EOLE Toolkit User
Manual

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Iss. Rev.: X2XXXX
Internal Ref.: 1.0
Date: XX/XX/202X
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EOLE Toolkit User Manual

Doc. code: DOC-SEN-BL-00XX

Internal Ref.: X2XXXX

Version: 1.0

Date: XX/XX/202X

Prepared by: Javier Lago de Diego

Revised by: Delia Sánchez Gómez

Approved by:

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CHANGES RECORD

Iss. Rev.	Date	Modified by	Section / Paragraph modified	Change implemented
1.0	XX/XX/XX		All	First formal issue

DRAFT

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1. APPLICABLE AND REFERENCE DOCUMENTS

1.1. Applicable Documents

The following documents, listed in order of precedence, contains requirements applicable to the activity:

No.	Document Title	Reference	Issue/Rev.
AD-01			
AD-02			

Table 1-1: Applicable documents.

1.2. Reference Documents

The following documents, listed in order of precedence, contains requirements applicable to the activity:

No.	Document Title	Reference	Issue/Rev.
RD-01	PlugUp Platform EOLE MW K588		

Table 1-2: Reference documents

1.3. Acronyms

The following acronyms are used in this document:

COM	Communication (port)
ITR	Integrate Then Read
IWR	Integrate While Reading
Tint	Integration time
Tframe	Frame period or integration period
GPOL	Gate Polarization
FPA	Focal Plane Array
ROIC	Readout Integrated Circuit
RW	Read/Write
RO	Read Only
FPS	

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2. INTRODUCTION

This document serves as a reference for using EOLE Toolkit APP. All the information provided here will guide the final user on how to install, setup and effectively use this APP. Before using it, proper eBUS Player configuration is required. Due to the lack of an official application to easily control the parameters of EOLE detector the necessity for an internal application to effectively manage the cameras arose. This program aims to provide a solution to this problem and therefore simplify the management of the detector.

It is greatly encouraged to read the whole manual before using the APP.

3. GETTING STARTED

The EOLE Toolkit APP is designed to be as fast and simple to both install and use. The only previous requirement is to correctly set the camera up within eBUS Player. This must be done manually after plugging the camera in. The following sections will guide the user through the process of downloading and setting the necessary software up.

3.1. EOLE Toolkit installation and setup

The latest version of the software can be downloaded from SharePoint. The installer is straight-forward, and the process will only require the preferred installation folder (this should be an empty folder if possible). It is recommended NOT to use the default installation folder. Once installed, the application should not be executed until the following steps are completed.

1. Plug in the camera
   Once the camera is correctly plugged into the system, it is required to use eBUS Player, which must already be installed in the system.
2. Connect to camera and change UART mode
   In order to connect to the device, it is necessary to click on the *Select/ Connect* button (Figure 1). Another window will pop up showing the available devices (Figure 2).
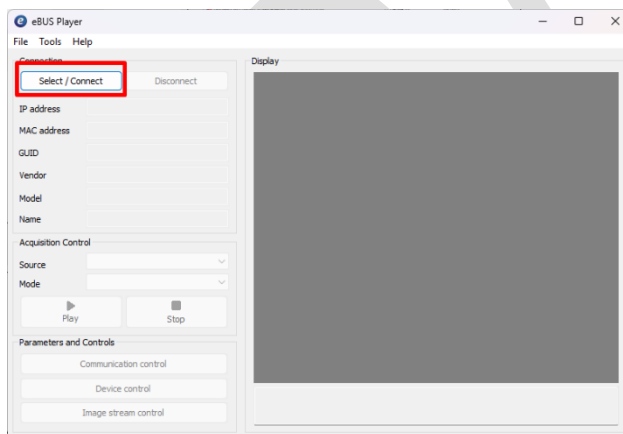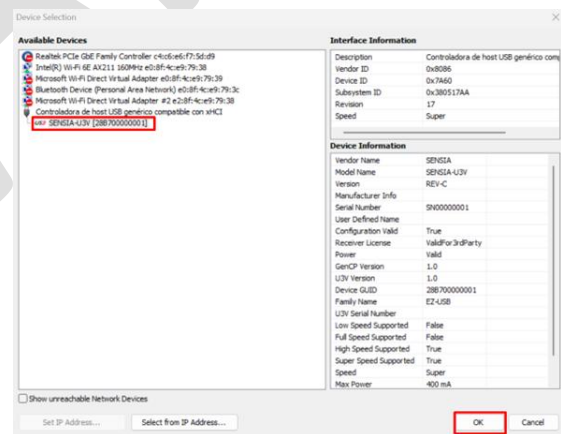

Figure 1: eBUS Player   Figure 2: Available devices

The camera should appear at the bottom and have a name with some kind of label referring to "Sensia". After selecting it and clicking *OK* the application will close the pop-up window and appear as connected. Then, *Device control* button must be clicked to open a new window (Figure 3).

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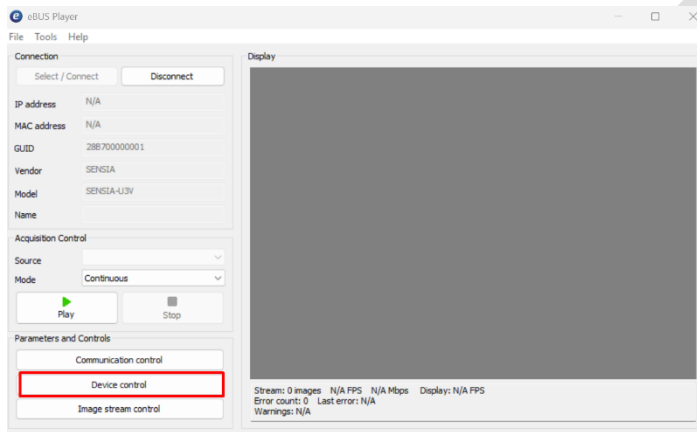Internal Ref.: 1.0
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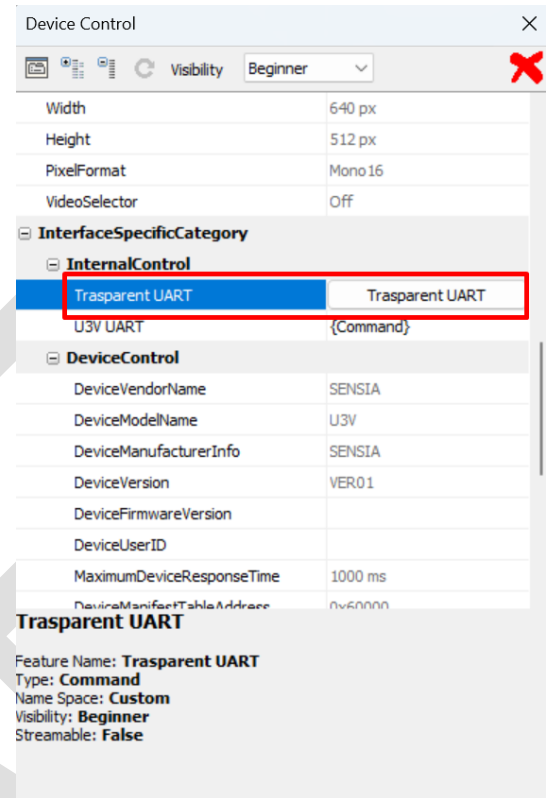Pages: 10 of 16

Figure 3: Device control section

Figure 4: Transparent UART button

The Transparent UART button can be reached scrolling down (Figure 4). Clicking this button will allow the EOLE Toolkit APP to properly manage the connection and communicate with the camera.

3. EOLE Toolkit Setup
    Once the previous steps have been completed, the app can be launched. The program does not require any additional setup or configuration, and eBUS Player can be kept open to display video.

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4. EOLE TOOLKIT FUNCTIONALITY

This chapter outlines the key features and functionalities of the application.

This program allows users to monitor and manage the most relevant parameters of the detector. In addition, a custom register field can be found to access another register to both read or write and a log screen where all sent, received and debug messages are shown.

4.1. Application window

The EOLE Toolkit application has been designed as a single-window interface in order to simplify the usage of all possible functionalities within the program. As it will be covered in next sections, the fields and buttons displayed will allow the user to get and set the values of most relevant parameters of EOLE detector (Figure 5).
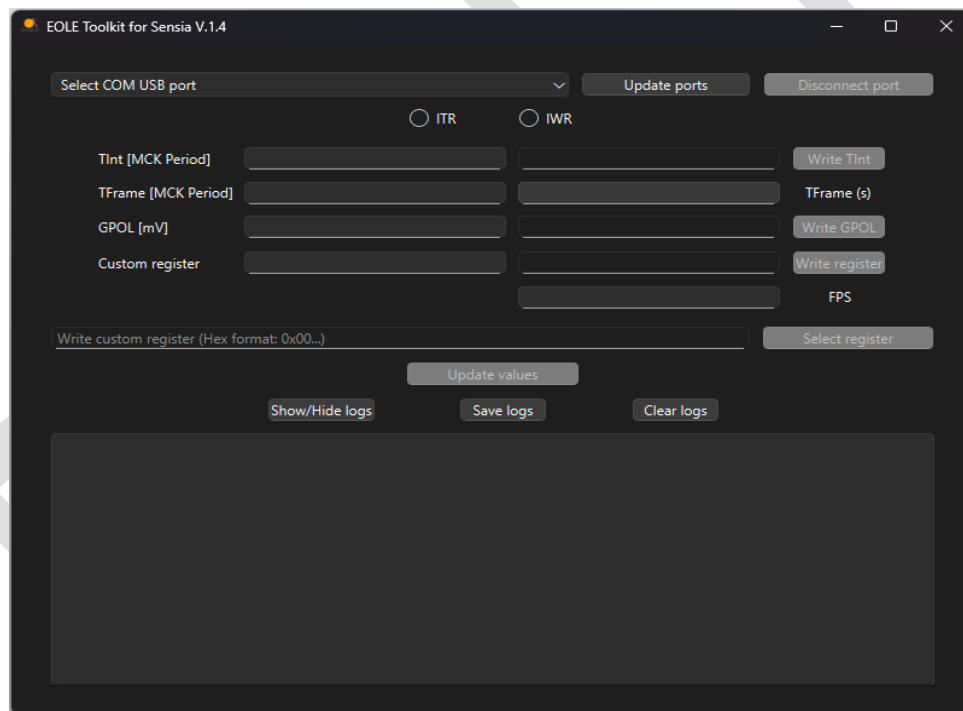

Figure 5: EOLE Toolkit window

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4.2. Connecting to a device

Once the program starts, the program will search for available COM ports and open a pop-up window, informing on the number of outputs found (Figure 6). The dropdown menu shows the list of those COM ports, allowing the user to choose between them to start a connection.
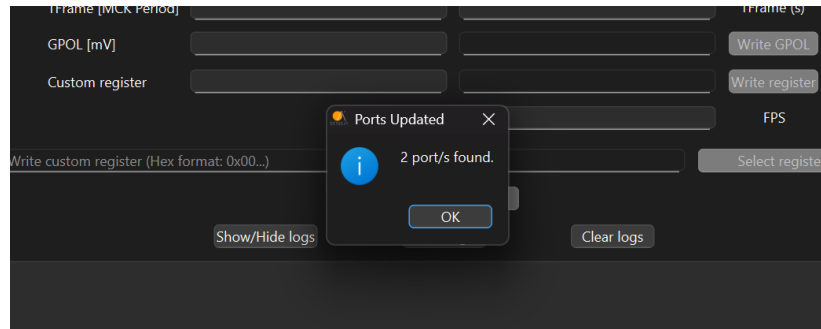

Figure 6: Found ports pop-up window

The *Update ports* button will reset the current connection, if there was any, and then refresh the list of available ports detected from the system. In order to avoid possible issues with port connectivity, the user must click *Disconnect port* button before unplugging the device (Figure 7).
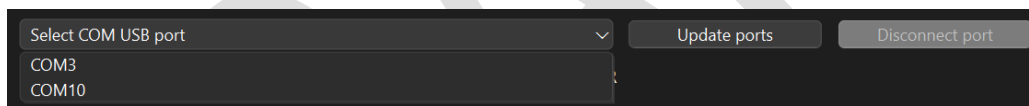

Figure 7: Port management section

If swapping ports was required, the user should always press Disconnect port, then Update ports and then select the desired port by using the dropdown menu. Although the application is designed to support port swapping by just selecting another port from the dropdown menu, that is not the best way to proceed.

Once the port is selected, the application connects to the device automatically and, if it were a compatible device, make the rest of the fields available.

4.3. Integration mode

This section will briefly explain the two different integration modes available in EOLE. The two possible integration modes should be ITR and IWR, but only ITR mode will be available, due to instructions from manufacturer. The radio buttons can not be interacted with and just show the current mode in which the EOLE is working, for information purposes (Figure 8).

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Figure 8: Integration mode selection

This program avoids possible issues with the integration mode by adjusting the Tframe value to maintain the relation between Tint and Tframe, so the detector always works in ITR mode and at maximum framerate.

3.3   Reading and writing parameters

Once the device is connected via the COM port, the fields and buttons below will update with the current parameter values of the detector and show as available. The main component of the interface is a grid layout (Figure 9) that includes fields to display the value of the corresponding parameter, and a button and an input field to set the parameter to a new value.

The following parameters are shown:

- Tint (RW): The integration time field is a read and write register. The current value will be shown in the left-column field and, in order to set a different value, there is an input field and a button in the right column.
- TFrame (RO): The frame period Is a non-writable parameter for the user. The value will update automatically when the Tint value is changed in the left column, showing the conversion in seconds in the right column.
- GPOL (RW): GPOL field is a read and write register. The current value will be shown in the left-column field and, in order to set a different value, there is an input field and a button in the right column.
- Custom register: This represents a read and write register. The current value will be shown in the left-column field and, in order to set a different value, there is an input field and a button in the right column. Further information on how to manage this field will be provided in the next section (Section 3.3.1).
- FPS (RO): This read-only field shows the current FPS the camera shows (can be double checked in eBUS Player in real time). This value is also the maximum number of FPS the sensor can work with the selected integration time; they are the same value because the program ensures the sensor always works to its maximum FPS potential.

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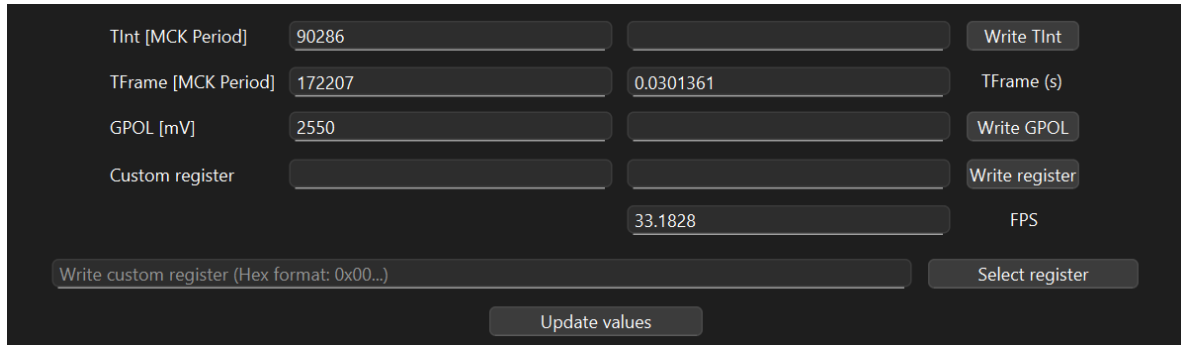Date: XX/XX/202X
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Figure 9: Register grid

When setting the value of a register, write the value in the input field and press the button to send the command. The current value will be updated automatically after this process and so will be the related fields.

The last element of the grid is the *Update values* button. This will refresh the parameters values directly from the detector and update them, if necessary.

4.3.1. Managing custom registers

This section is made up of a writable field to select a custom register (this can be any register in EOLE, even the ones used above). The custom register must be written in hexadecimal, as shown in the EOLE documentation.

These are the steps to follow in order to select and interact with a custom register:

1. Write the register address into the *Write custom register field* (Figure 9). All available addresses can be found in EOLE documentation. Press *Select register* button to save the address.
2. Read and write fields and buttons above (Figure 9) can now be used.
3. Press *Update values* button to read the value of the register or write a value using the right column elements. Keep in mind that depending on the register nature, read or write commands may not be executed correctly.

3.5 Logs

The logging section provides a comprehensive view of the serial port activity. It serves as a powerful tool for debugging and monitoring communication, helping to ensure proper functionality and identify potential issues.

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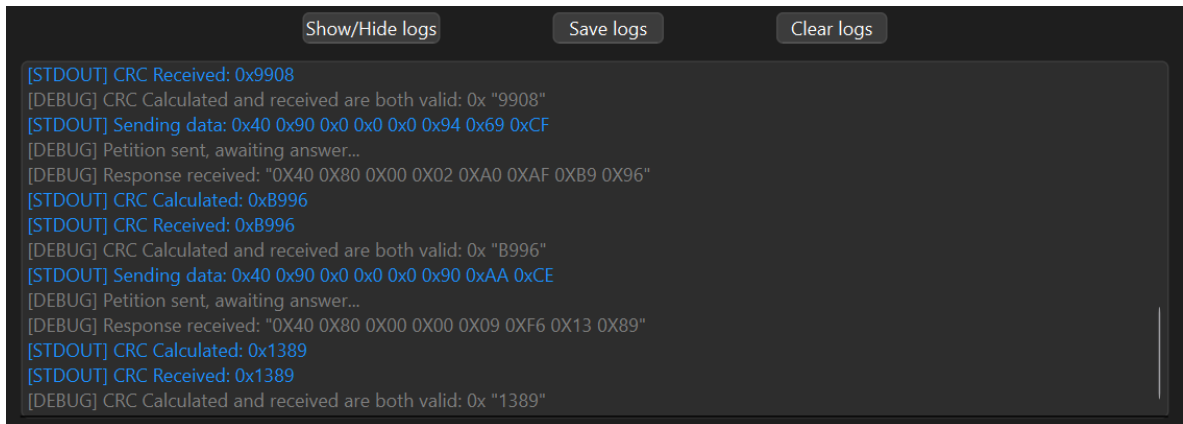Pages: 15 of 16

Figure 10: Log section

As shown in Figure 10, the text field displays detailed debug messages and hexadecimal commands and responses in different colours, offering a clear representation of the communication flow for troubleshooting purposes. Users can interact with buttons above the log display.

- Show/Hide logs: toggles the visibility of the logs to change the appearance of the interface.
- Save logs: exports the lines to an external file for documentation or further analysis.
- Clear logs: quickly deletes the current log data to maintain clarity during extended debugging sessions.

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