USER MANUAL ConfigLQT

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Thank you for choosing a transducer from Hugo Tillquist AB!

ConfigLQT is the software used for the configuration of our transducers via their USB port in a simple and convenient way. It is free and can be downloaded from our website: www.tillquist.com .

Table of contests

1 General information

1.1 Introduction

This manual provides the information necessary for the proper use of ConfigLQT and some examples of configuration for our transducers. The information in the manual is intended for use by technically qualified personnel.

The ConfigLQT software is free and can be downloaded from our website: www.tillquist.com . We always recommend the use of the latest version of ConfigLQT.

1.2 Marking – Symbols

Our transducers are marked with the following symbols.

Double insulated device.

Warning for life-threatening or hazardous for properties situations.

1.3 Contact info

You can always contact Hugo Tillquist AB for questions about ConfigLQT. Contact info of all our colleagues is available on our website: www.tillquist.com .

1.4 Copyrights

2 Instructions

2.1 Installation of ConfigLQT

The installation kit consists of the configuration software and a driver for the USB connection. ".NET Framework" version 4.0 is a software from Microsoft, usually installed by default, that is necessary for the proper operation of ConfigLQT. If not already installed, it can be downloaded by the following link: http://www.microsoft.com/net/.

Download ConfigLQT from www.tillquist.com, unzip the files and install it by running the setup.

3 Configuration

3.1 Connection to computer

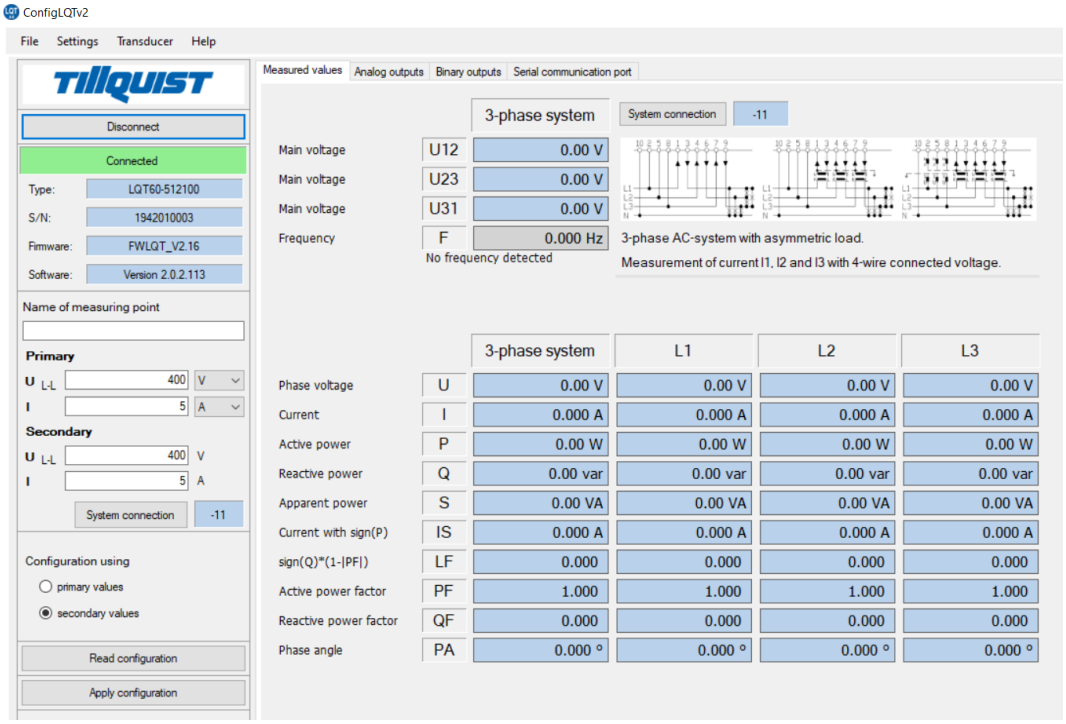
Connect a USB-cable between the USB-port on the device and the computer. No safety action is required while connecting the USB cable to the device.

Start ConfigLQT and click Connect.

The connection status will change to **Connected** with a green background and information about the transducer will be displayed once the connection is established.

Depending on the type of the connected transducer, various basic parameters as well as all the possible connections for 1-phase or 3-phase networks are displayed. The measured values are displayed on the screen when the transducer is connected to a measuring object. The measured values can be shown as Primary or Secondary values.

The connection and configuration process for the LQT60 transducer is following for informative purposes. Read always the respective product manual for actual specifications and different requirements.



3.1.1 Monitored parameters

These are the parameters that our transducers can measure.

P Power
*P=S*cos(φ) [W]*

Q Reactive power
*Q=S*sin(φ) [var]*

S Apparent power
*S=rot(3)*Uh*Ih [VA]*

U Voltage

I Current

IS System current with sign

PF Power factor
PF=P/S

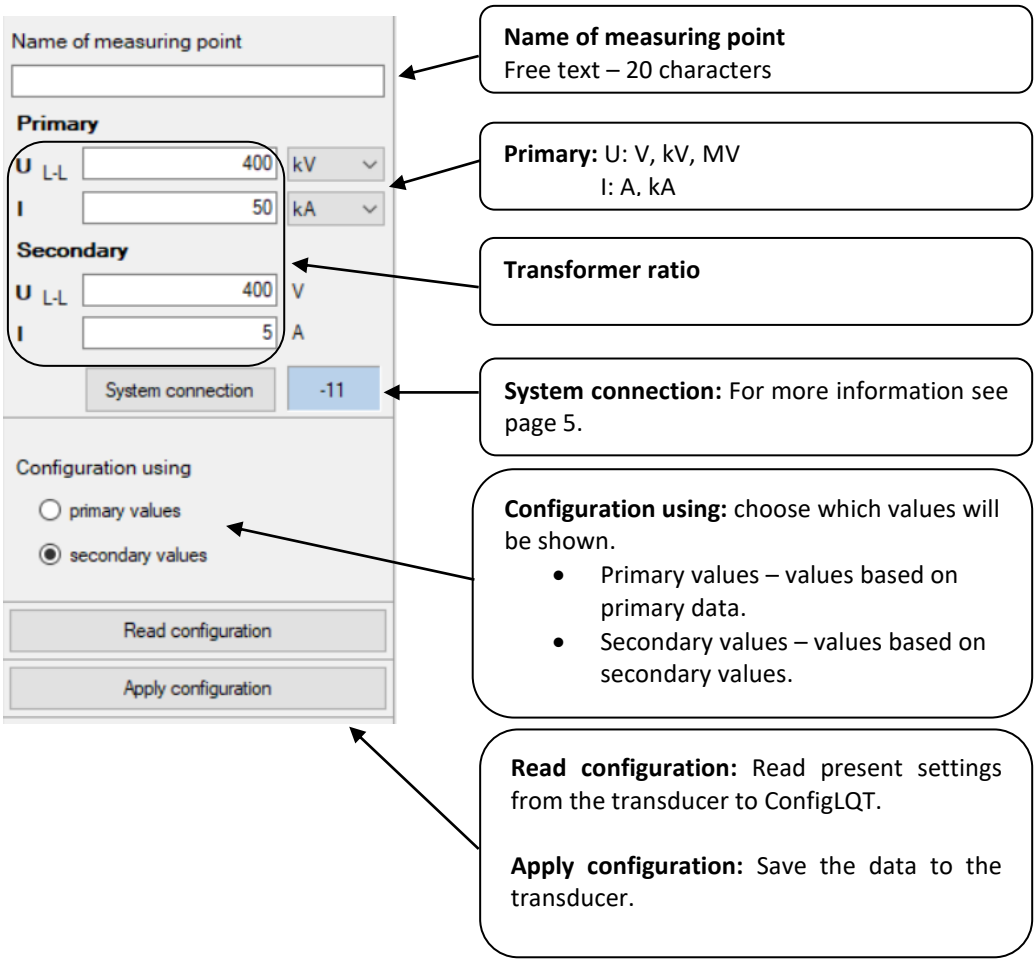
QF Reactive power factor
QF=Q/S

LF = sign(Q)*(1-|PF|)

PA Phase angle

F Frequency

3.2 Input settings

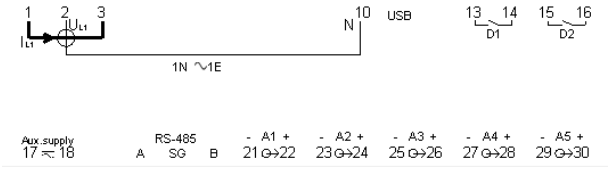


3.2.1 System connection

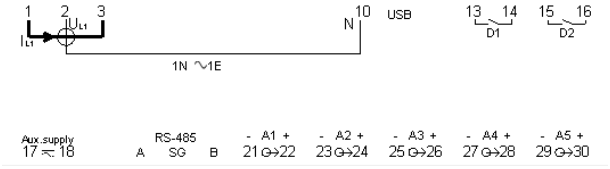
Select the appropriate diagram for the used network.

-00 3-phase
1 system

4 wires
3-phase symmetrical load

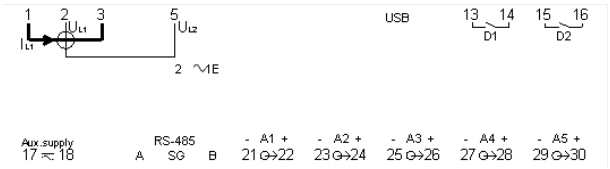


-01 1-phase
1 system



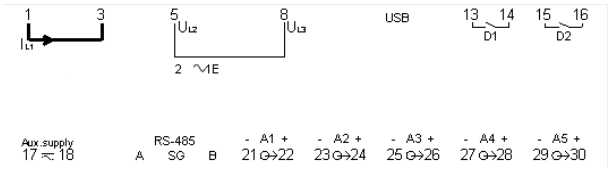
-02 3-phase
1 system

4 wires
3-phase symmetrical load



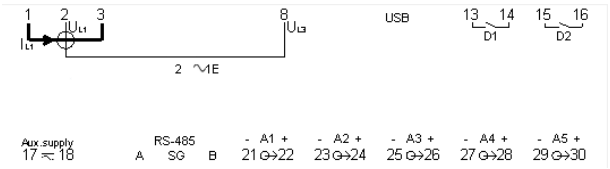
-03 3-phase
1 system

4 wires
3-phase symmetrical load



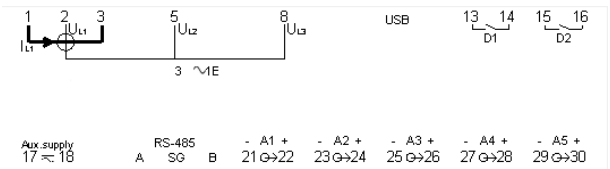
-04 3-phase
1 system

4 wires
3-phase symmetrical load



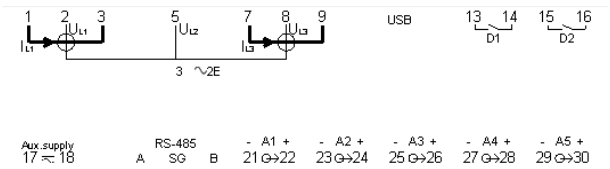
-05 3-phase
1 system

3 wires
3 faser symmetrisk last



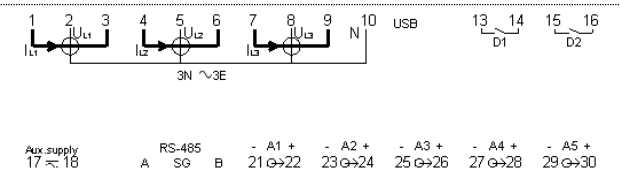
-09 3-fas
2 system

3-ledare
3-phase asymmetrical load



-11 3-phase
3 system

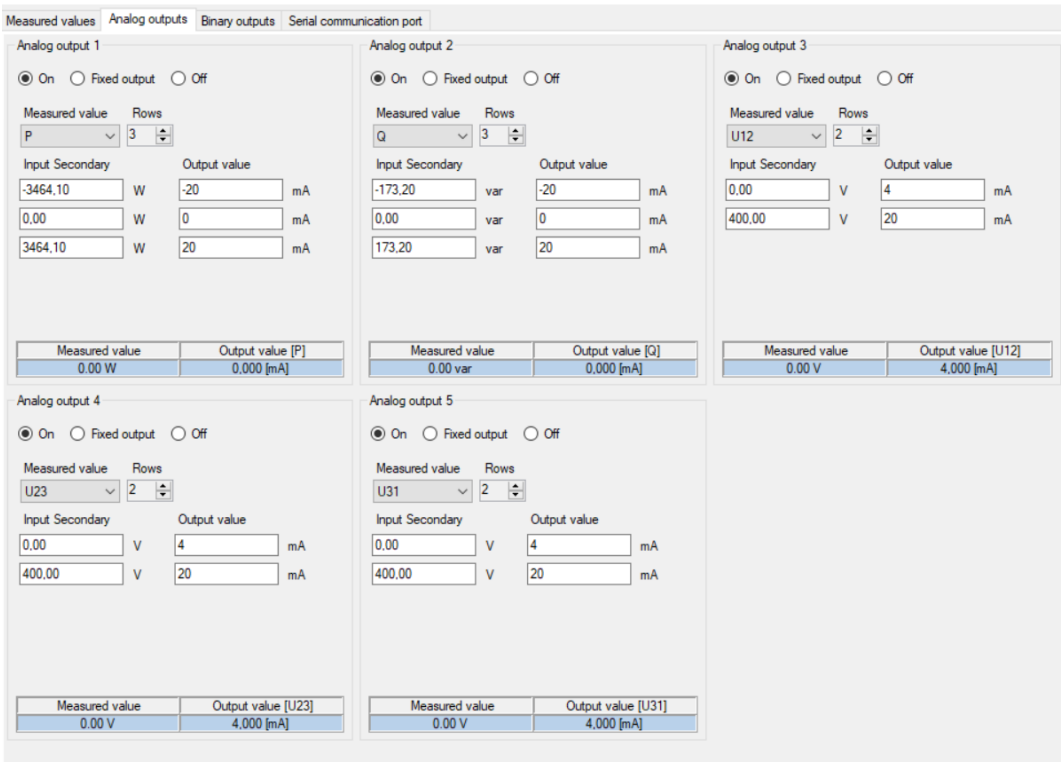
4 wires
3-phase asymmetrical load



System connection	Application	I1	I2	I3	N	U1	U2	U3	U12	U23	U31	U =	I =	P =	Q =	S =
-00	4 wires 3-phase symmetrical load	**X**	-	-	**X**	**X**	-	-	-	-	-	U1	I1	P1*3	Q1*3	S1*3
-01	1 wire 1 phase	**X**	-	-	**X**	**X**	-	-	-	-	-	U1	I1	P1	Q1	S1
-02	3 wires 3-phase symmetrical load	**X**	-	-	-	-	-	-	**X**	-	-	-	-	PI1U12	QI1U12	I1*U12*√3
-03	3 wires 3-phase symmetrical load	**X**	-	-	-	-	-	-	-	**X**	-	-	-	PI1U23	QI1U23	I1*U23*√3
-04	3 wires 3-phase symmetrical load	**X**	-	-	-	-	-	-	-	-	**X**	-	-	PI1U31	QI1U32	I1*U31*√3
-05	3 wires 3-phase symmetrical load	**X**	-	-	-	**X**	**X**	**X**	**X**	**X**	**X**	-	I1	P1*3	Q1*3	S1*3
-09	3 wires 3-phase asymmetrical load	**X**	-	**X**	-	**X**	**X**	**X**	**X**	**X**	**X**	-	(I1+I3)*3/2	(P1+P3)*3/2	(Q1+Q3)*3/2	(S1+S3)*3/2
-11	4 wires 3-phase asymmetrical load	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	(U1+U2+U3)/3	(I1+I2+I3)/3	P1+P2+P3	Q1+Q2+Q3	S1+S2+S3
-11	4 wires 3-phase asymmetrical load Open Delta	**X**	**X**	**X**	-	**X**	**X**	**X**	**X**	**X**	**X**	(U1+U2+U3)/3	(I1+I2+I3)/3	P1+P2+P3	Q1+Q2+Q3	S1+S2+S3

3.3 Analogue outputs

Click **Analogue Outputs** tab to configure the analogue outputs.



The analogue outputs can be freely configured to the desired measured quantity within the allowed measuring range. Select the quantity you want to measure using the drop-down list. In the **Input Secondary** field, the start values are to be written in the first space, any breakpoints afterwards and the end value at last. Under **Output Value** the corresponding values of the output signal shall be indicated.

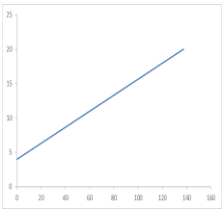
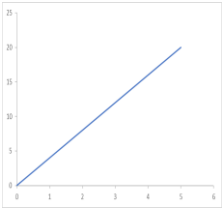
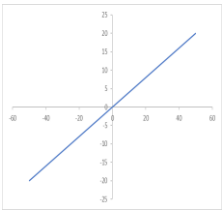
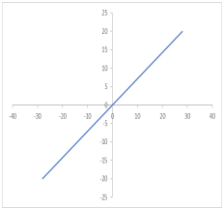
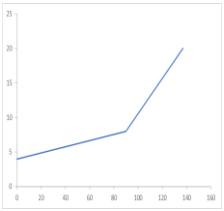
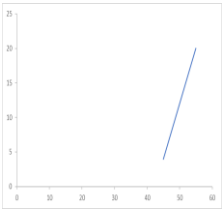
Click *Apply configuration* to transfer and save the new settings in the transducer.

To simulate the outputs for testing purposes, choose Fixed Output, fill in the desired value and click *Apply configuration*.

3.3.1 Measured quantities

Prefix	Quantity	Calculation	System / Phase
I	Input current	(I1+I2+I3)/3	System
I1	Phase current L1		L1
I2	Phase current L2		L2
I3	Phase current L3		L3
U	Input voltage	(U1+U2+U3)/3	System
U1	L1 Phase voltage		L1
U2	L2 Phase voltage		L2
U3	L3 Phase voltage		L3
P	Active power	P1+P2+P3	System
P1	Active power L1		L1
P2	Active power L2		L2
P3	Active power L3		L3
Q	Reactive power	Q1+Q2+Q3	System
Q1	Reactive power L1		L1
Q2	Reactive power L2		L2
Q3	Reactive power L3		L3
S	Apparent power	S1+S2+S3	System
S1	Apparent power L1		L1
S2	Apparent power L2		L2
S3	Apparent power L3		L3
U12	Main voltageL1-L2		L1 - L2
U23	Main voltage L2-L3		L2 - L3
U31	Main voltage L3-L1		L3 - L1
PF	Active power factor	P/S	System
PF1	Active power factor	COS(ϕ1)=P1/S1	L1
PF2	Active power factor	COS(ϕ2)=P2/S2	L2
PF3	Active power factor	COS(ϕ3)=P3/S3	L3
QF	Reactive power factor	Q/S	System
QF1	Reactive power factor	SIN(ϕ1)=Q1/S1	L1
QF2	Reactive power factor	SIN(ϕ2)=Q2/S2	L2
QF3	Reactive power factor	SIN(ϕ3)=Q3/S3	L3
LF	LF factor	sign(Q)*(1-|PF|)	System
LF1	LF factor	sign(Q1)*(1-|PF1|)	L1
LF2	LF factor	sign(Q2)*(1-|PF2|)	L2
LF3	LF factor	sign(Q3)*(1-|PF3|)	L3
PA	Phase angel	PA=(PA1+PA2+PA3)/3	System
PA1	Phase angel	ϕ1=ARCCOS(P1/S1)/PI*180*sign(P1)	L1
PA2	Phase angel	ϕ2=ARCCOS(P2/S2)/PI*180*sign(P2)	L2
PA3	Phase angel	ϕ3=ARCCOS(P3/S3)/PI*180*sign(P3)	L3
IS	Input current with sign	(IS1+IS2+IS3)/3	System
IS1	Phase current with sign	I1*sign(P1)	L1
IS2	Phase current with sign	I2*sign(P2)	L2
IS3	Phase current with sign	I3*sign(P3)	L3
P_I1_U12	Active power, System connection-02		System
P_I1_U23	Active power, System connection -03		System
P_I1_U31	Active power, System connection -04		System
Q_I1_U12	Reactive power, System connection -02		System
Q_I1_U23	Active power, System connection -03		System
Q_I1_U31	Active power, System connection -04		System
F	Frequency		System
Fixed Output	Fixed output		

3.3.2 Example of settings for the analogue outputs

U12	Measuring main voltage L1-L2 IN: 0 – 137,5 V OUT: 4 – 20 mA	Secondary / Output 0 / 4 137,5 / 20	
I1	Measuring current I1 IN: 0 – 5 A OUT: 0 – 20 mA	Secondary / Output 0 / 0 5 / 20	
P	Measuring total power IN: ±50 MW OUT: ±20 mA	Primary / Output -50 / -20 50 / 20	
Q	Measuring total power IN: ±28 MVar OUT: ±20 mA	Primary / Output -28 / -20 28 / 20	
U12	Measuring main voltage L1-L2 with voltlup. IN: 0-90-137,5 V OUT: 4-8-20 mA	Secondary / Output 0 / 4 90 / 8 137,5 / 20	
F	Measuring frequency 45 – 55 Hz IN: 45 – 55 Hz OUT: 4 – 20 mA	Secondary / Output 45 / 4 55 / 20	

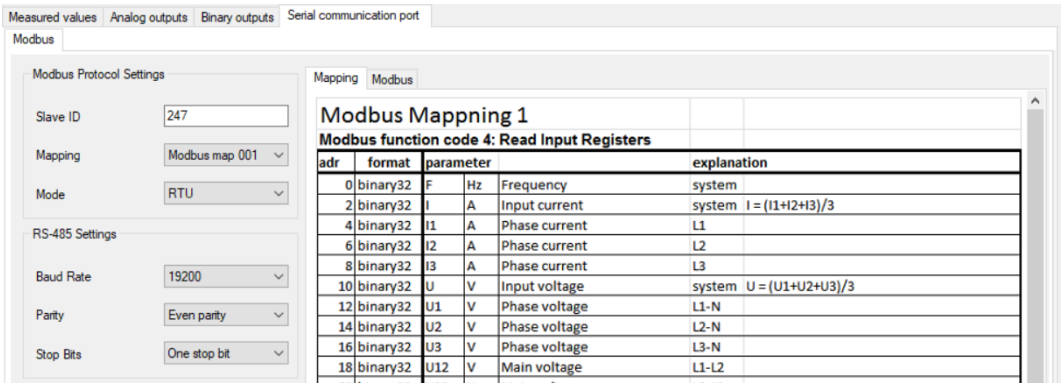
3.4 Other outputs

3.4.1 Energy pulses

Under the **Binary outputs** tab, you can change the settings for the output mode, type of energy and direction of measurement. You just need to fill in the pulse frequency and all other quantities are calculated automatically.

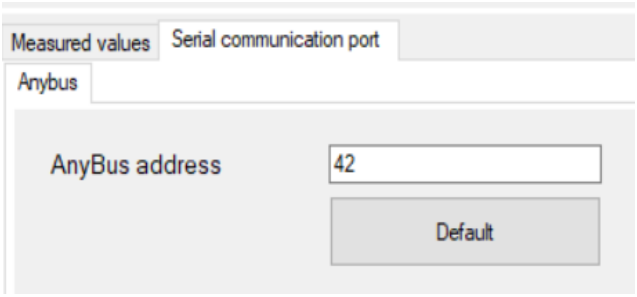
3.4.2 Modbus

Choosing the **Serial communication port** tab you can change the modbus settings. There are different mapping profiles to choose from. You can also find all necessary information about RS-485 settings under the **Modbus** tab.



3.4.3 Profibus / Profinet

Here you can set the address for the anybus or choose **default**. The GSD file is available to download from our webpage: www.tillquist.com .

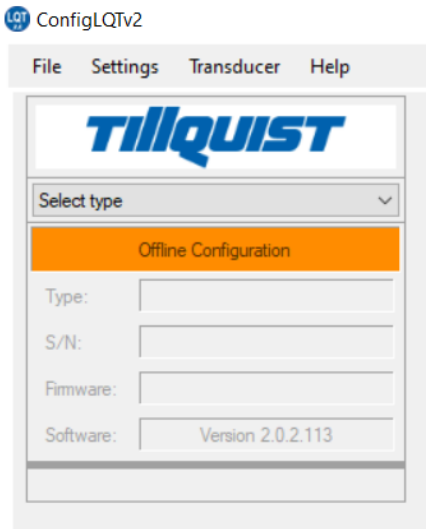


3.5 Offline configuration

Follow the next steps to make a configuration in offline mode.

1. Select *Transducer* menu -> Configuration Mode -> Offline Configuration.
2. Choose the desired type of transducer from the drop-down list.

You can now see the text 'Offline Configuration' with orange background at **Connection status** field.



3.6 Save / Open a saved configuration

The configured parameters of a transducer can be saved to a file which can easily be downloaded to other transducers.

3.6.1 Save a configuration to a file

1. Select *File* menu and click *Save as*.
2. Write a file name and choose a desired folder.
3. Click *Save*.

3.6.2 Open a configuration from a saved file

1. Select *File* menu and click *Open file.*
2. Choose the desired configuration file (XML-dokument).
3. Click *Open*.

4 Firmware upgrade

The firmware of our transducers can be upgraded with the ConfigLQT software. To do so, connect the transducer to the computer with a USB cable.

1. Start ConfigLQT.
2. Select *Firmware Upgrade* from *Transducer* menu.
3. Choose the file with the new firmware and click *Upgrade.*
4. When the upgrade is done, the auxiliary voltage must be disconnected so that the transducer restarts, allowing the new firmware to take effect.
5. Check that the right firmware version is displayed among the transducer's data.