

# **USER GUIDE**

## **Integrated IR Evaluation Software**

(Applies to Version 3.0.0.0 & above)



Version 3.0 ISSUE 1





Copyright Page Please read carefully before you proceed.

Copyright © 2012-2017 by SGX Europe sp. z o.o. All rights reserved. Trademarks and registered trademarks are the property of their respective owners.

No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the publisher, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law. For permission requests, write to the publisher, addressed "Attention: Permissions Coordinator" at the address below.

SGX Europe sp. z o.o. 103 Ligocka street, Katowice, 40-568 Poland <u>http://www.sgxsensortech.com</u>

Ordering Information:

For more information and technical support for the product please contact SGX Europe sp. z o.o. in Poland using the following lines: Tel. +48 (0)32 438 4780

Author : Filip Ryło Created/Printed in the Katowice Poland



# **Table of Contents**

Table of Contents       3         DOCUMENT REVISION RECORD       4
DOCUMENT ERRATA RECORD 4
Summary of Contents
Included in the Box5
1 Integrated IR Evaluation Software
1.1 EVALUATION SOFTWARE INSTALLATION GUIDE
1.2 USER INTERFACE of the EVALUATION SOFTWARE
Menu Bar11
1.2.1 COMMUNICATIONS TAB
Configuration Unit (Connecting a device)12
1.2.2 READINGS & DATA LOGGING TAB
Readings in Table View14
Data Logging the Readings & Graph View15
1.2.3 CALIBRATION in "Readings & Data Logging" 16
ZERO CALIBRATION
SPAN CALIBRATION
Offset Calculate
1.2.4 ENGINEERING TAB18
Appendix A20
Table of Coefficients
Index



#### DOCUMENT REVISION RECORD

Version	Issue Date	Change
0.0	10/06/2014	Original Version Released. DRAFT Version.
1.0	25/07/2014	DRAFT Beta released with the software for customers to evaluate.
2.0	11/11/2015	Officially Issue User Guide for the Evaluation Software of INIR and SMIR. (Applies to Version 3.0.0.0 & above)
3.1	11/08/2017	Officially Issue User Guide for the Evaluation Software of INIR. (Applies to Version 30.0 & above)

#### DOCUMENT ERRATA RECORD

Version	Issue Date	ERRATA

#### Summary of Contents

In the first chapter we can find a tutorial including the guidelines for using the Evaluation Software, included within the Evaluation Kit, is being presented. Many examples and screenshots are embedded into the document for further understanding of the software's tools as well as the installation process.

Please find attached also in the end an index table for quick reference to the important part of this document.



#### Included in the Box

The Evaluation Kits were designed for easy testing and experimental measurements as well as for production use. We can see below in the Figure a screenshot of the Evaluation Kit and what is included inside the package. Obviously depending on the application and the ordering code the Gas Sensor type or other components may vary.



#### Included in the Box :

- 1 x Configuration Unit with USB TTL Cable
- 1 x CD/DVD, containing the Smart IR Evaluation Software
  - 1 x Electronic Version of the Integrated IR Datasheet
  - 1 x Electronic Version of any Integrated IR Application Notes
  - 1 x Electronic Version of this Integrated & Smart IR Evaluation Software User Guide



# **1** | Integrated IR Evaluation Software

#### **1.1 EVALUATION SOFTWARE INSTALLATION GUIDE**

In the Table 1.1 we can find the minimum and recommended system requirements for the computer on which the Evaluation Software will be installed. Windows is the only Operating System (OS) that the Evaluation Software Currently is working.

	Minimum Requirements	Recommended Requirements
Processor	Pentium III/Celeron 866 MHz	Pentium core 2 duo or better
RAM	1 Gb	3 Gb
Screen Resolution	1024 x 768 pixels minimum	1280 x 768 Pixels minimum
Operating System	Windows XP/7/Vista (32- and 64-bit) Windows Server 2003 R2 (32-bit) Windows Server 2008 R2 (64-bit)	Windows 7/Vista (32- and 64-bit)
Disk Space	1 Gb	3 Gb

#### Table 1.1 - Evaluation Software Minimum System Requirements

In order to use the Evaluation Software the TTL USB cable drivers should be installed in your PC. If you are using other operating system than Windows 7 or 8 with internet connection that can automatically find the drivers on the internet, please visit <u>http://www.ftdichip.com/Products/Cables/USBTTLSerial.htm</u>, FTDI web site to download and install the appropriate driver for your operating system.

#### **IMPORTANT!**

The operating system that the Evaluation Software is targeting is Windows; there is no Evaluation solution for other operating systems at the moment.



In order to install the Evaluation Software please follow the steps below:

1. Insert the CD/DVD into the drive in the targeted computer.

2. If the autorun is not working open the CD/DVD Drive, found inside the **Computer** place that contains the Installation CD. See the Figure below:



Figure 1.1 – Open the CD/DVD in your Computer places

3. Inside the CD/DVD find **setup.exe**, double click in order to start the installation.

- 4. See below the installation screenshots for more details on the installation process:
- (a) Choose the installation folder, default is recommended

🐙 Smart IR Evaluation Software		🐺 Smart IR Evaluation
Smart IR Evaluation Software	SGX	Destination Directory Select the primary installation directory.
It is strongly recommended that you exit all programs before running this installer. Applications that run in the background, such as virus-scanning utilities, might cause the installer to take longer than average to complete.	SENSORTECH	All software will be installed in the following locations. To install software into a different locations, click the Browse button and select another directory.
Please wait while the installer initializes.		Directory for Smart IR Evaluation C\Program Files (x86)/SGX Sensortech (Smart IR)\ Browse
Paase war while the installer initializes.		Directory for National Instruments products C1.Program Files (x36)/National Instruments\ Browse
	Cancel	K Back Next>> Cancel

#### Figure 1.2 – Choosing the installation folder for Evaluation Software

Whilst SGX Europehas taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017



(b) Accept the License Agreement(s), press the next button.

License Agreement You must accept the licenses displayed below to proceed.	
SOFTWARE DISCLAIMER	
© 2012 SGX Sensortech Ltd. All Rights Reserved.	
This software is supplied by SGX Sensortech Ltd o understanding that it is to be treated as confide may not be copied, used or disclosed to others in for any purpose except as authorised in writing b Ltd. Permitted use is customer's personal use of	ntial and that it whole or in part y SGX Sensortech
conjunction with SGX Sensortech Ltd gas sensors o networked FCs. All users accept that SGX Sensorte way liable for any consequences incurred as a res failure of this software and that this software i	ch Ltd is in no ult of use or
<ul> <li>I accept the Licer</li> </ul>	nse Agreement.
🗇 I do not accept th	e License Agreement.

Figure 1.3 – Accept the License Agreement

(b) Start Installation, press the next button.

Start Installation Review the following sum	mary before continuing	9.		
Adding or Changing • Smart IR Evaluation Files • NI-VISA 5.2 Run Time Support				
Click the Next button to begin installat	ion. Click the Back bu	utton to change the	installation settings.	



(c) Wait for the Installation to finish, only takes a couple of minutes.

The installation will only take a few minutes depending on the processing power of the computer being used. Along with the appropriate files that the Evaluation Kit needs to install there are some Run Time machines for the NI Labview software. These files are required for the application to run independently inside any computer without the need for the full NI Labview Software to be installed. Please see the Figure 1.5 including a screenshot taken during and after the installation has finished.

Whilst SGX Europe has taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017



nart IR Evaluation			
Overall Progress: 30% Complete			
Updating component registration			
	< < Back	Next >>	Cancel
mart IR Evaluation	(K Back)	Next>>	
mart IR Evaluation	<< Back	Next >>	
mart IR Evaluation	<< Back	Next >>	
	<< Back	Next >>	
	<< Back	Next>>	
Installation Complete	<< Back	Next>>	Cancel
Installation Complete	<< Back	Next>>	
Installation Complete	KK Back	Next>>	
Installation Complete	<< Back	Next>>	
Installation Complete	<< Back	Next>>	
Installation Complete	<< Back	Next>>	
Installation Complete	<< Back	Next>>	
Installation Complete	<< Back	Next>>	
Installation Complete	<< Back	Next>>	
Installation Complete	K	Next>>	

Figure 1.5 – Waiting for the installation to finish

(c) Left Click on SGX Sensortech (Smart IR) -> Run as Administrator, from the Start Menu -> All Programs -> SGX Sensortech (Smart IR) or desktop shortcut (see below).

A XPS Viewer		Open			
Accessories	9	Run as administrator			
<ul> <li>Avira</li> <li>CADSTAR Design View</li> <li>CADSTAR Express 13.0</li> <li>Elaborate Bytes</li> </ul>		Troubleshoot compatibility			
	Open file location Scan with Microsoft Security Essentials				
📙 Google Apps Migratior		Pin to Taskbar			
Google Apps Sync Google Chrome		Pin to Start Menu			
IcoFX 2		Restore previous versions			
Maintenance Microsoft Office		Send to +			
J Microsoft Silverlight	Cut				
Microsoft SQL Server 2	Сору				
Revo Uninstaller		Delete			
SEGGER	🚱 Rename				
🔋 SGX Sensortech (Smart	Properties				
SGX Sensortech (Sn.,					
J Startup					
J TOSHIBA		*			
1 Back					
Search programs and file.	s	Shut down			
1	_	is taken			



Whilst SGX Europehas taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017



#### **1.2 USER INTERFACE of the EVALUATION SOFTWARE**

The Graphical User Interface (GUI) is simple and has been designed to increase productivity and solve engineering problems quickly.

From the GUI it is possible to change the type of the values like the Temperature, in Celsius or Fahrenheit. There is the possibility to connect more than one Integrated IR Sensor and to read and change the settings to all of them at once. Moreover changing the coefficients can be done simultaneously by using a text file that contains the saved coefficients.

The readings can also be logged and saved into a specific file. For the beta version of the Software there is no option for logging the data coming from all the connected devices at present time, although there is a Table View where the data coming from all the connected Integrated IR Devices can be observed.

After running the application from the start menu or from the shortcut on our desktop we must be able to see the following window in the Figure 1.7 below. The window can be resized and fit most screen resolutions but a minimum of 1280 x 768 Pixels is recommended.



Figure 1.7 – Screenshot from Evaluation Software



Menu Bar

On the top left hand side we can find a menu bar File|Data|Hardware|Help. In the Table 1.2 below we can find the functionality of each menu item or submenu items that exist on that bar.

Menu Bar	Submenu1	Submenu2	Description		
File →	Show Scroll Bars		Show the scroll bars in the		
			window		
	Print Window(Ctrl+P)		Print dialog for the current		
			window		
	Exit (Ctrl+Q)		Exit the evaluation software		
Data→	Temperature Units	Celsius	Shows the Temperature in		
	$\rightarrow$		Degrees Celsius (°C)		
		Fahrenheit	Shows the Temperature in		
			Degrees Fahrenheit (°F)		
	Concentration Units $\rightarrow$	Percent	Concentration		
			in %vol of gas		
		PPM	Concentration in		
			ppm = 10000* %vol		
	CSV File Delimiter	Comma(,)	The saved coefficient file will use		
			comma (,) to separate values.		
		Semicolon(;)	The saved coefficient file will use		
			semicilon (;) to separate values.		
Hardware→	Update Firmware		Perform update of the firmware		
			to the connected device.		
			(Currently Disabled for the Beta		
			Version)		
Help→	Software Disclaimer		Displays a software disclaimer		
			statement.		
	About		Displays the splash screen, with		
			details about the software.		

Table 1.2 – Menu Bar Items on the Evaluation Software

Whilst SGX Europehas taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017



#### 1.2.1 COMMUNICATIONS TAB

#### **Configuration Unit (Connecting a device)**

In order to connect with a device we must first correctly connect the Integrated IR Configuration Unit with the computer running Windows and installed the drivers for the TTL USB cable. Make sure the Integrated IR is plugged onto the Board too, before powering up the Configuration Unit.

First choose the COM port for the program to search in order to find the device, then press the "Search for devices" button on the Communications Tab to search for new devices connected to the PC. If we don't know the exact port, we could use a range from 1 to 6 for example but do not overdo it by using a range from 1 to 25 because the Evaluation Software will search all the COMs for a device even if there is none connected which will take some time. By pressing the "Search for devices" button the process will be initialized and all the devices found will be displayed in the "Found Devices" field on the right hand side. We will be able to also see the COM Port that the device is connected the Serial Number of the Device and the Firmware version installed in the Integrated IR.

Below we can see a screenshot of the Communications Tab and the process of searching of a new Integrated IR device.

SGX Sensortech Ltd Smart / Integrated IR Gas Sensor Evalua	ation Kit (Version 3.0.0.0)			
File Data Hardware Help				
				🦻 🗖
According to Accor				- Landaud J
	Smart IR	& Integrated IR (	Gas Sensors	Software Version 3.0.0.0
SGX		valuation Softw		Data OK
SENSORTECH		valuation Joitw	are	
Communications Readings & Data Log	gging Engineering			No Faults
Communication				
Communication				
Search Search	Sensor Type	INIR-ME		
10 6 Q for	Gas Type	Methane 💽	1	
Unwiden Young 1 Devices				
COM Port S/N Firmware Ver.	Conc. Range (%v/v)	100.00		
COM6 00000001 1v24	Span Cal. Gas (%v/v) Offset Cal. Gas (%v/v)	20.00		
COM Port SN Tirmwidee Ver.	Unser call Gas (wviv)	2.00		
	"a" Coefficients	0.014200 0.014500 0.016500		
COM Port S.N. Firmware Ver.		0.788000 0.578000 0.481000		
Hote: All devices formation the changed to configuration	"Betaneg" Coefficients	-4.450 -2.080 -1.650	Serial Number 000000001	
Matth rhoung sourch	"Betapos" Coefficients	-2.000 -2.120 -1.680	Time Delay (ms) 25	
	"Alphaneg" Coefficient	0.000500	Firmware Version 1v24	
Select-Device(a)	"Alphapos" Coefficient	0.000619	Active Calibrated Value 0.025928	
COM6 00000001 - ^	Averaging	12	Reference Calibrated 0.027115	
0000001	Baud Rate	38400	Zero 0.956223	
	Current Conc'n Range	Low Range	Span 4.000000	
	Calibration Time (hhmmss)	134630	Offset 0.000000	
All None	Calibration Date (DDMMYY)	30815	cal Temp (K) 300.8	
An None				
Read Serial Write Serial	Read	Write	oad Save	
Numbers 🥀 Numbers to	From Single	Configuration Confi	guration Configuration	
from Device Device	Device	to Device(s) fro	m File to File	
Tel: +44 (0)1245-809110 Fax: +44(0) 1245-809112			@ 2012-20	15 SGX Sensortech Ltd. All Rights Reserved.
101. · ++ (0)1245-005110 Tax. · ++(0) 1245-009112			@ 2012-20	to soft softon Ltu. An rights Reserved.

Figure 1.8 – Evaluation Software, "Communications Tab"

Whilst SGX Europe has taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017



In the same Tab we can configure the devices that we have found under the "Settings & Coefficients" section. By default the connected devices should be initially in Configuration Mode, where we could be able to read and write the coefficients of each device. We can Read the coefficients from a Single Device with the ability to "Write" new coefficients to all the devices that are connected to the computer.

The configuration settings/coefficients can be saved to a text file to be used in the future and in the same way we can load settings/coefficients from a single text file. Therefore by having different text files for different sensors we can load and write the configuration settings/coefficients effectively in all the devices that are connected to the computer. In addition to the above there are two ranges of coefficients that we can load, save, write or read, usually depending on the Concentration Ranges. For example we can have or create a text file that will include the coefficients for the low range of 5% Methane and the high range of 100% Methane. So each time we can choose a different range of coefficient depending on the application by clicking the Range 1 or Range 2 buttons at the bottom of the coefficients.

#### 1.2.2 READINGS & DATA LOGGING TAB

In order to start evaluating the sensors we must set the device into "Engineering Mode" by setting the tick box, same think can happen by setting the device into Normal Mode but we won't be able to see the Active and Reference counts. See below in Figure 1.9 the screenshot of the software solution in the Readings & Data Logging Tab.



Figure 1.9 – Evaluation Software, "Readings & Data Logging Tab"

Whilst SGX Europehas taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017 Page **14** of **22** 



The Evaluation Software gives the ability to log the data coming from the Integrated IR Sensor and to save it to a .csv type file.

#### **Readings in Table View**



Figure 1.10 – "Start" Button to be clicked in Engineering Mode, Table View



#### Data Logging the Readings & Graph View

In order for us to be able to monitor the Sensor's Readings we have to enable the data logging by pressing the "Start Logging" button. Doing so a new folder dialog will appear asking to choose the folder that the .csv file will be saved, see Figure 1.11.

SGX Sensortech Ltd Smart / Integrated IR Gas Sensor Evaluation Kit ( File Data Hardware Help	Version 3.0.0.0)		
SENSORTECH Communications Readings & Data Logging	Smart IR & Integrate Evaluation S		Software Version 3.0.0.0 Data OK No Faults
	Choose or Enter Path of File	- 4 Search Desktop	
Kommel Mode	Organize   New folder		Ratio Temp (°C) -
Craph/Table Options	7	Size Item type Date modified	Graph: Concentration
Condestationed (Parcella, 2 Lipidate State Coop) 2 Anto State Coop) 2 1 1	<ul> <li>Mecent Places</li> <li>ibiraries</li> <li>Jusic</li> <li>■ Pictures</li> </ul>	File folder         05/11/2015 08:42           3 KB         Shortcut         13/01/2015 13:32           3 KB         Shortcut         13/01/2015 13:32	
AMD. Standing X, 2005.         27           Inc. In a contraction of the contraction of	File name: Test Save as type: Custom Pattern (.csv)		
Start Log	Hide Folders	OK Cancel	75 80 85 90 95 10
Send Custom Command	(Sansor Readings)		Stop gging Data
Tel: +44 (0)1245-809110 Fax: +44(0) 1245-809112		© 2012-2015	SGX Sensortech Ltd. All Rights Reserved.

Figure 1.11 – Enabling Data Logging Function

By enabling the data logging we are now able to see the Graphical representation of the data coming via UART against time in seconds while the readings are being saved second by second to the file that we have identified before. When enough logged data has been collected press the "Stop Logging" button. The process can be started again in the same way and the data saved to the same file by overwriting it or to a different file. The .csv files generated above can be opened by using Microsoft Excel or any application that can handle spreadsheets and therefore we can produce Graphs from the data and even plot different sets of measurements comparing the results from different settings.

In the "Readings & Data Logging Tab" it is possible to have at the same time a Table View and a Graph View of the elements that we are actually monitoring. By changing the "Graph View" roll down menu we can choose which Graph we want to observe but it is possible to see only one graph at a time and only from one integrated IR. In case multiple devices are connected to the Evaluation Software solution then only the first one will be monitored in the Graph View although all of them will be visible to the Table View. In the Figure 1.11 we can see the Graph: Concentration while the Data logging is enabled in the "Readings & Data Logging" Tab.





Figure 1.12 - Readings Send via the UART in Engineering Mode, Graph: Temperature

#### 1.2.3 CALIBRATION in "Readings & Data Logging"

In the same tab Readings & Data Logging we can perform the Zero Calibration Routine, the Span Calibration Routine and the Offset Calculation on the Device(s) we have selected on a left hand side (see Figure 1.12.)



Figure 1.13 – Evaluation Software, Calibration Routine

Whilst SGX Europe has taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017



#### ZERO CALIBRATION

We can perform the "Zero" calibration routine by sending the correct command while the Integrated IR is in NORMAL or ENGINEERING mode. Please make sure that the value we have set in the configuration Tab matches the percentage of concentration of the gas used. Performing the Zero calibration with different percentage of concentration as default value comparing with the Gas Sensor type will result unstable readings and may cause false alarms as well.

#### SPAN CALIBRATION

We can perform the "Span" calibration routine by sending the correct command while the Integrated IR is in NORMAL or ENGINEERING mode, see Application Note. Please make sure that the value we have set in the configuration Tab matches the percentage of concentration of the gas used. Performing the Span calibration with different percentage of concentration as default value comparing with the Gas Sensor type will result unstable readings and may cause false alarms as well.

#### **IMPORTANT!**

It is advisable to do the Span and Zero Calibration after we have left the sensor for 35-40 minutes to warm up.

It is important to perform both zero and span calibration routines in the same controlled environmental conditions of ambient temperature, humidity and pressure without strengthening the components above the maximum ratings presented into the technical specifications table.

Last but not least will be also advisable to perform the zero calibration under nitrogen gas first and then the span calibration exposing the sensor into the target gas that you want to detect. In both cases the Active and Reference counts representing the Peak-to-Peak voltage of the signals accordingly along with the temperature the moment of the calibration, are stored inside the Flash/EE memory of the Integrated IR Sensor and can be read back by performing the appropriate command.

#### **IMPORTANT!**

Beware that selecting different concentration ranges via the Evaluation Software or with the low level microcontroller implementation, the steps of the calibration routine should be performed again. By changing the concentration ranges we only changing the coefficients for that range and not the stored data of the calibration; we have to perform a recalibration process anyway.

Whilst SGX Europehas taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017



#### **Offset Calculate**

We can perform the "Offset" calculation by sending the appropriate command while the Integrated IR is in NORMAL or ENGINEERING mode. Please make sure that the value we have set in the configuration Tab matches the percentage of concentration of the Offset Gas used. Performing the Offset calibration with different percentage of concentration as default value comparing with the Gas Sensor type will result unstable readings and may cause false alarms as well.

#### 1.2.4 ENGINEERING TAB

In the Engineering Tab it is possible to observe the incoming string of data via the UART each second. In the specific Tab we can also find information about all the settings that are now valid on the Evaluation Application. Some of the information present at any given time is the Concentration, Temperature and Text Separation settings.

There are LEDs indicating the different conditions in real time of the received data, see in the Table 1.4 in the next page.

LED Indicator	Description - Meaning
Gettings Readings?	If the LED is on then the Readings are coming via UART
Logging Data?	If the LED is on then the Readings are being logging in real-time
Data Ready?	Every time software receives data, LED is on, almost every 1 second
Not Running?	If data will not be updated in real time and the LED will be on.
Clear Data?	If we clear the data in the Graphs LED will be on instantly and the off again

#### Table 1.4 – LEDs Meaning in the Engineering Tab

There are also three directories that we can see in the Engineering Tab and those are the "Coefficient File Directory", which contains the text files of the range settings for the Smart IR Module or the Integrated IR Sensor. The "Log File Path" is the path name where the logged data is stored in the type .csv files. Final the "Log File Basic Directory" is the path, where by default the logged data is being saved. In Figure 3.13 that we can see everything that we have described before.





Figure 1.13 – Evaluation Software, "Engineering Tab"

In the right hand side there is a table view that includes date and time the data are being received. In addition to the above, we can see in the table the set of readings in hexadecimal format as they are being received in real time from the digital string output of the Smart IR or the Integrated IR Sensor.



# Appendix A Table of Coefficients

Please read the applicable INIR Application Note for the correct ranges and the coefficient depending on the version of the Firmware that your Smart IR Module is utilizing. There are a few changes in coefficients from versions 1vX, 2vX, 3vX to the new version 4vX and above that. Always make sure you are using the correct coefficients as the performance of the Smart IR and the Integrated IR Sensor would be affected by those values.

#### NOTE:

1. These coefficients are based upon results measured at SGX Sensortech (IS) Ltd using standard test equipment. These coefficients may vary slightly when using different circuits. It may be required to recalculate some of these coefficients if small inaccuracies are observed during testing (refer to Infrared Sensor Application Note 5 for determination of coefficients).

2. For sensor variants with a "\_1" suffix (supported lamp versions), use the equivalent non-supported lamp version. For example for an IR11GM\_1, use coefficients for the IR11GM.



# Index

### С

coefficients, 16 COM port, 15 Copyright, 2 csv, 17

### F

Faults, 18

### G

Graph View, 17

### M

Menu Bar, 14 Minimum System Requirements, 9

### S

SGX Sensortech (IS) Ltd, 2 SOFTWARE INSTALLATION, 9

Whilst SGX Europehas taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017



Copyright©2012-2015 SGX Sensortech (IS) Ltd. All rights reserved.

Copyright@2012-2015 SGX Sensortech (15) Ltd. All rights reserved. Trademarks and registered trademarks are the property of their respective owners. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the publisher, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law.

For permission requests, write to the publisher, addressed "Attention: Permissions Coordinator," at the address below:



SGX Europe sp. z o.o. 103 Ligocka street, Katowice 40-568 Poland http://www.sgxsensortech.com

Author : Filip Ryło Created & Printed in the Katowice, Poland by SGX Europe zp. z o.o.

Whilst SGX Europe has taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. SGX Europe accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein. © SGX Europe sp. z o.o. ISSUE 3, 11 Jul. 2017