give. For each resolution a separate shot is saved.

If you want immediate acceleration without waiting, move the mouse pointer to the leftmost edge of the screen and after awhile the saver will activate. As usual, the image turns on again by pressing a button or moving a mouse.

At this point still a miscarriage! The screen saver completely switches off all output to the monitor, meaning that no sync signals are sent to the monitor any more. It's like simply unplugging the monitor cable or turning off the computer. Incomprehensible and dangerous, there are monitors (namely, some older SM124 copies) that can not cope. This is of course a design bug of the monitor, usually allowed

It does not matter to turn on the monitor without the computer plugged in / switched on!

To gain speed: In resolutions with high bus load (256 colors or True Color, many pixels), it can come to a doubling of the speed, or the other way around said: These resolutions slow the Falcon down to half speed!

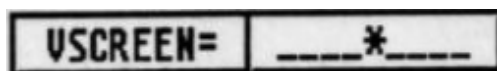
6.4 The virtual screen

With any color number, apart from the real "physical" resolution, you can also set a (much larger) apparent resolution. From this high resolution is only visible as much as you have set with the other slides. So you only see a part of the whole screen. Whenever the mouse pointer approaches the edge of the visible image, the image scrolls a bit further.

It should be noted that the overview can easily be lost. Alert and dialog boxes dive for example possibly in invisible places. For programs that support the VSCR cookie (for example, Gemini 2), dialogs and alerts are always displayed in the middle of the visible screen.

Furthermore, it should be noted that the memory consumption can be very large, especially if you use many colors.

Activating the virtual screen:



Press the button VSCREEN. The desired virtual image size is entered in the edit field to the right, e. 1280x1024. If the virtual resolution is smaller than the set physical resolution (which of course is meaningless), an error message is output when saving using SAVE BOOT.

6.5 Tips and problems while configuring

- If during the "Live" - Configuration with MultiScan monitors the picture suddenly turns black or only nonsense appears, try the following: First press UNDO. Then select the VGA monitor type (instead of MSI / MS 2) and repeat the setting that caused the image to be lost. Since no longer "live" is configured, the picture remains unchanged in any case. Once you have reached the wrong setting, check the numbers in the H: and V: boxes and compare them to the allowed Hires Monitor values.

If still nothing works, experimenting is announced: Are perhaps any margins too small? Increase this on a trial basis. Is the pixel clock too high for the current resolution? With 256 or 65535 colors more than about 32 MHz are not possible! Are all plugs connected (video port and joystick port)?

- You can also use the + and - to move them so that you can make wrong settings retrograde without undoing your entire work with Undo. Be careful, however, if you have crossed the boundaries of your monitor, the correction with the buttons may be too slow. Incidentally, there may be even older key pressed in the key buffer and the shder shoots past its target.

- The LOWER BLANK should be larger than VSYNC, otherwise the picture starts too cautiously.

- Some monitors darken the image if the left margin is chosen too small. Also, often the left or the top of the picture is compressed. Vergrofiem the affected edge in these cases.

- Sometimes (when you increase the x-resolution), the Falcon's interlace generation fails and every second line of the picture is swallowed up. In this case simply set HSYNC higher until the complete picture is visible again.

- Some external frequencies may cause slightly distorted vertical lines due to an unfavorable interaction between the Falcon, monitor line, BlowUP030 Hardware II and monitor. In this case, easily change the clock frequency.

- Some MultiScan monitors adapt to the current horizontal frequency only in coarser steps. Then (sometimes even after seconds) the image geometry suddenly changes after a certain transition frequency. Some monitors give a click that obviously comes from a relay. If you think that's annoying, tune the horizon frequency a bit. Damage does not occur by any means.

- was with BLOWBOOT. If PRG is booted, the parameters saved by BLOWOONF are also transferred directly to the resident program so that you can switch immediately (without reset) to the previously configured resolution (with "Screen type ..." in the desktop).

- MSI / MS 2 in the configuration program and in the resolution selection mean:

MSI: multiscan of 15-38 kHz (e.g., NEC TM 3D)

MS2: Multiscan from 30 to > 50 .. .80 kHz (almost all modern MS monitors) This is only intended for rough division.

- Problems with the 2-color modes:

Due to the not so perfect Flexibility of the Falcon video hardware, it is not possible here to stand up to any authoritative x-resolution. This problem only occurs in the 2-color modes, except that the right edge of the screen remains white. However, everything works fine in the following areas: 736-768, 864-896, 992-1024, ... 800x608 are definitely not!

For certain settings for the left and right margins, the screen composition was quite confused. Here, the margin settings only make sense within a certain range. If you can no longer recognize the position of the mouse pointer, remember that the last slider applied also responds to the + and - keys.

- Problems with the 4-color modes:

Here, too, the lack of flexibility of the Falcon hardware makes a dash through the free x-resolution. Again, the right edge remains white, even more so than usually in 4 colors usual. Here, the "allowed" steps are simply 64-pbcel steps in x-direction. If a resolution did not work, you can tell by the fact that the always existing left edge is smaller than the right one. So the x-resolutions are possible: 640, 704, 768, ...

- TV settings are possible with the following features:

Live configuration is possible.

The clock is fixed at 32 MHz, i. the resulting clock rate is 16 MHz (so you can estimate this value: Very good video recorders come to about 4 MHz, everything over it is blurred.). The X-resolution setting sets the left and right margins in such a way that overall the line frequency (15.625 kHz) does not change. Although it is possible to adjust the border after that, color stripes appear on the right edge. - The image position can be changed by the HSYNC, but excessive deviations from the standard value can lead to incompatibilities with other types of fame (distorted / continuous image).

The Y setting runs as before, i. Any vertical frequency can be configured, as modern TV sets automatically adapt to PAL (50 Hz, 312 lines) and NTSC (60 Hz, 262 lines).

In 2 and 4 colors the same limitations apply as with VGA.

For the popular setting 768 times 576 (voile PAL resolution without edge), there is a standard configuration, which works perfectly in 16/256 / TC.

The hardware extensions are not addressed in TV mode. Due to the limited capabilities of Femsehem and Videorecordem an increase of the pixel clock is neither necessary nor meaningful.

- BLOWBOOT. PRG must be after NVDI, Speedo and MultiTOS in the AUTO folder!

- The CRITICAL button (only for hardware II)

Most MultiScan monitors have a lower limit for the horizontal frequency of about 30 kHz. The monitors usually handle smaller frequencies, but only if they are - as figuratively speaking - slowly connected to these frequency, instead of switching over suddenly. This is usually not noticeable in BlowConf, because you often use the slides to move up or down slowly samples; only after booting the monitor can not synchronize. In this case, do a RESET and press the Shift key, then BLOWBOOT will activate. Not PRG. To be able to use such (probably extreme) resolutions (example: 640 x 480 in IYueColor), the CRITICAL button is used. Thus, when the resolution is turned on, the horizontal frequency of about 30 kHz (which is too much in the example for the Falcon hardware) is slowly reduced to the lower one (23 kHz in the example). For many monitors, the lowest frequencies specified by the manufacturer can often be significantly lower. You can test out the limit of your own monitor in BlowConf by slowly increasing the resolution while watching the H: field. The CRITICAL-Button is only effective on the safe when the MS 1 / MS 2-Button is selected and the horizontal frequency is below 30 kHz.

7 More problems ...

- If you can not find the serial number for the installation: It is on the disk! (Hello Bernhard!)

- If BlowUp030 crashes with a white screen and flaky pixels in the lower area after booting, it is most likely the wrong order of NVDI, MultiTOS, SPDGDOS and BLOWBOOT in the AUTO folder; to recognize the order of the messages of the individual programs.

Remedy: Rename the AUTO folder in e.g. AUTOX, create a new folder named AUTO, and then copy the programs from AUTOX back in the correct order. If in the desktop under INDEX the display 'unsorted' is selected, the displayed order in the AUTO folder also corresponds to the sequence at boot time. Note: BlowUP030 is the last one (in the AUTO folder!) Correct order: MiNT, NVDI, SPDGDOS, BLOWBOOT!

If this still does not improve, only try, i. Accesories and AUTO folder programs (except for NVDI, MiNT, SPDGDOS, BLOWBOOT, these work at least for us) to disable (extension in. ACX or. PRX rename), reboot (then have to go!), And then each Activate the program individually and reboot. Should there be a crash when booting again, the most recently activated program was the Ubeltater and you probably have to do without it. Please contact us but hire experiences. It is e.g. it is possible that the utility 'MORTIMER' causes cancellations at higher resolutions and 256 colors; However, we do not know any details yet. Likewise, resident RAM disks are conceivable as a reason, since then there may be no more memory for a coarser resolution when switching over.

- If the desktop crashes while displaying files, then you are more likely to have a non-divisible Y-resolution (not in interlace). Correct this to a multiple of 16. The crash is not due to BlowUP030 itself, but to the problems of the BIOS in 'half text lines'.

- If you permanently receive the message 'The frequencies of this setting are not (...) executable' when saving resolutions, but you have a multisync monitor: It is best to select the menu item MS1 / MS2 immediately after starting BLOWCONF on, as otherwise discrepancies between displayed and actually set values may result if a sudden switch is made.

- In the live configuration, it is quite normal that at higher resolutions on the right and bottom only Datenmiill is displayed, while the section with the BLOWCONF menu is getting smaller: this has namely still 640 x 480.

- If your own settings on the right edge of a thin, vertical vertical line, so this can be moved with HSYNC in the edge and thus made invisible.

- If the monitor image has become smaller despite the high resolution (ie the black edges are coarser), first check the maximum vertical frequency that your monitor can handle. Compare this to the value displayed by BLOW-CONF. If the latter is higher, the image is compressed by many monitors.

Remedy: 1. Increase the Y-resolution a bit, 2. make the upper / lower edges slightly coarser, or lower the clock frequency a little at Hard 2: 3. Now the vertical frequency is within the specification of your monitor.

- Unfortunately, it can not be avoided that the image is sometimes not centered despite the maximum possible HSYNC setting. In such a case, simply use the image position controls on the monitor to center the image.

- True color resolutions are easier to save as follows: Configure a resolution in 256 colors (for example 880 x 480) and then press the TC button in BLOWCONF. You see: The x-resolution is halved (= 440 x 480). Then get this resolution.

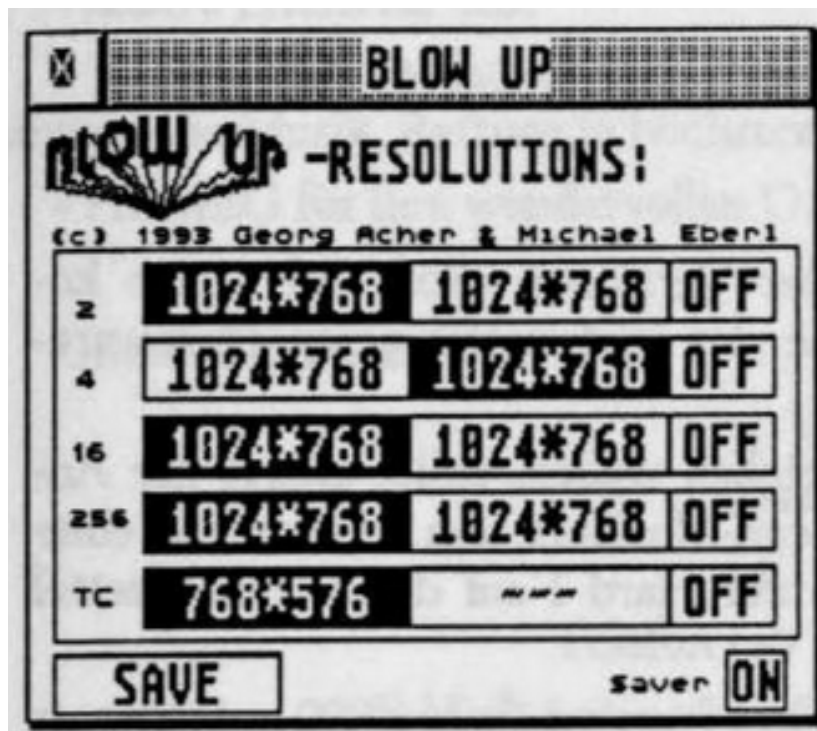
8 Resolution change in the desktop - the BlowAcc

With activated BLOWBOOT. PRG in the AUTO folder you can continue to easily change the resolution with the desktop dialog "Screen type." Only now the behavior changes: Significantly, the number of colors that you choose now is significant.

When switching over, the original, Falcon-original resolution will not appear after selecting OK, but the new resolution set by you in BlowConf for that color number.

The original resolutions can be achieved by switching the new resolutions to OFF by means of the accessory (or program, simple renaming in .PRG or ACC) (see illustration).

Here you can also select the second conflicting resolution. With the SAVE button, you can permanently set this setting for every color number.



Another tip: If you turn on 40 columns and line doubling in the screen type dialog, you will have a smaller system character set after the resolution change, as well as narrower window margins. This is a feature of the AES that is normally only active at 320x240; but this resolution is so rough that you hardly notice it!

9 The programming interface

The resolutions are switched via the following Falcon XBIOS video calls:

- Setscreen (XBIOS 5)
- Vs et fashion (XBIOS 88)

Both functions continue to receive a parameter called modecode, via which the resolutions of the Falcon are selected. If you specify the modecode as usual when calling these functions (as without BlowUP030), you get into the same resolutions that the desktop would reach (depending on your configuration). If you set bit 15 to modecode, only the old resolutions will be used. Certainly the reverse behavior would be better for compatibility reasons, unfortunately the desktop could not switch to the new resolutions and you would have to reboot for the resolution change each time. The function VgetSize (XBIOS 91) always corrects the correct length of the screen memory.

So here the correct behavior, if a program would switch the video mode and restore the original state after program end:

Query and remember the current video mode with VgetSize! Switch video mode to good diinking (with bit 15 set, or directly with the video registers, like the many demo programmers). At the end of the program, switch back to the original version with the XBIOS and use the modecode obtained from VgetSize!

10 upgrade

Of course, all versions of the soft-only version * offer a cost-effective way of upgrading to one of the more powerful hardware versions:

For those who want to get the most out of their performance, the first step should be to buy a freely synchronizing MultiScan monitor, preferably with a 17 Zou diagonal, and then upgrade to Hard I on the wish list.

Because with it, the resolutions are stable and you get at 880 x 608 instead of 93 Hz interlace 145 Hz interlaced or even 76 Hz non-interlaced, and at 1024 x 768 103 Hz interlaced instead of about 65 Hz as with the software alone.

For those who either want to work on the good (?) Old SMI 24 or a fixed-frequency VGA monitor, the Hard II is the main choice.

The rise on Hard I costs 80 DM, on Hard II it is 110 DM. In addition there are still 6 DM postage and packaging, if you pay by S check or transfer, or 10 DM, if you pay by cash on delivery.

Of course it is indispensable for an upgrade to let us know your serial number!

11 Thanks a lot ...

At this point, we (like Georg Acher, Michael Eberl and Ewald Seibert) would like to thank all the people who helped us in some way with the implementation of this project. Should anyone in the list below miss anyone who thinks they need to be mentioned, they can contact us and pick up a warm handshake or a warm hug!

Should such requests pile up, we will hold autograph sessions!

Thanks to...

- Bemd Paysan for his wonderful bigFORTH and for the proofreading of the manual.
- ATARI for the wonderful Falcon and merciless developer support
- our beta testers Frank Bartels, Torbjoem Ose, Harald Schonfeld and Uwe Seimet.
- our parents for us.
- Ludwig van Beethoven and Jean-Michel Jarre ("Chronologie" ...!) For the insanely great music, rescue in highest notes!

Our address:
Georg Acher
Eslamer street 34
81549 Munich

Telephone (from 6 pm): 089/68 11 04
E-Mail: acher@informatik.tu-muenchen.de
or eberl@informatik.tu-muenchen.de

ACER	View 25	31-60	50-90	MS
ADI	MicroScan 3E-LR	30-48	50-100	MS
AOC	CM336/CMLB336	30-50	50-90	MS
	CM337/CMLB337	30-60	50-90	MS
	CM735/CMLB735	30-64	60-90	MS
ARX	CM1448VA	30-38/45-50	50-90	MS
	DCM1468	30-60	50-100	MS
	DCM1568	30-65	50-100	MS
ATARI	PC1446	31,5	60	VGA
	SM124	35,7	71	SM124
	SM144	35,7	71	SM124
	SM146	35,7	71	SM124
	SC1224	15,625	50/60	TV
CPA	424	31,5/35,2/35,5	56/60/70/87	SVGA
	424NL	31,5/35,2/35,5/48,4	56/60/70/87	SVGA
	425	31,5/35,2/35,5	56/60/70/87	SVGA
EIZO	T240i	30-60	55-90	MS
	FlexScan F340i	27-61	55-90	MS
	FlexScan F550i	27-65	55-90	MS
	FlexScan F560i	27-80	55-90	MS
	FlexScan T560i	30-78	55-90	MS
	FlexScan F660i	30-80	55-90	MS
	F750i	30-65	55-90	MS
	FlexScan F760i	30-78	55-90	MS
	FlexScan 9065S	30-49	50-90	MS
	Flexscan 9080i	30-64	50-90	MS
Highscreen	LE1024	31,5/35,2/35,5	50-87	SVGA
	MS1280	30-64	50-90	MS
Hitachi	15MVX/CM1584ME-301	30-58	50-100	MS
	CM2187ME	30-78	50-120	MS
IDEK	Multiflat MF-5115	21,8-50	50-90	MS
	Multiflat MF-5117	21,8-50	50-90	MS
	Multiflat MF-5421A	30-80	50-90	MS
Ikegami	C/T-20A	30-81	50-90	MS
JVC	GD-H6116SFW	31,5/37,3/47,7/63,3	60/70	SVGA
MAG(Magic View)	II PMV1448L	31,5 +/- 1,5/48 +/- 1,5	50-90	VGA
	14 Digital(MX14)	30-64	50-120	MS
	14H(MX15H)	30-68	50-120	MS
Microvitek	PRO-SCAN 1550FST	30-50	45-120	MS
	PRO-SCAN 17FST	30-65	50-90	MS
Miro	C1766	30-38/48-66	50-140	MS
Mitsubishi	Diamond Pro VGA	31,5	60/70	VGA
	Diamond Scan 14	30-38,5	40-90	MS
	Diamond Pro 17	30-64	50-130	MS
	Diamond Scan 20	30-64	50-130	MS
	Diamond Scan 21	30-78	50-130	MS
	FL 6615ETKV	30-64	50-90	MS
	HL 7955 SFKL	30-78	50-130	MS
NEC	2A	31,5/35	56/60/70	VGA/SVGA
	3FG	31,5-38	55-90	MS
	4D	30-57	50-90	MS
	4FG	27-57	55-99	MS
	6FG	27-79	55-90	MS
NOKIA	Salora CED 4	31,5-50	50-100	MS
Panasonic	1481/F	30-38	50-90	MS
	TX-1703MA	30-64	50-90	MS
	TX-1713MA/AB	30-64	50-90	MS
	TX-T1537	30-64	50-90	MS
	TX-2103MA	30-64	50-90	MS