Tech-note

Getting Started with UniOP B Series Panels

This document contains all you need to know to get quickly started with the new B-generation UniOP panels.

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1 The New Hardware Platform for UniOP Panels

The new “B” series of eTOP products feature a completely new hardware platform called “T2003”. The T2003 CPU board uses a new 200 MHz 4131 MIPS processor.

The B series uses a new Firmware Type called FW60.

1.1 New Features Available in the T2003 Platform

The new hardware platform brings up to the product a set of interesting new features:

- support for 64K color systems on panels with TFT display
- support for 256 colors on panels with STN display
- support for 8 levels of gray on panels with monochrome display
- 32MB Internal Memory Card and optional SSFDC External card
- Video Input Option for panels with TFT displays
- Backlight dimming for panels with TFT display

2 Support for 64K Colors

The support for 64K colors is available only on B units with TFT display.
To enable the 64K colors support select the “High Colors” option into the “Settings” tab from “Panel Setup”.

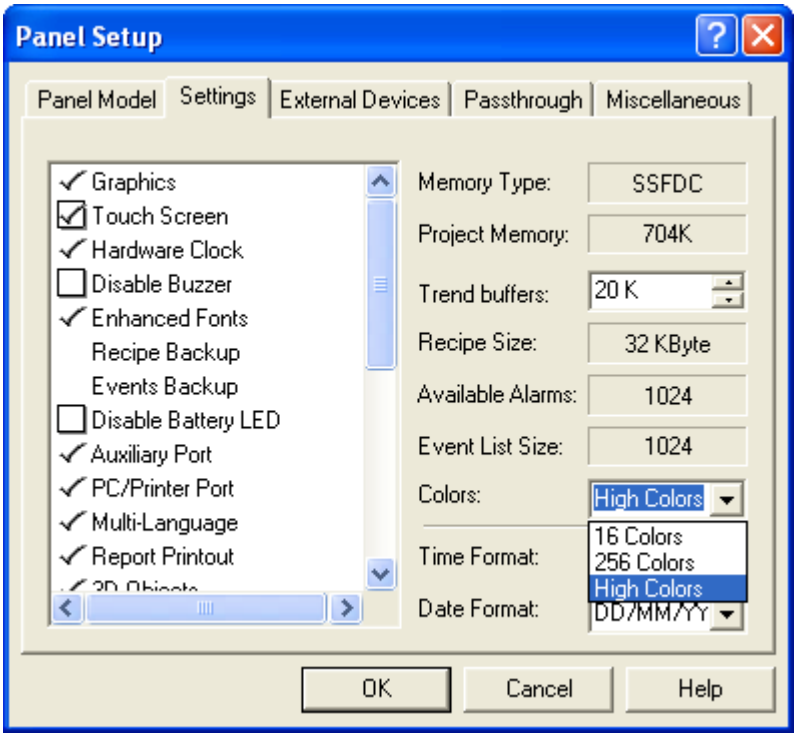

Figure 1 – Selecting 64K color support in Panel Setup

The High Colors option can be used only in the following screen objects:

- dynamic graphics
- bitmap editor
- imported images
- video input windows

All the other screen objects, such as text and touch objects, support 256 colors.

3 The FW60 Memory Architecture

The memory organization of the T2003 hardware platform is shown in the block diagram in Figure 2.

The picture shows the relation between the internal user memory, the external SSFDC memory card contents and the system-level memory storage in the panel.

The reference to this picture may be useful to understand the subsequent chapters of this document, with particular reference to the chapter on Internal Memory.

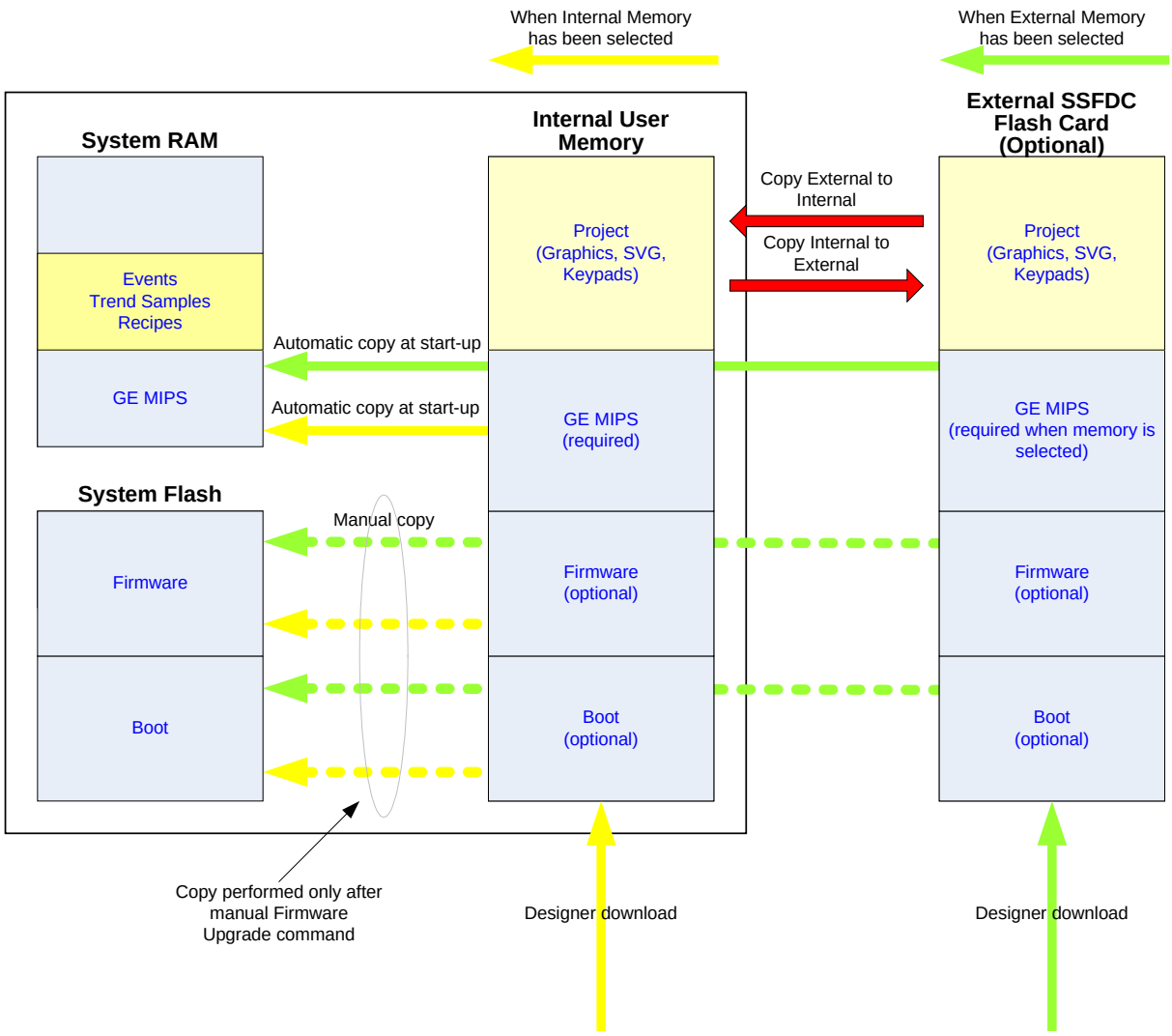

Figure 2 – T2003 Memory Organization

4 The Internal Memory

The B series units have 32 MB internal Flash memory dedicated to project file components and firmware files in the same way as the SSFDC card is used on the T2000 platform.

This memory will be the standard storage location for both user application and firmware files.

The SSFDC socket is still present in the T2003 CPU and can hold an additional SSFDC memory card.

Note: *B-series units are delivered **without** the SSFDC card in the external socket.*

The Firmware Type 60 includes some new controls to handle the two memory locations.

At any time only one memory can be considered “active”. The run-time software will run the project and the firmware components only from the active memory.

The memory selection can be done using a special memory setup menu activated in Configuration Mode by pressing and holding down for 2 seconds the **right** arrow key.

The menu is shown in Figure 3.

```
Memory setup
Select Format Copy Exit

-> Panel Memory  -  32MB, 2% used
   Flash Card    -  32MB, 6% used
```

Figure 3

When the menu is activated a cursor will blink over one of the four available options: Select, Format, Copy and Exit.

Select	selection the active memory
Format	formatting the active memory
Copy	copy from the active memory to the other one
Exit	exit from the Memory Setup menu to Configuration Mode

To Select a memory type, place the blinking cursor over he “Select” option and confirm with OK; the blinking cursor will move the memory indicator represented with the arrow -> symbol; the cursor can be moved using the up/down keys; once selected the desired memory type, confirm with OK.

When doing a Copy process all the contents of the source memory will be copied to the destination memory. The currently active memory location is always considered as the source.

4.1 Firmware 60 Files

Firmware Type 60 has only three components; please note this is different from the older FW58:

- Boot
- Firmware
- MIPS

The MIPS file is the only one that must always be present in the active user memory either this is the internal memory either it is the flash card.
The Firmware Upgrade menu will only show the Boot and the Firmware components; they are the only two components the system will need to copy from the active user memory to the internal System Flash (see Figure 1).

5 Video Input Option

The Video Input option is available for the following models:

eTOP10B
eTOP19B
eTOP20B
eTOP33B
eTOP39B
eTOP40B
eTOP50B
ePAD33B
ePAD33BT

The VMO10 module is delivered as a separate product and requires installation by the user. Please refer to the product datasheet Tn209 and to the installation guide for specific information about specification and installation.

5.1 How to Create a Video Input Object

To create a video input object just select “Insert\Video Input” or use the icon available in the toolbar: .

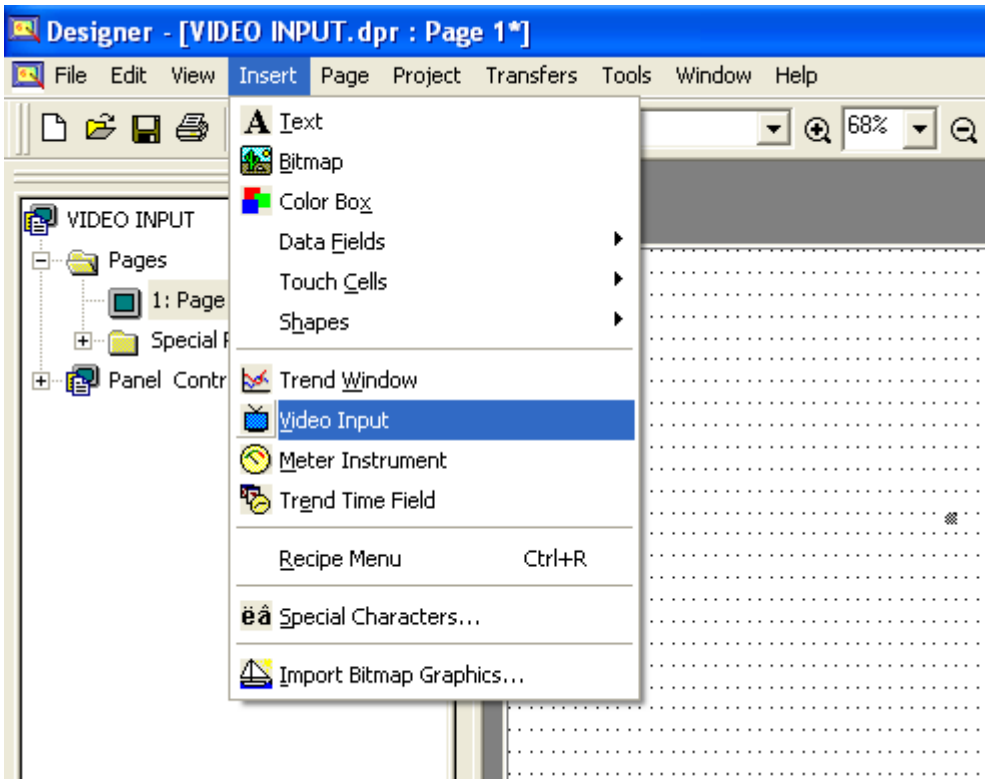

Figure 4 – Creating Video Input Objects

The menu item and the icon are active only if the project has been configured for a panel model that supports the Video Input Option. Please remind that icons layout can be restored to the default settings using the “Default” button in the “Tools\Customize” dialog box.

5.2 Video Input Properties

5.2.1 Video Input Type

The video module is provided of 1 VGA input and 3 PAL inputs; the source of the video input object placed in the Designer project page can be selected using the related list box in the “Video Input Properties” dialog box shown in Figure 5.

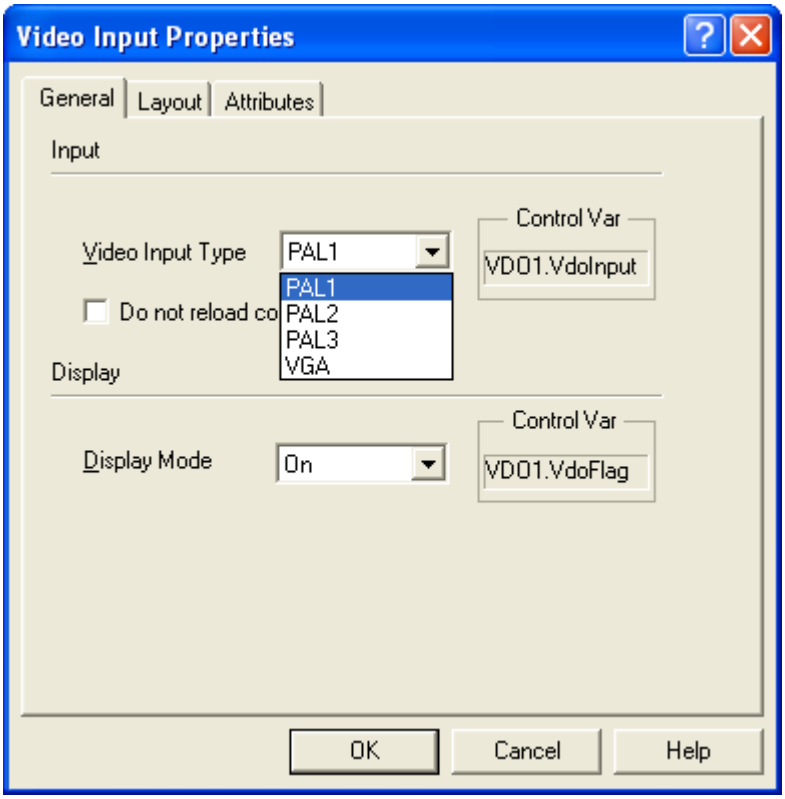

Figure 5 – Property Sheet for Video Input Objects

Note: *The Video Input Type can be selected also from the panel screen using the apppropriate Control variable.*

5.2.2 Display Mode

Display Mode defines how video input objects are initialized.
Two options are available for the Display Mode:

- On
- Off

Display Mode can be set in the “Video Input Properties” dialog box as shown in Figure 6.

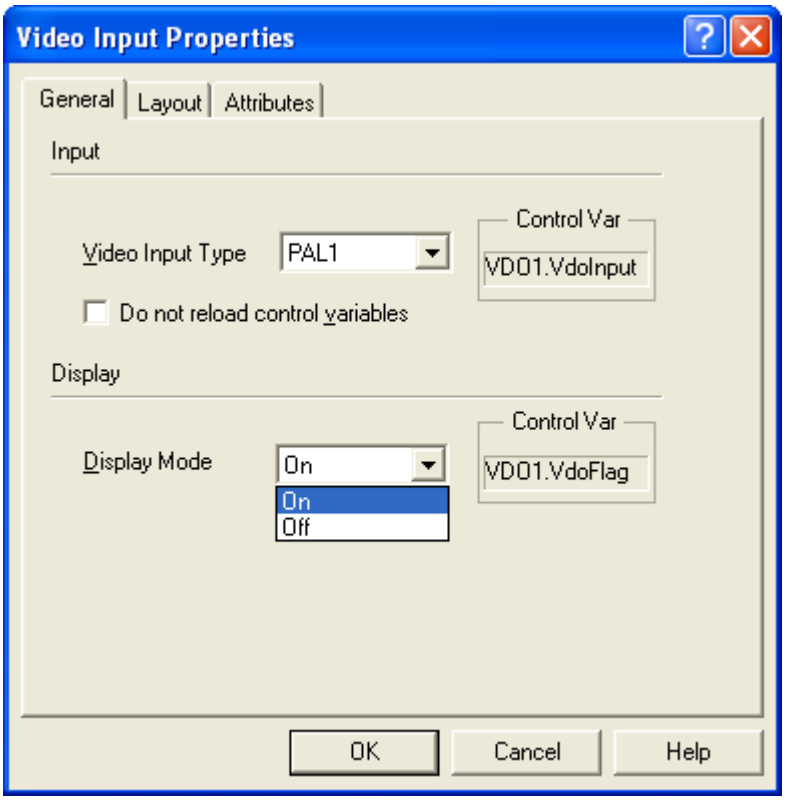

Figure 6

On	makes the input image immediately visible in the Video Object after project download
Off	the image from the video channel is not shown in the “Video Object” and needs later to be in case enabled using the dedicated Control Variable

Note: *The Display Mode can be selected also from the panel by using the apposite Control variable.*

5.2.3 Color and Video Options

The “Layout” tab of the Video Input Properties dialog box contains several options for video objects as shown in Figure 7.

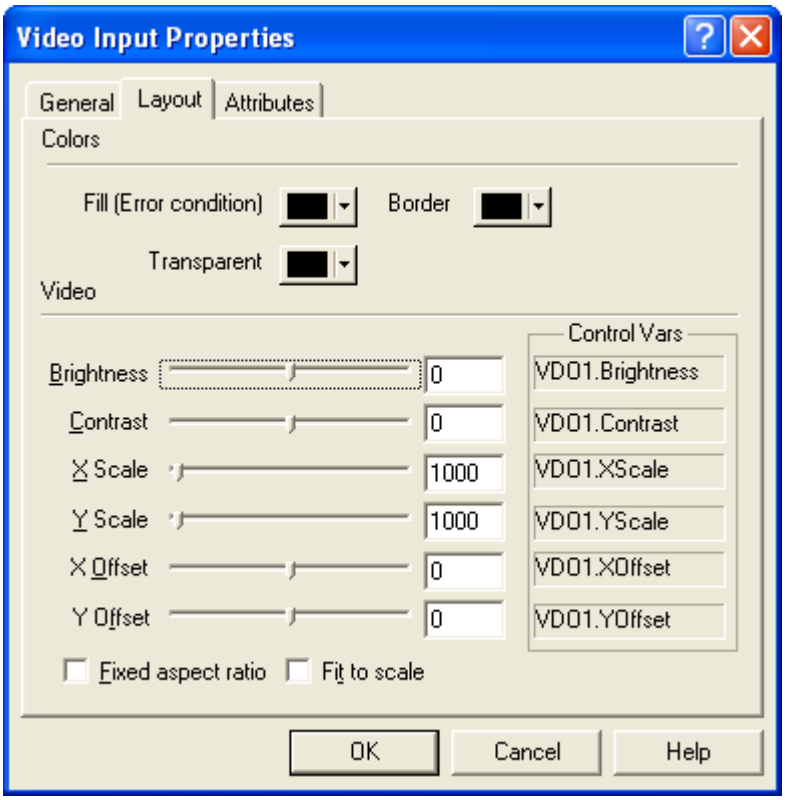

Figure 7

Note: *VideoOptions can be changed at run time using the proper Control variables*

Fill error conditions — It is the color used to fill the video object in case, for instance, no signal is detected at the video input

Border — The color of the border of the Video Input window.

Transparent — The parts of the image filled with the selected transparent color will be transparent.

Brightness — Brightness level. The range is from –128 to 127, with zero as a *normal* level.

Contrast — Contrast level. The range is from –128 to 127, with zero as a *normal* level.

Scale — The picture can be scaled belong both dimensions. The value is measured in *per-mills* of the original video stream, meaning that a value of 1000 returns the image in the original size; values greater than 1000 will zoom in, while values smaller than 1000 will zoom out. Scaling limits are resolution dependent; the scale values will be anyhow forced to allowed limits. Additionally, the hardware interface will round off the specified

scaling factors to match its internal calculation capabilities; this will result in a picture on panel slightly smaller than programmed one.

Offset The top-left position of a window within the video stream that will be displayed. Into the Video Object the input stream will be displayed starting from the specified position and cropped on right/bottom borders.

Fixed aspect ratio Scaling will be performed in a way that original stream's aspect ratio is preserved; vertical scaling factor will be ignored.

Fit to scale If set, all offset and scaling parameters will be ignored; a stream will be scaled in a way that it is completely visible.

5.3 Control Variables

Video Input parameters can be adjusted also at run time using the dedicated Control Variables; to select a Control Variable select "Variable" in the "Numeric Field Properties" dialog box as shown in Figure 8.

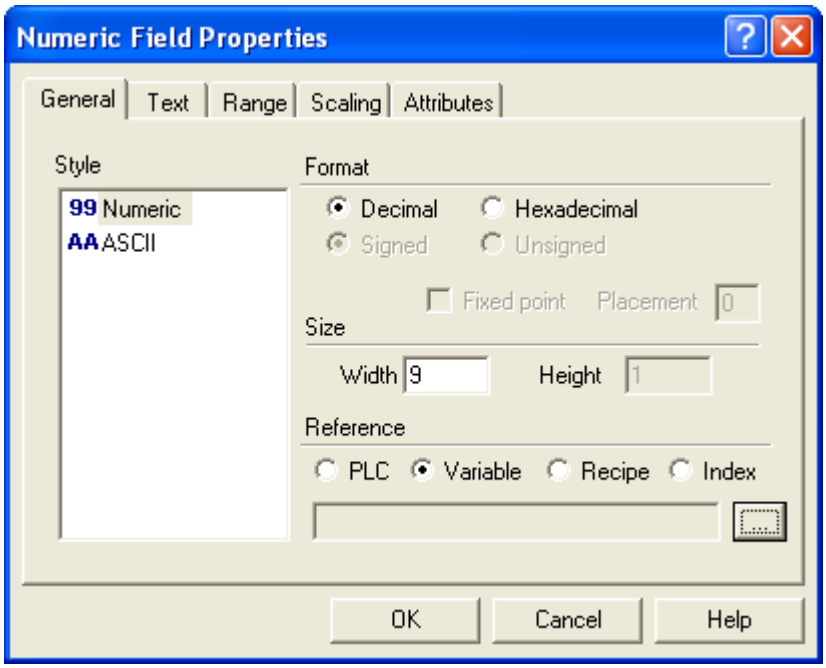

Figure 8

Then select "Internal variable" for the Data Type as shown in Figure 9.

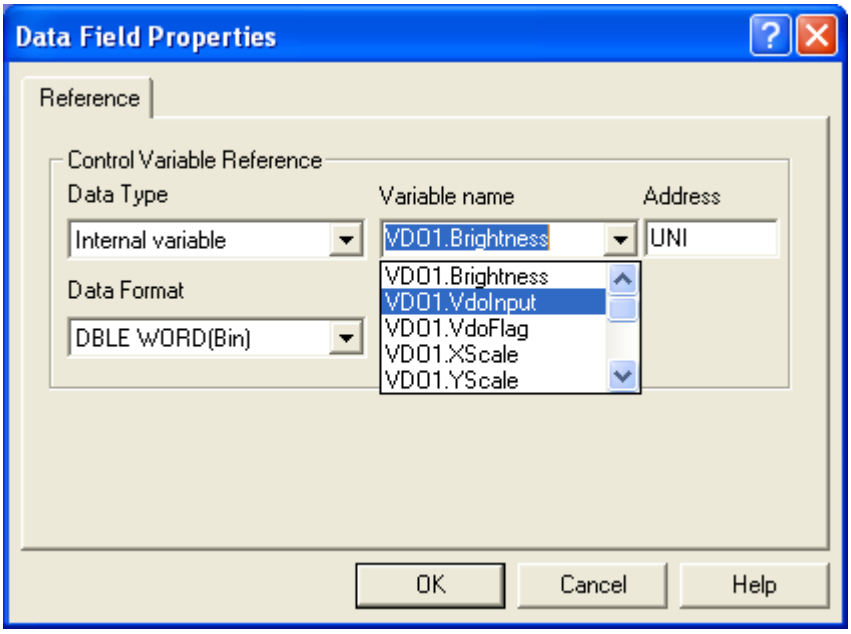

Figure 9

The following Control Variables are available for use with Video Input objects:

VDO*x*.XOffset
VDO*x*.YOffset

Specify the top-left position of a window within the video stream that will be displayed. Only positive values are allowed.

VDO*x*.XScale
VDO*x*.YScale

The picture can be scaled belong both dimensions. The value is measured in *per-mills* of the original video stream, meaning that a value of 1000 returns the image in the original size; values greater than 1000 will zoom in, while values smaller than 1000 will zoom out. Scaling limits are resolution dependent; the scale values will be anyhow forced to allowed limits. Additionally, the hardware interface will round off the specified scaling factors to match its internal calculation capabilities; this will result in a picture on panel slightly smaller than the one that has been programmed.

VDO*x*.VdoInput

Selection of the Video Input channel to be displayed in the Video Input object; valid values are the following:

0 – Video Input 1 (CVBS)
1 – Video Input 2 (CVBS)
2 – Video Input 3 (CVBS)
3 – RGB Input

VDO*x*.VdoFlag

This variable contains some status flags to identify the status of the Video Input object:
bit 0 (0x01) – do not reload internal variables (if not set, video object' state will be saved across page changes)
bit 1 (0x02) – fixed aspect ratio (scaling will be performed in a way that original stream's aspect ratio is preserved; vertical scaling factor will be ignored)
bit 2 (0x04) – turn off (if set, video object will not display a video stream)
bit 3 (0x08) – reserved (do not use)
bit 4 (0x10) – reserved (do not use)
bit 5 (0x20) – fit to scale (if set, all offset and scaling parameters will be

	ignored; a stream will be scaled in a such way that it will be completely visible in the window)
VDO*x*.Brightness	Brightness level. The range is from –128 to 127, with zero as a *normal* level.
VDO*x*.Contrast	Contrast level. The range is from –128 to 127, with zero as a *normal* level.
VDO*x*.VdoStatus	Read only register containing some information related to the Video Input object status: bit 0 (0x01) – VGA signal displayed bit 1 (0x02) – PAL signal displayed bit 2 (0x04) – signal is valid
VDO*x*.Hres	Read-only register containing the horizontal resolution of an object's video stream.
VDO*x*.Vres	Read-only register containing the vertical resolution of an object's video stream.
VDO*x*.VFreq	Read-only register containing a vertical frequency of an object's video stream.

6 Backlight Dimming

The T2003 platform for units with TFT display adds the possibility to use the dimming function for the display backlight.
The brightness of the backlight can be controlled using the macro commands shown in Figure 10.

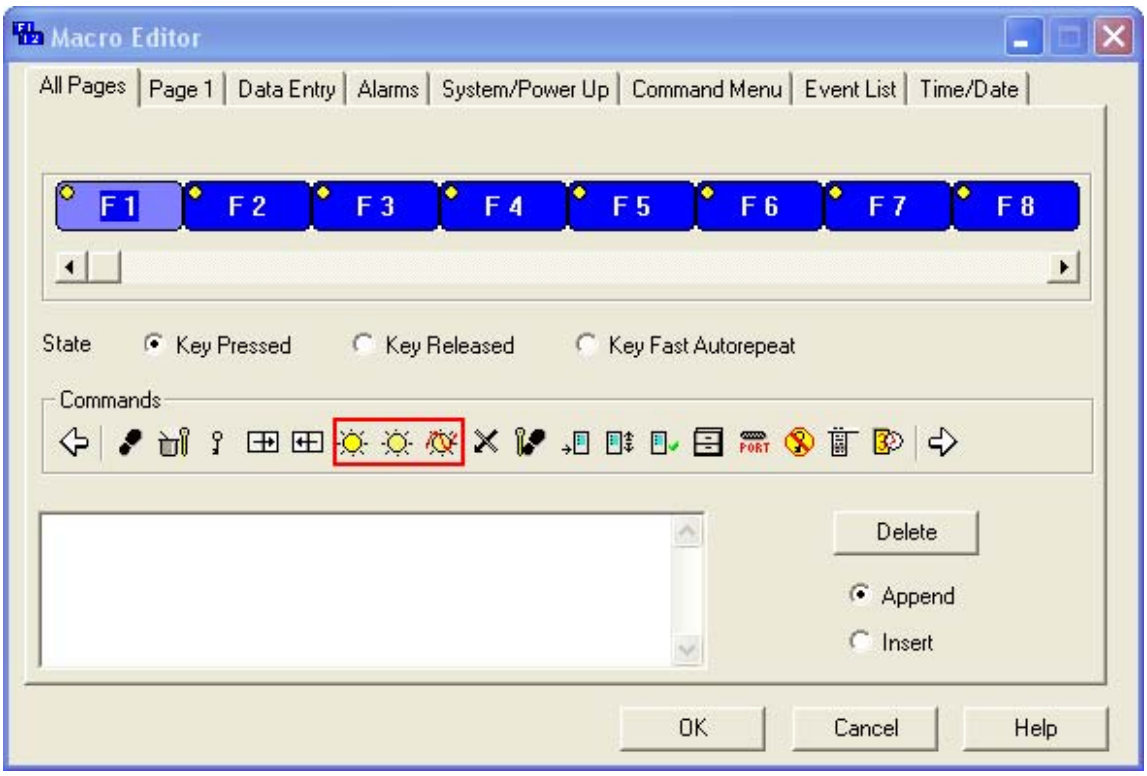

Figure 10

The brightness can be decreased, increased and changed in cycle with steps using the macro "Dimming" identified by the following icon: .

The display brightness can be reduced up to 2% of the maximum value.

7 Compatibility Issues

The “B generation” units are delivered without removable memory card; user memory is the internal 32MB Flash memory as a factory setting.

From the point of view of transferring a new project file to the panel, there are no differences in handling the download whether you use internal memory or Flash card. The memory selection is done in Configuration Mode and no settings are required at Designer level.

The “Copy” option of the Memory Setup menu can be used to transfer the entire contents of an external SSFDC card to the internal flash. The external card must be of course prepared with proper firmware files, Type 60, and correct project matching the hardware type, according to the Designer Panel Setup selection.

SSFDC cards already programmed for units with firmware type 58 are not compatible with “B” series panels.
In the same way, memory cards prepared for units with firmware type 60 are not compatible with units using T2000 hardware platform.

The project stored on a memory card suitable for use with firmware 58 units cannot be copied to the internal memory of a “B” series unit. The copy option operates only for the entire memory contents.

Any “B” series unit to be used as a replacement of existing Firmware 58 panels must be completely prepared at early stage and must be sent to site ready for installation.