Sateco XT AG

SXTSC Capacitive Silicone Force Sensor Demo Kit

Operating Manual

Version 1v02, 24.02.2021



Confidentiality

This document is intended as basis for internal collaboration and information exchange with external partners. The content of this document is confidential and shall neither be shared nor forwarded to any other parties without prior consent of Sateco XT management.

Modification History

Version	Date	Name	Description
1v00	08.01.2021	R. Krämer	Initial version
1v01	24.02.2021	G. Schürch	Module and measure principle documentation added (1.3&1.4)
1v02	29.04.2021	R. Krämer	Updated 2.2

Table of Contents

Со	nfide	ntiality	2
Mo	difica	tion History	2
Tab	ole of	Contents	3
1	Сара	acitive Silicone Force Sensor Demonstrator Kit	4
	1.1	Kit Content	4
	1.2	Sensor Description	4
	1.3	Measuring Principle	4
	1.4	Sensor Module Description	5
	1.5	Sensor GUI Software Description	6
2	Sens	sor GUI Software	6
	2.1	Installing the Software	6
	2.2	Connecting the Silicone Force Sensor with the Sensor Module	8
	2.3	Connecting the Sensor Module with your PC	8
	2.4	Starting the SXT Sensor GUI	8
	2.5	Navigating the GUI	9
	2.6	Configure the Serial Port connection	9
	2.7	Logging Data to a File	0
	2.8	Uninstalling the Software 1	0

1 SXTSC Capacitive Silicone Force Sensor Demonstrator Kit

1.1 Kit Content

The following items are delivered with this demonstrator kit.



Pos.	Item	Comment
1	Sensor	SXTSC Silicone Force Sensor
2	USB Cable	USB Cable with MicroUSB Connector
3	Sensor Interface Module	Evaluation Board
4	USB Data Stick	SXT Sensor GUI Software and Documents

1.2 Sensor Description

The force-sensitive SXTSC silicone force sensor operates according to the capacitive operating principle and can measure both compressive force and touch.

1.3 Measuring Principle



With a capacitive half bridge, the voltage changes as a result of an influence to the sensor capacitance CM. This can be measured and digitalized by the ADC. The advantage of this measuring principle is the large capacitance work range and the optional possibility to compensate external influences like temperature or humidity measuring relatively to a reference sensor. In that case an equal sensor is used for the reference CR.

1.4 SXT Sensor Module Description



Block Diagram 4CH CAP SXT Sensor Module

The SXT Sensor Module measures the force or touch of max. 4 connected sensors by use of capacitive sensing technology. The module is controlled by a small microcontroller, which interfaces to a host computer over an UART-USB serial converter. Using the included SXT Sensor GUI the measured sensor data can be visualized on a PC.

The module contains 4 channels (C0, C1, C2, C3) and one compensation channel (CR internal). The 5V from the USB Interface are used for power supply of the CAP demonstrator

The module PCB includes 4 internal digital outputs and two switch connections for optional functions. To make use of these options an individual software adaption is required. Please contact Sateco XT if your project requires further sensor functions.

1.5 SXT Sensor GUI Software Description

The graphical user interface is a software tool to visualize the SXT silicone force sensor data in real-time and allows user to log and store the sensor data. The SXT Sensor GUI software supports the following operating systems:

Microsoft Windows 7, 10 (both 32-bit and 64-bit)

2 SXT Sensor GUI Software

2.1 Installing the Software

Follow these steps to install the software:

Name Date modified bin 09,12,2020 08:21 ciscnee 09,12,2020 08:21 supportfiles 09,12,2020 08:21 inidistid 09,12,2020 08:19 setup 09,12,2020 08:19 setup 09,12,2020 08:19	Type Size File folder File folder File folder ID File ID File 1 KB Application 5'327 KB Configuration sett 33 KB	1.	Run the executable setup.exe file
StT Sensor GUI Destination Directory Select the installed in the following locations. To install softw different location, click the Browse button and select another direct Directory for SXT Sensor GUI C:\Program Files (x86)\SXT Sensor GUI\ Directory for National Instruments products C:\Program Files (x86)\National Instruments\ <	Are into a 300 Browse	2.	Select the installation directories and click "Next".
🐙 SXT Sensor GUI	– 🗆 X		
License Agreement You must accept the licenses displayed below to proceed. N M M NATIONAL INSTRUMENTS SOFTWARELLE LESEN SIE DIESEN SOFTWARELLE LESEN SIE DIESEN SOFTWARELIZENZVERTRAG (VETRAG') AU HERUNTERLADEN DER SOFTWARE UND/ODER ANKLICKEN DI SCHALTFLÄCHE ZUM ABSCHLUSS DES INSTALLATIONSPROZE MIT DEN BESTIMMUNGEN DIESER VEREINBARUNG EINVERSTF GEBUNDEN, WENN SIE NICHT VERTRAGSPARTEI DIESER VER NICHT AN ALLE VERTRAGSBEDINGUNGEN UCENED INNERHALB VON DREISSIG (30) TAGEN NACH ERHALT (EINSCH SCHRIFTLICHEN BEGEITIMATERILIEU NUD VERPACKUNG) ZI RÜCKSENDLINGEN UNTERI IEGEN DER ZU DEM JEWEILIGEN O I do not acc	ZENZVER TRAG	3.	Read the National Instruments license agreements, select "I accept the above 2 License Agreement(s)" and click "Next".

sateco »xt

SXT Sensor GUI	 Disable Windows fast startup to prevent problems with installing or removing hardware and click "Next".
Start Installation Review the following summary before continuing. Adding or Changing NN-Seriel 13:0 Runtime Support NN-VSA 13:0 NN-VSA 13:0 NN-VSA 13:0 Click the Next button to begin installation. Click the Back button to change the installation settings. Click the Next button to begin installation. Click the Back button to change the installation settings. Save File Cancel	5. Review the summary and start the installation by clicking "Next".
SXT Sensor GUI Installation Complete The installer has finished updating your system. Key	 Wait for the installation to complete, and then click "Next".
SXT Sensor GUI — — × Image: Strain Sensor GUI You must restart your computer to complete this operation. If you need to install hardware now, shut down the computer. If you choose to restart later, restart your computer before running any of this software. Restart Shut Down Restart Later	7. Restart your computer before running this software.

2.2 Connecting the SXTSC Silicone Force Sensor with the Sensor Module

Connect each SXTSC silicone force sensor to any input channel (C0, C1, C2, C3) of the sensor module. Connect the upper electrode to the yellow wire and the brown wire to the lower electrode.



Please note, that sensor wires do not contain any active shielding and therefor may cause noise/interference on the measurement signal. If wire lengths require to be increased, we recommend to use coaxial shielded cables.

2.3 Connecting the SXT Sensor Module with your PC

Attach the SXT Sensor Module to a free USB port on your computer via the provided USB cable.

Please note, that once the SXT Sensor Module is connected to the USB port, the SXT Sensor Module will reset the sensor level. So always first connect the sensor to the SXT Sensor Module and then connect the USB cable.

To perform a reset of the sensor level, just disconnect and reconnect the USB cable.

2.4 Starting the SXT Sensor GUI

After connecting the sensor module and restarting your computer, the "SXT Sensor GUI" icon should appear on your desktop. Double click on it to start the software.



2.5 Navigating the SXT Sensor GUI



2.6 Configure the Serial Port connection

Navigate to the "Config" tab and select the correct com port. If you are not sure which com port to select, disconnect the USB cable from your PC or SXT Sensor Module and click the "Refresh" button. You will then see all com ports available which are already in use. Reconnect the USB cable and press the "Refresh" button again. Select the com port which has newly added to the comport list.

iraph Config Logging	Graph Config Logging
COM Port	COM Port
¼ COM4	K <mark>COM4</mark> ▼
UartSettings	COM1
baud rate 📮 38400	Refresh
data bits 🗮 8	data bits 🖉 8
parity 🗬 None	parity 💭 None
stop bits 💭 1.0	stop bits 💭 1.0
flow control 👻 None	flow control

Keep the other settings like baud rate, data bits, parity, stop bits and flow control as listed above.

2.7 Logging Data to a File

Follow these steps to log measurement data to a file.

1. Navigate to the "Logging" tab

Gra	ph	Config	Loggi	ng	
VL	oggi	ng Enable	d		
Log	y to F	older:			
	C:\I	ogging		^	
ሔ					
				¥	
Open Folder					

- 2. Select "Logging Enabled"
- 3. Chose a Folder where your log file will be stored
- 4. To start data streaming click on the "Start" button to stop the streaming click on the "Stop" button.

2.8 Uninstalling the SXT Sensor GUI

Follow these steps if you want to uninstall the software:

- 1. Quit/ Close the Software
- 2. Go to Windows Start Settings Apps
- 3. Find the App "SXT Sensor GUI"

1	SXT Sensor GUI	2.77 MB	
	1.0.2		10.01.2021
		Modify	Uninstall

- 4. Click on "Uninstall" button and confirm again by clicking on "Uninstall"
- 5. Find the App "National Instrument Software"

National Instruments Software		18.01.2021
	Modify	Uninstall

6. Click on "Uninstall" button and confirm again by clicking on "Uninstall"

The SXT Sensor GUI is based on LABView from National Instruments. If you are using any other software which requires the Nation Instruments Software, do not uninstall it.