

# USER MANUAL

## **SL EV400 Demo Software**

Preliminary Specification

November 2001

Revision 1.0

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## SL EV400 Demo Software

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## SL EV400 Demo Software

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### 1 GENERAL INFORMATION

#### 1.1 Scope

This document describes the installation and functionality of the demo software for PHILIPS I•CODE Pegoda SL EV400. The software together with the read/write device shall give you the possibility to explore the features of the contactless reader IC SL RC400 in an easy way. It also demonstrates the behaviour and functionality of the Smart Labels I•CODE 1 and I•CODE SLI (ISO 15693).

#### 1.2 General Description

This software is based on the PC libraries for the SL EV400. It supports the communication with the read/write device via USB. To use the SL EV400 demo software it is necessary to install the included USB driver as described in the Application Note "SL EV400, Quick Introduction Sheet".

#### 1.3 System Requirements

To install the demo software for the SL EV400 the PC has to fulfil the following requirements:

##### Hardware:

- PC (Intel Pentium 166 MHz or comparable)
- minimum 32 MB RAM
- full USB support with one available USB Port
- 20 MB free hard disk space
- CD-ROM or DVD-ROM drive

##### Operating System:

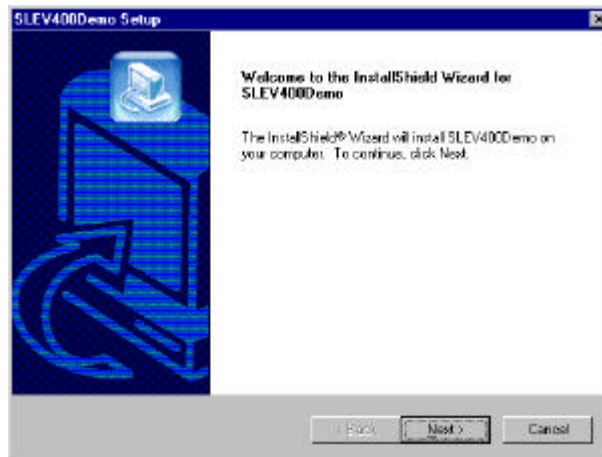
Supported Operating Systems are

- Windows 98
- Windows 2000

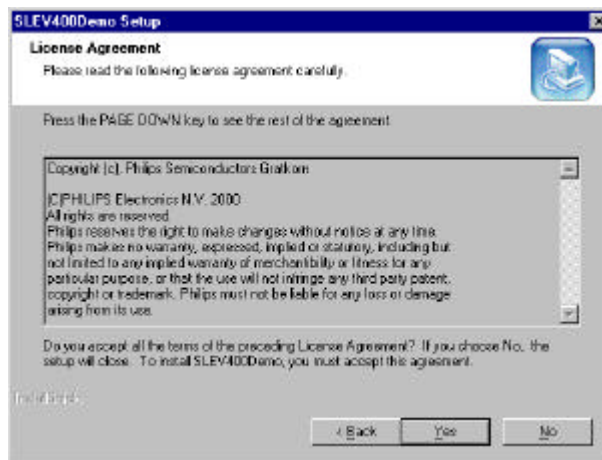
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### 2 INSTALLATION OF THE SOFTWARE

- Start the installation of the demo software with a double click on the file SLEV400Demo in the directory Application on your CD. After self extracting of the files the installation will stop with the following screen

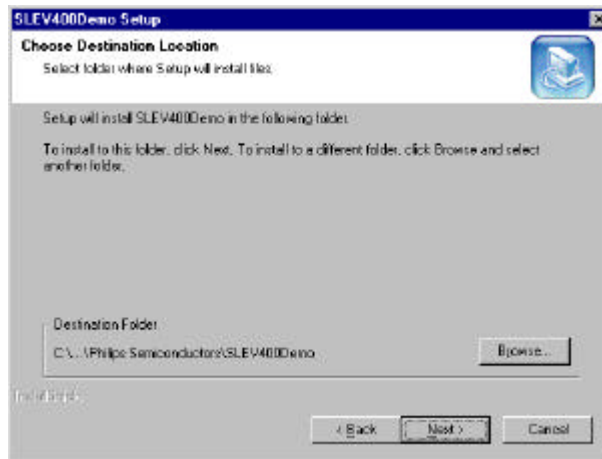


- Continue the installation with the **Next** button. The following screen informs you about the Licence Agreement. To go on with the installation you have to agree with the **Yes** button.

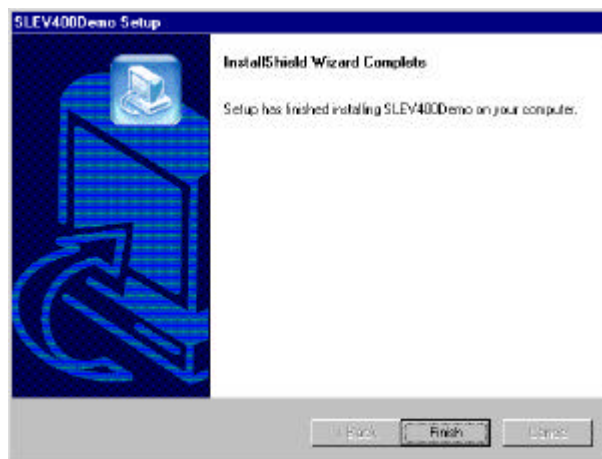


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- With the following screen you can choose the installation directory with the Browse button or accept the suggested directory. To continue press the **Next** button.



- After the installation of the program press the **Finish** button to complete.

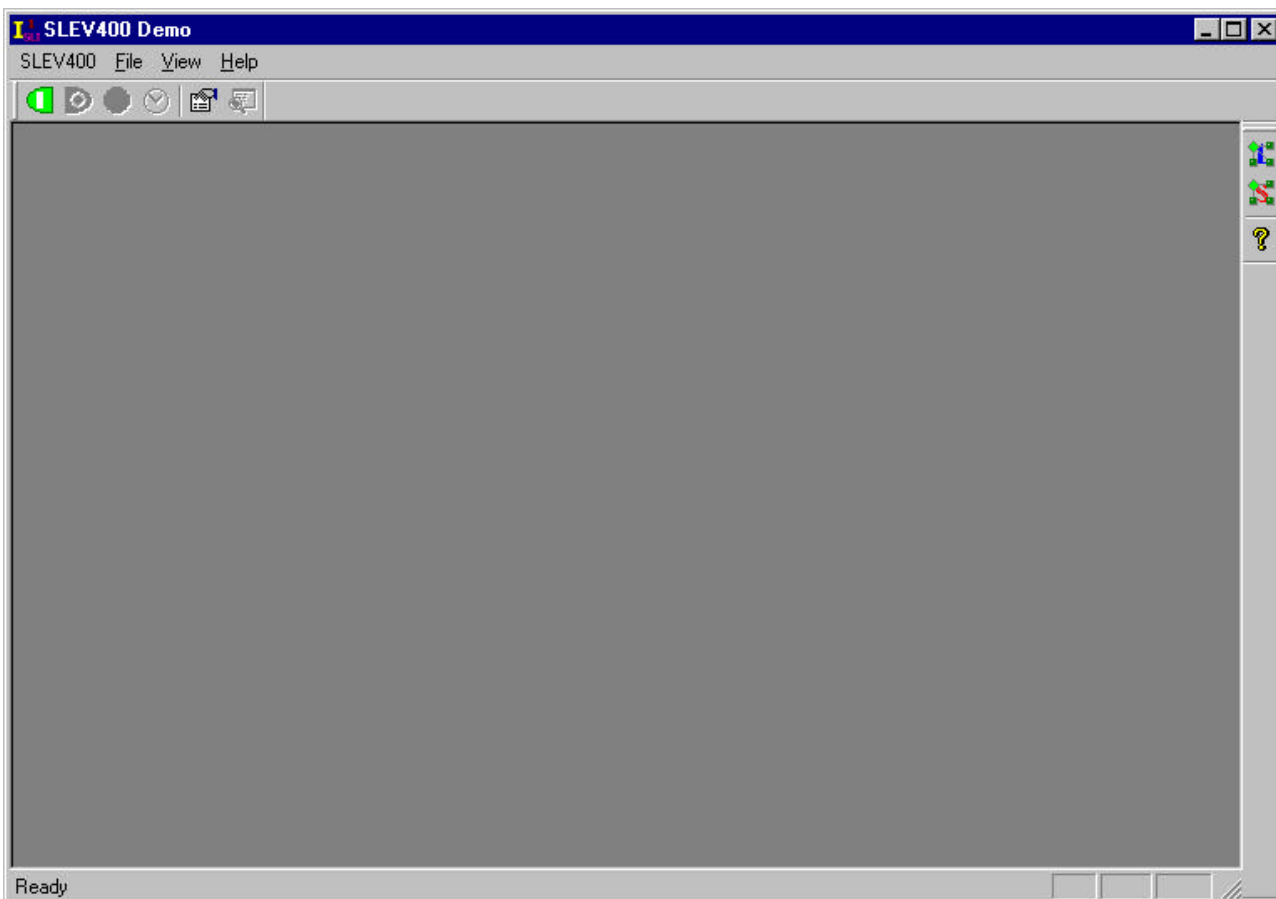


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### 3 FUNCTIONALITY

#### 3.1 Getting started

To start the program connect the I<sup>2</sup>CODE Pegoda read/write device to the Host PC via the USB port and execute the program by clicking the icon **SLEV400Demo** in the Start menu – Philips Semiconductors – SLEV400Demo. The following Start up screen will open.



##### 3.1.1 PORT SETTINGS



Within the menu SLEV400 – Settings or by clicking the **Edit Port Properties** button the used communication port can be set. Due to the fact the SLEV400 Evaluation Kit is just available with USB support the default setting is **USB**.

##### 3.1.2 OPEN SLEV400 INTERFACE



To set up the communication between the PC and the I<sup>2</sup>CODE Pegoda read/write device click to **Open** within the SLEV400 menu or press the **Open SLEV400** button. A message window will open with the information that the interface has been opened successful. Continue with the **OK** button and the program will start up with the **I<sup>2</sup>CODE 1** window (see chapter 3.4).

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### 3.2 Window Bar description



#### SLEEV400 Menu

Open	Opens the Interface to the SL EV400 as defined in the Port Settings	
Close	Closes the open Interface to the SL EV400	
Reset	SL EV400 executes a RF Reset (Switching off and on the RF field) with the defined Reset Time	
Show the Register Control UI	opens the Micore Register Control Window (see chapter 3.3)	
Settings	Port	To set the Interface Port (SL EV400 supports just the USB port)
	Reset Time	To enter the time for the RF Reset Time (10 – 200 ms)

#### File Menu

SLEEV400 I•CODE 1	Switch to the I•CODE 1 window
SLEEV400 I•CODE SLI	Switch to the I•CODE SLI window
Exit	Exit the program

#### View Menu

SIRc400 Basic Toolbar	Switching on and off the SIRc400 Basic Toolbar
Standard Toolbar	Switching on and off the Standard Toolbar (right side of the window)
	<ul style="list-style-type: none"> <li> Switch to I•CODE 1 window</li> <li> Switch to I•CODE SLI window</li> <li> Opens Info window about the SLEEV400Demo Program</li> </ul>
	Status Bar

#### Window Menu

Standard Windows Menu

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### Family Menu (only I•CODE SLI Window)

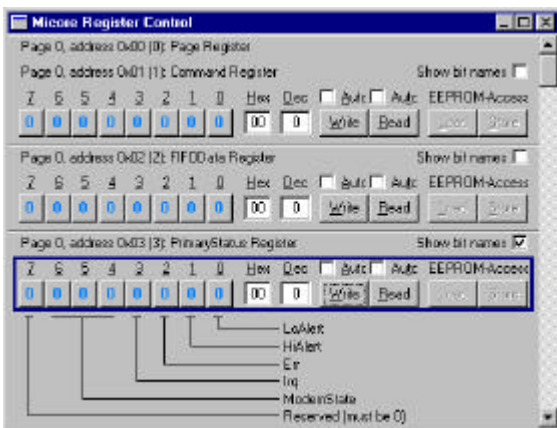
AFI	Write	Writes the AFI (Application Family Identifier) to the chosen I•CODE SLI labels
	Lock	Locks the AFI at the chosen I•CODE SLI labels
DSFID	Write	Writes the DSFID (Data Storage Format Identifier) to the chosen I•CODE SLI labels
	Lock	Locks the DSFID at the chosen I•CODE SLI labels

### Help Menu

About SLEV400 Demo	Opens info window about the SLEV400Demo program
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### 3.3 Micore Register Control Window

The Window can be opened with the button in the SIRc400 Basic Toolbar or with the entry in the SLEV400 Menu.



With that Register Control window you get access to the registers of the contactless reader IC SL RC400 that is used within the I•CODE Pegoda SL EV400.

The registers are described in detail in the Data Sheet "I•CODE SL RC400, Highly Integrated I•CODE 1 and ISO 15693 Reader IC".

**NOTE: Changing the content of the control registers is influencing the functionality of the I•CODE Pegoda SL EV400.**

By marking the check box "Show bit names" the names of the bits within the byte are displayed according to the Data Sheet.

The new values can be entered in hexadecimal or decimal form or by a click to the related bit button. Use the write button to write the value to the register and use the read button to read the actual value from the register. If you activate the Auto checkboxes for write and read this will be done automatically when you leave the input area.

It is also possible to store the actual value of the register into the EEPROM and to load it back from the EEPROM.





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### 3.4.1 READ AREA

Within the read area you find the general settings for the I<sup>2</sup>C CODE 1 commands and the output frame that shows the data content read from the labels.

#### General Settings


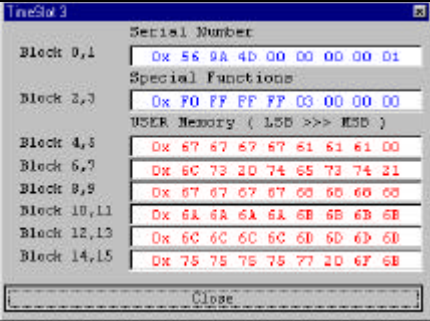
1'st Block	First block within the memory of the label that should be read out
No. of Blocks	Number of blocks that should be read out of the label memory starting with the 1'st Block
No. of Labels	Maximum number of labels that will be within the RF field simultaneously. If there will be too many labels within the RF field an error message will occur.
Enable Fast Mode	With this check box you can enable/disable the Fast Mode for all commands
Content as Hex	This check box allows you to change the display for the input and output areas between Hexadecimal and ASCII mode.  NOTE: The Serial Numbers (SNR) are always displayed in Hexadecimal form

#### Output Frame

The rows show the content of the different **timeslots** (Data Sheet "I<sup>2</sup>C CODE 1 Label ICs, Protocol Air Interface")

Choice	At some commands ( <i>Write, Halt</i> ) it is necessary to select labels. That can be done by clicking to the choice box. A blue cross indicates that the following command ( <i>Write, Halt</i> ) has no influence for that labels. A green check indicates that the following command ( <i>Write, Halt</i> ) will be executed for that labels.
SNR	That column show the Serial Numbers of the read labels. The Serial Numbers are just displayed at commands with disabled Unselected Read check box (see chapter 3.4.4.1)
Content	That column shows the data that had been read out of the memory of the labels.
State	That column informs you about the status within the different timeslots. Displayed states are OK or ERROR.
Select All	With this button all displayed labels were selected for the next <i>Write</i> or <i>Halt</i> command.
Deselect All	With this button all displayed labels were deselected for the next <i>Write</i> or <i>Halt</i> command.
Invert Selection	Changes selected labels to deselected labels or the other way round.

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<p>Folder button</p> 	<p>By clicking to that icon a window will open that shows the read data within the memory structure of the label. To close the window press the Close Button.</p> <p>NOTE: Not read data will be signed as question marks. To see all content of the memory use the <i>Read Mem Content</i> command (see chapter 3.4.4.2)</p>	
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### 3.4.2 WRITE AREA

Within that area the data that should be written to the selected labels (see Choice in chapter 3.4.1). It is possible to input data to more then one block. After pressing the Write button the program executes a *Write* command to the labels for each block where data were found.

The data for blocks 0 – 1 can not be changed (Serial Number) and with that software also not the content of the special function registers at block 2 and 3.

NOTE: All data within that area will be written to the labels. To be aware of writing wrong data to the labels it is recommended to clear all input boxes with the **Clear all Input** button before entering new data.

### 3.4.3 HISTORY AREA

Within that area all executed commands are displayed. Use the scroll bar to go up and down. Not all commands between the host PC and the I•CODE Pegoda were recorded but just the important ones.

### 3.4.4 COMMAND AREA

NOTE: All following I•CODE 1 commands are described in detail in the Data Sheet “I•CODE 1 Label ICs, Protocol Air Interface”.

#### 3.4.4.1 Unselected Read

That check box has an influence on the behaviour of the command buttons **Read, Read SNR, Read Mem Content, Halt** and **Write**.

You will find the information in the related chapters.

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### 3.4.4.2 Read, Read SNR (Serial Number), Read Mem Content

#### Parameters

	1'st Block	No. of Blocks	No. of Labels
Read	As adjusted	as adjusted	as adjusted
Read SNR	0	2	as adjusted
Read Mem Content	0	16 (all)	as adjusted

#### Command execution

Unselected Read	Description
ON	The software executes a Unselected Read Command and the data of the labels are shown in the content column in the row (timeslot) in which the different labels have sent the response. The SNR column stays empty. The labels will change the timeslots if the command will be repeated. The choice fields are disabled.  NOTE: Errors indicate collisions in the corresponding timeslots.
OFF	The software executes first a RF Reset if necessary. After that <i>Anticollision Select</i> commands will be repeated till all labels are selected within a timeslot. After that a <i>Read</i> command is executed. The SNR is displayed in the SNR column and the data of the read blocks are shown in the content column. The choice fields are activated and labels can be chosen for the commands Write and Halt.

### 3.4.4.3 Write

After the commands *Read*, *Read SNR* and *Read Mem Content* with disabled Unselected Read check box the Serial Numbers of the labels are displayed in the SNR column, the choice boxes and the Write button are active. Choose the labels to write by clicking to the corresponding choice box and insert the data into the related blocks in the write area. By clicking on the Write button the read/write device executes one *Write* command for each block where data are contained in the write area and writes the content to the related block of the marked labels.

Execute a *Read* command after the *Write* procedure to see the changed memory content (choose the right 1'st Block and No. of Blocks)

NOTE: If you choose a label to write to do not move the label out and then into the RF field. Otherwise the label is not in the selected mode and you have to start again with a *Read* command to be able to write to it.

### 3.4.4.4 Halt

After the commands *Read*, *Read SNR* and *Read Mem Content* with disabled Unselected Read check box the Serial Numbers of the labels are displayed in the SNR column, the choice boxes and the Halt button are active. Choose the labels to set to the halt mode by clicking to the corresponding choice button. By clicking on the Halt button the read/write device executes a *Halt* command for the chosen labels.

NOTE: If you choose a label to set to the halt mode do not move the label out and then into the RF field. Otherwise the label is not in the selected mode and you have to start again with a *Read* command.

NOTE: Due to the fact that before any following command a RF Reset is executed the effect of that Halt command can not be verified.

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### 3.4.4.5 *Reset Quiet bit*

The I<sup>2</sup>C CODE Pegoda read/write device executes a *Reset Quiet Bit* command and the related two bits in byte 0 of block 3 will be reset to zero.

### 3.4.4.6 *Config EAS*

By clicking the Config EAS button the Serial Numbers of the labels are displayed in the SNR column, the content of block 3 is shown in the content column. The Choice buttons as well as the Config EAS Set and Clear buttons are active. Choose the labels at which the EAS status should be changed by using the choice boxes.

With the Set button the related two bits in block 3 will be set to 1 (EAS enabled), with the Clear button the two bits will be set to zero (EAS disabled).

NOTE: If you choose a label to change the EAS bits do not move the label out and then into the RF field. Otherwise the label is not in the selected mode and you have to start again with a *Config EAS* command.

### 3.4.4.7 *Scan EAS*

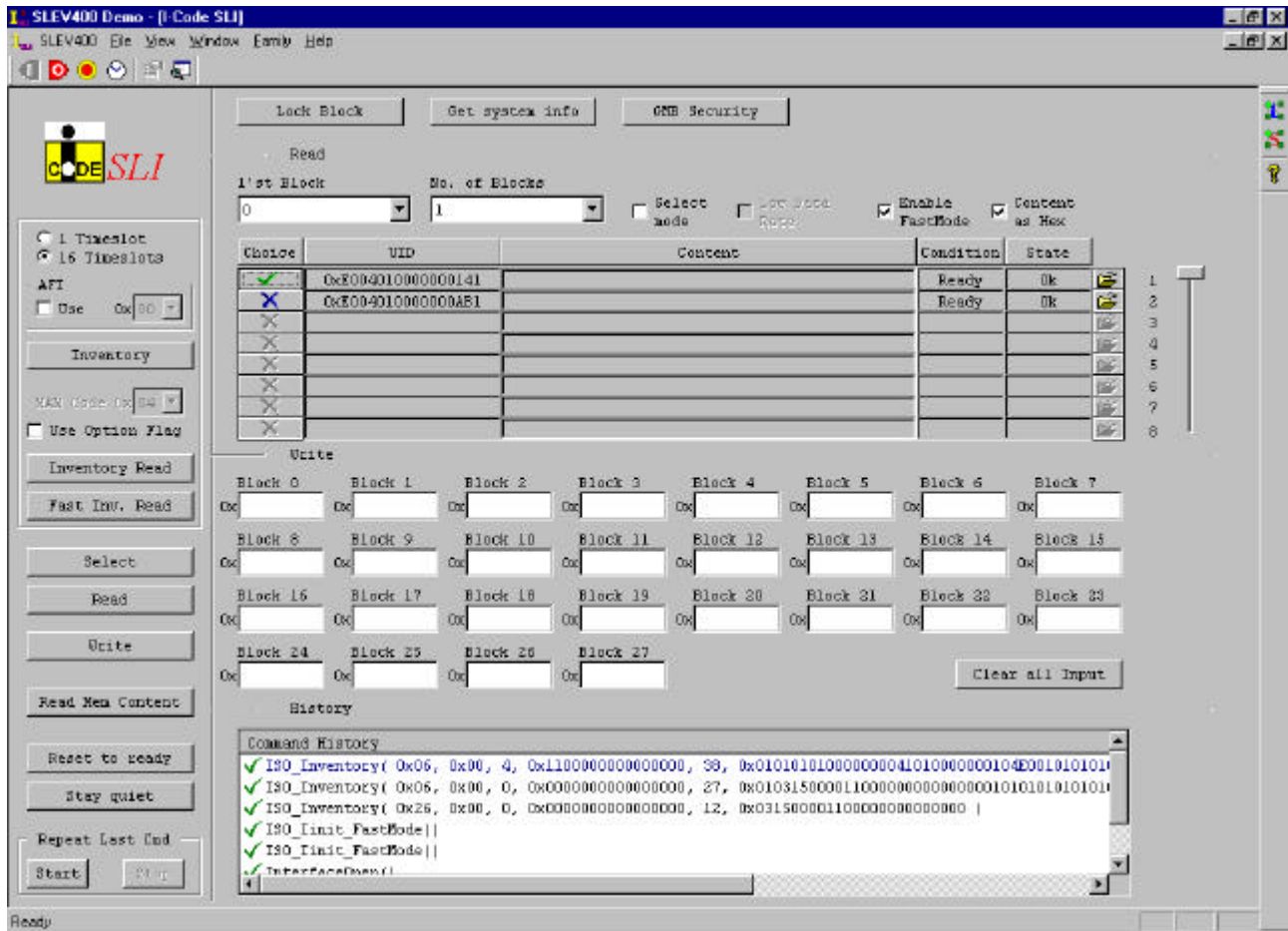
With the Scan EAS button an *EAS* command is executed by the I<sup>2</sup>C CODE Pegoda read/write device. If there is no label with enabled EAS in the RF field the indication field will turn to green for a short time. If there is at least one label with enabled EAS in the RF field the indication field will turn to red (EAS alarm).

### 3.4.4.8 *Repeat Last Cmd*

With the Start button the last command will be repeated till the Stop button is activated.

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### 3.5 I•CODE SLI Window



The five areas of the window will be described in the following chapters.

NOTE: All parameters and commands of the I•CODE SLI are described in the Data Sheet "I•CODE SLI; Standard Label IC; SL2 ICS20 Functional Specification".

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### 3.5.1 READ AREA


Within the read area you find the general settings for the I<sup>2</sup>C CODE SLI commands and the output frame that shows the data content read from the labels.

#### General Settings

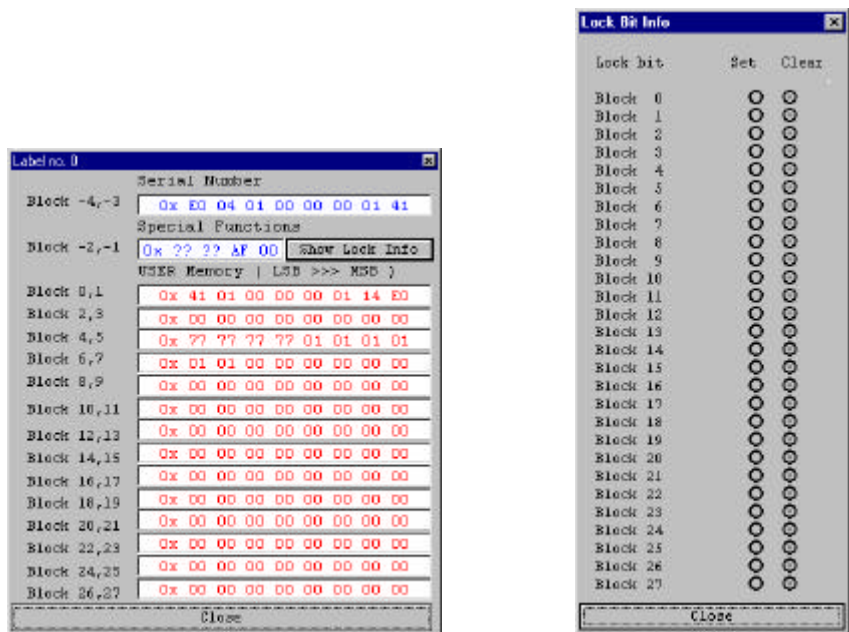
1'st Block	First block within the memory of the label that should be read out
No. of Blocks	Number of blocks that should be read out of the label memory starting with the 1'st Block
Select Mode	If this box is marked the selected flag is set at all commands (except the <i>Inventory</i> command)
Low Data Rate	not active
Enable Fast Mode	With this check box you can enable/disable the Fast Mode for all commands
Content as Hex	This check box allows you to change the display for the input and output areas between Hexadecimal and ASCII mode.  NOTE: The UIDs (Unique Identifiers) are always displayed in Hexadecimal form

#### Output Frame

The rows show the content of the different labels. The maximum number of labels that can be displayed is 256. Use the scroll bar to go up and down.

Choice	Use this box to select labels for the following commands. A blue cross indicates that the following command has no influence for that labels. A green check indicates that the following command will be executed for that labels.
UID	That column show the UID (Unique Identifier) of the read labels.
Content	That column shows the data that had been read out of the memory of the labels.
Condition	Shows the condition of the label (READY or SELECTED or QUIET)
State	Information about errors (OK or ERROR)
Folder button 	By clicking to that icon a window will open that shows the read data within the memory structure of the label (see picture below). To close the window press the Close Button.  NOTE: Not read data will be signed as question marks. To see all content of the memory use the <i>Read Mem Content</i> command (see chapter 3.5.5.7)  If you press the Show Lock Info the Lock Bit Info window will be opened and informs you about the security status (Block write protection) of the blocks of the user memory (see picture below).

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### 3.5.2 WRITE AREA

Within that area the data that should be written to the user memory of the selected labels can be filled in (see Choice in chapter 3.5.1). It is possible to input data to more than one block. After pressing the Write button the program executes a *Write* command to the labels for each block where data were found.

NOTE: All data within that area will be written to the labels. To be aware of writing wrong data to the labels it is recommended to clear the all input boxes with the **Clear all Input** button before entering new data.

### 3.5.3 HISTORY AREA

Within that area all executed commands and additional information are displayed. Use the scroll bar to go up and down. Not all commands between the host PC and the I•CODE Pegoda were recorded but just the important ones.

### 3.5.4 SECURITY AREA

Within this area you have the possibility to execute the following commands:

- **Lock** the adjusted block at the chosen labels  
NOTE: Locking a block is irreversible
- **Get the System Information** of the chosen labels
- **GMB (Get Multiple Block) Security Status** of the chosen labels

For these three commands the general setting of **1'st Block** and **No. of Blocks** defines which blocks are effected.



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### 3.5.5 COMMAND AREA

All parameters and commands of the I•CODE SLI are described in the Data Sheet “I•CODE SLI; Standard Label IC; SL2 ICS20 Functional Specification”.

#### 3.5.5.1 *Inventory*

The *Inventory* command is executed till all UIDs of the labels are collected. The UIDs are displayed in the output area.

Used parameters:

- Timeslots as marked in the related check boxes.
- AFI (Application Family Identifier) is used if the check box is marked.

One label can be chosen with the choice box (see chapter 3.5.1)

#### 3.5.5.2 *Inventory Read*

The *Inventory Read* command is executed till all data are collected from the labels. The content is displayed in the output area.

Used parameters:

- Timeslots as marked in the related check boxes.
- AFI (Application Family Identifier) is used if the check box is marked.
- Option flag as selected

#### 3.5.5.3 *Fast Inventory Read*

The *Fast Inventory Read* command is executed till all data are collected from the labels. The content is displayed in the output area.

Used parameters:

- Timeslots as marked in the related check boxes.
- AFI (Application Family Identifier) is used if the check box is marked.
- Option flag as selected

#### 3.5.5.4 *Select*

The chosen label (see Choice in chapter 3.5.1) is set to the Selected State (just one label).

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### 3.5.5.5 Read

The I<sup>2</sup>C CODE Pegoda read/write device executes a *Read* with the following parameters:

Used general parameters:

- 1'st Block
- No. of Blocks.

Variable Parameter:

- If no label is chosen at the *Inventory* command and Selected Mode is not activated the Addressed and Selected flags are not set and all labels will respond that are not in the Quiet Mode. If there is more then one label in the RF field a collision will be detected.
- Addressed flag is set if a label is chosen (see Inventory command in chapter 3.5.5.1) and just that label will be read.
- Selected flag is set if Selected Mode is marked and just the (only one) label in the Selected Mode will respond.

### 3.5.5.6 Write

The I<sup>2</sup>C CODE Pegoda read/write device repeats the *Write Block* command according to the amount of blocks which are filled with data within the Write area.

Used Parameter:

- If no label is chosen at the *Inventory* command and Selected Mode is not activated the Addressed and Selected flags are not set and the data will be written to all labels that are not in the Quiet Mode.
- Addressed flag is set if a label is chosen (see Inventory command in chapter 3.5.5.1) and the data will be written just to that label.
- Selected flag is set if Selected Mode is marked and just the (only one) label in the Selected Mode will be written.

### 3.5.5.7 Read Mem Content

The complete user memory of one label will be read out under the same conditions as at the *Read* command.

### 3.5.5.8 Reset to ready

A *Reset To Ready* command will be executed and a label in the Selected Mode will be set to the Ready Mode.

### 3.5.5.9 Stay quiet

On label can be chosen after the *Inventory* command to be set to the Quiet Mode.

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### *3.5.5.10 Repeat last Cmd*

With the Start button the last command will be repeated till the Stop button is activated.

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**4 REVISION HISTORY**

REVISION	DATE	CPCN	PAGE	DESCRIPTION
1.0	November	-		first published version

*Table 4-1: Document Revision History*

## Definitions

<b>Data sheet status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics section of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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