
TRF-598 TV

TRF-598 TV&SAT

TV and TV-SAT Test Generator

(Brief)



- ◆ PAL, SECAM, NTSC and all substandards
- ◆ Picture format 4:3/ 14:9/ 16:9
- ◆ Interlaced and non-interlaced patterns
- ◆ 69 test patterns, 5 user definable, 50 preselections, auto mode
- ◆ Outputs: Video (CVBS), S-Video, RGB, Y, R-Y, B-Y, TV, SAT, ...
- ◆ TV, CATV and SAT frequency range
- ◆ MONO/ STEREO/ DUO, optional modulation
- ◆ Warranty: 24 months, lifetime service

Epsilon

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TRF-598 generator data

Indication Display Current setup Menu	backlighted LCD, 2x16 characters <ul style="list-style-type: none"> • Video mode (pattern number, television standard, picture format, vertical frequency in Hz, field mode, included chrominance, colour subcarrier frequency in MHz or SFM for SECAM FM, chrominance channel filter, luminance channel filter, output signals) • TV mode (picture carrier frequency or TV channel, RF attenuation in dB, I. sound subcarrier modulation signal, I. sound subcarrier frequency, II. sound subcarrier modulation signal, II. sound subcarrier frequency, ID signal) • SAT mode (picture carrier frequency, RF attenuation in dB, I. sound subcarrier modulation signal, I. sound subcarrier frequency, II. sound subcarrier modulation signal, II. sound subcarrier frequency, voltage at SAT) 59 items, short menu mode available
Setting Standard Quick Selection	menu oriented device control direct control of basic parameters using keys on front panel
Preselections	50 preselections divided into 10 memory, 5 banks per memory
TV standards Picture format TV lines count Scanning Colour subcarrier Teletext	PAL, SECAM, NTSC and all substandards 4/3, 14/9, 16/9 625/ 50 Hz, 525/ 60 Hz interlaced, non-interlaced according to PAL, SECAM or NTSC standard (including lock to line frequency as required) European Telecommunication Standard, raster and page mode (max. 125)
Test patterns Standard User Generation method	64 standard patterns 5 user patterns TRUE PICTURE technology (maximum TV resolution)
Outputs CVBS (Video) S-Video Y (luminance) CHROMA (chrominance) R (red) G (green) B (blue) C _R Y C _B Audio TV SAT Line Gate PC Interface	<i>(This values are valid only in case the generator is under standard setting)</i> 75 ohm, level 1,2 Vpp (colour bars 100/0/100/0), level 1 Vpp (colour bars 75/0/75/0) 75 ohm, level 1 Vpp (colour bars 100/0/100/0) 75 ohm, level 0,6 Vpp (colour bars 100/0/100/0) 75 ohm, level 0,7 Vpp (colour bars 100/0/100/0) 75 ohm, level 0,7 Vpp (colour bars 100/0/100/0) 75 ohm, level 0,7 Vpp (colour bars 100/0/100/0) RGB outputs can be switched to CDF (colour difference) mode (see menu item nr. 13). Output levels at R/C _R , G/Y, B/C _B are adjustable in wide range (see menu items nr. 14, 15). symmetrical audio output 600 ohm/ 1,55 V _{eff} , sin. 1 kHz asymmetrical TV output 75 ohm, 80 dBuV (0 dB attenuation set) asymmetrical SAT output 75 ohm, 85 dBuV (0 dB attenuation set) TTL levels (pin 12 of "PC Interface" connector) communication interface (use TRF Manager to configure TRF-598 from PC)
Ffrequency characteristic (outputs) CVBS and S-Video R/C _R , G/Y, B/C _B	4 filters in luminance channel (see menu item nr. 11) 2 filters in chrominance channel (see menu item nr. 10) luminance signal has gain -3 dB at 6 MHz and -12 dB at 8,5 MHz, colour difference signals has gain -3 dB at 2,5 MHz and -12 dB at 3,5 MHz Note, the RGB signals are created by dematrix frequency limited (see above) signals C _R , Y a C _B .

TRF-598 generator data (installment)

<p>TV output Output level Picture carrier frequency Video modulation</p> <p>I. sound subcarrier frequency Picture to sound ratio Modulation type Modulation signal</p> <p>II. sound subcarrier frequency Picture to sound ratio Modulation type Modulation signal</p> <p>Pilot signal Frequency shift ID signal Validity</p>	<p>30 ..80 dBuV (adjustable via digital attenuator), ripple -4 dB/ +1 dB 38 ..855,25 MHz, tuning step 125 kHz (or TV channel) negative AM DSB, adjustable modulation depth 72,5% to 90%</p> <p>4,500 MHz, 5,500 MHz, 6,000 MHz and 6,500 MHz -11 ..-18 dB (adjustable) FM, adjustable frequency deviation 1 kHz, 3 kHz, 1 kHz + 3 kHz (half level), 0 Hz</p> <p>5,000 ..7,000 MHz, tuning step 1 kHz -13 ..-20 dB (adjustable) FM, adjustable frequency deviation 1 kHz, 3 kHz, 1 kHz + 3 kHz (half level), 0 Hz</p> <p>54,6875 kHz, +/-1Hz 2,5 kHz (II. sound subcarrier frequency deviation is 30 kHz, or else relative) AM (m=0,5), 0 Hz (mono), 117,5 Hz (stereo), 274,1 Hz (duo) Interlaced mode (I1, I2) and vertical frequency 50 Hz</p>
<p>SAT output Output level Picture carrier frequency Video modulation</p> <p>I. sound subcarrier frequency Modulation type Modulation signal</p> <p>II. sound subcarrier frequency Modulation type Modulation signal</p>	<p>60 ..85 dBuV (adjustable via digital attenuator), ripple +/-5 dB 860 ..1900 MHz, tuning step 125 kHz FM, CCIR405-I preemphasis</p> <p>5,000 ..8,500 MHz, tuning step 1 kHz FM, frequency deviation 30 kHz 1 kHz, 3 kHz, 1 kHz + 3 kHz (half level), 0 Hz</p> <p>5,000 ..8,500 MHz, tuning step 1 kHz FM, frequency deviation 30 kHz 1 kHz, 3 kHz, 1 kHz + 3 kHz (half level), 0 Hz</p>
<p>Power Dimensions Weight</p>	<p>~230V/ 50 Hz/ max. 28W 336 x 108 x 250 mm (W x H x D) 4,5 kg</p>

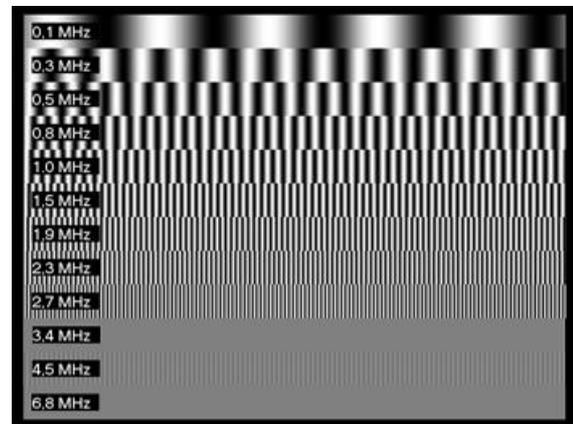
User patterns

The TRF-598 TV (SAT) generator can store up to 5 user patterns. User patterns are always designed for 525 lines or 625 lines mode. You can use it in any picture format, but if the current screen format differs from designed, geometric distortion or clipping can occur.

User patterns contain one or two fields. In the first case you can select "I1", "NI" and "NL" scanning mode, in the second case the "I2" mode, too. Generator memory can contain up to 5 fields, so you can store 5 patterns with one field, or 1 pattern with two fields and 3 patterns with one field or 2 patterns with two fields and 1 pattern with one field.

This patterns are completely user definable. You can create it using bitmap picture editors or download required patterns from internet. From factory the generator is fitted with the most popular set of patterns.

If you want to create special patterns (monoscopes, anti-PAL and so on), you should use "TRF Manager" software. The last version is very powerful and you are able to create your own patterns "in a minute or two". Moreover you can create teletext pages, store current TRF-598 configuration to disk, save preselections, retrieve it and many more.



TRF-598 monoscope example and multiburst example (format 4:3, 625 lines, 50 Hz)

Teletext

From factory the TRF-598 contain set of most popular teletext pages. If you want to create your own teletext pages or teletext rasters, use "TRF Manager" software.

Teletext pages may be edited at different levels: starting single byte editing up to visual design. Visual mode is the simplest way how to create new teletext pages. Advanced designers can use packet editors, too.

The TRF-598 is able to generate any teletext pages, you design. See ETS 300-706 teletext specification for detail information about teletext.

Teletext pages count is limited only by available memory. The TRF Manager show you how many bytes are free, when you design new pages.

Teletext is transmitted inside three lines during vertical blanking interval, by default. You can change lines and fields as you need, when using TRF Manager.

TRF Manager

The "TRF Manager" CD contain software packs that help you:

- create your own test patterns or modify completed,
- change standard patterns,
- create your own teletext pages and rasters,
- edit preselections,
- configure TRF-598 from PC,
- and many more!

Moreover the CD contain set of completed user patterns, standard patterns, teletext pages, preselections and another data files.

You can find here various utilities, documentation and teletext specification ETS 300-706.

Installation

Insert CD into computer, open folder "TRF Manager" and run installation wizard named "SetupENG.exe". Select installation type, destination folder and run installation.

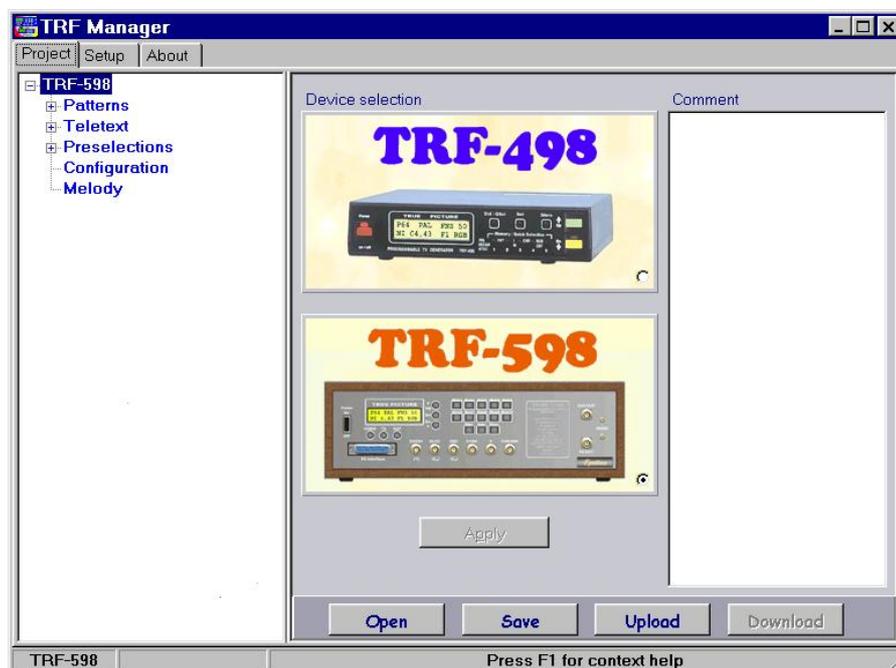
Program "Pattern Viewer" show pattern files (PNF extension) content and is automatically associated with this file type. You can run it by double clicking the pattern file.

Other programs are associated with appropriated file types, too. But you can find them in "Start/ Programs/ TRF Manager" and run it directly:

- **TRF Manager** ...main program (TRF-598 control, project administration and so on),
- **Pattern Creator** ...creates your own patterns.

TRF Manager

Data for TRF-598 TV pattern generator are prepared in form a project. The project you can open or save to disk and upload to generator. Project is divided into several separated parts (patterns, teletext, ...). Many of them you can individual open or save to disk, upload to generator and, in case of preselections, download from generator. You can select requested project part in the tree located near left side of program window.



When you work on new project, you should first select device type. Device can be changed later, but not all properties are supported by all types.

But it is very helpful if you have more generators and want setup them to the same state.

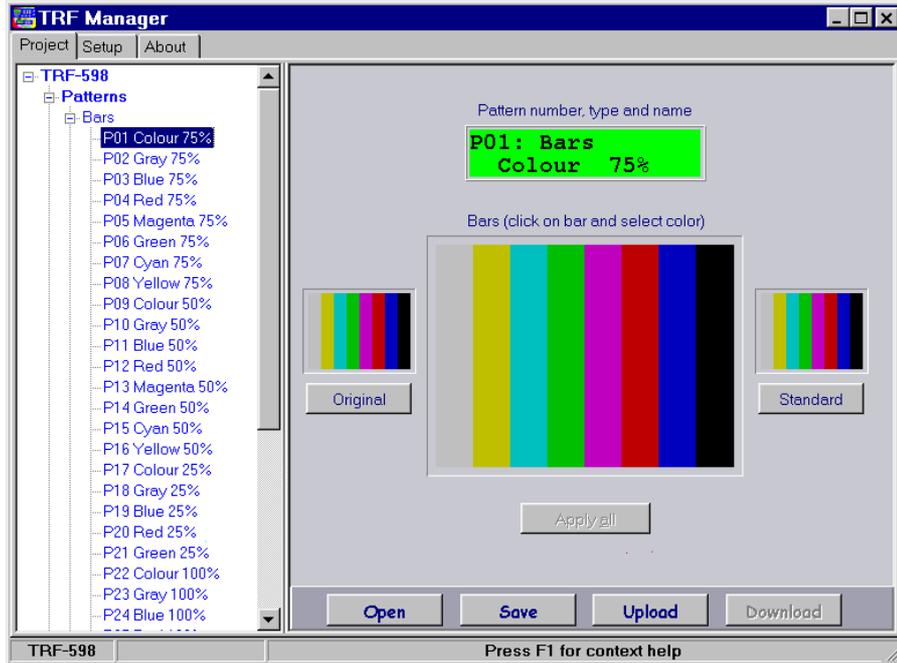
This window enables you add comment to project, too.

TRF Manager main screen (device selection, comment, project open, save, upload)

Bars, areas

If you select in project tree bars pattern, at the right side appear editor. At the top is pattern number and type and at second line pattern name. If selected device support name changes, you can type your own name here.

Note, the name length is limited. Delete previous text before you type new (use Del key for example).



Center part of editor show pattern preview. Click on bar and set colour coordinates as you need.

Click button "Previous" to restore pattern to previous state or press "Standard" button to restore pattern to default state. Above buttons you can see appropriate pattern preview.

Changes are stored to project by button "Apply all".

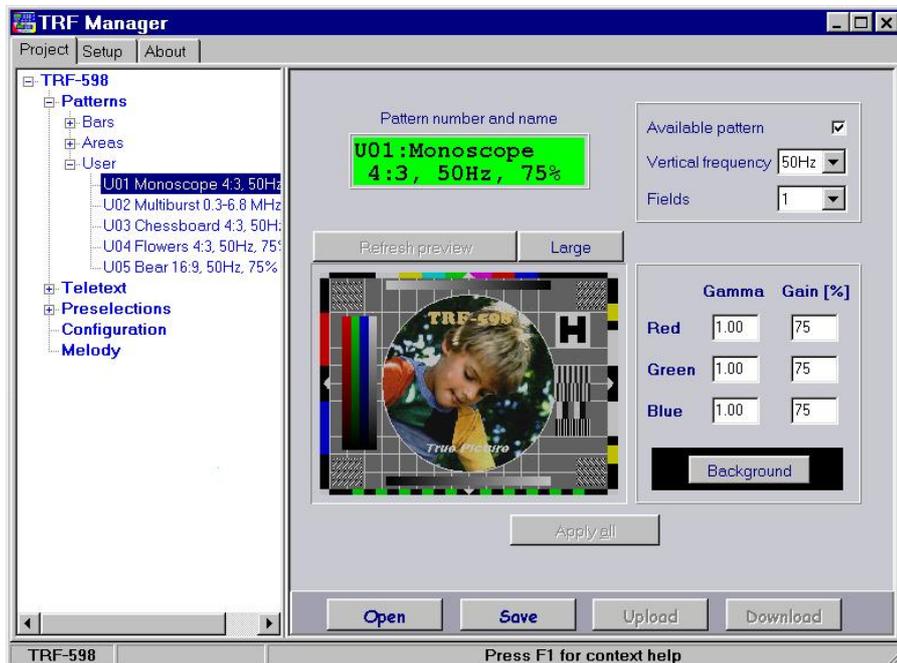
If you select in project tree area pattern, you can edit it in a similar way.

Bars pattern editor (areas pattern editor is similar)

User patterns

In project tree select one of five user patterns. On the right appear user pattern property editor and pattern preview (if auto preview function is enabled, see "Setup").

At the top is pattern number and name. Set cursor at the first or second line and type your own name. Note, the name length is limited. Delete previous text before you type new (use Del key for example).



If pattern preview is not visible, press button "Refresh preview". If you need larger preview, press button "Large".

Pattern parameters are at right. All user patterns are stored to project, but only "Available patterns" are uploaded to generator. Note, the total field count must be less or equal to 5.

Background colour is used only after vertical frequency change or if you import smaller bitmap image.

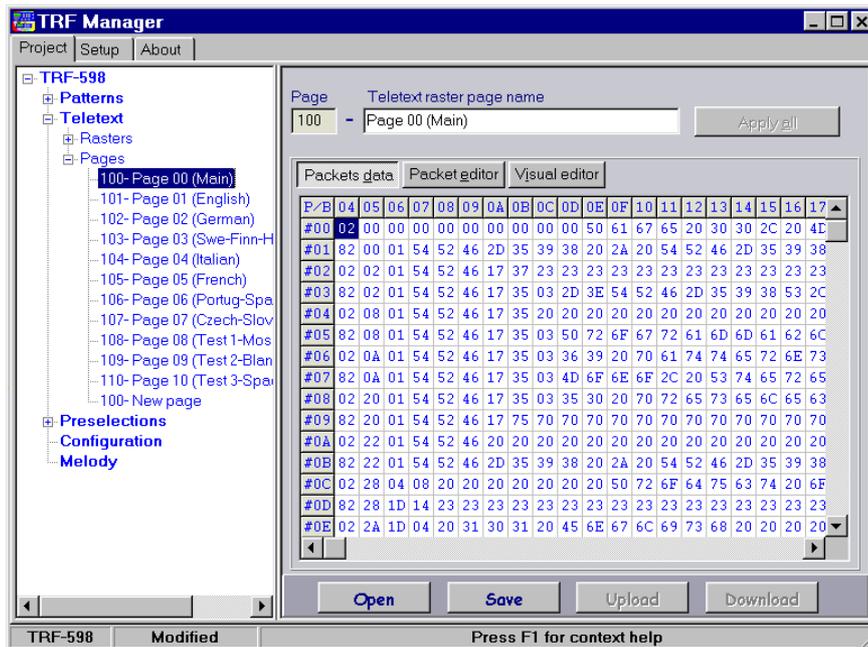
Changes are stored to project by button "Apply all".

To create new user pattern, use "Pattern Creator".

User pattern property editor

Teletext

If you select in the project tree teletext raster or teletext page, editor appear at right. The term "teletext raster" mean a subset of term "teletext page". While teletext pages can contain any (different) packets, teletext rasters contain only two packets: 0 and 1. The rest of page up to packet nr. 23 is filled with packet 1 content. So teletext pages can contain any number of packets (limited only by available memory), while teletext rasters have fixed packet count (24)



and take far less memory, than full teletext pages.

Teletext editor allows you to name selected page. The name including page number is then visible in project tree. Page number is given by packet nr. 0 content (see teletext specification). You should set it first, because program keep "magazine" number. Teletext packets may be edited by three different ways.

The most common is "Packets data editor". Use this editor to change single bytes (indexed \$04..\$2d) in any packet.

Moreover you can add new packets, remove, clear or

Teletext editor (packets data editor selected)

move packets to any location in page. This editor allows you to set the same magazine number for all packets together.

If you select some packet, then you can edit it in "Packet editor". Packet editor allows you to enable or disable automatic computing of parity bits. This option is needed for all standard packets, otherwise you have to add it manually. Parity bits are added when data are uploaded to generator, so data inside packets editor are unchanged.

Packet editor enables you to set magazine number, packet number and designation code. Packet data are displayed in mode according to these values.

Packet nr. 0 allows you to set many teletext parameters (see ETS 300-706). Above all you can set page number units and tens, enable special functions, select character set and fill visible part.

Visible part is divided into two sections -lower (bytes indexed 14 to 37) and upper (bytes 38 to 45). Upper eight bytes are usually used for time display, let us say for characters visible at any page. Default teletext pages use this section for raster (page) index formatted "_R01/P--" for rasters and "_R--/P01" for teletext pages. Top right corner of TV receiver then show what is at the moment transmitted and how fast.

Next packets may be edited by bytes (in hexadecimal, binary or character notation), or by triplets (in hexadecimal or binary notation). The most significant digit is at left, the least significant digit is at right. Characters may be written as hexadecimal codes preceded with "#" character, too ("#1e" for example).

Packets nr. 0 to 23 and packets nr. 24, 25 may be edited using "visual editor". If you edit teletext raster, then only packets nr. 0 and 1 may be modified. Packets nr. 2 to 23 are the same as packet nr. 1. Standard teletext pages may be edited freely.

In center of visual editor is design grid. If a bar on left side is visible (cursor is blinking), you can insert characters using keyboard. After key is pressed, cursor moves at right. Use common keys to set cursor at requested position.

Characters, you can insert, are divided into three groups. First group contain special control characters called "spacing attributes" (code \$00 to \$1f, see ETS 300-706). Second group contain alphanumeric characters and the last group contain graphic characters called "mosaic" (code \$20 to \$7f). You can insert characters using keyboard, pop-up menu or click them in table on the right. Use spacing attributes to change alphanumeric characters to mosaic and vice versa. In design time click icon above table to show alphanumeric or mosaic characters.

Invoke pop-up menu using right mouse button above design grid. If your keyboard support Windows keys, use appropriate key. The menu allows you insert character by code, switch character table to alphanumeric or mosaic, move visual editor into sizeable separate window or repaint design grid.

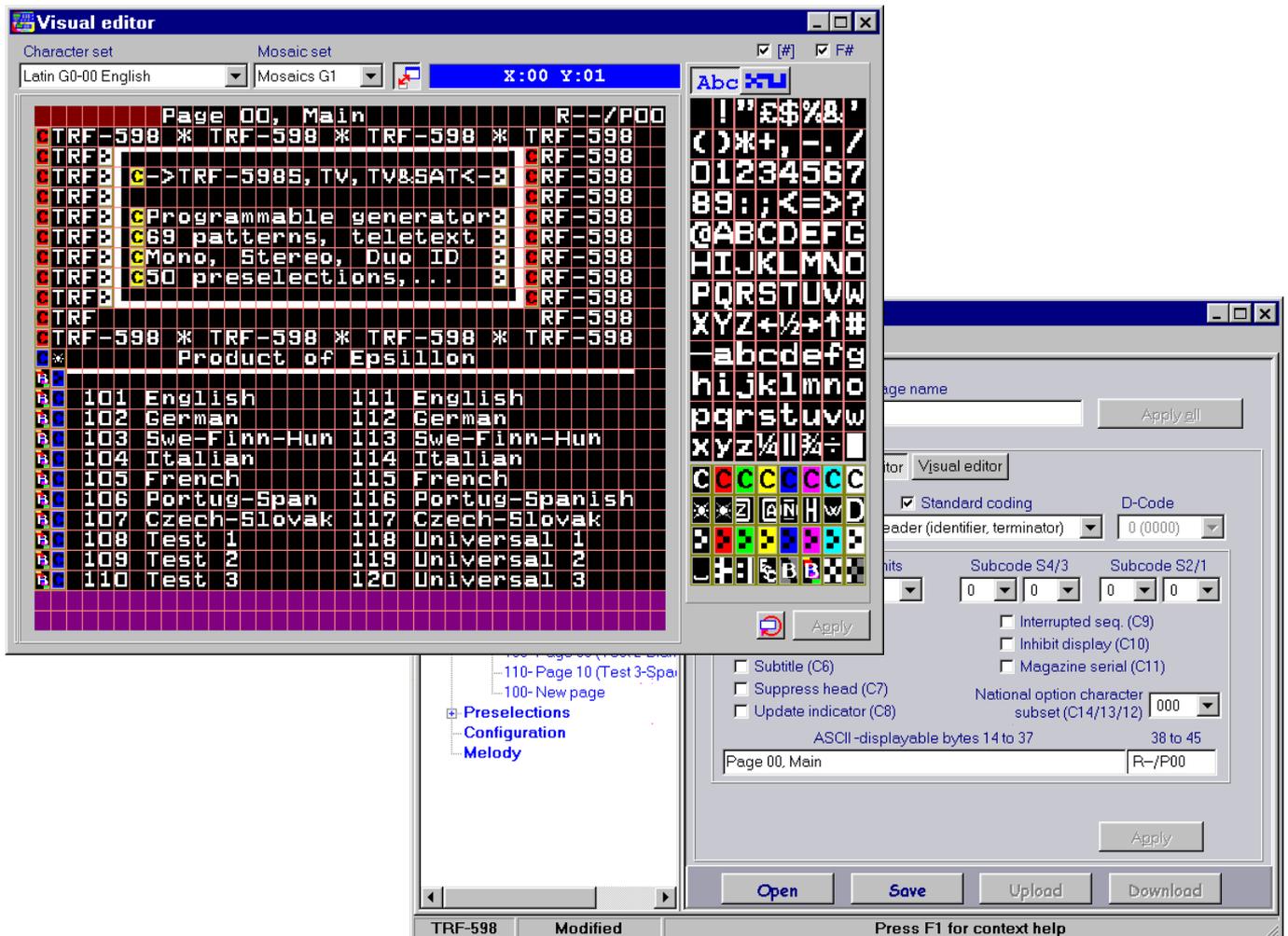
On the top of editor you can select alphanumeric and mosaic character set. This set is used only in design time. Use packet nr. 0 (or packets nr. 28, 29, etc.) to force teletext decoders switch to requested character set.

In design time you can use any character sets (it is helpful if you use packet nr. 26). If you click "Repaint" button (or when you type into new packet), the design grid is repainted using selected alphanumeric and mosaic set.

Press "Apply all" to save changes into project.

In project tree is always visible "New page" and "New raster". Select this item to create new page or teletext raster. Change the page name and when you press "Apply all" button, the page will be added into project. If you want to determine rasters or pages transmit order, use project tree pop-up menu. Invoke this menu using right mouse button over appropriate page (raster) in project tree.

The pop-up menu allows you to remove selected page, too.



Visual editor and packet nr. 0 editor

Preselections

Preselections are labeled by number (from 1) followed by bank symbol (A to E). The number come up to device key where the preselection is stored and bank symbol give press count to recall requested preselection.

In project tree select preselection you want to edit. At the right appear editor that enables you to change preselection parameters. At the top is preselection number, bank and name. Change

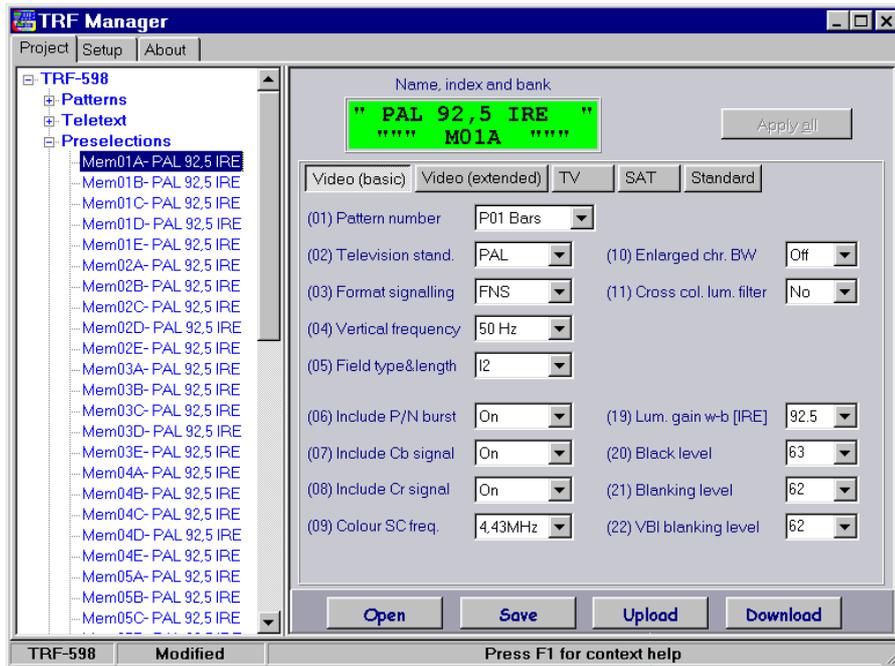
the name, if selected device support it.

Note, the name length is fixed. Delete previous text before you type new (use key Del for example).

Preselection parameters comes up to TRF-598 TV generator menu items. See item number and find detail description in user manual.

If some items are grayed, then selected device do not support it.

Store changes to project using "Apply all" button.



Preselection editor

Device configuration

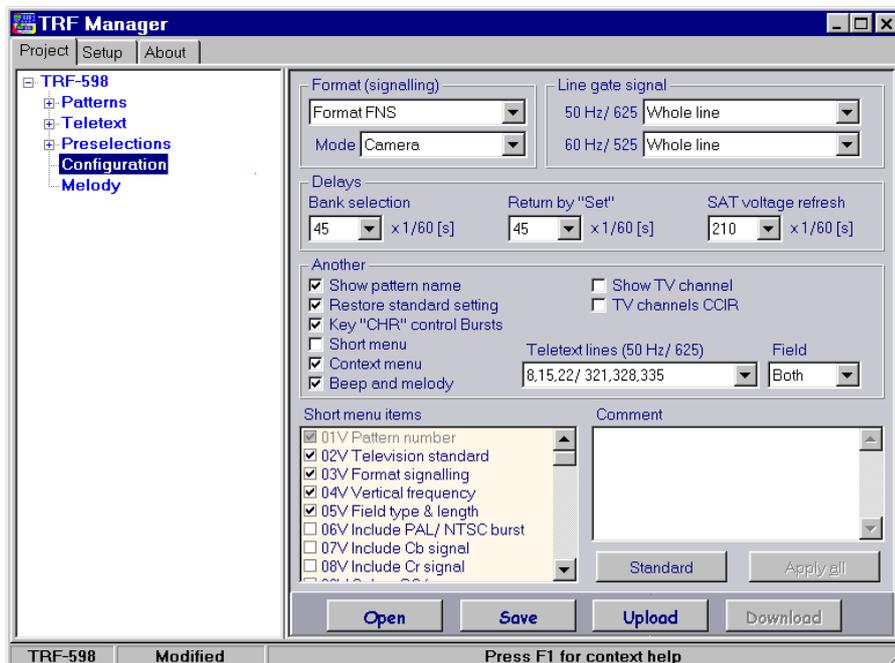
The TRF-598 TV (SAT) generator allows you to configure some parameters only using your personal computer (PC) and "TRF Manager" software. If some items are grayed, then selected device do not support it.

Items contain plain description (see figure below). Short menu items allows you check items,

that only appear if you select "Short menu mode".

Add comment to your own configuration and press button "Apply all" to store changes.

Press button "Standard" to restore device configuration to default state.



Device configuration editor

Melody

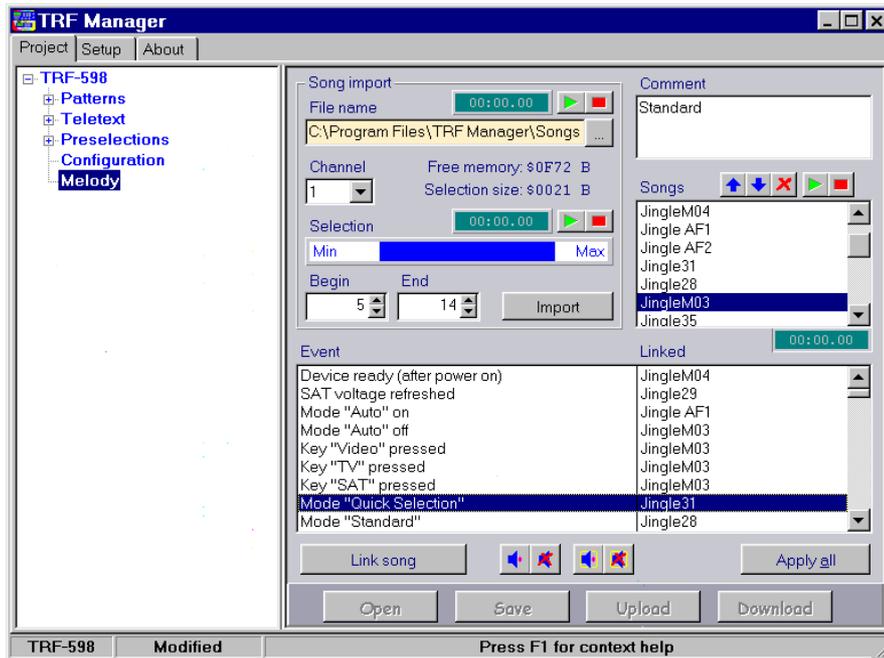
The TRF-598 support beep and melody signals. When some event occur, then linked beep or song is played. For example, if you press key then you can hear song that depend on key function. There are many events, by default the most of them are linked to short beep or to "no sound" and only a few play longer songs (after startup, for example). The TRF Manager helps you to create your own signalling scheme. You can open songs in MIDI type 0 or PianoMan 4

formats and import it entire or only get a part.

List box "Songs" show the imported songs, you can link to events. Events and linked songs are listed below.

Use spacebar to play song or "Enter" to link it to selected event.

Save changes to project using "Apply all" button.



Linking sounds to events

Environment parameters

TRF Manager allows you to customize program environment. Select "Setup" bookmark and set folders, colours and another parameters. Changes may be valid only before you close the program ("Apply all" button pressed only) or you can store applied changes as default using "Save" button.

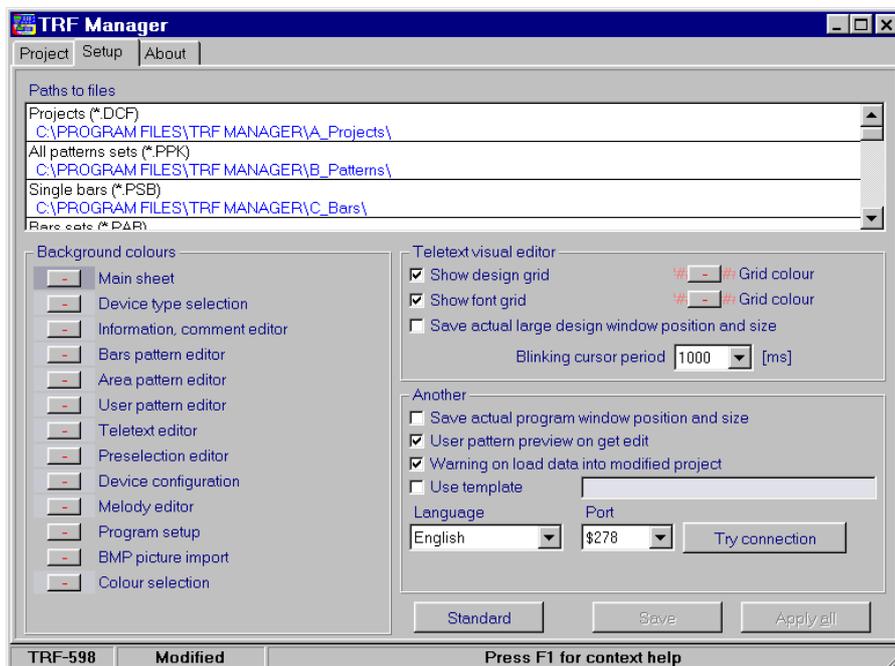
Be careful when you select communication port number. The TRF-598 TV generator have to

be connected only to valid parallel (LPT) port of your computer. Use only original cable and connect the TV generator into PC only after program call you. If you disappoint this rules, you can damage computer and generator.

If you are not able to find port number under Windows, contact your computer dealer.

Press "Try connection" to check communication.

To restore parameters to default state, press button "Standard".



Program environment setup

Pattern Creator

Use "Pattern Creator" to design your own television test patterns and signals. The program menu contain following items: "File", "View", "Insert" and "Help".

File

Init new design by selecting "New" or open existing PCF file using "Open". To close file use "Close" menu item. Changes you can store using "Save" or "Save as" items.

You can save designed pattern either in component format (PCF extension) or in pattern format (PNF extension). Component files may be opened and modified using Pattern Creator, while pattern files are created only for TRF Manager and for transfer to TRF-598. Components files may be converted to pattern files, but pattern files cannot be converted back to components.

Use "Exit" to close the program.

View

User pattern is created from components. All components you add are listed in Pattern Creator window and you can change its order or properties. You are able to hide some components, too. Current pattern preview is visible in separate window after you select "Pattern" item. Note, it is preview only and some special signals (anti-PAL, etc.) are simplified.

If "Auto refresh" is checked, then all changes will appear in preview window immediately. Otherwise you have to select "Refresh" item.

When "As is" checked, then pattern will be displayed without distortion given your computer monitor resolution. But in this mode the picture format is always incorrect.

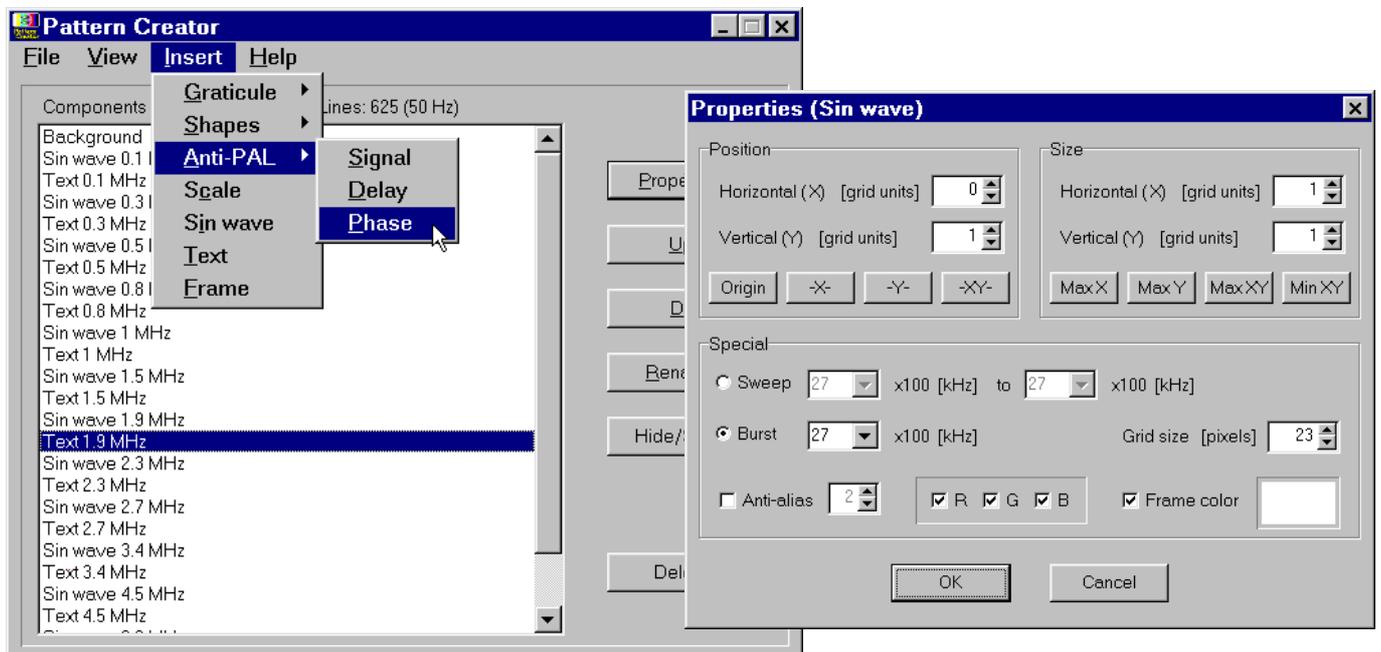
"Sizeable" item allows you to change size and picture format as you need (not available in "As is" mode). Use standard window elements to make this changes. Note, you change only preview window, not real pattern format. Pattern format is specified when you select "File/ New".

Insert

To insert a pattern component, use this menu item. Select required component from "Graticule", "Shapes", "Anti-PAL" signals, bars, sin waves and many other. After you select component, you can set its properties.

Help

If you need help, pick this menu item or press "F1" key.



Pattern Creator (pattern preview window is not visible)

Notes: