

L TI EÓN °

OPTOELECTRONICS

Thank you for evaluating Lite-On sensor solution.

Demo Kits consist of a **Master board** and an **Evaluation Board** (with sensor mounted on top), together with a **Micro B USB cable.** 

This is a master user guide for demo programs of below part numbers:

- 3-in-1 sensor solution (Standard package)
  - o LTR-559ALS
  - o LTR-556ALS
- 3-in-1 sensor with small window solution
  - o LTR-578ALS
  - o LTR-579ALS
- 4-in-1 sensors (ALS+PS+IRLED+UV or RGB)
  - LTR-590UV
  - LTR-580RGB
  - o LTR-588RGB

This demo program demonstrates the capability of the sensor products, which is an integrated I2C digital Ambient light sensor [ALS], proximity sensor [PS] with built in emitter, and/ or with RGB Color Sensor [CS], or UV sensor.

Below listed what the demo program can do.

- User selectable settings (at SETTING tab)
- Run or stop or exit control panel at all tabs
- **Continues** raw data and converted data, as well as interrupt status **update** (at EXECUTE tab)
- Visual effect of sensor function mode (at EXECUTE tab)
- Data logging of real time data with file saving capability (at EXECUTE tab)
- Real time plot of sensor raw data (at PLOTS tab)
- **Debugging mode** with Manual read write function (at DEBUG tab)



## **Setup Instruction**

### 1. Hardware Setup of the Demo Kit

a. Evaluation board connector pin-out



b. Connect Master board and Evaluation board as shown below. It is recommended to connect into **D1** port.



c. Connect the demo kit to any of the USB port in your computer using the USB cable provided.

2/8

### 2. Install the Master Board Driver (For 1<sup>st</sup> time user)

LITEON®

OPTOELECTRONICS

- a. Extract all the contents of "Demo\_LTR-5XX.zip" onto your computer.
- b. Connect demo master board to your computer via USB port.
- c. Install the driver "dpinst-x86.exe" or "dpinst-amd64.exe" from the zip file.
- d. To ensure the driver is successfully installed, please go to "Device Manager", follow by "Ports (COM & LPT)", and you should see Arduino Micro available. Refer to picture as below.

ſ	-			- <b>-</b> ×	
	🗸 🖓 🔸 Control Panel 🕨 All Control Panel Items 🕨			✓ 4 <sub>3</sub> Search Control Panel	
	Adjust your computer's set	ttings		View by: Small icons 👻	
	Action Center	😨 Administrative Tools	AutoPlay	Backup and Restore	
	Biometric Devices	BitLocker Drive Encryption	Color Management	Device Manager	
🚔 Device Ma	anager			Elach Diavas (22 hit)	
File Action	n View Help				
(+ +) 🖬	1 🛄 🛛 🖬 🗔 🔛 🙀 🚯			HomeGroup	
a 🛁 ESGA	0049			- Internet Options	
þ 😽 Ba	atteries			C Lenovo - Fingerprint Reader	
Þ- 🖉 Bi	ometric Devices			Contraction - Update and Drivers	
	Dirk driver			I Mouse	
Di	Disk drives			Personalization	
⊳-0,5 H	A 🖓 Human Interface Devices			Becovery	
Þ-🚘 ID	Gamma De ATA/ATAPI controllers			al Count	
⊳-— Ke	b — Keyboards			a sound	
D-B M	lice and other pointing devices			Taskbar and Start Menu	
	Monitors			Windows Defender	
1.0	Vetwork adapters     Vietwork adapters     Vietwork adapters     Vietwork adapters     Vietwork adapters     Vietwork adapters				
	Intel(R) 82579LM Gigabit Network Co	onnection			
-9	Intel(R) Centrino(R) Ultimate-N 6300	AGN			
D 🛄 Po	ortable Devices				
a Po	orts (COM & LPT)				
	Arduno Micro (COM14)	1000 SOL (COM2)			
	Intel(K) Active Management Techno	logy - SOL (COMS)			
5 - 😥 Se	ecurity Devices				
5 - I SI	M Driver				
b-a So	Sound, video and game controllers				
Þ-👰 Sy	ystem devices				
⊳-₩ Ui	niversal Serial Bus controllers				



#### 3. Starting the Demo Program

OPTOELECTRONICS

LIT EON <sup>®</sup>

- a. Connect Evaluation board to Master board as per the orientation shown in 1(b). Wrong orientation may result in evaluation board failure.
- b. Execute "LTR5XXALS\_demo.exe" application in the unzipped folder "LTR5XXALS\_Demo" to start the Demo Program.
- c. You will see window below pop-up with status box showing Master Board found, and the COM information at left bottom corner.
- d. If you failed to have this, please change to other USB port, or reinstall the driver.

			LITEON
Anbient Light and UV Sensor R	eadings	Proxemity Sensor Readings	LITEON
LUX	UV Index	PS Data	
ALS Data	UVS Data	Object Status	UV Sensor
ALS I	terrupt		RUN
		Status	STOP
		Product Data ( Total )	EXIT
	and a second		
			- Datalog



OPTOELECTRONICS

IT EÓN <sup>°</sup>

- a. The program will 1<sup>st</sup> shown in EXECUTE tab.
- b. With all the default settings in SETTING TAB, you may just check/tick the function you need from right top corner and click the RUN button.
- c. You may change the settings accordingly in settings tab. You need to STOP 1<sup>st</sup> before changing the settings.

e LTR-590UV Demo Program Version 3.0		- • ×
SETTINGS EXECUTE PLOTS DEBUG		HIEON
- Ambient Light and UV Sensor Readings LUX UV Index	Proximity Sensor Readings	
	PS Data	Ambient Light Sensor
ALS Data UVS Data	Object Status	Proximity Sensor
ALS interrupt		RUN
	Status	
	Arduino Board Found !!	EXIT
ALS Effect IV PS Effect	Datalog	
Arduino Micro on COM14		] 

- d. The raw data and computed data will be displayed when the sensor is running.
- e. You may check/tick the visual effect selection at the left bottom. When ALS effect is selected, the brightness of the sunflower picture will change according to the light level detected by the sensor. When PS effect is selected, the size of the sunflower will change according to the object distance detect. When CS effect is selected, the color on the phone screen picture will change according to the color detected by the sensor.
- f. Only for LTR-580RGB & LTR-588RGB. For RGB visual effect, you may go to CCT\_DEMO tab for more details information includes color temperature scale bar, color temperature (CCT) in Kelvin, Lux value and color detected.





# Demo Program User Guide

	EXECUTE PLOTS	CCT_DEMO DEBUG	
100000	Colour Temperatures in the	e Kelvin Scale North Light (Blue Sky)	Color Detected
9000K -			Ambient Light Se
BOODK -			RGB Sensor
7000K -		_ Overcast Daylight	Proximity Sensor
6000K -		Baylight, TV Screen	
5000K -		<ul> <li>Noon Daylight, Direct Sun Xenon Arc Lamp</li> </ul>	
4000K -	-	-	
3000K .	-	Household Light Bubs	PIN
2000K •	-	Early Sunnse Tungsten Light	RUN
Color c	oordinates	ireen Blue	Calibration
	771	1249 647	Red Cal Factor 1.62
	//1	1248 647	Green Cal Factor 1.00
	249.01	LUX	Blue Cal Factor 1.90
	5477		

g. For data logging, you need to check/tick the datalog box and the directory for the datalog file will be shown in Status box.

ITR-590UV Demo Program Version 3.0			
SETTINGS EXECUTE PLOTS DEBUG			
- Ambient Light and UV Sensor Readings	Proximity Sensor Readings	LITEONI	
LUX UV Index 213.76	PS Data 10	Ambient Light Sensor	
ALS Data UVS Data 1336	Object Status: FAR	UV Sensor V Proximity Sensor	
ALS Interrupt		RUN	
	Status	PROGRAM	
	[11:35:00 AM] ALS: 1339, LUX: 213.28 [11:35:00 AM] PS Count: 11	STOPPED	
	[11:35:00 AM] ALS: 1349, LUX: 214.24 [11:35:00 AM] PS Count: 11 [11:35:00 AM] LS: 1336, LUX: 215.84	EVIT	
	[11:35:00 AM] PS Count: 10	EXIT	
Re Cost Completion	[11:35:03 AM] Program Stopped !!		
	Datalog Directory : C:\tmp\LiteON_Datalog Datalog Filename : LTR-590_Datalog_2016-06-21_11-35- 05-AM.txt		
ALS Effect V PS Effect	✓ Datalog		
Arduino Mirro on COMIA			



h. You can also view the real time plot of the sensor raw data by selecting the "PLOTS" tab as shown below.

**LITEON**<sup>®</sup>

OPTOELECTRONICS



i. For manual debugging, go to DEBUG tab and you may manual write & read single register address.





# Demo Program User Guide

LTR-590UV Demo Program Version 3.0	
SETTINGS EXECUTE PLOTS DEBUG	
Address Data	LITEON
Write 02 01	
Read 02 1	Ambient Light Sensor     UV Sensor     Proximity Sensor
Read_all       00       Addr (0x0=3	RUN PROGRAM STOPPED EXIT
Interrupt mode  Default at D1	
Arduino Micro on COM14	

#### 5. Exit the demo program

a. You may stop and exit the program by clicking the "EXIT" button.

