

FIG

Tcube

Operation Manual

**BI5x9
HD/SD Bug Inserter**

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BI5x9 : application description

BI5x9 is a set of software application based on FIG, the powerful OS free computer for video and audio signal processing developed by Tcube.

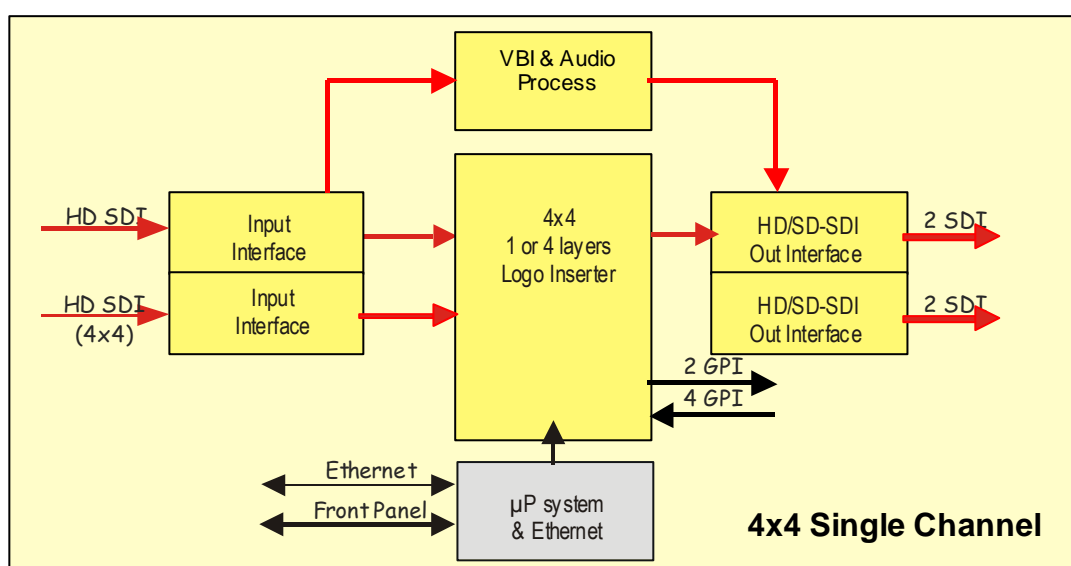
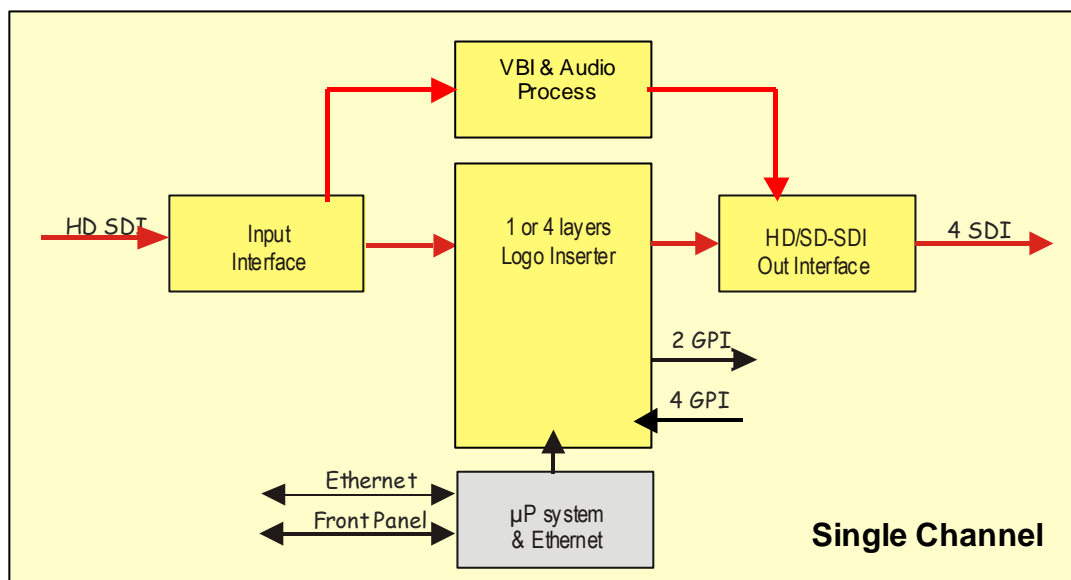
BI5x9 is a single/ dual channel bug inserter (single or 4 layers) with HD or SD SDI inputs and 4X4 I/Os

Current section will

- detail BI5x9 functionality,*
- explain how to insert BI5x9 in a working environment*
- present FIG I/O connections*

Functionalities

- HD-SD Serial 4:4:4: or 4:2:2 I/Os,
- SD-SDI Outputs (525, 625) with EDH,
- All HD formats supported (1080i, 720p) at all frame rates (23.99, 24, 25, 29.97, 30, 50, 59.97,60) with Auto detect capability
- 1 or 4 layers logo inserter
- single or dual channel version
- embedded audio and VBI transparency
- 1RU height, half 19" width (2 units in 1RU)
- Dazibao, associated WinXp application software for control applications



BI5X9 : APPLICATION DESCRIPTION

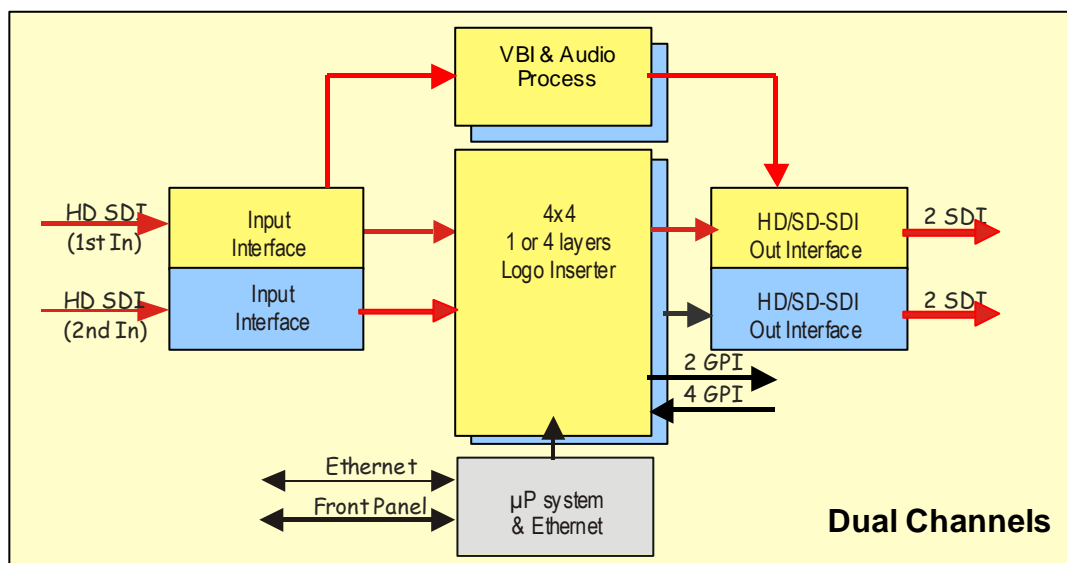


Figure 1 Internal organizations of BI5x9

Commercial reference	4 : 2 : 2 I/O	4x4 I/O	Dual Channel	Single Layer	4 Layers
BI500/509	✓			✓	
BI510/519	✓		✓	✓	
BI520/529	✓				✓
BI530/539	✓		✓		✓
BI559	✓	✓			✓

References ending by 0 (e.g. BI520) are SD-SDI I/O only

Inserting BI5x9 in a working environment

BI5x9 is particularly designed for:

- Satellite or transmission reception room
- Final transmission Room

... and more generally at any place where logos have to be inserted on live video signals.

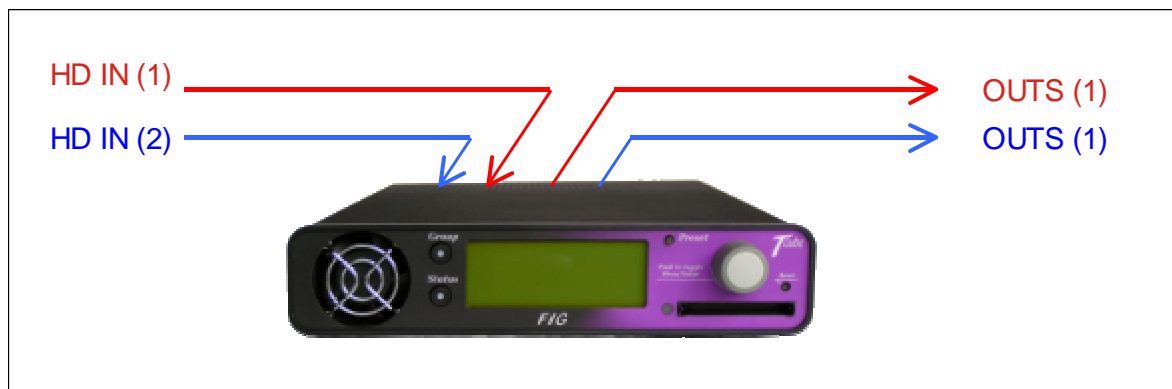


Figure 2 Inserting BI5x9 (here a dual channel) in a working environment

FIG I/O connections

As BI5x9 is a software application running on FIG, I/O connections are identical to all FIG applications.

Simply connect In and Out according to your application.

HD-SDI IN1 and IN2 have **internal 75 ohms** matching resistor;

Out1-Byp1 is a processed output in normal operation (IN1), it is a bypass relay of IN1 in case of power fail.

Out2-Byp2 is a processed output in normal operation (IN2), it is a bypass relay of IN2 in case of power fail.

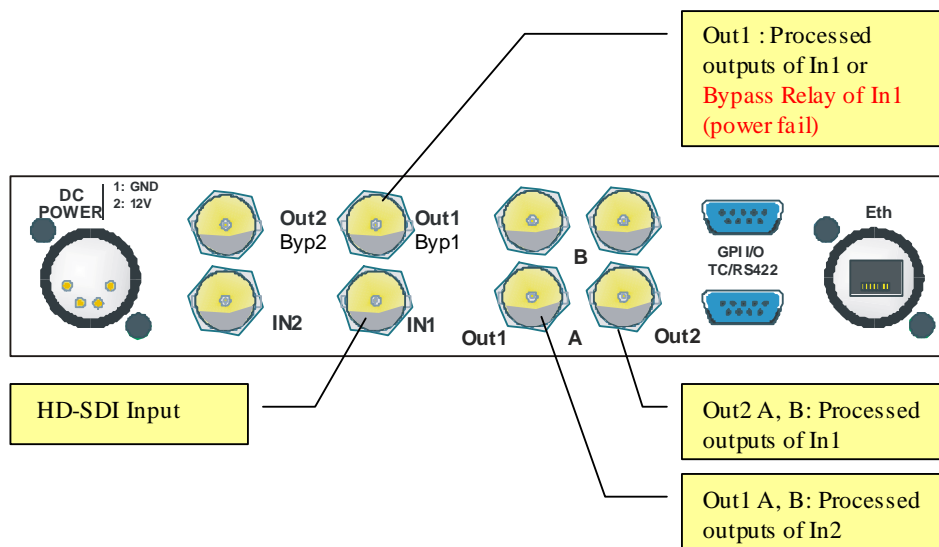
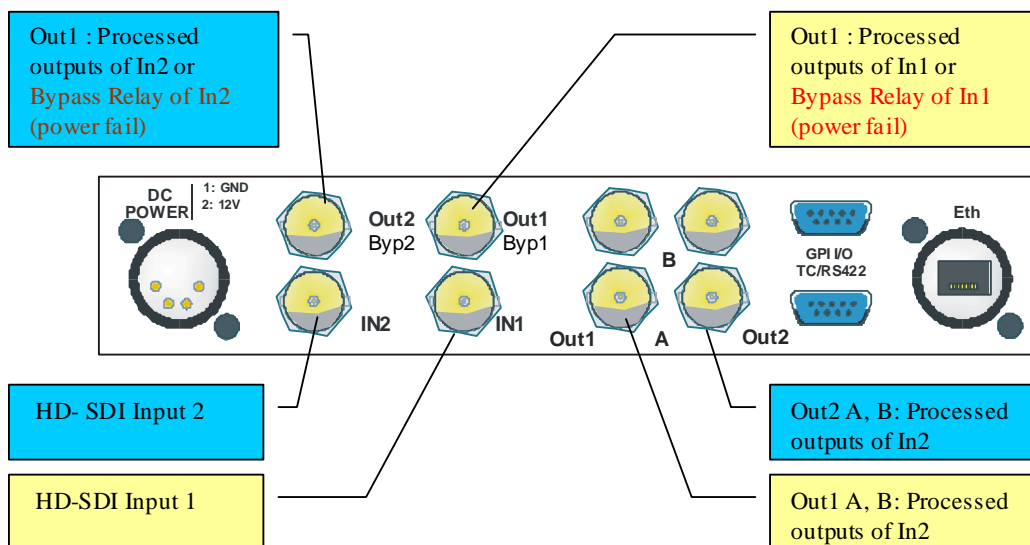


Figure 3 FIG connectors on back panel (BI500/9 or BI520/9)



BI5X9 : APPLICATION DESCRIPTION

Figure 4 FIG connectors on back panel (BI510/9 or BI530/9)

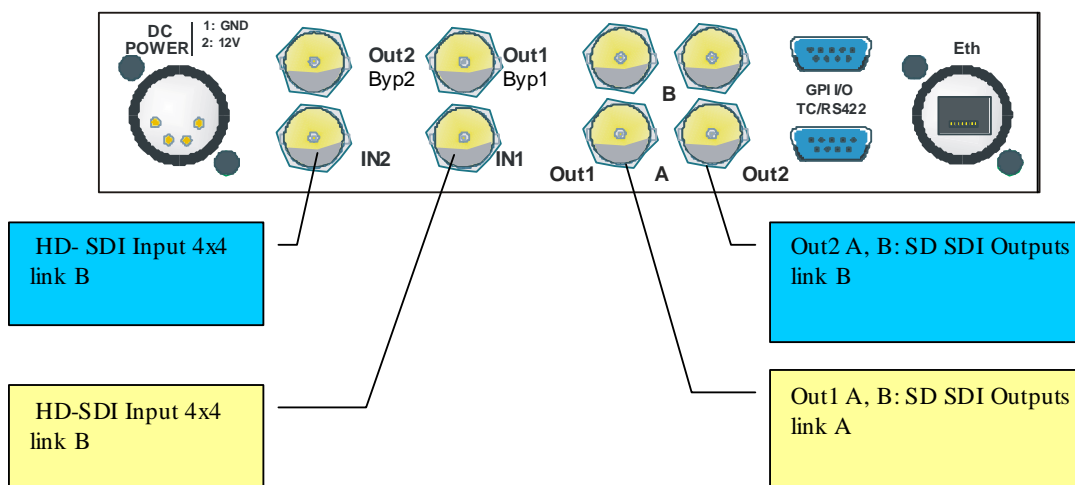
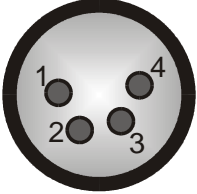


Figure 5 FIG connectors on back panel (BI559)

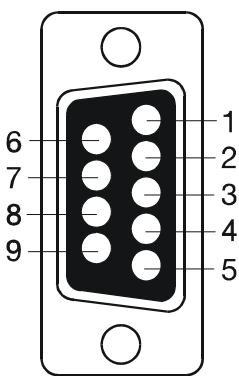
For the detailed explanation of 4x4 Link A and Link B, refer to SMPTE RP175, SMPTE 372M, SMPTE 292M..

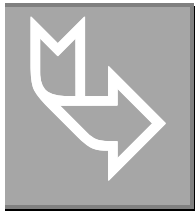
Connectors details

POWER (XLR 4 pin male type)

	+12V	2
	GND	1
	OPEN (UNUSED)	3,4

GPI (DB9 female type)

	In 1	6
	In 2	2
	In 3	7
	In 4	3
	Out 1	4
	Out 2	9
	GND	1, 5, 8



GPI inputs 1 to 4 are

- active by making a short between GPI In and GND
- inactive by leaving GPI In unconnected

GPI Ins must never be connected to an external Power supply.

Operating BI5X9 from FIG local front panel

Current section will

- *introduce the functionality of FIG/BI5X9 front panel*
- *introduce the menu organization of BI5X9*
- *explain how to set up BI5X9 parameters from front panel*

FIG Front panel presentation

Front panel is made of:

- 1 graphics screen
- 2 main buttons (**Group-Status**)
- 1 control wheel (Control wheel has **2 functions**: ROTATE and PUSH)
- 1 Preset button
- 1 Reset Button

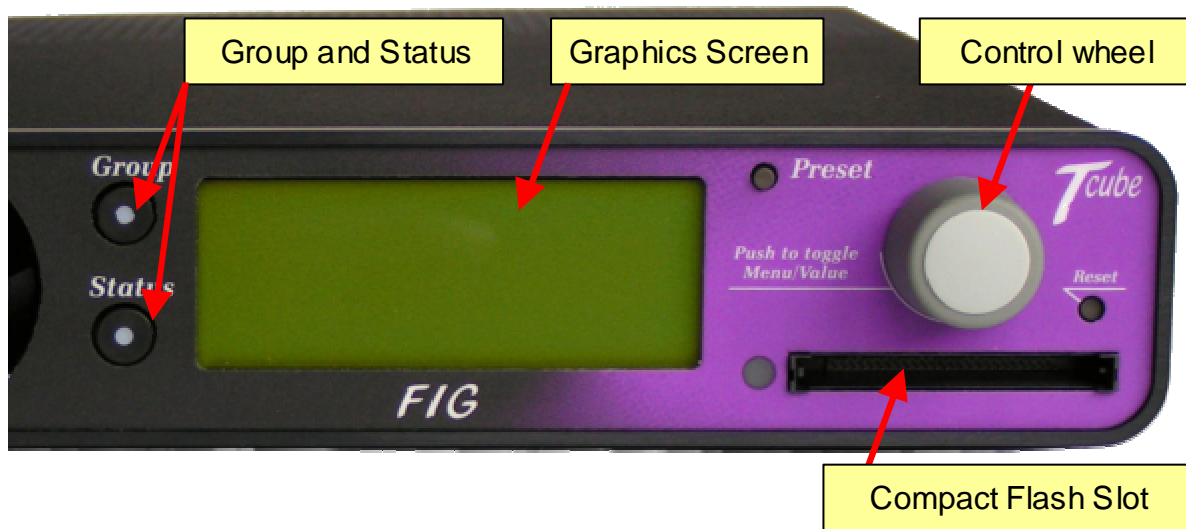


Figure 6 FIG front panel

Compact flash slot is **not used** in ordinary operation. It is reserved for firmware and software update of the product.

Status

Entering STATUS mode

The status of the device is accessed by pressing on the **STATUS** button.

Status screen is turned on either by pressing **STATUS** button or automatically after a few minutes without operation on front panel (sleep mode).

There are three status screens.

Status screen 1 indicates

- Input Status (422, 444, SD, HD)
- Input format
- On third row, Audio Group presence

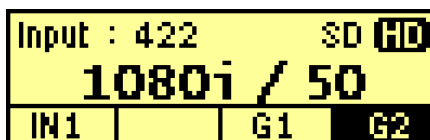


Figure 7 Status screen1

Status screen 2 indicates

- On first row, Logo name
- On second row, Layer status and animation status

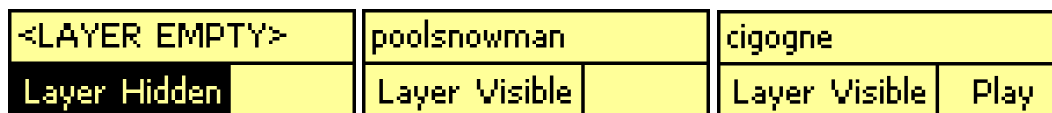


Figure 8 Status screen 2

Exiting STATUS mode (or wake up front panel)

To exit from STATUS mode, press **STATUS** button

Terminology

The different **parameters** of the device are accessible through dedicated **menus**.

Example: **Clip Black = +20mV** where

Clip Black represents the menu name

+20mV represents the value of the parameter

A **group** consists of a set of menus related to a single function of the device (example the group **Proc Amp** consists of all parameters related to the processing amplifier of the device: *Y Gain, Y lift, Sat level, ...*)

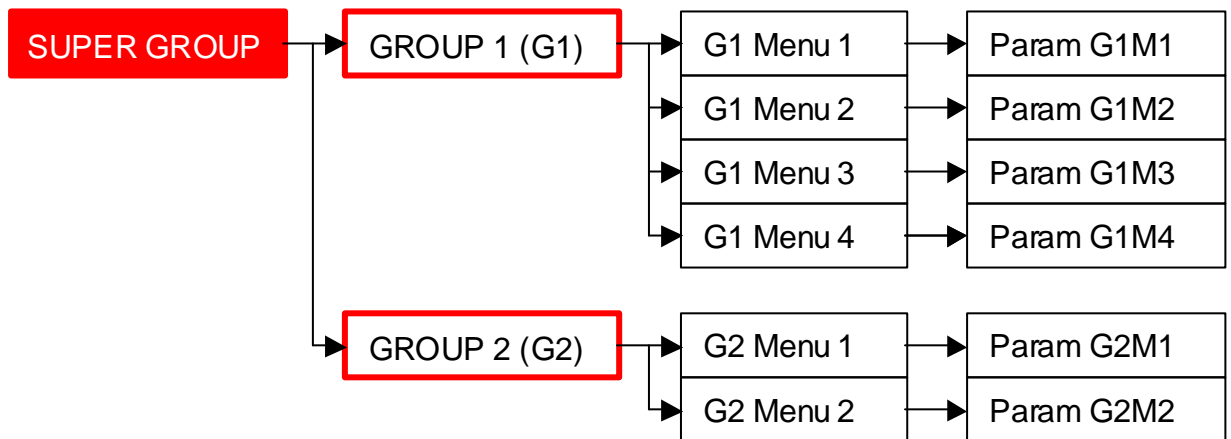


Figure 9 Hierarchical organization of super-groups, groups and menus

A **super-group** consists of a set of groups related to an application function of the device (example the group **Bug Inserter** consists of all menus related to the Logo Inserter function of the device.)

Super groups are identified by **icons** (on first row) and text description on second row



Figure 10 Icons of super-groups

Navigating in the super-groups, groups and menus

Navigation is achieved with **GROUP** button, **WHEEL ROTATE** and **WHEEL PUSH**

If device is in Status Mode, exit by pressing on **STATUS** before any other action.

In the groups

1. Press **GROUP** button,
2. use **WHEEL ROTATE** to navigate within the different groups.

Current group is displayed in inverted video on the GRAPHICS SCREEN

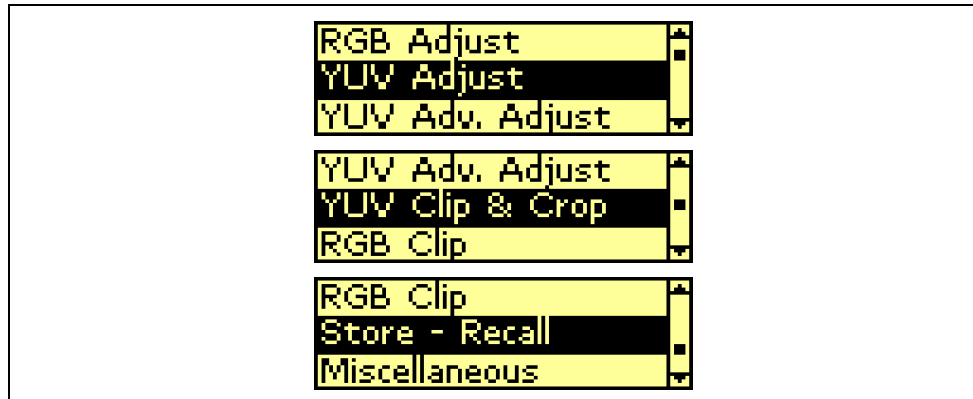


Figure 11 Examples of graphics screen display when navigating within groups

Note that **Group** button is in **direct access** mode and it will supersede current action (i.e. press Group will make the device **jump directly** to Group selection mode of current Super group)

To go to Super-Group, push **GROUP** once more.

Select one group and navigate within a group

1. When inverted video shows desired group, press **WHEEL PUSH**,
2. use **WHEEL ROTATE** to navigate within the group to see the different menus.

Select one super group and navigate within a super group

3. When inverted video shows desired super group, press **WHEEL PUSH**,
4. use **WHEEL ROTATE** to navigate within the group to see the different menus.

Accessing a parameter and adjusting it

1. When inverted video shows desired menu, press **WHEEL PUSH**,
2. use **WHEEL ROTATE** to adjust the parameter.
3. when OK, press **WHEEL PUSH** to return to 'navigate within a group'

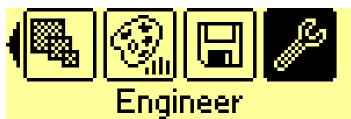
BI5X9 groups and super-groups

../..

Save/Recall Super Group



ENGINEER Super Group



1. **Bug Loader** (loads static/animated logo from Compact Flash)
2. **Bug Manager** ()
3. **Options** (mV/IRE, RGB Wheel, Primary Correction)
4. **(Un)Protect Config** (to protect user configurations)
5. **Network Info** (information on current TCP/IP configuration)
6. **Run OS**

Save - Recall super group

This group is used to store and recall configurations of each channel. A maximum of 60 configurations (per channel) plus Preset are available.

2 properties, **LOCK** and **USER PRESET**, can be assigned to each configuration (except Preset). These properties forbid SAVE and ERASE actions. Setting USER PRESET property is achieved in the Engineer/User Preset group of menu, while LOCK/UNLOCK is achievable from the Store Recall Group.

When entering the Group select (WHEEL.PUSH from Group or GROUP BUTTON.PUSH), comes the list:

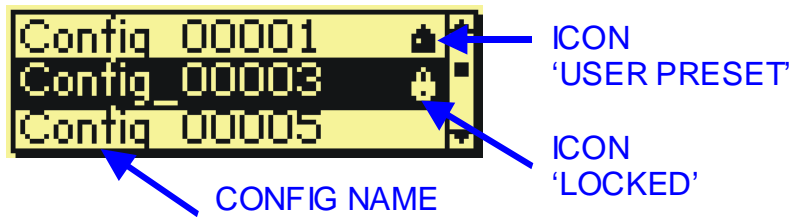


Figure 12 List of Configurations

Using WHEEL.PUSH will display a pop up menu. Available options of the pop up depend on the status of the configuration (see examples and table below)

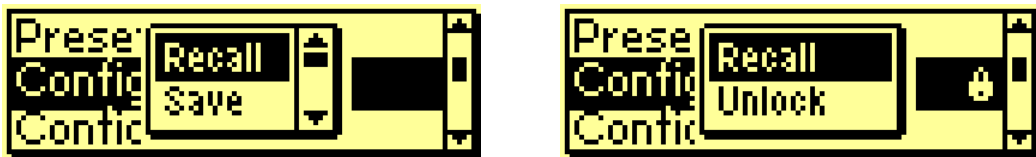


Figure 13 Different examples of Pop up menus

	Save	Recall	Rename	Lock Unlock	Erase	Copy to CF	Copy from CF	Delete from CF
PRESET or USER PRESET CONFIGx		✓						
CONFIGx (not locked)	✓	✓	✓	✓	✓	✓	✓	✓
CONFIGx (locked)		✓		✓		✓		
NEW	✓						✓	

Saving on an EMPTY configuration will create CONFIGx (first not used index)

Using the rename option

When pushing Rename, **Config name** is displayed on graphics screen with one character in inverted video.

PUSHING WHEEL will toggle **TURN WHEEL** action between **text scrolling** and **character edit**

To save and exit, press **STATUS**, to exit without saving, press **GROUP**.

Engineer super group

Bug Loader group

loads static/animated logo from Compact Flash into Fig internal memory

It is mandatory to have the Bugs resident in the Fig internal memory to reload automatically all set ups at power up.

Simply select Bug files you want to copy into Fig.

Bug Manager group

Used to clean up Fig internal memory.

Protect Config.

Protect Config is used to transform an ordinary configuration into a USER PRESET or vice versa



**PUSH ON THE WHEEL TO
ACCESS TO STORED CONFIG
LIST**



**CONFIG_00001 is USER
PROTECTED**

Network Info group

information on current TCP/IP configuration

Run OS group

Operation with DAZIBAO

Current section will present the different screens to operate BI5X9

Principle of operation

Dazibao is a **WYSIWIG** software designed to position logos or animations on PC screen while controlling the operation of Tcube FIG/Bug Inserter application in real time.



Ethernet domain
176.23.x.x



Setting the TCP IP parameters

FIG

Ethernet control of FIG requires the setups of 2 operations:

- Workgroup Identification
- TCP/IP address mode

In order to ease private network implementation (i.e. no other equipment than Tcube stuff plus PC not connected to another network), the mode TCUBENET is proposed. Skilled users who have the need to realize heterogeneous networks can turn to fixed TCP/IP addressing mode allowing to completely define TCP/IP address and mask.

WORKGROUP ID

The workgroup Id consists of a single information **FIG Id**, a digit between 1 and 254. Workgroup Id is used by PC to sort out useful FIG devices which can be controlled by the current PC software like DAZIBAO.

TCP/IP ADDRESSING DEFINITION MODE

Fig supports either the **Static IP** address mode or **TCUBENET basic** mode.

- TCUBENET basic: automatic address definition using Workgroup Id
- Static IP: entirely definable address and mask definition by user

Setup

The Setup menu is made of 3 sub menus: Workgroup Setup, TCP/IP Setup and Date/Time.

WORKGROUP SETUP

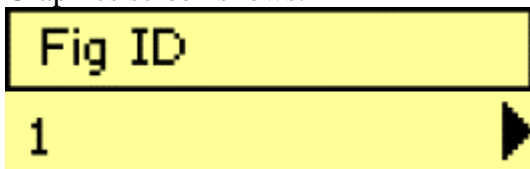
Workgroup Setup consists of defining FIG Id and Group Id.

- To proceed, press **RESET** button on FIG front panel (or turn power off and on)
- During boot, press **GROUP** in order to get the OS operation screen



- Turn **WHEEL** until you get **WorkGroup Setup** in inverted video, then push **WHEEL**.

Graphics screen shows:



If you want to change FIG Id, push **WHEEL** and turn it until you see desired Id number. Press **WHEEL** again to validate, any other button to cancel

OPERATION WITH DAZIBAO

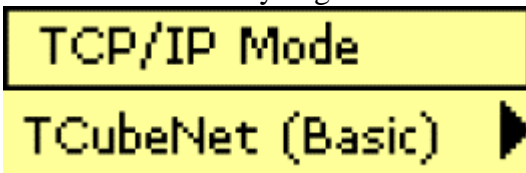
TCP/IP AND GATEWAY ADDRESS SETUP

TCP/IP Setup consists of defining the Address mode and (eventually) address and mask setups.

- To proceed, press **RESET** button on FIG front panel (or turn power off and on)
- During boot, press **GROUP** in order to get the OS operation screen



Turn **WHEEL** until you get **TCP/IP Setup** in inverted video, then push **WHEEL**.



Press **WHEEL** and turn it to scroll between the different options : TcubeNet basic, TcubeNet Advanced, Static IP

Description of TcubeNet Basic mode

TcubeNet Basic simplifies TCP Address definition by fixing all parameters.

- First 2 digits are fixed as 176.23
- Third digit is given by application
- Last digit is taken as FIG Id (as in workgroup Id)
- Mask is fixed at 255.255.0.0

Description of TcubeNet Advanced mode (not recommended)

TcubeNet Advanced simplifies TCP Address definition by limiting user access to the first 2 digits (network definition)

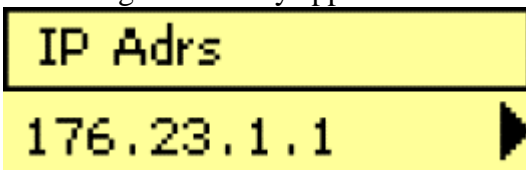
- First 2 digits are user definable (176.23 at reset)
- Third digit is given by application
- Last digit is taken as FIG Id (as in workgroup Id)
- Mask is fixed at 255.255.0.0

Description of Static TCP/IP mode

Selecting Static TCP/IP allows complete address and mask definition.

TCP/IP, MASK ADDRESS

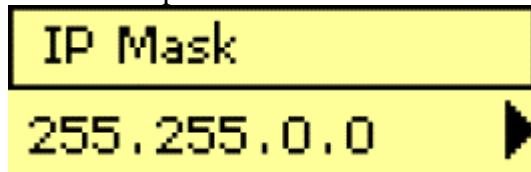
Following menus only appear if TCP/IP mode is Static IP.



When digit is flashing turn **WHEEL** until you get desired value, to scroll through digits, press **PRESET**.

OPERATION WITH DAZIBAO

When done press **WHEEL** or **GROUP**

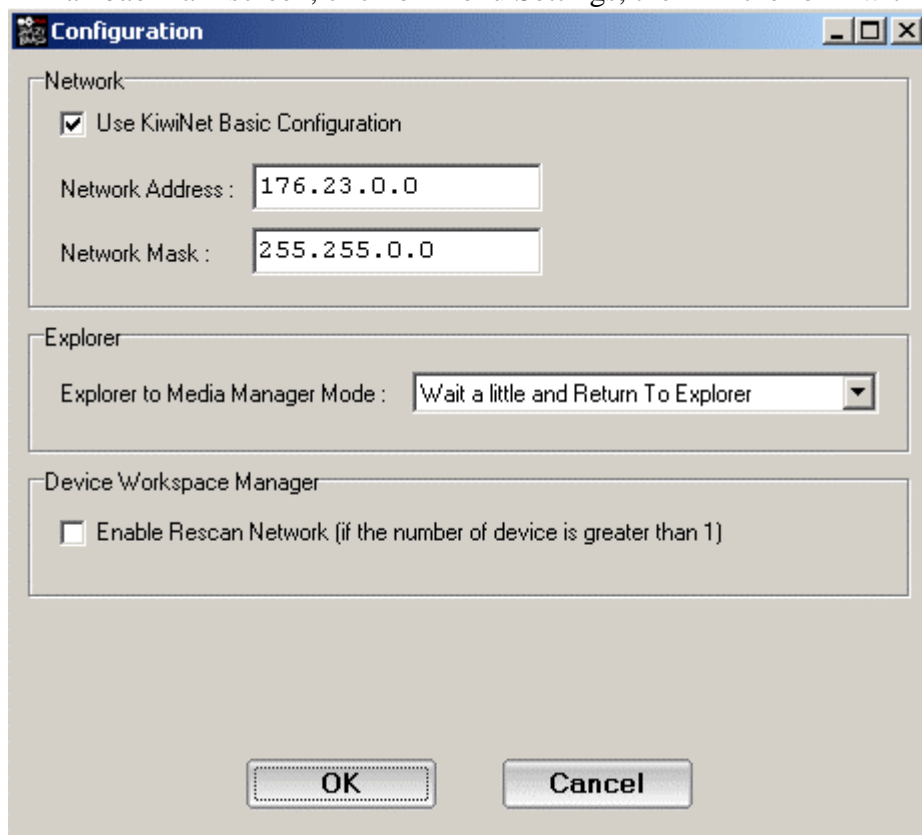


When digit is flashing turn **WHEEL** until you get desired value, to scroll through digits, press **PRESET**.

When done press **WHEEL** or **GROUP**

Defining Network domain in Dazibao

In Dazibao main screen, click on menu Settings, then fill the form with desired values.



Alternatative solution :Edit Network section of the **dazibao.ini** file with a text editor (e.g. notepad.exe)

[Network]

NetwordAddr=192.168.206.0

NetwordMask=255.255.255.0

To proceed Dazibao uses **WORKSPACES**, a collection of elements designed to easily edit, change and recover graphics environment.

WORKSPACE Definition

By definition, a WORKSPACE is a collection of:

- shortcuts to graphics elements (static logos, animated bugs, clocks)
- layer content and properties
- guideline set ups

WORKSPACES are stored in PC as files with extension '**daw**'.

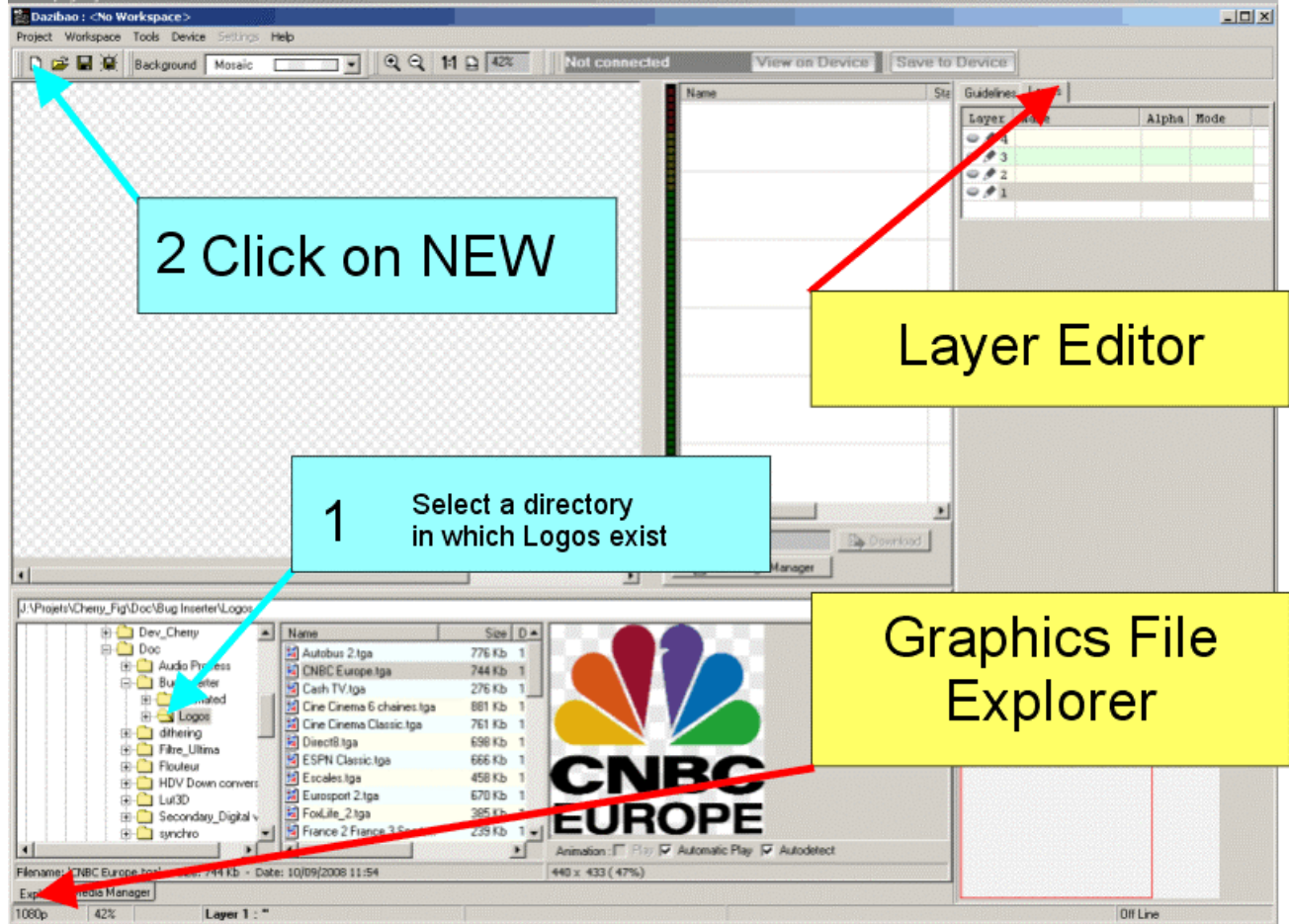
Creating a WORKSPACE

To create a workspace, you just have to 'send' (drag and drop) graphics files either from the **internal explorer/browser** (see Graphics file Explorer description) or from an external **windows explorer** window.

Dazibao: Getting started

Launch DAZIBAO on PC

Launching screen



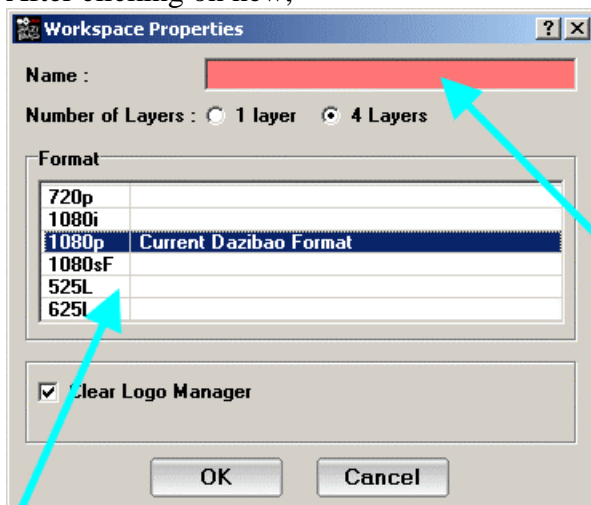
Take care on Thumbnail Selection (Graphics file explorer) and Layers (Layer Editor)

Action 1: Select a directory in which logos exist

Action 2: Click on New (mandatory)

OPERATION WITH DAZIBAO

After clicking on new,



3 Select Video format

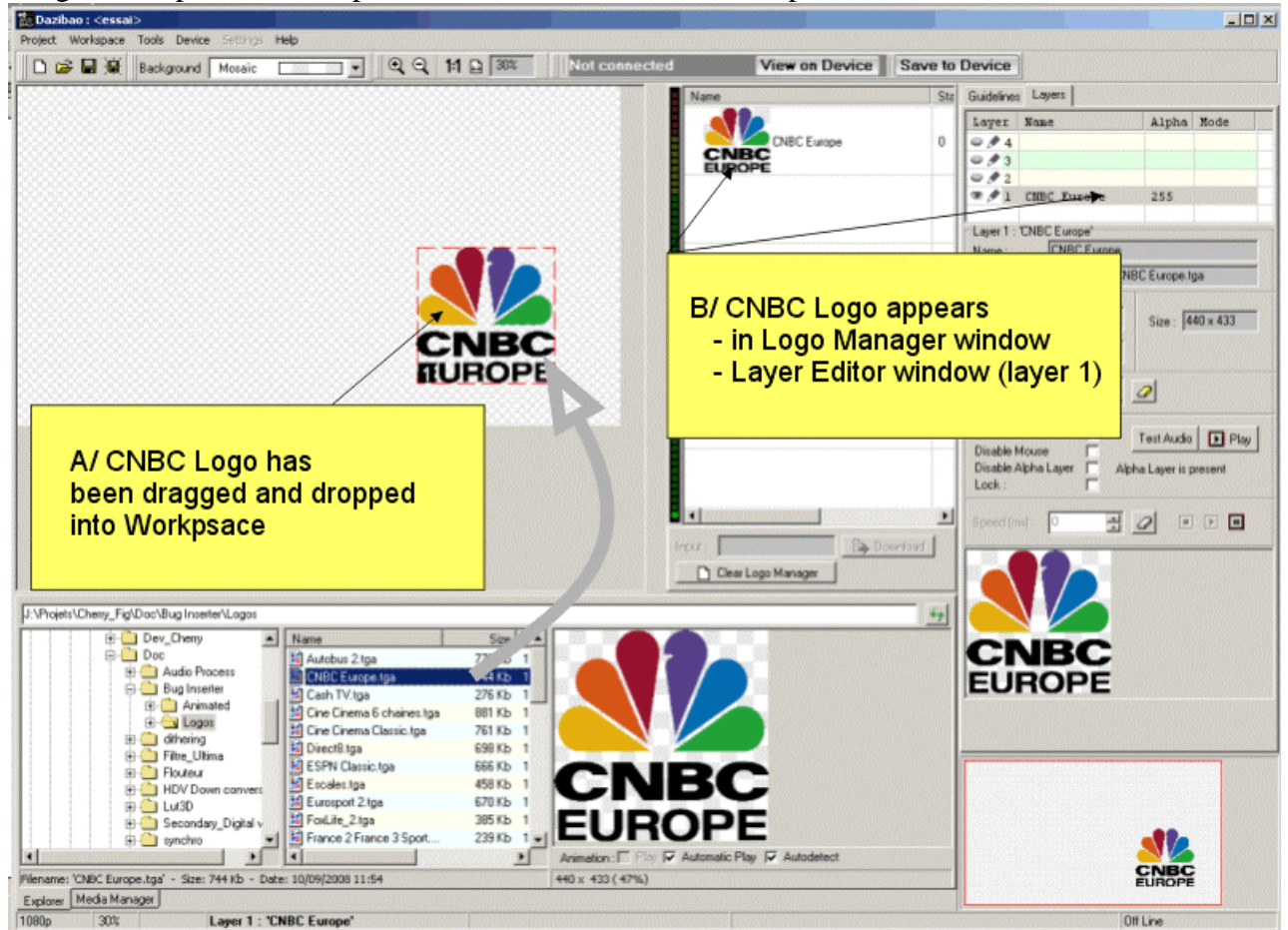
Action 3: Eventually select video format

Action 4: Give a name (mandatory)

4 Give a name to Workspace

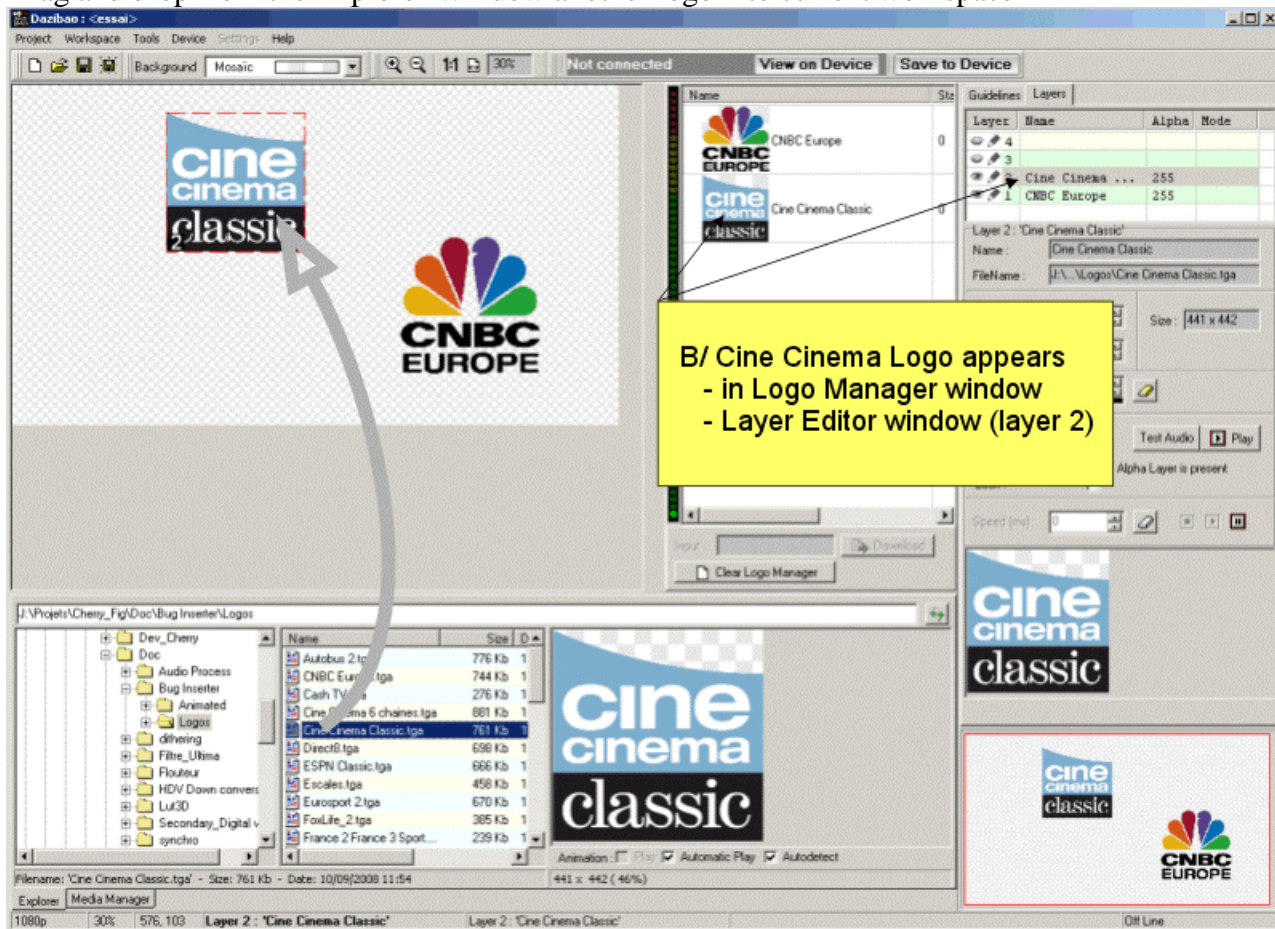
Inserting a logo on current workspace

Drag and drop from the Explorer Window into current workspace



Inserting a 2nd logo on current workspace

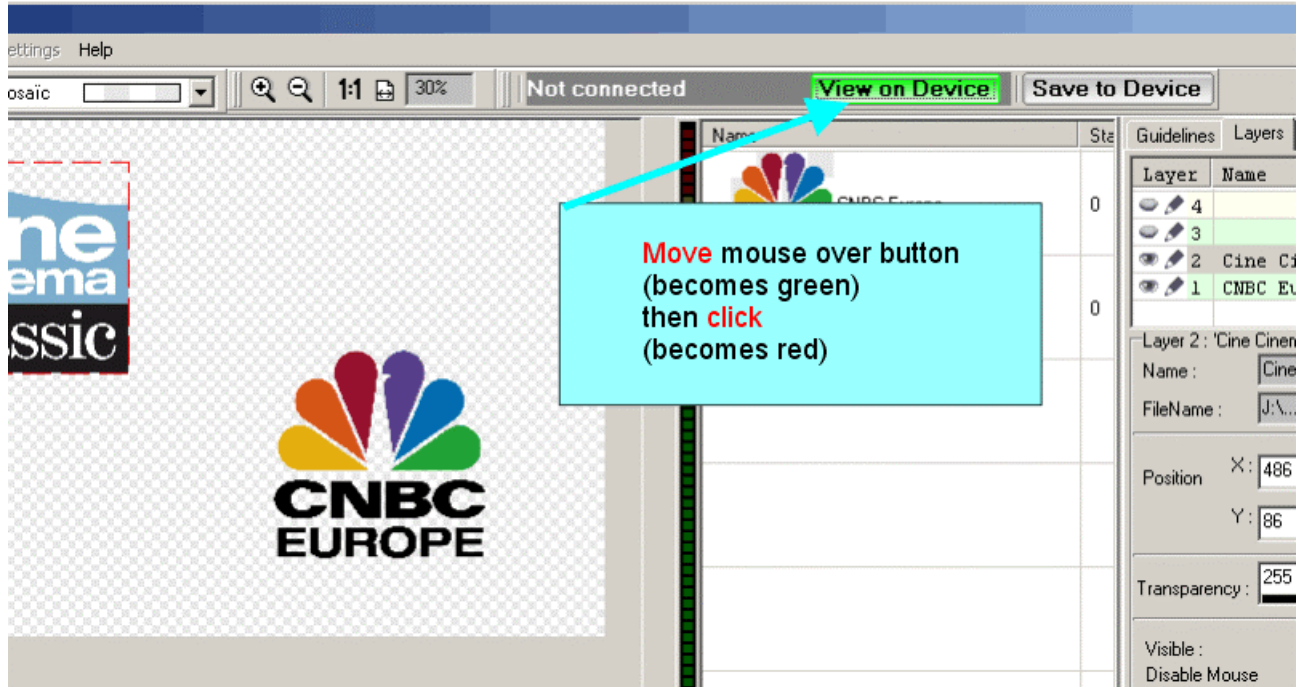
Drag and drop from the Explorer Window another logo into current workspace



Viewing Workspace on FIG/BI application

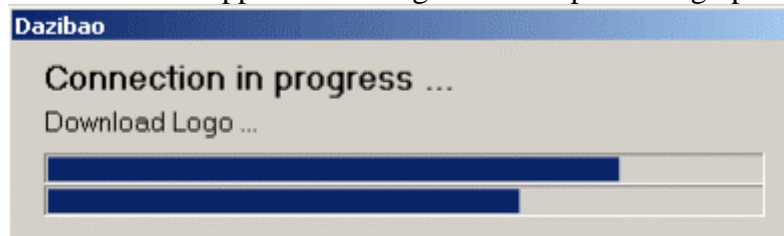
We assume that FIG and PC are properly connected (see Principle of operation)

View on FIG device

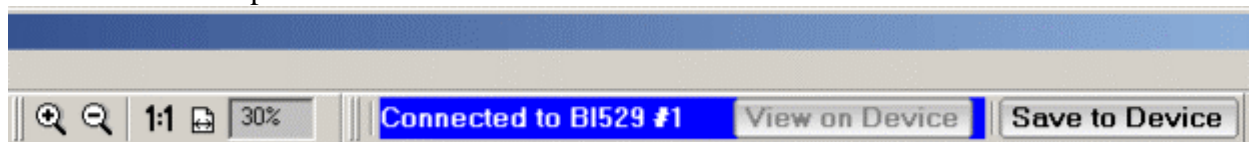


then answer Yes to the dialog Box

A window will appear indicating that workspace and graphics fiel are downloaded into FIG.

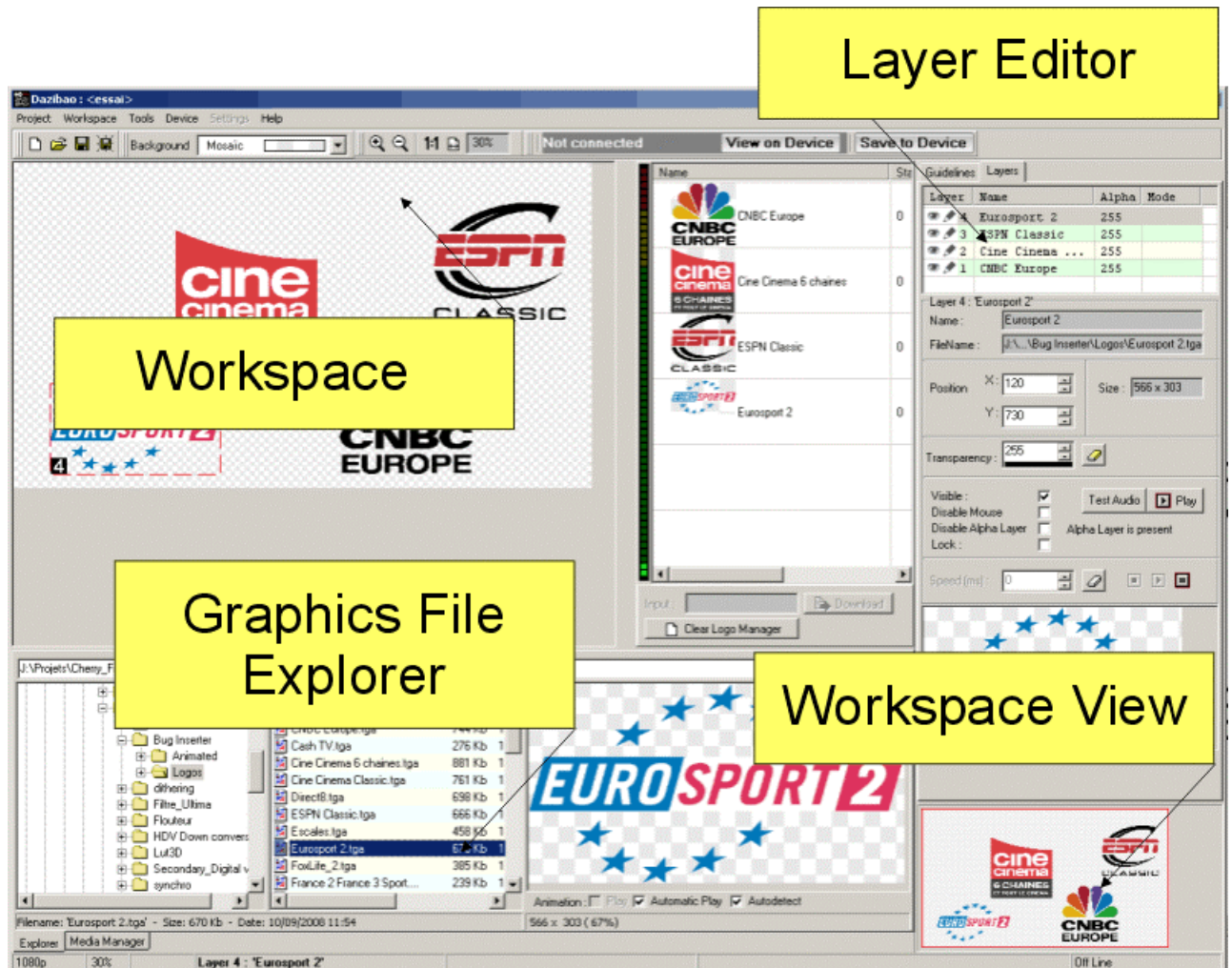


then observe the top bar icon



From now on, all moves made in the Workspace window of Dazibao are reproduced on FIG SDI Output

Dazibao Main Screen

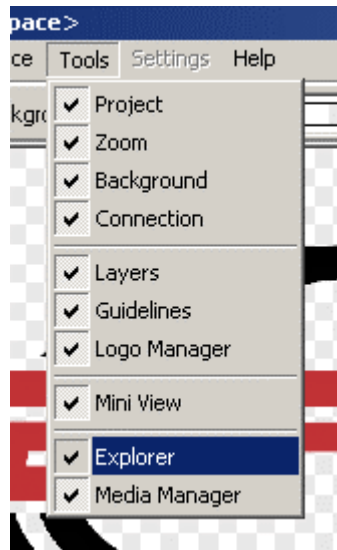


The main screen consists of:

- A menu bar
- An Icon Bar
- A **workspace window** showing (in WYSIWIG form) all or part of the current workspace (see the **Workspace view** window) depending on zoom factor
- A **Right window** showing either the Guideline Editor, or the Layer Editor or the logo Manager
- A **Graphics File Explorer** window to browse, view and drag-drop all graphics elements present on the network
- A **Workspace view** (right hand window in the bottom) that represents workspace composition on videoscreen. The red rectangle, when present, indicates the position of the Workspace window
- a **Status bar**

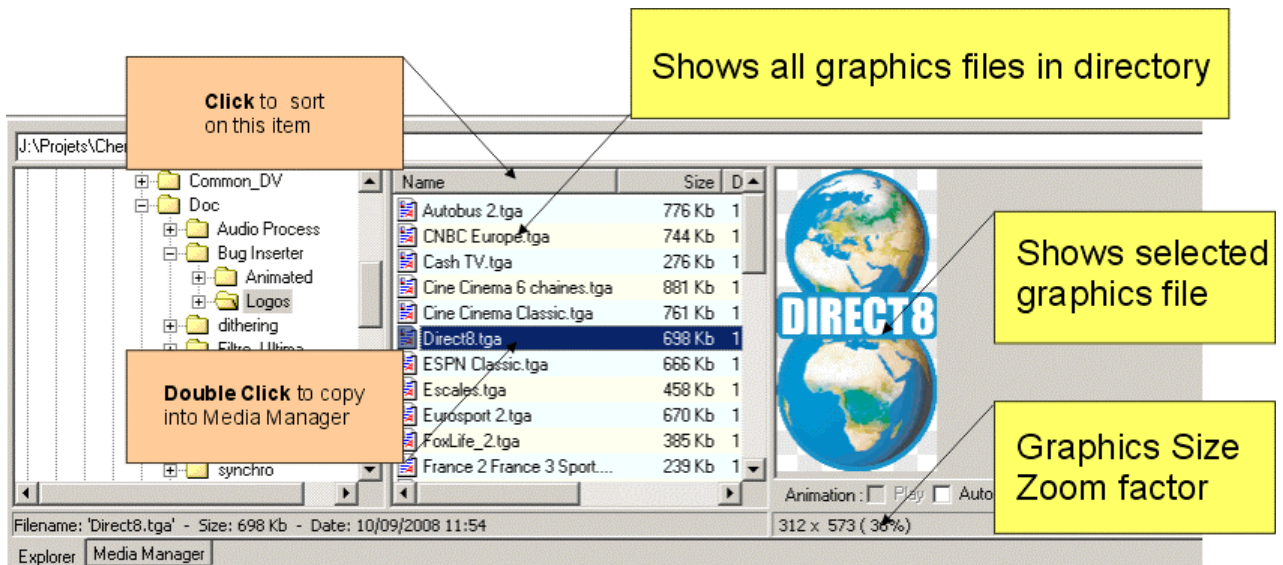
Graphics File Explorer

Important: This window may be masked by **Tools menu** options. If the window is not visible, check the Tools menu:



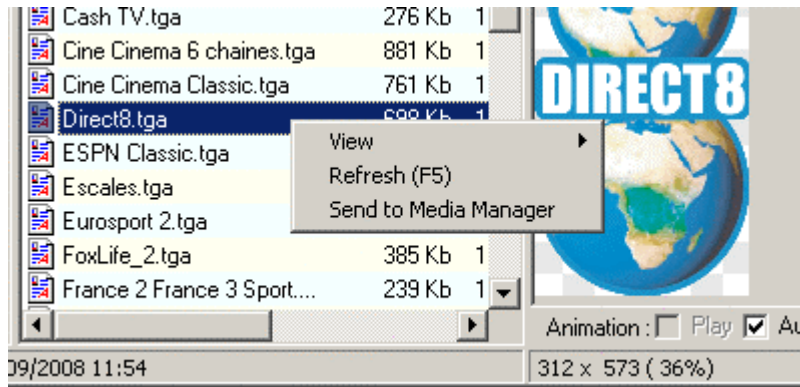
The **Graphics File Explorer** has 2 thumbnails : File Explorer and Media Manager
 The **File Explorer** Windows is a graphics browser designed to show all graphics files of the network whose format is accepted by Dazibao.
 The **Media Manager** is a collection of Shortcuts to graphics files addresses on the network. It allows easy access to a selection of oftenly used logos.
 Content of the Media Manager is stored in the register base of current computer.

File Explorer



Contextual menu (mouse right click)

There is a contextual menu on the elements of the graphics browser

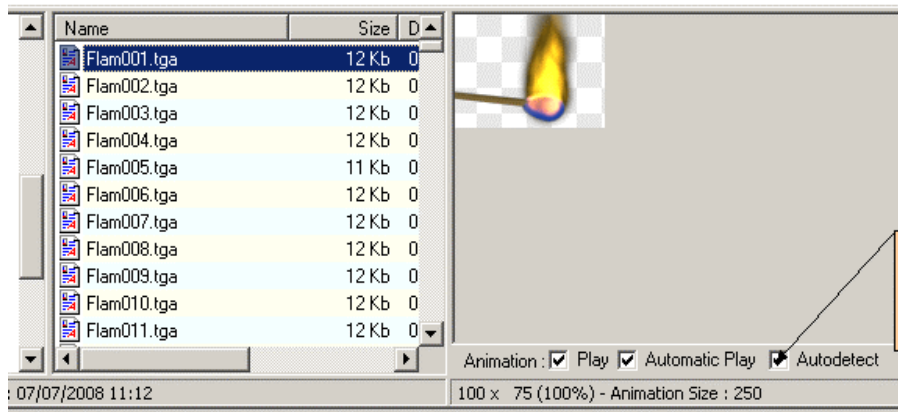


View : to change display mode (small icons, name, detail)
Refresh (equivalent to function key F5): forces a new browsing
Send to media manager : copies the shortcut into **Media manager**

Animated graphics files

At the exception of **gif** which supports an encapsulated form of animation, **animated files** (for Dazibao use) must be a set of static pictures labeled as **[name00x.extension]** stored in the same directory

The number of zeros in the name depends on the length of the animation (example to have an animation of 4 seconds at 25 frames.sec require 100 static pictures or files labeled from name001 to name 100)

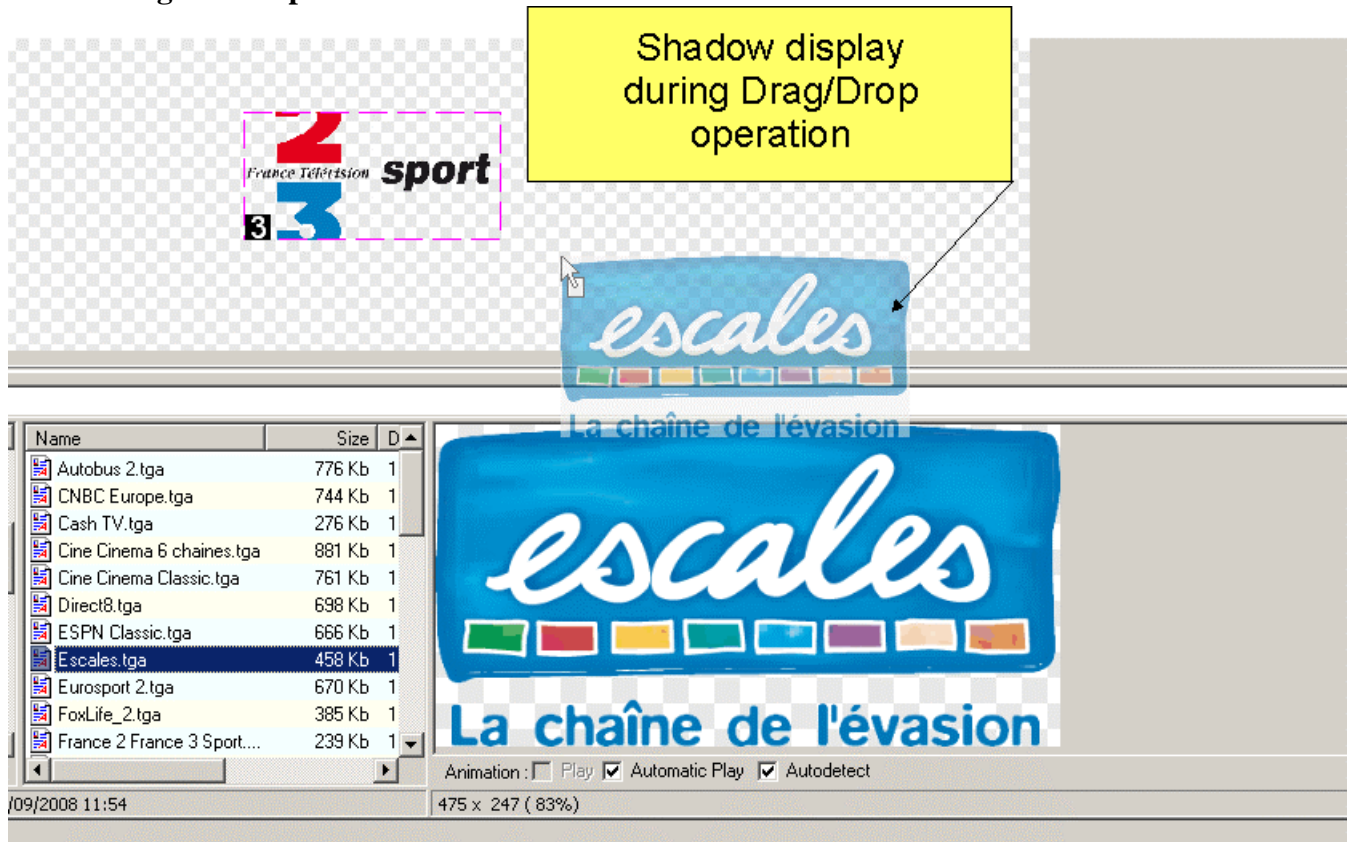


Autodetects Animation when set

Number of frames in animation

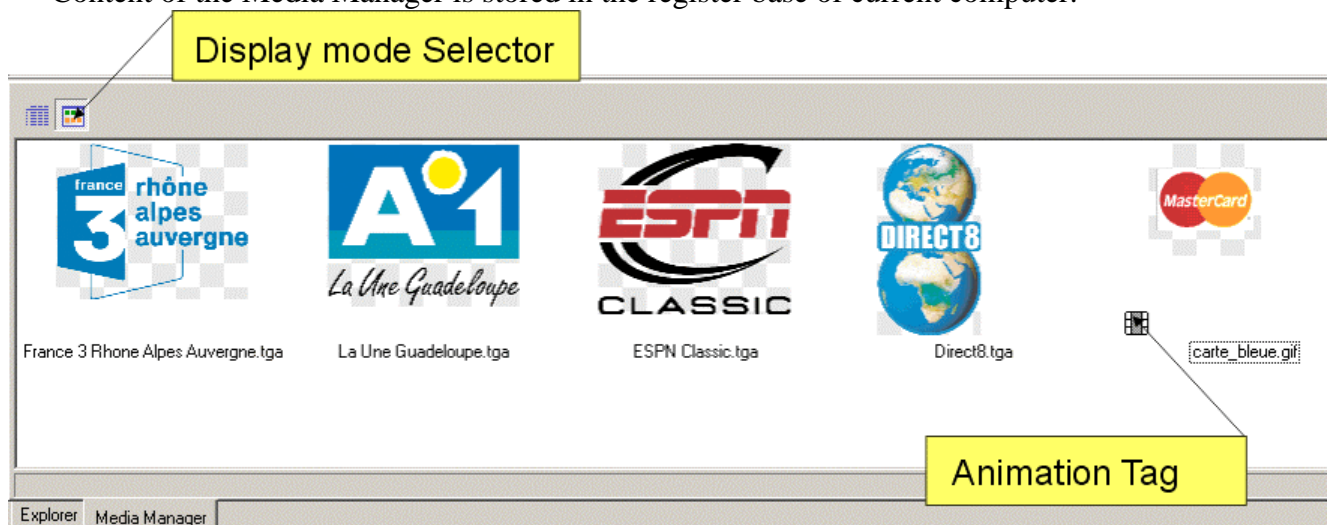
Inserting logo/animation into the workspace

Use drag and drop



Media Manager

The **Media Manager** is a collection of Shortcuts to graphics files addresses on the network. It allows easy access to a selection of oftenly used logos. Content of the Media Manager is stored in the register base of current computer.

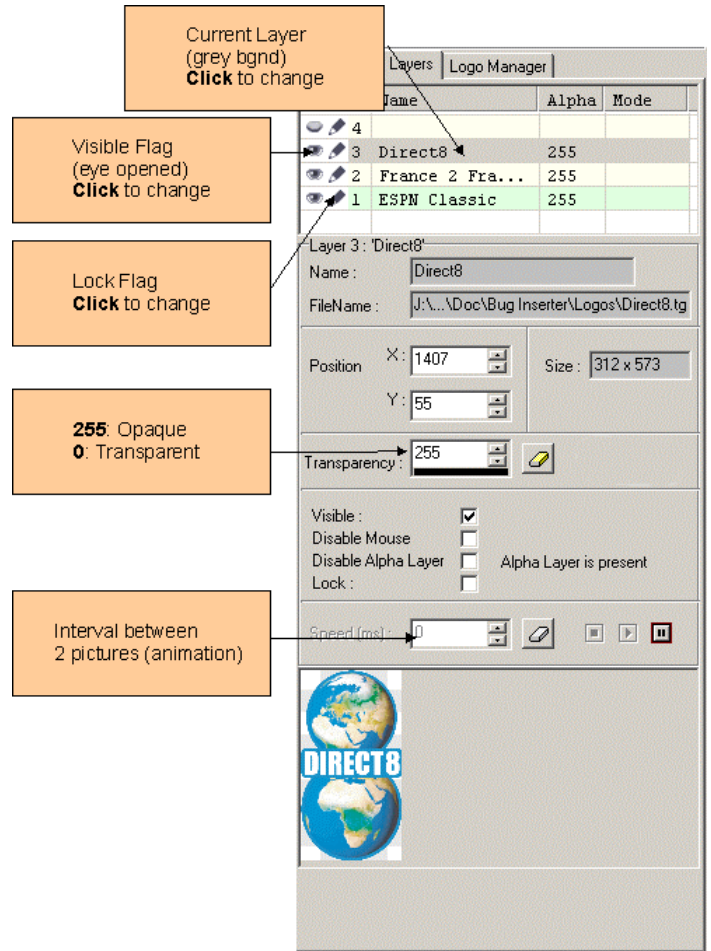
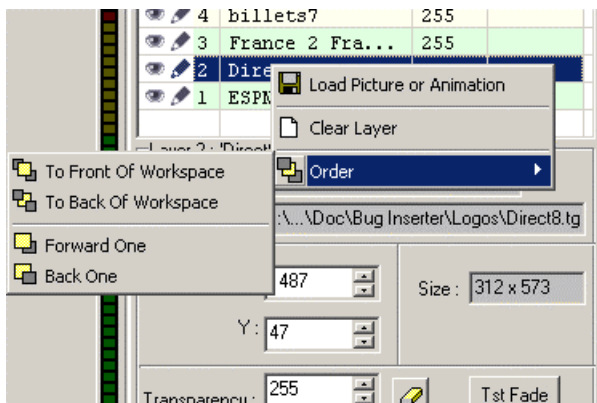


Top set : Layers Editor

Each Layer contains a maximum of one logo/animated bug.

Layer 4 is at the top, while layer 1 is just over the background (the input picture).
 When composing by drag-drop into the Workspace window (starting from scratch), first layer is layer 1 unto layer 4. Selected layer is the last on which a logo has ben dragged-dropped (here Layer 3)
 A Layer can be turned **unvisible** (opened or closed eye), but logo/bug still remains.
 A Layer can be **locked** (the pencil is barred) to protect mouse selection in the workspace window.
 Animation speed can be adjusted by changing the interval between pictures.

Contextual menu on Layer



Top set : Logo Manager

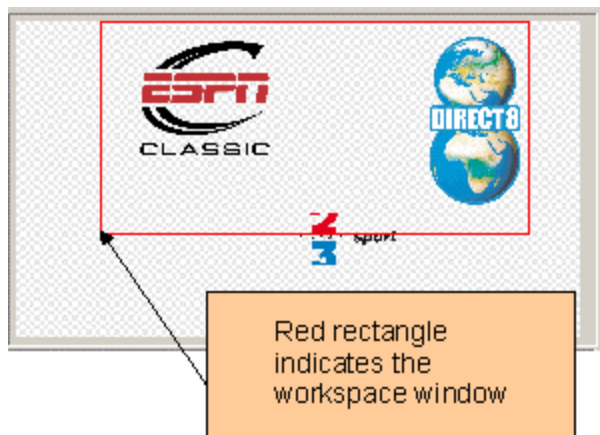
Logo Manager contains shortcuts to all logos/animated bugs that will be transferred into device (FIG).

The **gauge** at the left of the window indicates how much memory is used to store all elements listed in the Logo Manager.

Contextual menu on Logo



Bottom set : Workspace global view

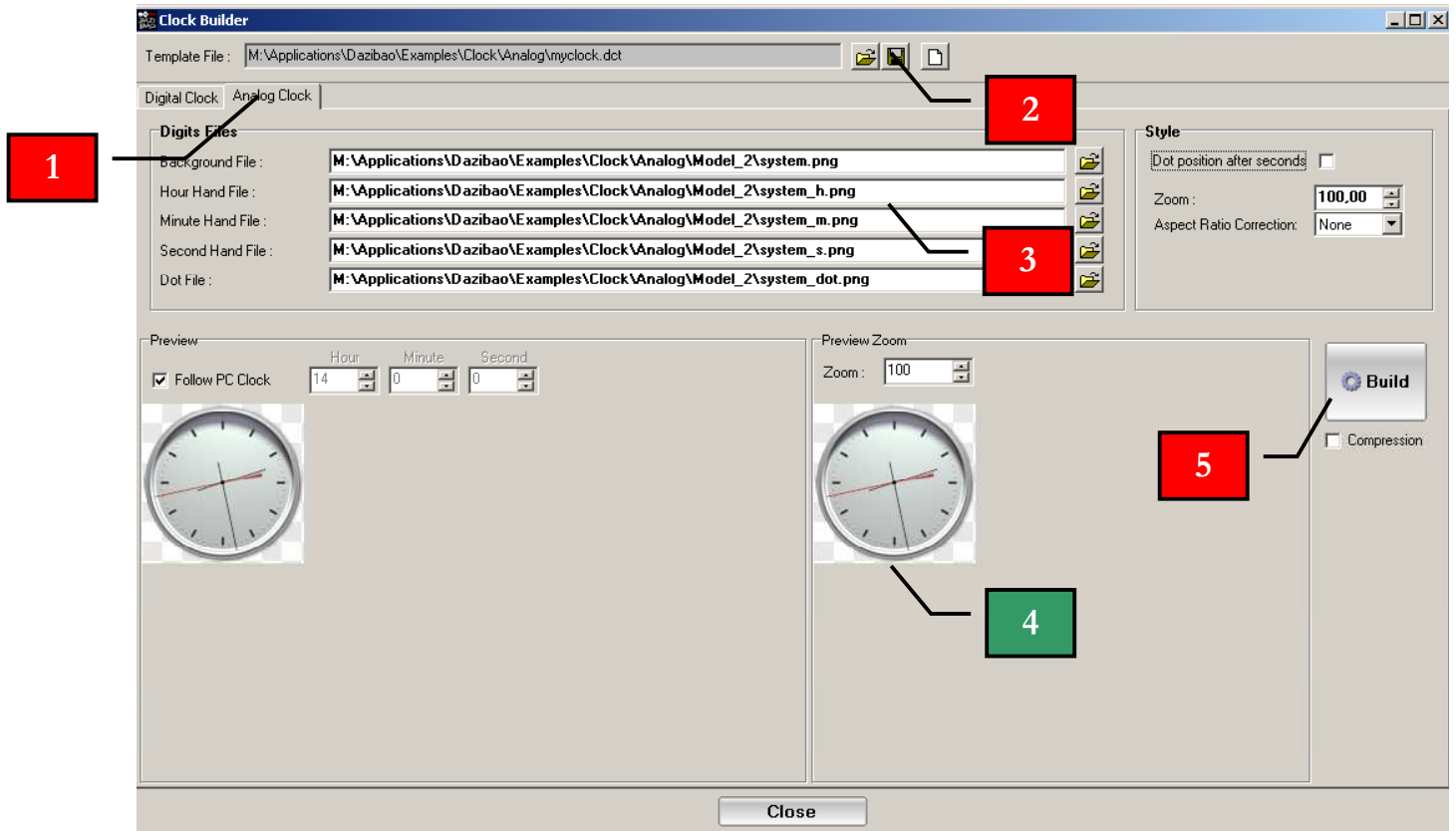


Clocks

Clock design (clk file design)

It is necessary to compile the graphics elements of a clock into a Fig loadable and executable file.

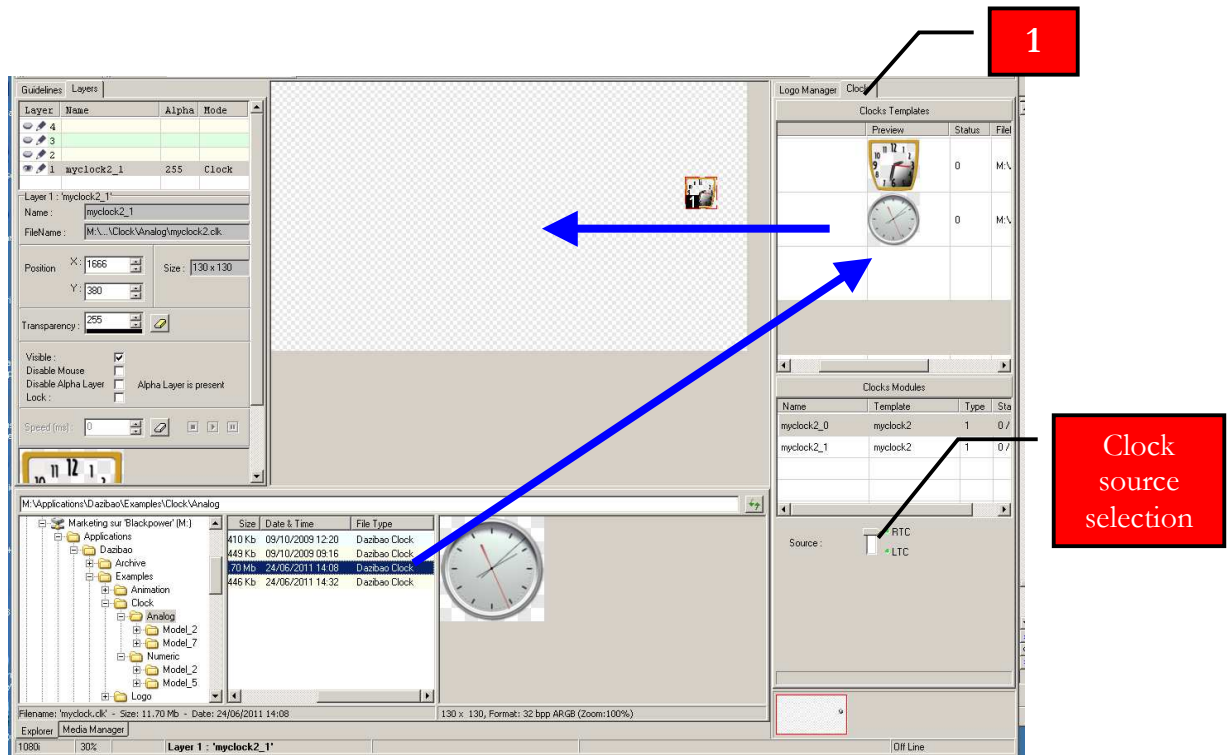
To proceed, open the Clock builder menu (using the menu **Tools** on Dazibao menu bar).



Then

1. **Select** Clock format (analog or digital)
2. **Open** a clock template file (file with extension dct), or create a new one. In case of a new one, do not forget to save clock template file.
3. **Give** path and file name of the different clock components. When done, **save** dct file
4. **Observe** clock appearance in the preview window
5. **Build** the clk file (Fig usable clock file). Path and File name are as dct file with clk extension.

Using the clk file



- 1 Select the Clock thumbnail in the right window
- 2 Drag and drop clk file into the right window
- 3 Drag and drop desired clock from right window into workspace window

Assigning a clock source to the clock

Select either RTC (FIG real time clock) or LTC Fig Inputs as clock source

Maintenance

Current section will

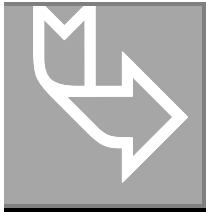
- explain how to make an update from a compact flash,

Update from a compact flash

FIG is a programmable device taking data from a compact flash.

Once content of compact flash is transferred into the FIG., compact flash becomes useless and FIG will boot up and operate from internal flash memory until user decides to update software.

This method is also used for replacing current running application of a FIG (example, BI5X9 application running on a FIG Hardware can be replaced by CO510/519, the color corrector)



An application note on how to download an application and its license can be found on the web at www.tcube.tv/download

Transfer of files on the compact flash

Unless you received an already programmed compact flash, this is the first step of the procedure.

A software update consists of 1 package (with pak extension). It will come to you compressed in a single zip file. Before proceeding, you need to decompress this .pak file.

Step 1.1: format compact flash.

Compact flash must be formatted as FAT.

Step 1.2: copy files on compact flash.

Using drag and drop or any other means like copy and paste, transfer the pak file on the compact flash.

Make sure that the file is effectively copied (experience has shown that computer cache may fool user) by closing compact flash explorer and reopening it.

Then remove compact flash from reader.

Updating BI5X9 from compact flash

Step 2.1: Insert Compact flash into slot on front of the FIG,

Step 2.2: push on the Reset button (do not confuse Reset and Preset) or turn FIG power supply off and on

Step 2.3: Wait until graphics shows

Download completed

Then

Remove compact flash

Step 2.4: After removing compact flash, FIG will reboot and update is finished;