# tronics Evaluation Kit Quick-start Guide

#### Tronics Evaluation Kt SYPRO® or AXO® EVB (as delivered by Tronics) Concorrection Concorection Concorection Concorection Concorrection

### **Features**

This user manual is intended for customers who have purchased GYPRO<sup>®</sup> or AXO<sup>®</sup> Evaluation Board and who would like to implement it using Arduino platform. The following paragraphs explain how to set-up the full evaluation kit and how to configure Arduino Leonardo or Yùn Rev.2 board.

### Required:

- GYPRO® or AXO® EVB
- Header Connectors (x5)
- Tronics USB Flash drive.
- Arduino Leonardo board or Arduino Yùn Rev. 2 Board (not included).
- Micro-B USB Cable (not included).
- Computer running Window 7 or later version with USB port.

Note: If you intend to perform tests over temperature, make sure that your USB Cable can withstand the operating temperature range specified by Tronics



# **1. System Requirements**

Tronics Evaluation Tool software is compatible with OS Windows 7 or later versions. The program automatically adapts to the operating system on which it runs, eliminating the need for manual settings.

#### Recommended system configuration:

- Processor 1.6 GHz or faster
- 2 GB RAM
- 1280\*960 pixels minimal screen resolution
- 780 MB free hard disk space for the Arduino IDE and the Tronics Evaluation Tool software (additional space is needed during installation only to accommodate the initial setup files).
- USB Port.
- Operating Systems: Windows 7, Windows Server 2008 R2, Windows Thin PC, Windows 8 / 8.1, Windows RT, Windows Server 2012 and Windows 10.

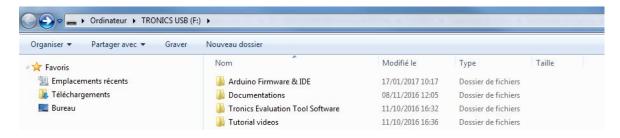
# 2. Setting Up

### 2.1. Installing Arduino IDE

1. Plug the USB flash drive directly into an available USB port.

NOTE: A message indicating that a new device has been detected should appear at the lower right hand of your screen. It may take a few seconds to be detected.

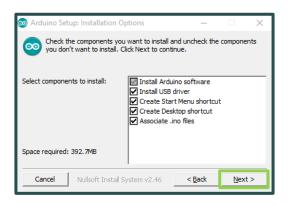
- 2. If the USB flash drive or external drive folder does NOT open automatically, follow these steps:
  - a. Click Start > Computer.
  - b. Double-click on the "TRONICS USB" associated with the USB flash drive.



tronics Evaluation Kit Quick-start Guide

3. Double-click on "**Installation**" folder then on *arduino-1.X.X.windows.exe* and proceed with the installation (please authorize the driver installation process).

NOTE: The latest version of this software is also available on our <u>website</u>.



- 4. Select all the components and then click on "Next" button.
- 5. Choose the installation directory (we suggest to keep the default one) then click on the "**Install**" button.

💿 Arduino Setup: Installation Folder	-		×
Setup will install Arduino in the following folder. folder, click Browse and select another folder. installation.			
Destination Folder		B <u>r</u> owse	
Space required: 392.7MB Space available: 24.6GB			
Cancel Nullsoft Install System v2.46	< <u>B</u> ack	Insta	all I

6. The process will extract and install all the required files to execute properly the Arduino Software (IDE).

💿 Arduino Setu	ıp: Installing	-		×
Extract: 0	:++.exe			
Show details				
Cancel	Nullsoft Install System v2.46	< <u>B</u> ack	⊆lose	

7. The installation of Arduino IDE includes "Atmel USB Driver Package" installation. You don't need to install this package if you don't use other boards than the Arduino Leonardo or Arduino Yun in the future.



8. Once the status "Completed" is displayed, Arduino IDE is installed and is ready to be used. You can close the Installer.

💿 Arduino Setup:	: Completed	—		$\times$
Completed				
Show details				
Cancel	Nullsoft Install System	< Back	Clo	se

# tronics Evaluation Kit Quick-start Guide

### 2.2. Configuring Arduino Board (Case Arduino Leonardo)

1. Connect the Arduino Leonardo board to your computer using the USB cable and the Native USB Port. *If this is the first time you are connecting an Arduino Leonardo Board to your computer, please wait a few minutes before going on, as Windows needs to install all the necessary drivers.* 



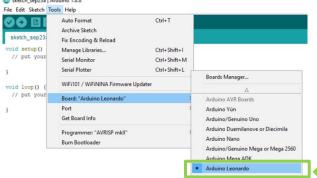
- 2. Open Arduino IDE.
- Open the "Boards Manager" in the Tools > Board menu.

Edit Sketch To	ols Help		
ketch_may24	Auto Format Archive Sketch Fix Encoding & Reload	Ctrl+T	
void setup // put y	Serial Monitor Serial Plotter	Ctrl+Shift+M Ctrl+Shift+L	
}	WiFi101 Firmware Updat	er	
void loop( // put y			
}	Port Get Board Info	L	Boards Manager Arduino SAMD (32-bits ARM Cortex-MU+) Boards Arduino SAMD (32-bits ARM Cortex-MU+) Boards
	Programmer Burn Bootloader		Arduino/Genuino Zero (Programming Port) Arduino/Genuino Zero (Native USB Port) Arduino/Genuino MKR1000

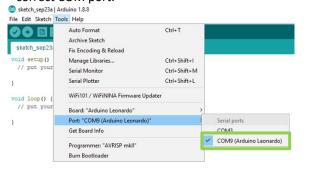
4. Install latest version of "Arduino SAMD Boards (32-Bits ARM Cortex M0+)"



5. Select "Arduino Leonardo" in the Tools > Board menu.



 Select the serial port number corresponding to the Arduino board in the Tools > Port menu. The name "Arduino Leonardo" should be associated with the correct COM port.



 Now, you need install *Tronics EVB Library* : Click on "Add .ZIP Library..." in the *Sketch > Include Library* menu.

-			
-	Verify/Compile Ctrl-	+R	
~	Upload Ctrl-	+U	
etch	The State of the second s	+Shift+U	
roid		+ Alt+S	
//	export complied binary Ctri-	+ AIT+5	
	Show Sketch Folder Ctrl-	Constant Const	
	Include Library		Δ
roid	Add File		Manage Libraries
// 2013	your main code here, to	run repe	Add .ZIP Library

- 8. Select "TronicsEvaluationKit\_Library" in the "Arduino Firmware & IDE" folder into the USB flash drive.
- 9. Now, you can open "EvaluationTool" firmware in the Examples menu.

	Tools Help			
New	Ctrl+N			
Open	Ctrl+O	atures	G2300 G3300 Features	000000 4045 East
Open Recent	•	atures		
Sketchbook	•	******	***************************************	***************
Examples			▲	///////////////////////////////////////
Close	Ctrl+W		trings	
Save	Ctrl+S	09.U	ISB •	1 11 11 11
Save As	Ctrl+Shift+S	10.S	-	(1  1  1  1
		11.A		
Page Setup	Ctrl+Shift+P	Euro	nples for any board	///////////////////////////////////////
Print	Ctrl+P		1 1	
Preferences	Ctrl+Comma		fruit Circuit Playground	
	een een u		uinoCloud •	
Quit	Ctrl+Q	Brid	ge 🔸	nedistribute it an
<pre>#include &lt;#</pre>	WB.h> // Re	Tror	nics Evaluation Kit Library	AXO ReadOutput
			OMPATIBLE	EvaluationTool
void setup() {				GYPRO_ReadOutput

### 2.3. Configuring Arduino Board (Case Arduino Yùn)

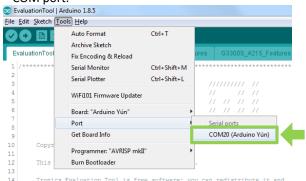
1. Connect the Arduino Yùn board to your computer using the USB cable and the USB Port. *If this is the first time you are connecting an Arduino Yùn Board to your computer, please wait a few minutes before going on, as Windows needs to install all the necessary drivers.* 



- 2. Open Arduino IDE.
- 3. Select "*Arduino Yùn*" in the Tools > Board menu.

EvaluationTool   A	arduino 1.8.5		
ile Edit Sketch To	ools Help		
	Auto Format Ctrl+T		
	Archive Sketch		
EvaluationTool	Fix Encoding & Reload	ure	s G3300S_A215_Features
1 /*******	Serial Monitor Ctrl+Shift+	-M ***	***********
2	Serial Plotter Ctrl+Shift-	-L	
4	WiFi101 Firmware Updater		
6	Board: "Arduino Yún"		
7	Port		Boards Manager
9	Get Board Info		Arduino AVR Roards
.0 Copyr			Arduino Yún
1	Programmer: "AVRISP mkII"		Arauno/Genuino ono
2 This	Burn Bootloader		Arduino Duemilanove or Diecimila
13 14 Tronics	Evaluation Tool is free software	: y	Arduino Nano
15 /or mod	ifu it under the terms of the CMT	T T A	Arduine /Genuine Mean or Mean 3560

 Select the serial port number corresponding to the Arduino board in the Tools > Port menu. The name "Arduino Yùn" should be associated with the correct COM port.



 Now, you need install *Tronics EVB Library* : Click on "Add .ZIP Library..." in the *Sketch > Include Library* menu.

Edit Sk	etch Tools Help		_	
0	Verify/Compile	Ctrl+R		
~	Upload	Ctrl+U		
etch	Upload Using Programmer	Ctrl+Shift+U		
voic //	Export compiled Binary	Ctrl+Alt+S		
	Show Sketch Folder	Ctrl+K	Ľ.	
}	Include Library	,		Δ
void	Add File			Manage Libraries
	ut your main code here,	to run repe		Add .ZIP Library
1				And the libration

- 6. Select "TronicsEvaluationKit\_Library" in the "Arduino Firmware & IDE" folder into the USB flash drive.
- 7. Now, you can open "EvaluationTool" firmware in the Examples menu.

	Tools Help		
New Open Open Recent Sketchbook Examples	Ctrl+N Ctrl+O	atures G2300_G3300_Features	G3300S_A215_Featu
Close Save Save As	Ctrl+W Ctrl+S Ctrl+Shift+S	09.USB + 10.StarterKit_BasicKit +	1111111111111111 11 11 11 11 11 11 11 11 11
Page Setup Print	Ctrl+Shift+P Ctrl+P		n innnin
Preferences	Ctrl+Comma	ArduinoCloud	
Quit	Ctrl+Q	Bridge •	n redistribute it en
#include <	<b>WB.h&gt;</b> // Re	Tronics Evaluation Kit Library	AXO ReadOutput
void setup	0 {	INCOMPATIBLE	EvaluationTool
EVB.Init	ARDUINO OUTE		GYPRO_ReadOutput

### 2.4. Configuring Arduino Firmware

- 1. Edit the *line 38* of the firmware: According your evaluation board, you need to change the value by:
  - EVB2.0  $\rightarrow$  EVB\_VERSION 20
  - EVB2.1 → EVB VERSION 21
  - EVB3.0 → EVB\_VERSION **30** (default value)

💿 EvaluationTool   Arduino 1.8.10 —		×
Fichier Édition Croquis Outils Aide		
		ø
EvaluationTool Common_Features G2300_Features G3300_G4100_A315_Features		
30 @author Loïc Blanchard (loic.blanchard@tronicsgroup.com)		^
31 @date 02 July 2020		
32 @version : 2.3		
33 @brief File containing firmware to program Arduino MO Board for Evaluation Tool software developped by Tronics Microsystems.		
34 @see <a href="https://github.com/TronicsMicrosystems/TronicsEvaluationKit_Library">https://github.com/TronicsMicrosystems/TronicsEvaluationKit_Library</a>		
35 */		
36		
37 #define ARDUINO OUTPUT SerialUSB // <== Define Ouput Port name (USB Port = SerialUSB ; R5422 Port = Serial)		
38 #define EVB VERSION 30 // <== Define EVB Version (21 for EVB 2.1, 30 for EVB 3.0)		
39		
40		
42 // // 43 // GLOBAL INITIALISATIONS //		
43 // GLOBAL INITIALISATIONS // 44 //		
		$\sim$
1 Arduine M	) sur C(	OM17

2. Upload the program: Simply click on the "Upload" button in the environment. Wait a few seconds, and you should see the RX and TX LEDs on the board flashing. If the upload is successful, the message "Done uploading." will appear in the status bar at the bottom of the window.

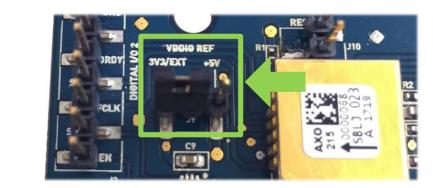


3. Close Arduino IDE

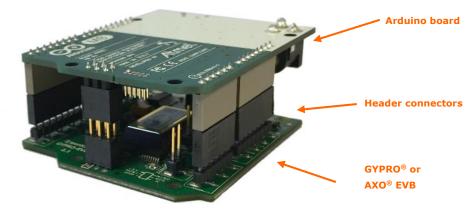
→ Now your Arduino board is programmed and ready to be used with Tronics Evaluation Tool.

### 2.5. Assembling EVB with Arduino Board

- 4. Disconnect your Arduino board from the computer, since the Arduino Board should be switched-off for the next step.
- 5. For EVB3.0): Add a Jumper to J9 connector between "3V3/EXT" and "VDDIO REF" pins. This will apply the same reference voltage for SPI signals as the Arduino board.



6. Plug the GYPRO<sup>®</sup> or AXO<sup>®</sup> Evaluation Board on the Arduino Board, using the 5 connectors supplied by Tronics. **The correct position is to have the Arduino board on top (above the Evaluation board).** 



- 7. Connect the Arduino Board to your computer using the USB cable and the Native Port.
- 8. Now you can launch *Tronics Evaluation Tool.exe* software on your computer!



# **3. Basic Operation of Tronics Evaluation Tool Software**

The Evaluation Tool is made of 5 tabs:

- Reading GYPRO<sup>®</sup> / AXO<sup>®</sup> (Main Tab): Reads the sensor data (Angular rate / Linear Acceleration and Temperature) and displays them on two real-time charts.
- System Register (SR): Enables reading, writing or changing the output format of the data (Raw, Compensated or Calibrated) by modifying the sensor System Register.
- Multi-Time-Programmable (MTP):
   Useful to read and program new temperature

compensation coefficients in the MTP of the sensor.

• Others:

To check Software and Hardware Self-Test, to read Drive Frequency, to measure Start-Up Time and to generate debug reports for Tronics support team.

**Compass / Plane:** Displays a real-time compass using GYPRO<sup>®</sup> or a plane using AXO<sup>®</sup>.

Once the Arduino board is detected by the software, you can click on the top left power ON/OFF button. The application will start and read the sensor information (serial number and type of sensor).

Choose an Acquisition time (1s minimum) and click on the "Start/Stop" button.

Power button		Arduino Leonardo (COM9) Ready to connect !	
	✿	Acquisition Time (s) : 30 +	
Start/Stop	×	STOP	
button	۶	3101	
	ø		
		File Name :	
	0	Record Acquisition Folder Path :	
	?	1 Hz Average	
		Self Test :	

→ For detailed description of Tronics Evaluation Tool Software please read the document Tronics Evaluation Kit – software user manual



# 4. Available Tools and Resources

The following tools and resources are available on <u>GYPRO®</u> and <u>AXO®</u> webpages of Tronics website.

Item	Description
Documentation & tec	hnical notes
a a a a a a a a a a a a a a a a a a a	GYPRO4100 - Datasheet
a a a a a a a a a a a a a a a a a a a	AXO315 - Datasheet
	GYPRO2300 / GYPRO2300LD - Datasheet
	GYPRO3300 - Datasheet
Mechanical tool	
entitie	AXO315 and GYPRO4100 - 3D model
	GYPRO2300 & GYPRO3300 - 3D model
Evaluation kit	
	<b>Tronics EVB3</b> – Evaluation board Evaluation board for AXO315 and GYPRO4100, compatible with Arduino Leonardo and Arduino Yùn
	<b>Tronics EVB2</b> – Evaluation board Evaluation board for GYPRO2300 series and GYPRO3300 series, compatible with Arduino Leonardo and Arduino Yùn
Evaluation	Tronics Evaluation Tool – Software
	Tronics EVB3 – User manual
	Tronics EVB2 – User manual
100 100 100	Tronics Evaluation Kit – Quick Start Guide
· <b>P</b>	Tronics Evaluation Tool – Software User Manual
	Tronics Evaluation Tool – Arduino Firmware

Should you encounter any issue while using GYPRO<sup>®</sup> or AXO<sup>®</sup> Evaluation Kit, please contact Tronics technical support by sending an email to <u>support@tronicsgroup.com</u>.