USER MANUAL LQT40M

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Rev. 1.0 2025-10-06

The LQT40M is a programmable multi-transducer designed for accurate and flexible measurement of AC current and voltage in modern power systems. With its True RMS measurement capability, it reliably monitors everything from basic single-phase installations to advanced 4-wire unbalanced loads.

In addition to general power monitoring, the LQT40M is particularly well-suited for applications requiring high-precision frequency measurement, such as turbine control and other demanding industrial processes where stability and accuracy are critical.

Equipped with serial communication via Modbus TCP, the LQT40M offers seamless integration into control, protection, and monitoring environments. Its compact format and the free configuration software ConfigLQT ensure simple installation, programming, and customization via the integrated USB port.

This manual is intended for engineers, technicians, and system integrators. It provides guidance on installation, configuration, operation, and troubleshooting. Please read the safety instructions carefully before installation.

Important User Information

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Table of contents

1 Instructions

1.1 Purpose of this document

This document describes how to use the LQT40M multi transducer. The user manual is intended to be used by:

• installation personnel and commissioning engineers

• service and maintenance personnel

• planners

1.2 Intended use

The transducer is intended to measure electrical quantities, 1 to 3-phases (alternating voltage and currents). The measured electrical quantities are then available via different serial interface, depending of versions.

1.3 Mounting

⚠	The transducer shall be installed into a protecting cabinet on a 35 mm top hat rail (DIN rail) according IEC 60715. The enclosure shall not be accessible without tools.
⚠	Ensure at least 5 mm free space is left around the device on the DIN rail to allow proper ventilation and safe operation.

1.4 Installation and maintenance

The installation, operation and maintenance shall only be made by qualified electrical engineering personnel and in accordance with applicable regulations. Before the installation, please check that the transducer is the correct type and complies with the installation needs.

1.4.1 Safety notes

⚡	Attention: Danger to life! Ensure that all leads are free of potential when connection them!
⚠	The AUX supply must be protected by an external fuse or circuit breaker with a maximum rating of 10 A. In addition, an external disconnect device (circuit breaker or switch) shall be installed close to the equipment, easily accessible to the operator, and with its OFF position clearly marked.
⚠	Voltage measurements (U_{L1}, U_{L2}, U_{L3}) inputs must have circuit breaker or fuses rated 10 Amps or less.
⚠	No fuses should be used on the currents inputs (I_{L1}, I_{L2}, I_{L3}). The current measuring circuits from the current transformers must be short-circuited before disconnection.
⚠	When UL certification is required, use a UL-listed current transformer with the correct transformation ratio to ensure compliance with UL standards. a) "Always open or disconnect circuit from power-distribution system (or service) of building before installing or servicing current transformers". b) "The current transformers may not be installed in equipment where they exceed 75 percent of the wiring space of any cross-sectional area within the equipment".

	c) "Restrict installation of current transformer in an area where it would block ventilation openings". d) "Restrict installation of current transformer in an area of breaker arc venting". e) "Not suitable for Class 2 wiring methods" and "Not intended for connection to Class 2 equipment". f) "Secure current transformer and route conductors so that the conductors do not directly contact live terminals or bus". g) The word "WARNING" and the following or equivalent statement: "To reduce the risk of electric shock, always open or disconnect circuit from power-distribution system (or service) or building before installing or servicing current transformers".

1.5 Operation

The transducer is intended for operation at an altitude not exceeding 2000 m and in an environment that is not considered as wet location.

Operation temperature: -10…22…24…+55°C

Proper function is only guaranteed if the USB is not connected to the transducer and all the instructions in this manual are followed for safety reasons.

If the equipment is used in a manner not specified by this instruction, the protection provided by the equipment may be impaired.

1.6 Safety

All inputs and outputs are galvanically isolated from each other.

Protection class:	II, protective insulation, voltage inputs via protective impedance.
Communication interfaces:	Only connect the communication interfaces of the device to circuits with extra-low voltage (max. 30VAC, 42.4V peak, 60VDC). Only connect the communication interfaces of the device to circuits which provide double or reinforced insulation to mains or other hazardous voltages.
Protection:	IP40 (housing), IP20 (terminals)

1.7 Warning!

⚠	Connection must comply with current regulations for systems with rated voltage up to 1000 V. Before switching on or off and if the housing is removed, all voltages to the equipment must be switched off and external currents circuit shorted before disconnected.

1.8 Maintenance

The transducer requires no maintenance. Any repairs shall be performed by trained personnel, or the equipment shall be returned to the supplier for repair.

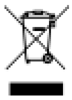
Wipe the device using a clean, dry and soft cloth if necessary. Do not use solvents.

1.9 Symbols

Warning for life-threatening or hazardous for properties situations. Indicates situations where careful reading of this manual is required to avoid potential HAZARD situations.

Caution, possibility of electric shock

Read the manual before use



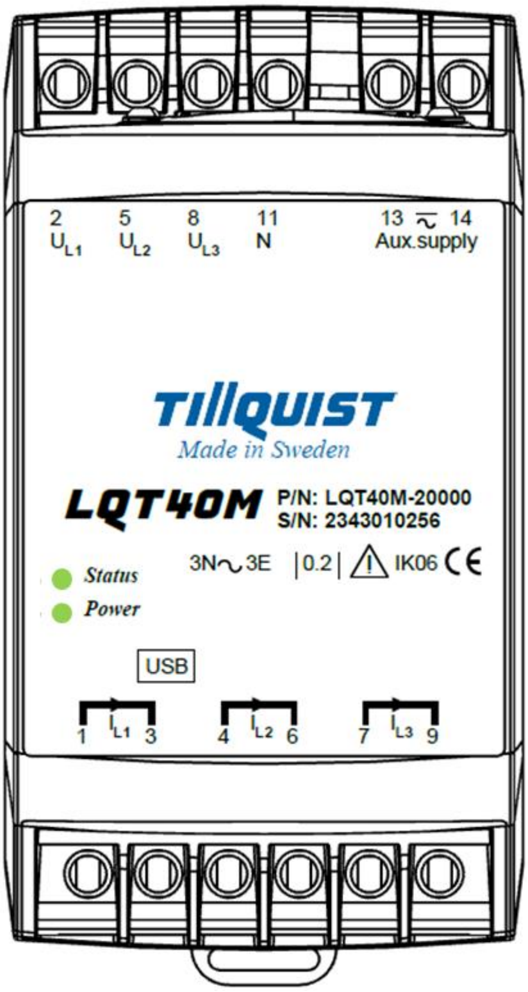
The device must be discarded in a professional way

CE conformity mark

2 Connections

2.1 Connection diagram

Voltage input		
U_{L1}	2	
U_{L2}	5	
U_{L3}	8	
N	11	
Current input	In	Out
I_{L1}	1	3
I_{L2}	4	6
I_{L3}	7	9
Aux Power Supply		
	13	
	14	
Modbus TCP		
	P1	
	P2	



2.2 Electric connection

The plug-in terminals needs to be removed before accessing the input terminals.

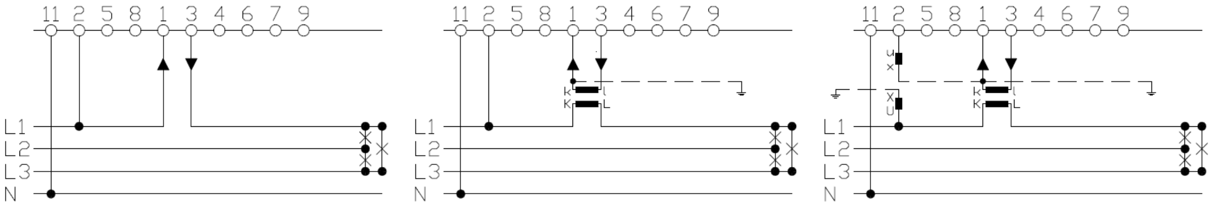
Inputs L1, L2, L3, N, I1, I2, I3, Aux.supply	
Wire section:	6.0 mm² / 10 AWG solid and stranded copper ≥70 °C
Clamp opening size:	3.2 × 3.9 mm
Wire stripping:	max 9 mm
Recommended torque:	0.8 - 0.88 Nm / 7.2 - 7.9 in.lbs

2.3 Connection diagrams – System connection

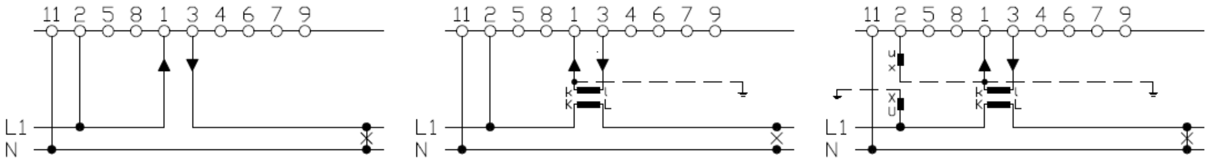
LQT40M system connection is programmable from single phase to 4-wire balanced or unbalanced connection.

Configurable System Connection											
System connection	**Application**	**I1**	**I2**	**I3**	**U1**	**U2**	**U3**	**N**	**U12**	**U23**	**U31**
-00	4wire, 3 phase symmetric load	X	-	-	X	-	-	X	-	-	-
-01	1-wire, 1 phase	X	-	-	X	-	-	X	-	-	-
-02	3-wire, 3 phase symmetric load	X	-	-	-	-	-	-	X	-	-
-03	3-wire, 3 phase symmetric load	X	-	-	-	-	-	-	-	X	-
-04	3-wire, 3 phase symmetric load	X	-	-	-	-	-	-	-	-	X
-05	3-wire, 3 phase symmetric load	X	-	-	X	X	X	-	X	X	X
-09	3-wire, 3 phase asymmetric load	X	-	X	X	X	X	-	X	X	X
-11	4-wire, 3 phase asymmetric load	X	X	X	X	X	X	X	X	X	X
-11	4-wire, 3 phase asymmetric load Open Delta	X	X	X	X	X	X	-	X	X	X

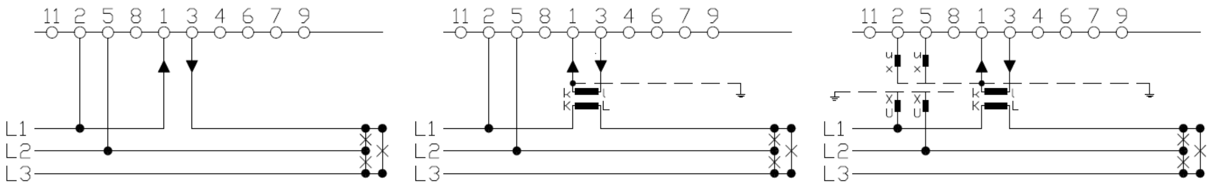
-00 1-phase 4-wire
1 element 3-phase symmetric load



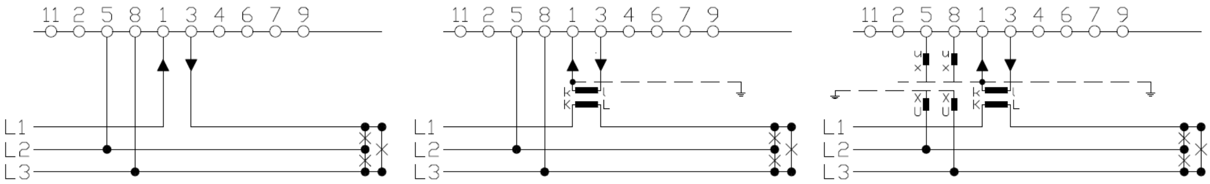
-01 1-phase 2-wire
1 element Single-phase AC



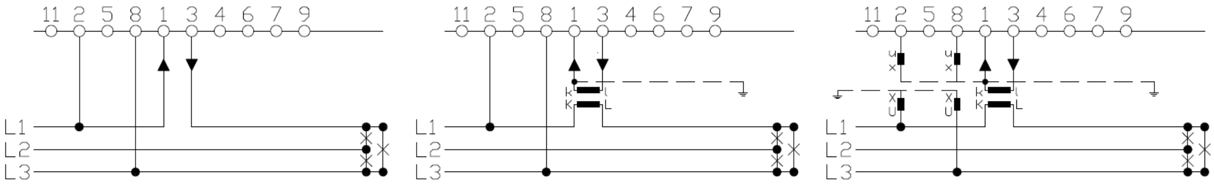
-02 1-phase 3-wire
1 element 3-phase symmetric load phase-shift U12-I1



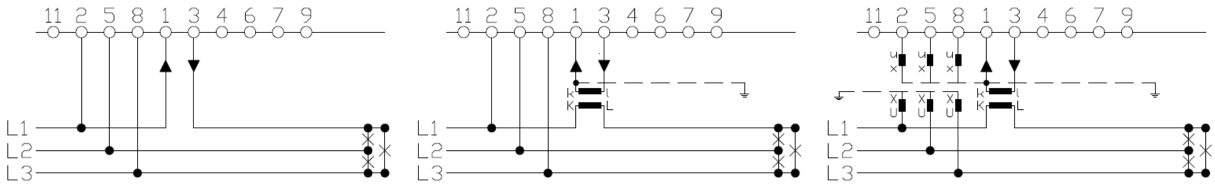
-03 1-phase 3-wire
1 element 3-phase symmetric load phase-shift U23-I1



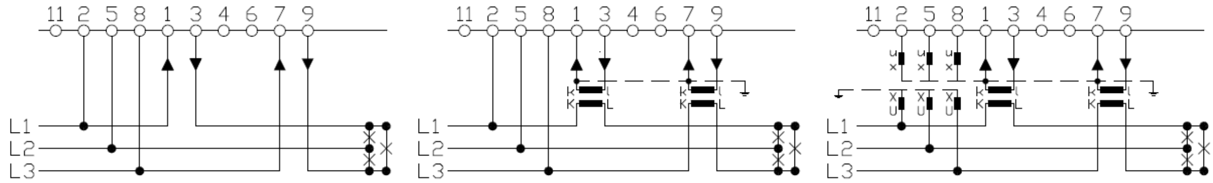
-04 1-phase 3-wire
1 element 3-phase symmetric load phase-shift U31-I1



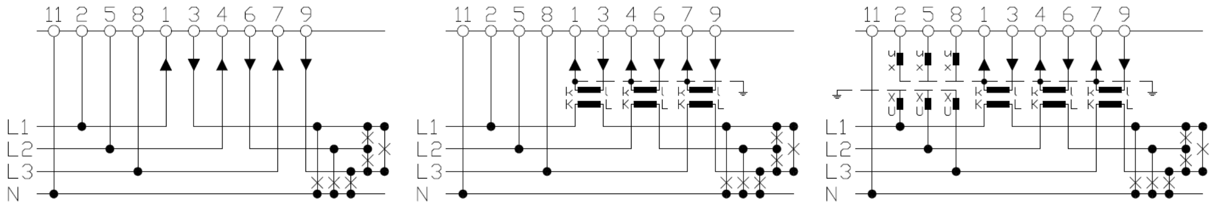
-05	3-phase	3-wire
	1 element	3-phase symmetrical load



-09	3-phase	3-wire
	2 elements	3-phase asymmetrical load



-11	3-phase	4-wire
	3 elements	3-phase asymmetrical load



3 Measuring

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	U1*I1	L1
S2	Apparent power L2	U2*I2	L2
S3	Apparent power L3	U3*I3	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= cos(φ)	System
PF1	Active power factor	cos(φ1)=P1/S1=cos(PA1)	L1
PF2	Active power factor	cos(φ2)=P2/S2=cos(PA2)	L2
PF3	Active power factor	cos(φ3)=P3/S3=cos(PA3)	L3
QF	Reactive power factor	Q/S= sin(φ) =sin(PA)	System
QF1	Reactive power factor	sin(φ1)=Q1/S1=sin(PA1)	L1
QF2	Reactive power factor	sin(φ2)=Q2/S2=sin(PA2)	L2
QF3	Reactive power factor	sin(φ3)=Q3/S3=sin(PA3)	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	φ=arccos(P/S)/PI*180*sign(P)	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
F	Frequency		System

3.2 Meassuring system

3.2.1 Phase-Locked loop - PLL

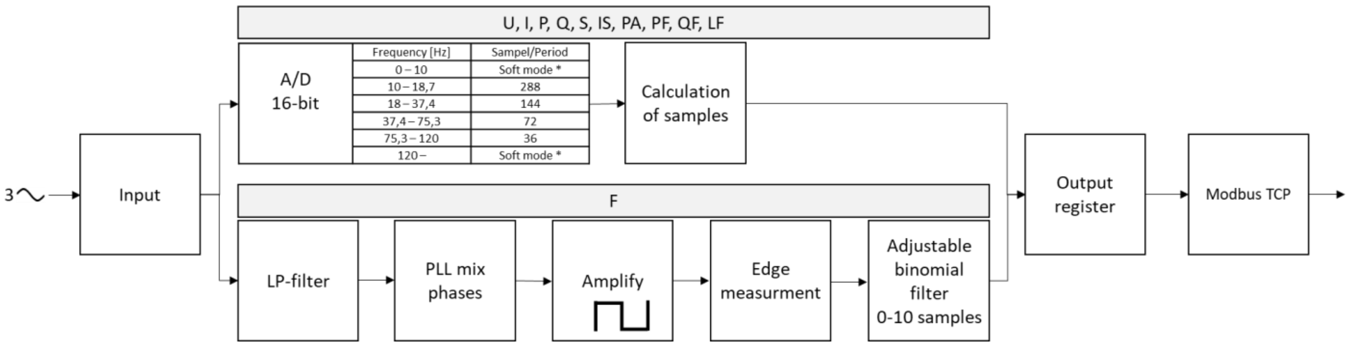
The measuring system use a phase-locked loop (PLL) between 10-120 Hz. All quantities are being measured. The number of samples per period is deppending of the frequency.

3.2.2 Soft mode

A fixed sample rate of 1800 samples/second (soft mode) is used when the frequency is lower than 10 Hz or higher than 120 Hz. Measured quantities in soft mode are voltage (U), current (I) and frequency (F).

3.2.3 Block diagram

Schematic block diagram of measure process.



* *Soft mode = 1800 samples / second*

3.2.4 Frequency filter

The voltage inputs, including the neutral line, first pass through a low-pass filter (1-pole, cutoff at 3.4 kHz) to remove high-frequency noise.

Next, the signals are buffered and passed through DC-blocking filters (1-pole, cutoff at 0.033 Hz) to remove any offset. These signals are then sampled by the ADC with reference to the neutral.

An analog multiplexer selects two of the buffered signals (see table). The difference between these signals is filtered and amplified, and then converted into a square wave with the same frequency. This square wave is sent to the microcontroller for frequency detection.

A binomial filter is also available and can be set from 0 to 10 to further smooth the data.

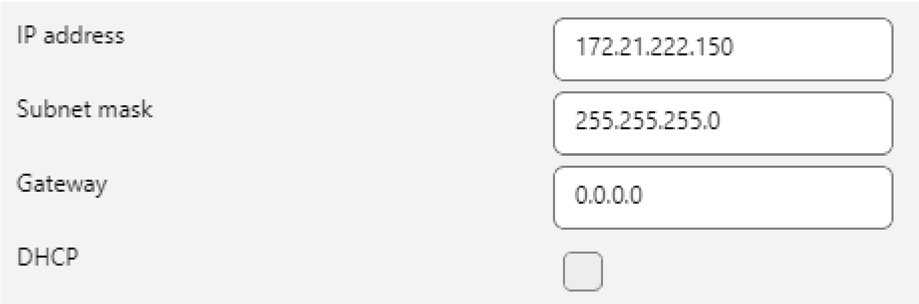
System Connection	Frequency reference	
00, 01	U1	(UL1 – UN)
03	U32	(UL3 – UL2)
02, 05, 09, 11	U12	(UL1 – UL2)
04	U31	(UL1 – UL3)

4 Output – Modbus TCP

LQT40M has a Modbus TCP output for serial communication. Three different set of ”Process Data Set Mapping”” are availble.

4.1 Ethernet configuration

Ethernet parameters are set in ConfigLQT v3.



4.2 Process Data Set Mapping

A: Basic

Parameters

Parameter	Range		Bus value	Type	Byte	Note
Bus Inc Num	-	-	0-65535	Unsigned Word	1-2	-
Data Inc Num	-	-	0-65535	Unsigned Word	3-4	-
I_RMS	0-12	A	0-65535	Unsigned Word	5-6	(I1+I2+I3)/3
U_RMS	0-300	V	0-65535	Unsigned Word	7-8	(U1+U2+U3)/3
P_RMS	±10800	W	±10800000	Signed Double Word	9-12	P=P1+P2+P3
Q_RMS	±10800	var	±10800000	Signed Double Word	13-16	Q=Q1+Q2+Q3
F	0-300	Hz	0-65535	Unsigned Word	17-18	-

Bus Increment Number increase with every new message.
Data Increment Number increase with every new measured

B: Bassic + High Resolution F

Parameters

Parameter	Range		Bus value	Type	Byte	Note
Bus Inc Num	-	-	0-65535	Unsigned Word	1-2	-
Data Inc Num	-	-	0-65535	Unsigned Word	3-4	-
I_RMS	0-12	A	0-65535	Unsigned Word	5-6	(I1+I2+I3)/3
U_RMS	0-300	V	0-65535	Unsigned Word	7-8	(U1+U2+U3)/3
P_RMS	±10800	W	±10800000	Signed Double Word	9-12	P=P1+P2+P3
Q_RMS	±10800	var	±10800000	Signed Double Word	13-16	Q=Q1+Q2+Q3
F	0-300	Hz	0-65535	Unsigned Word	17-18	-
F_HIRES	0-300	Hz	0-300000	Unsigned Double Word	19-22	-

Bus Increment Number increase with every new message.
Data Increment Number increase with every new measured

C: Extended

Parameters							Data Set
Parameter	**Range**		**Bus value**	**Type**	**Byte**	**Note**	**C**
Bus Inc Num	-	-	0-65535	Unsigned Word	1-2	-	X
Data Inc Num	-	-	0-65535	Unsigned Word	3-4	-	X
I_RMS	0-12	A	0-12000	Unsigned Double Word	5-8	(I1+I2+I3)/3	X
U_RMS	0-300	V	0-300000	Unsigned Double Word	9-12	(U1+U2+U3)/3	X
P_RMS	±10800	W	±10800000	Signed Double Word	13-16	P=P1+P2+P3	X
Q_RMS	±10800	var	±10800000	Signed Double Word	17-20	Q=Q1+Q2+Q3	X
F	0-300	Hz	0-300000	Unsigned Double Word	21-24	-	X
I1	0-12	A	0-12000	Unsigned Double Word	25-28	-	X
I2	0-12	A	0-12000	Unsigned Double Word	29-32	-	X
I3	0-12	A	0-12000	Unsigned Double Word	33-36	-	X
U1	0-300	V	0-300000	Unsigned Double Word	37-40	-	X
U2	0-300	V	0-300000	Unsigned Double Word	41-44	-	X
U3	0-300	V	0-300000	Unsigned Double Word	45-48	-	X
U12	0-520	V	0-520000	Unsigned Double Word	49-52	-	X
U23	0-520	V	0-520000	Unsigned Double Word	53-56	-	X
U31	0-520	V	0-520000	Unsigned Double Word	57-60	-	X
P1	±3600	W	±3600000	Signed Double Word	61-64	-	X
P2	±3600	W	±3600000	Signed Double Word	65-68	-	X
P3	±3600	W	±3600000	Signed Double Word	69-72	-	X
Q1	±3600	var	±3600000	Signed Double Word	73-76	-	X
Q2	±3600	var	±3600000	Signed Double Word	77-80	-	X
Q3	±3600	var	±3600000	Signed Double Word	81-84	-	X
LF	±1		±1000	Signed Double Word	85-88	-	X
PA	±180	°	±180000	Signed Double Word	89-92	-	X

C: Extended

Bus Increment Number increase with every new message.
Data Increment Number increase with every new measured

D: Secondary values

Parameters					
Parameter	**Unit**	**Description**	**Explanation**		**Register Address**
F	Hz	Frequency	system		0
I	A	Input current	system	I = (I1+I2+I3)/3	2
I1	A	Phase current	L1		4
I2	A	Phase current	L2		6
I3	A	Phase current	L3		8
U	V	Input voltage	system	U = (U1+U2+U3)/3	10
U1	V	Phase voltage	L1-N		12
U2	V	Phase voltage	L2-N		14
U3	V	Phase voltage	L3-N		16
U12	V	Main voltage	L1-L2		18
U23	V	Main voltage	L2-L3		20
U31	V	Main voltage	L3-L1		22
P	W	Active power	system	P = P1+P2+P3	24
P1	W	Active power	L1		26
P2	W	Active power	L2		28
P3	W	Active power	L3		30
Q	var	Reactive power	system	Q = Q1+Q2+Q3	32
Q1	var	Reactive power	L1		34
Q2	var	Reactive power	L2		36
Q3	var	Reactive power	L3		38
S	VA	Apparent power	system	S = S1+S2+S3	40
S1	VA	Apparent power	L1	S1 = U1*I1	42
S2	VA	Apparent power	L2	S1 = U1*I2	44
S3	VA	Apparent power	L3	S1 = U1*I3	46
LF	-	LF factor	system	LF = sign(Q)*(1-|PF|)	48
LF1	-	LF factor	L1	LF1 = sign(Q1)*(1-|PF1|)	50
LF2	-	LF factor	L2	LF2 = sign(Q2)*(1-|PF2|)	52
LF3	-	LF factor	L3	LF3 = sign(Q3)*(1-|PF3|)	54
PF	-	Active power factor	system	PF = P/S = cos(ϕ) = COS(PA)	56
PF1	-	Active power factor	L1	PF1 = P1/S1 = cos(ϕ1) = COS(PA1)	58
PF2	-	Active power factor	L2	PF2 = P2/S2 = cos(ϕ2) = COS(PA2)	60
PF3	-	Active power factor	L3	PF3 = P3/S3 = cos(ϕ3) = COS(PA3)	62
QF	-	Reactive power factor	system	QF = Q/S = sin(ϕ) = SIN(PA)	64
QF1	-	Reactive power factor	L1	QF1 = Q1/S1 = sin(ϕ1) = SIN(PA1)	66
QF2	-	Reactive power factor	L2	QF2 = Q2/S2 = sin(ϕ2) = SIN(PA2)	68
QF3	-	Reactive power factor	L3	QF3 = Q3/S3 = sin(ϕ3) = SIN(PA3)	70
PA	°el	Phase angle ϕ	system	PA= arccos(P/S)/PI*180*sign(P)	72
PA1	°el	Phase angle ϕ1	L1	PA1 = arccos(P1/S1)/PI*180*sign(P1)	74
PA2	°el	Phase angle ϕ2	L2	PA1 = arccos(P2/S2)/PI*180*sign(P2)	76
PA3	°el	Phase angle ϕ3	L3	PA1 = arccos(P3/S3)/PI*180*sign(P3)	78
IS	A	Input current with sign	system	IS = (IS1+IS2+IS3)/3	80
IS1	A	Phase current with sign	L1	IS1 = I1*sign(P1)	82
IS2	A	Phase current with sign	L2	IS2 = I2*sign(P2)	84
IS3	A	Phase current with sign	L3	IS3 = I3*sign(P3)	86
CTR	A/A	Rated current transformation ratio (I_{1n} / I_{2n}), e.g. 1000 A / 1 A			88
PTR	V/V	Rated voltage transformation ratio (U_{1n} / U_{2n}), e.g. 220 kV / 110 V			90

E: Primary values

Parameters					
Parameter	**Unit**	**Description**	**Explanation**		**Register Address**
F	Hz	Frequency	system		0
I	A	Input current	system	I = (I1+I2+I3)/3	2
I1	A	Phase current	L1		4
I2	A	Phase current	L2		6
I3	A	Phase current	L3		8
U	V	Input voltage	system	U = (U1+U2+U3)/3	10
U1	V	Phase voltage	L1-N		12
U2	V	Phase voltage	L2-N		14
U3	V	Phase voltage	L3-N		16
U12	V	Main voltage	L1-L2		18
U23	V	Main voltage	L2-L3		20
U31	V	Main voltage	L3-L1		22
P	W	Active power	system	P = P1+P2+P3	24
P1	W	Active power	L1		26
P2	W	Active power	L2		28
P3	W	Active power	L3		30
Q	var	Reactive power	system	Q = Q1+Q2+Q3	32
Q1	var	Reactive power	L1		34
Q2	var	Reactive power	L2		36
Q3	var	Reactive power	L3		38
S	VA	Apparent power	system	S = S1+S2+S3	40
S1	VA	Apparent power	L1	S1 = U1*I1	42
S2	VA	Apparent power	L2	S1 = U1*I2	44
S3	VA	Apparent power	L3	S1 = U1*I3	46
LF	-	LF factor	system	LF = sign(Q)*(1-|PF|)	48
LF1	-	LF factor	L1	LF1 = sign(Q1)*(1-|PF1|)	50
LF2	-	LF factor	L2	LF2 = sign(Q2)*(1-|PF2|)	52
LF3	-	LF factor	L3	LF3 = sign(Q3)*(1-|PF3|)	54
PF	-	Active power factor	system	PF = P/S = cos(ϕ) = COS(PA)	56
PF1	-	Active power factor	L1	PF1 = P1/S1 = cos(ϕ1) = COS(PA1)	58
PF2	-	Active power factor	L2	PF2 = P2/S2 = cos(ϕ2) = COS(PA2)	60
PF3	-	Active power factor	L3	PF3 = P3/S3 = cos(ϕ3) = COS(PA3)	62
QF	-	Reactive power factor	system	QF = Q/S = sin(ϕ) = SIN(PA)	64
QF1	-	Reactive power factor	L1	QF1 = Q1/S1 = sin(ϕ1) = SIN(PA1)	66
QF2	-	Reactive power factor	L2	QF2 = Q2/S2 = sin(ϕ2) = SIN(PA2)	68
QF3	-	Reactive power factor	L3	QF3 = Q3/S3 = sin(ϕ3) = SIN(PA3)	70
PA	°el	Phase angle ϕ	system	PA= arccos(P/S)/PI*180*sign(P)	72
PA1	°el	Phase angle ϕ1	L1	PA1 = arccos(P1/S1)/PI*180*sign(P1)	74
PA2	°el	Phase angle ϕ2	L2	PA1 = arccos(P2/S2)/PI*180*sign(P2)	76
PA3	°el	Phase angle ϕ3	L3	PA1 = arccos(P3/S3)/PI*180*sign(P3)	78
IS	A	Input current with sign	system	IS = (IS1+IS2+IS3)/3	80
IS1	A	Phase current with sign	L1	IS1 = I1*sign(P1)	82
IS2	A	Phase current with sign	L2	IS2 = I2*sign(P2)	84
IS3	A	Phase current with sign	L3	IS3 = I3*sign(P3)	86
CTR	A/A	Rated current transformation ratio (I_{1n} / I_{2n}), e.g. 1000 A / 1 A			88
PTR	V/V	Rated voltage transformation ratio (U_{1n} / U_{2n}), e.g. 220 kV / 110 V			90

The data format used is IEEE 754 single-precision binary floating-point format: binary32. Parmeters are represented as two consecutive Modbus registers. The value of a parameter is represented in SI unit as secondary values on transducer input. To calculate primary values, use the primary to secondary transformer ratio of parameter CTR, PTR. The CTR and PTR parameter can be configured by the user by editing primary to secondary current- and voltage-ratio in ConfigLQT.

5 Commissioning

5.1 Programming of the transducer

ConfigLQT is a free configuration software available for download from the Tillquist website (www.tillquist.com). The software connects to the transducer, enabling users to modify adjustable parameters and monitor live readings.

ConfigLQT also supports offline configuration, allowing parameter settings to be prepared in advance. Configurations can be saved to a file and later loaded into a transducer.

Key Features of ConfigLQT

With ConfigLQT, users can:

- Monitor live readings of measured values
- Adjust output functionality
- Save parameter settings to a file
- Load parameter settings from a file
- Generate and print a settings report
- Upgrade the transducer firmware

5.2 USB configuration interface

The USB interface serves for configuration and commissioning of the transducer. It is not intended for measurement processing during normal operation!

5.3 LED functionality

LQT40M have two LEDs at front, *Power* and *Status*.

State	Power	Status
Start-up	Flashing - On 1 sec / Off 0.5 sec	Flashing - On 1 sec / Off 0.5 sec
Normal operation	On	Flashing - On 200 ms / Off 200 ms
Error	Flashing - On 100 ms / Off 100 ms	Off

6 Technical Data

	Technical Data	Details
Input	Voltage range (Un)	100–400 V (L-L) main voltage (nominal)
	Measuring range	1–520 V_{L-L} TRMS 50/60 Hz or 16⅔ Hz CAT III 1-300 V_{L-N} TRMS 50/60 Hz or 16⅔ Hz CAT III
	Frequency	50/60 Hz (10…40….70…120 Hz) 16⅔ Hz (10…15….18…120 Hz)
	Overload voltage	2 x Un – 10 s
	Consumption	$\leq U^2$ / 1.32 MΩ
	Impedance	1.32 MΩ per phase
	Current (In)	1–5 A
	Measuring range	5 mA–10 A TRMS
	Overload current	2 x In continuously, 10 x In 15 s, 40 x In 1 s
	Consumption	<0.05 VA / phase
	Auxiliary power supply	24–230 VDC / 90–230 VAC 50/60 Hz ±10 %
	Burden	max 7.1 W / 15 VA
Output	Serial communication	Modbus TCP
General Data	Accuracy class	0.2 (Ref. temp. 23 °C)
	Galvanic isolation	Supply, in- and output are galvanically isolated
	Connection terminals / Torque	Input and Auxiliary power supply: 6 mm^2 / 0.8 Nm Output: 2.5 mm^2 / 0.5 Nm
	Humidity	95 % non-condensing
	USB	USB Micro-B, port for configuration
	Temperature	-10…+55 °C (operation) -40…+70 °C (storage) Temperature coefficient < 0.1 % / 10 °C
	Test voltage	4 kV AC /1 min
	Measurement category	Cat. III
	Overvoltage category	Cat. III
	Pollution degree	2
	Dimension (W x H x D)	70 x 132 x 101 mm
	Weight	330 gr
	Protection	IP40 (housing), IK06
	Flammability class	UL94 V-0
	Standards	SS-EN 60688 Transducers SS-EN 61010-1 Safety IEC 61010-2-030 EN 61000-6-2 / -6-4 / -6-5

7 Ordering Codes

	LQT40M-	X	X	XXX
Communication				
Modbus TCP		2		
Frequency				
50/60 Hz			0	
16⅔ Hz			1	
Other Requirements				
Standard configuration				000
Customer configuration (to provide ERF)				001
High precision with Frequency Test Certificate				201

LQT40M-20000	LQT40M Modbus TCP 50/60 Hz
LQT40M-20001	LQT40M Modbus TCP 50/60 Hz with ERF and Test Protocol
LQT40M-21000	LQT40M Modbus TCP 16⅔ Hz
LQT40M-20201	LQT40M Modbus TCP 50 Hz with Frequency Test Protocol