PIXEL CMOS PROJECT

MIMOSA26 PROTOTYPE

Technical Documentation Version 0.1

JTAG SOFTWARE

GETTING STARTED

Ref Number: IPHC_CMOS_MIMOSA26_MULTI_DEV_JTAG_SW_INST_NOTES_1002 (100201)

Support:

Web address: http://www.iphc.cnrs.fr/-CMOS-ILC-.html

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Important Information

Warranty:

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About this manual

This is a short description for initiation of using the JTAG software for MIMOSA26 device.

Modifications Chronology

VERSION	MODIFICATIONS	CHAPTERS
0.1	Creation of the document.	All
0.2	Changes in graphical user interface (GUI)	All

1. Getting Started

This document is a short description for initiation of using the JTAG software for a MIMOSA26 prototype test system. All the necessary hardware installation should be done before starting with this document.

The software is archived with the WinZip program.

MINIMUM SYSTEM REQUIREMENTS FOR PC

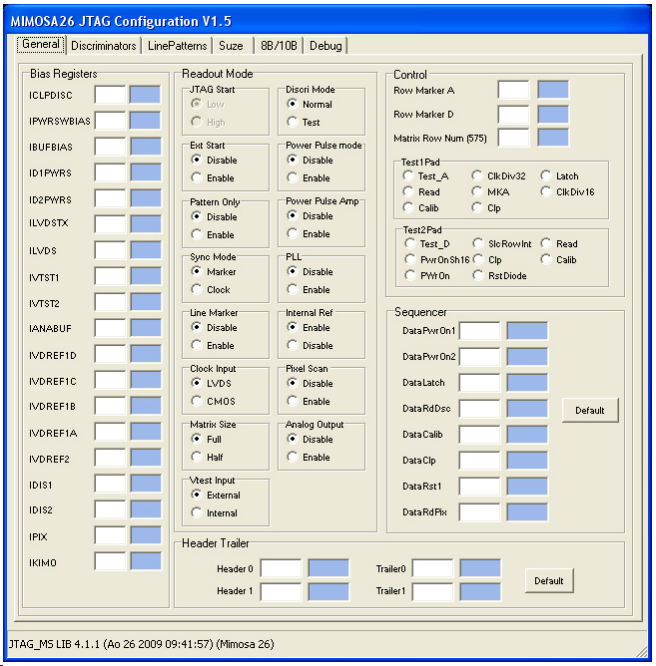
- Pentium IV, 2 GHz or faster
- Microsoft Windows XP
- 256 MB RAM min. (512 MB recommended)
- CD-ROM driver
- 100 MB free hard disk place for software installation
- AGP video card with 64MB video RAM

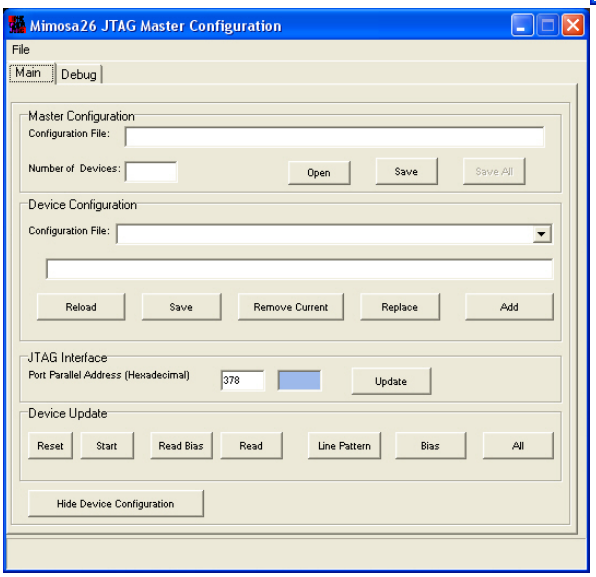
To use this software, the MIMOSA26 prototype test system should be connected to PC's parallel port and all the necessary power supplies should be connected and powered.

2. Software installation

1. All the files for the MIMOSA26 JTAG SOFTWARE are packed in a file **MIMOSA26_MULTI_JTAG.zip**. To start, create a directory C**:\CCMOS_SCTRL** and copy the file **MIMOSA26_MULTI_JTAG.zip** to the directory C**:\CCMOS_SCTRL** . Unzip **MIMOSA26_MULTI_JTAG.zip** file to this directory.

2. To start the MIMOSA26 JTAG SOFTWARE, double click the file **C:\CCMOS_SCTRL\ MIMOSA26_JTAG\MI26.exe**. Following two windows should be shown on the screen.



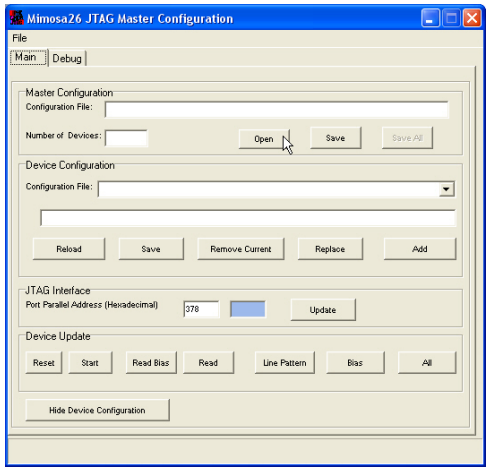


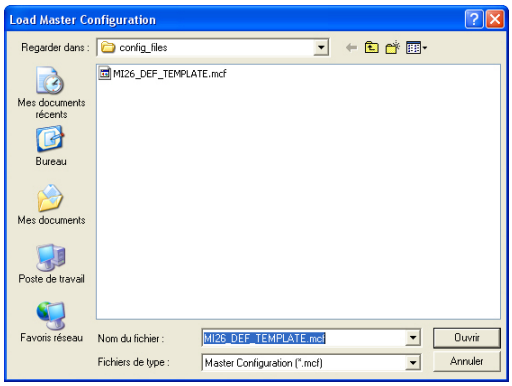
3. Using the software

In this example, the MIMOSA26 JTAG software is configured for 2 MIMOSA26 devices.

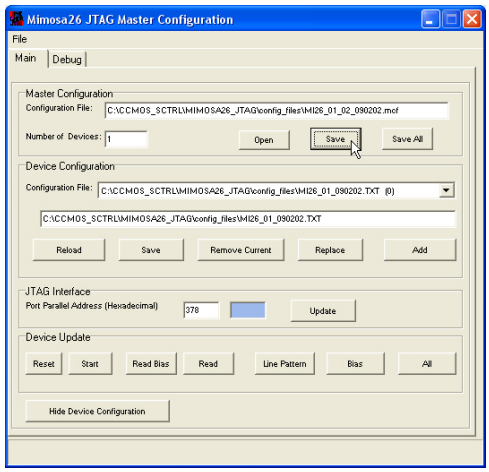
1. To start the MIMOSA26 JTAG SOFTWARE, double click the file **C:\ CCMOS_SCTRL\ MIMOSA26_JTAG\MIMOSA26_JTAG.bat** as it was explained in previous chapter.

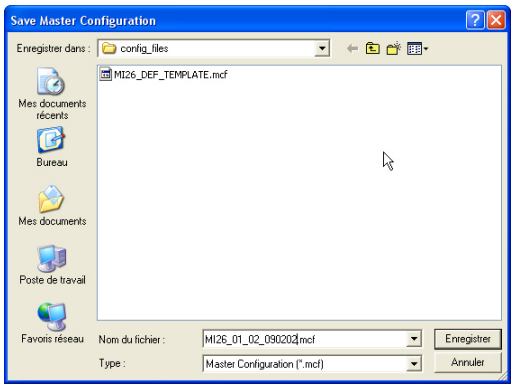
2. To start using the software, the environment of MIMOSA26 devices has to be defined. This definition is stored in a Master Configuration file that includes information of number of MIMOSA26 devices in JTAG chain and name of a Device Configuration file for each device in chain. Press Button "Open" on window titled "MIMOSA26 JTAG Master Configuration". Please select file "MI26_DEF_TEMPLATE.mcf" (see the image below). This is a simple template (read-only) file that can be used as a start point for the environment definition. The Master Configuration files are in directory "**C:\CCMOS_SCTRL\MIMOSA26_JTAG\config_files**".





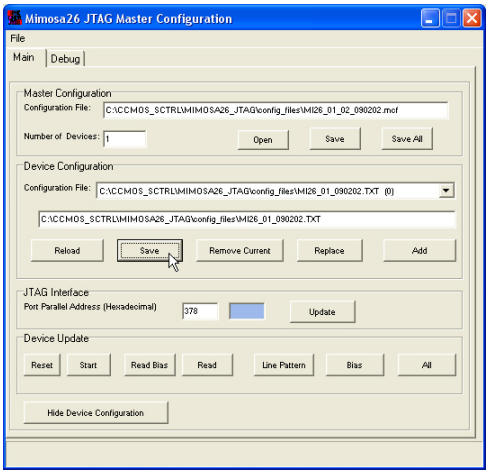
3. Save this template file with a suitable name for the configuration, e.g. "MI26_01_02_090202.mcf" by clicking "Save" button on "MIMOSA26 JTAG Master Configuration" window (see the image below).

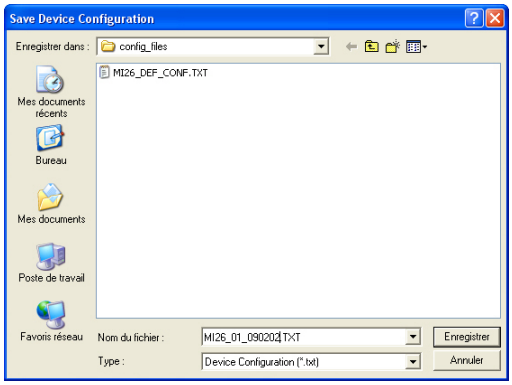




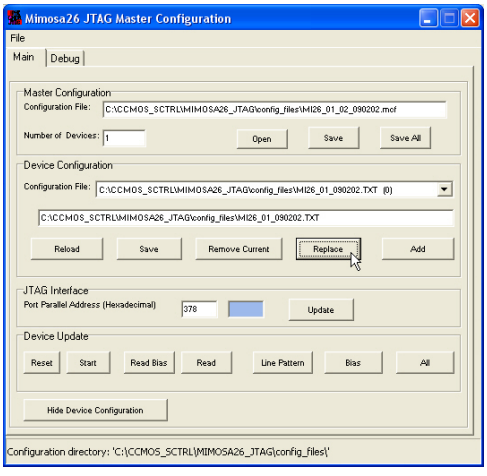
4. Load the Master Configuration file “MI26_01_02_090202.mcf” by clicking button “Open” (See the chapter 3.2.).

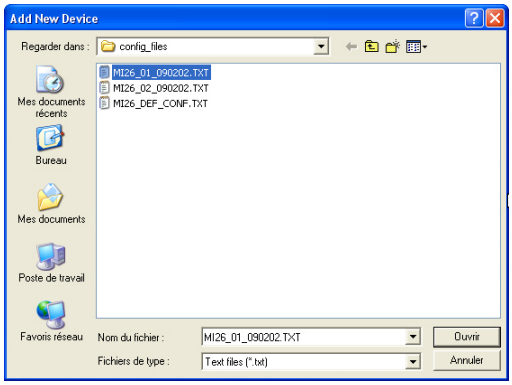
5. As the Master Configuration template file uses a Device Configuration template file the default configuration file has to be replaced by a Device Configuration files dedicated to this environment (There are 2 devices in this configuration example). Please select “Save” button on Device Configuration section. Set the file as “MI26_01_090202.txt” and save it. Please save this Device Configuration file again with a name as “MI26_02_090202.txt”.



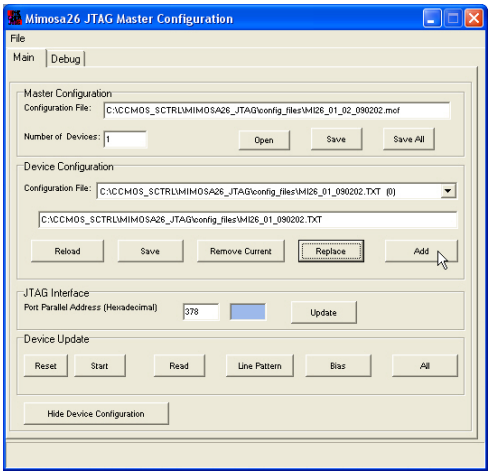


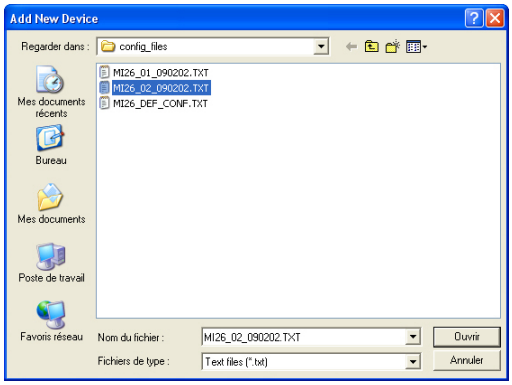
6. Replace the Device Configuration template file on Master Configuration by clicking the button “Replace” on Device Configuration section. Select the file “MI26_01_090202.txt”.



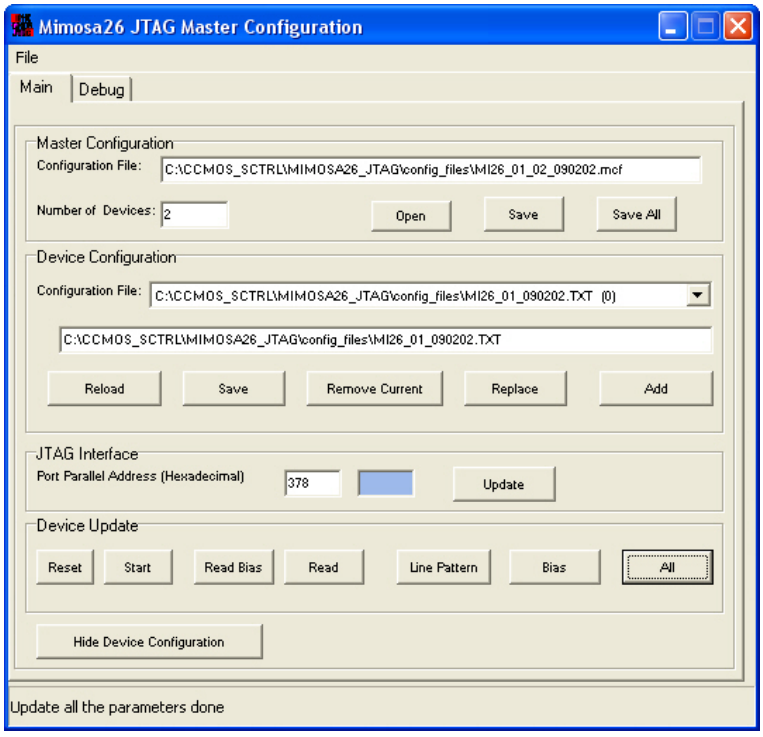


7. Add the other two devices to the MIMOSA26 JTAG environment. Click the button "Add" on Device Configuration section. Select the file "MI26_02_090202.txt" (see the image below).



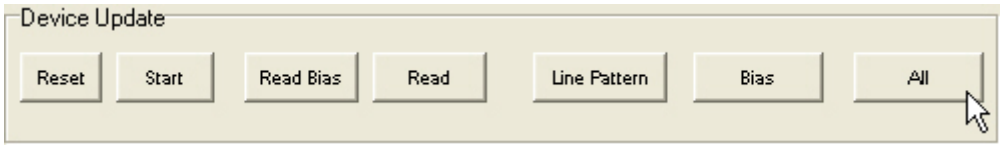


8. If the definition of MIMOSA26 JTAG environment was successfully performed the number of device in Master Configuration section should be 2 (see the image below). Save the Master Configuration to file by clicking "Save" on Master Configuration section.

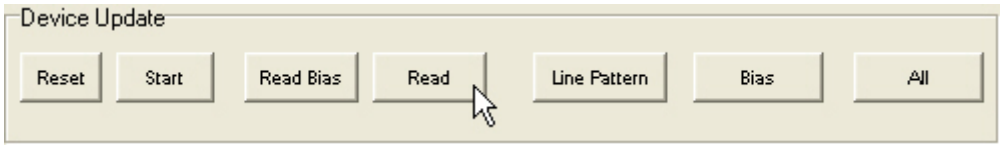


At this moment, the MIMOSA26 JTAG environment is defined. The MIMOSA26 JTAG chain can be updated and read back the status of devices.

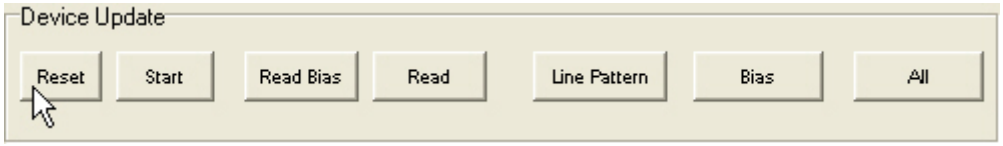
9. To update the parameters to the devices, please select a button “All” from the “Device Update” section (see the image below).



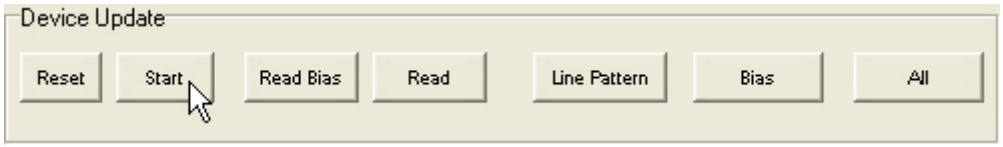
10. To read back the parameters from MIMOSA26 devices, click the button “Read” (see the image below).



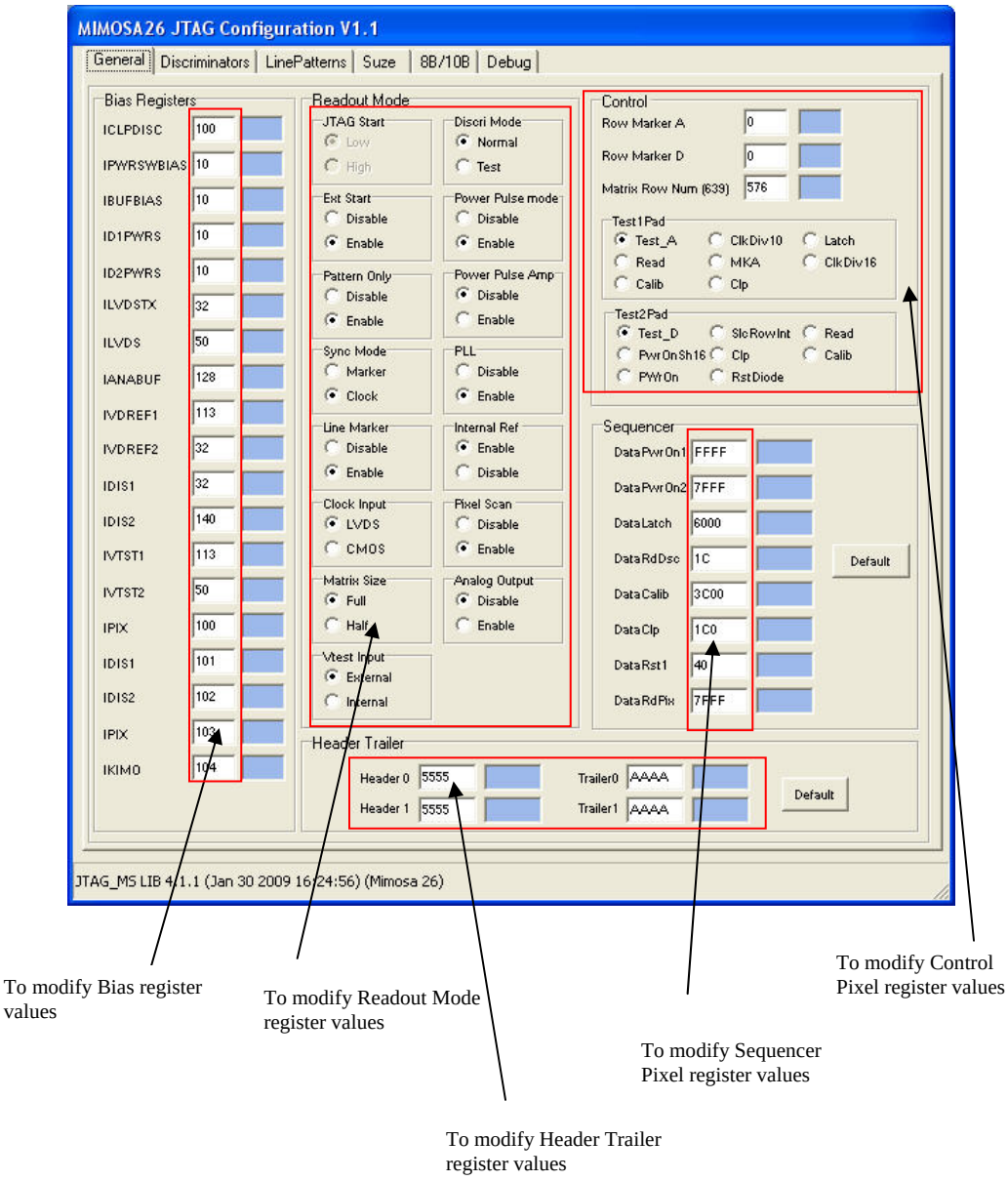
11. To reset the MIMOSA26 devices, click the button “Reset” (see the image below).



12. To perform a start-up sequence for the MIMOSA26 devices, click the button “Start” (see the image below).



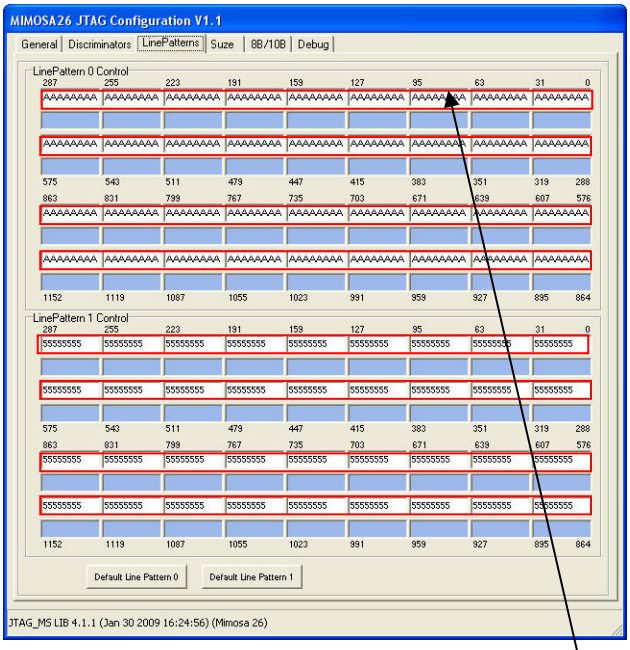
13. In the following image is shown a Device Configuration window for the general device parameter settings. If this window is not visible please click “Show Device Configuration” or click two times “Hide Device Configuration”. See the Chapter 4 for the overview of functionalities of the Device Configuration window. There are five zones that user can modify the device parameters: Bias (BIAS_DAC) Register, Readout mode (RO_MODE) Register, Control (CTRL_PIXEL) Register, Sequencer (SEQ_PIXEL) Register and Header/Trailer (HEADER_TRAILER) Register**. Please save the parameters after the modifications by clicking button “Save” on Device Configuration, otherwise the modifications will be lost.**



14. In the following image is shown a Device Configuration window for the device Column Discriminator parameter settings.

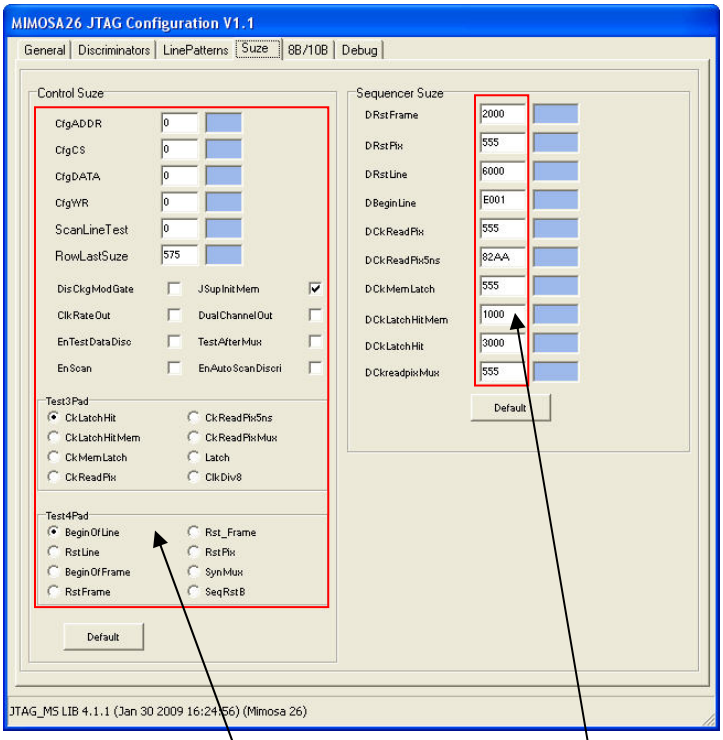
To modify Discriminator Control register values

15. In the following image is shown a Device Configuration window for the device Line Patterns parameter settings.

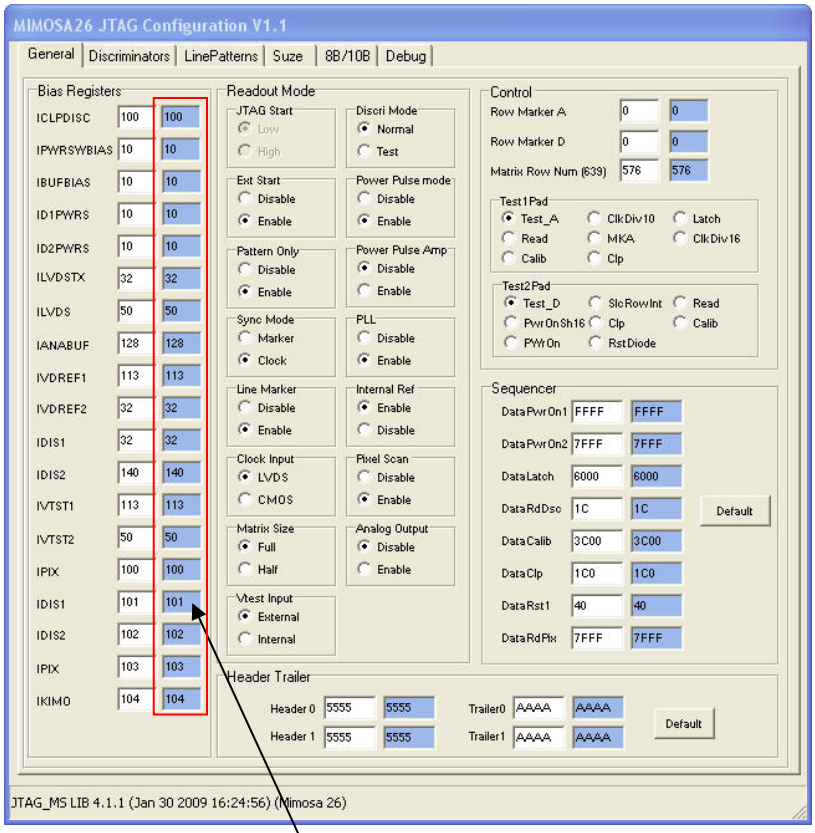


To modify Line Pattern register values

16. In the following image is shown a Device Configuration window for the SUZE (Zero Suppression engine) parameter settings.

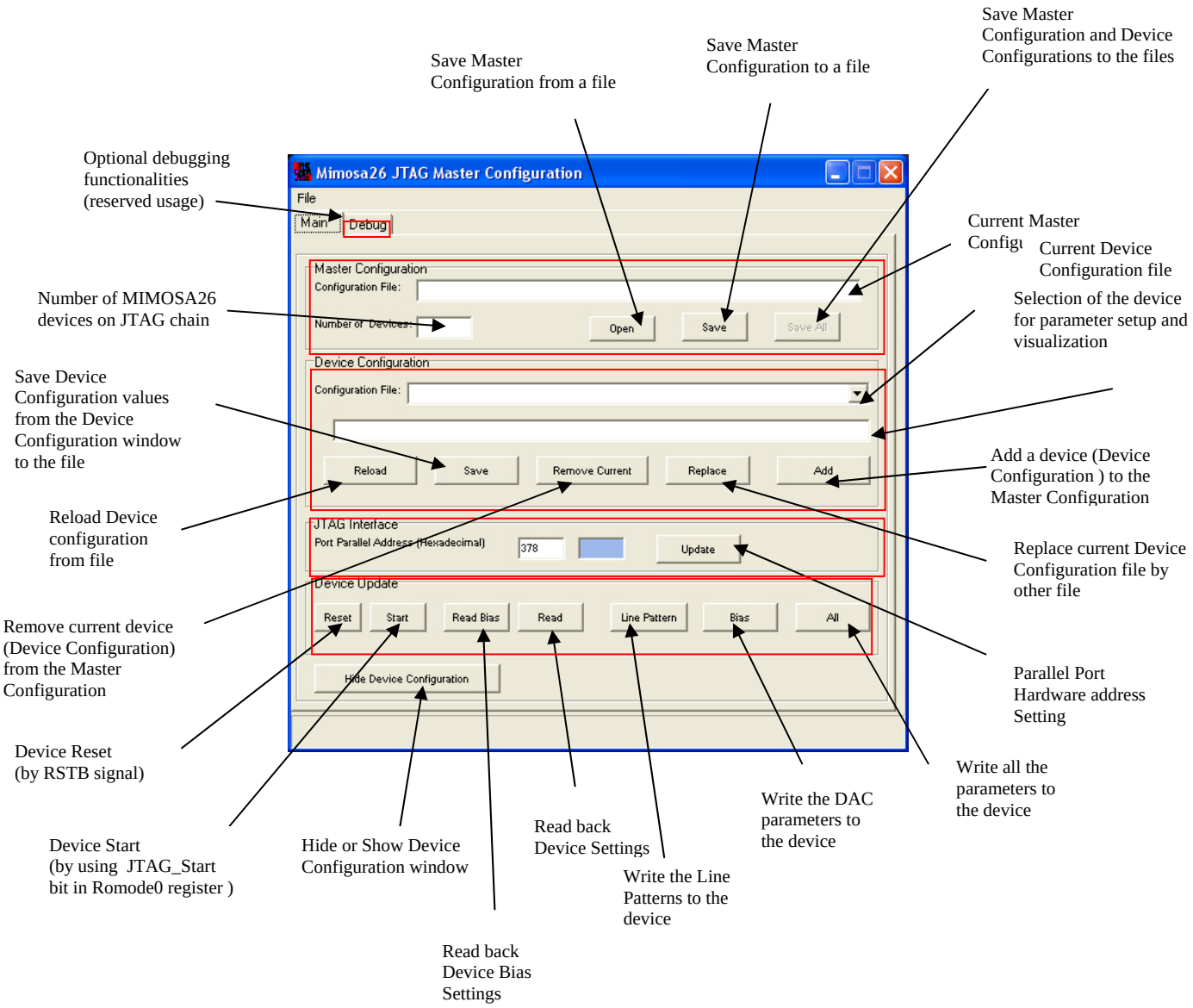


17. If the device configuration was successfully finished the read back values for DACs should be shown at the right-side of each parameter (see the image below).



18. As a default, the Port Parallel Hardware address is set to a default value of 0x378. In most cases there is no need to modify this value. In case that this address is not valid, the port address can be changed by typing a new value to “Port Parallel Address” field in hexadecimal form. Please click the button “Update” to take account the modification of the address of port parallel. After this please reload the Master Configuration.

4. Overview of the functions



Optional debugging functionalities (reserved usage)

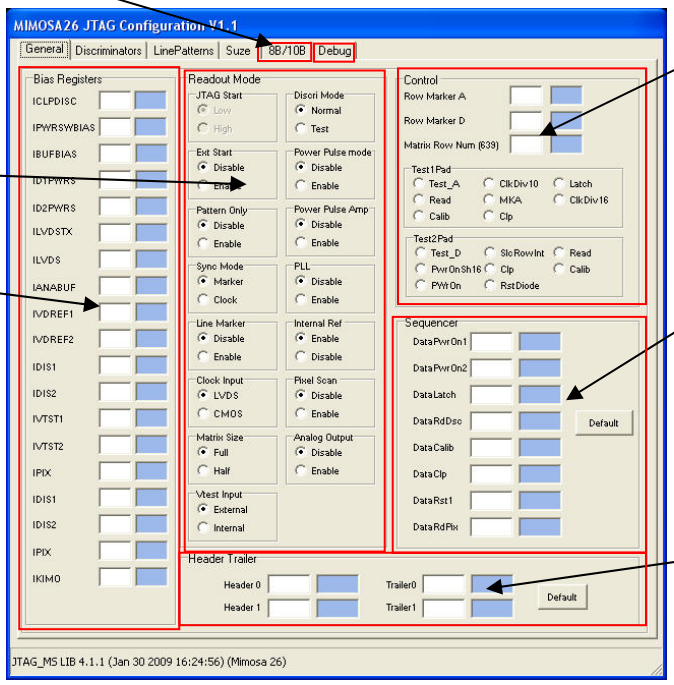
Control Pixel register

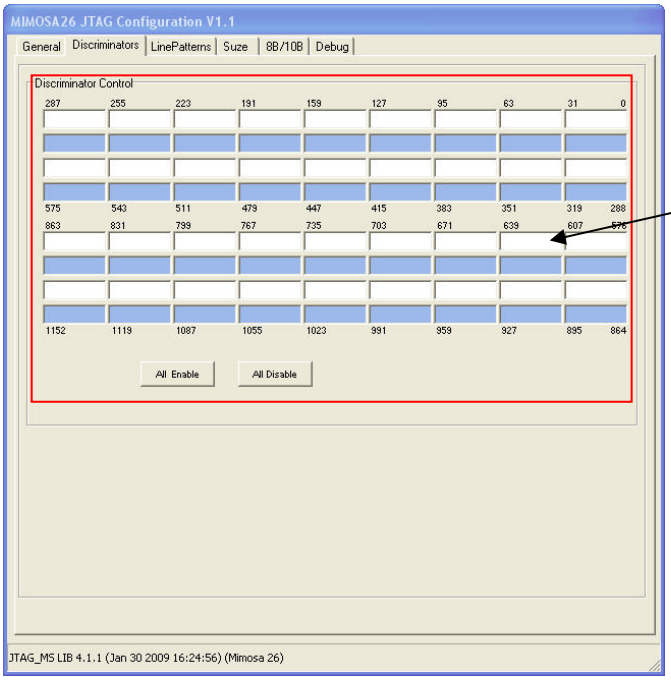
Readout Mode Settings

BIAS DAC Settings

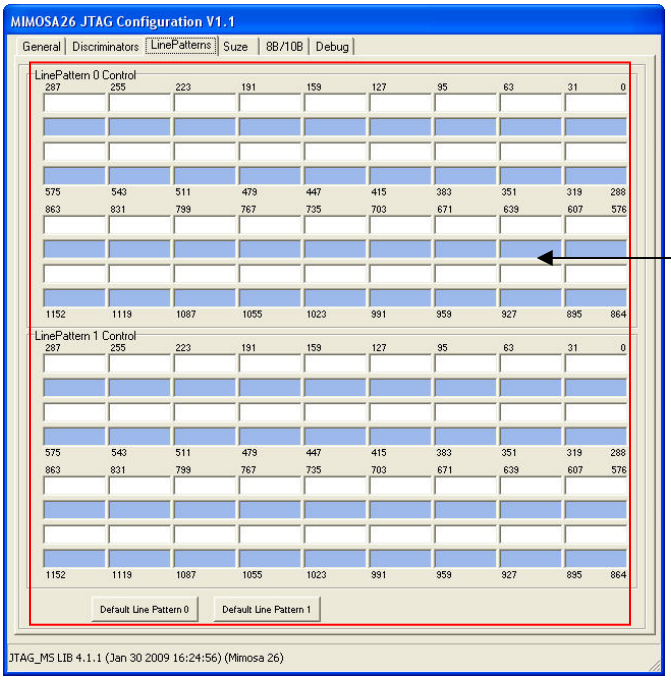
Sequencer Pixel register

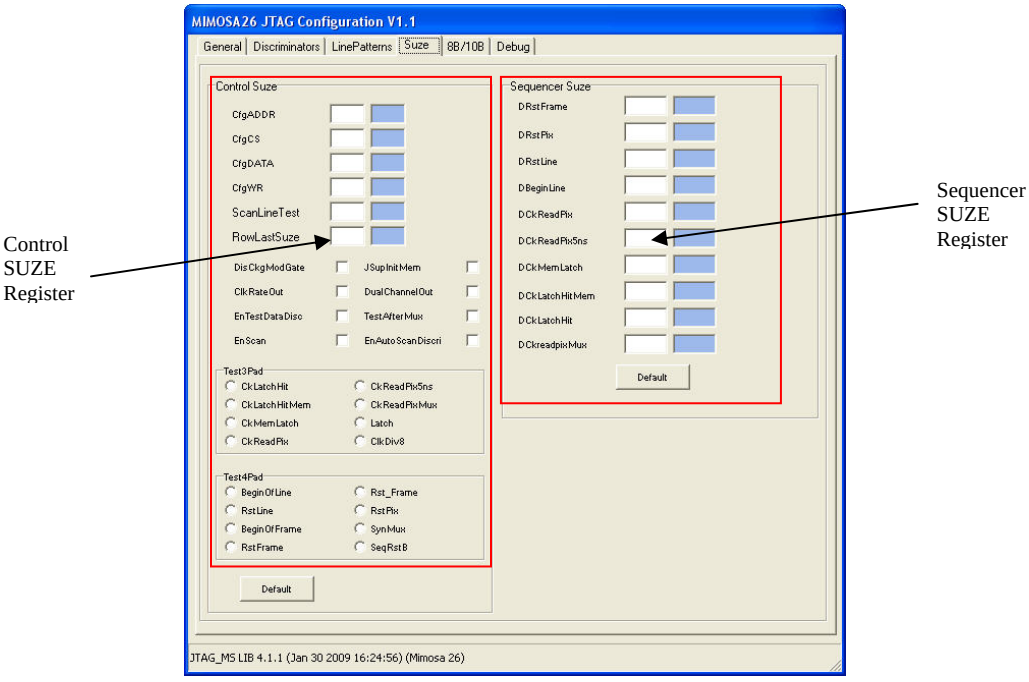
Header Trailer Register





Columns discriminators control register


MIMOSA26 JTAG Configuration V1.1
General
Discriminators
LinePatterns
Suze
8B/10B
Debug
LinePattern 0 Control
LinePattern 1 Control
Default Line Pattern 0
Default Line Pattern 1
JTAG_MS LIB 4.1.1 (Jan 30 2009 16:24:56) (Mimosa 26)
Line Pattern Registers


MIMOSA26 JTAG Configuration V1.1
General
Discriminators
LinePatterns
Suze
8B/10B
Debug
Control Suze
CfgADDR
CfgCS
CfgDATA
CfgWR
ScanLineTest
RowLastSuze
Sequencer Suze
Default
Test3Pad
Test4Pad
JTAG_MS LIB 4.1.1 (Jan 30 2009 16:24:56) (Mimosa 26)
Control SUZE Register
Sequencer SUZE Register