

## LQT40S

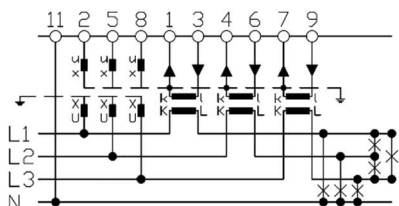
DIN rail, fully programmable, high accuracy, Tillquist's LQT40S, a fast response multi-transducer with less than 50 msec response time, can be used with 50, 60 or 16 $\frac{2}{3}$  Hz rated frequencies with a wide range of AC and DC auxiliary supply. This transducer can measure active and reactive powers, power factors, and all other electrical quantities including voltage and current for any 3-phase system. LQT40S can be easily programmed through its USB micro standard port and Tillquist's ConfigLQT free software.



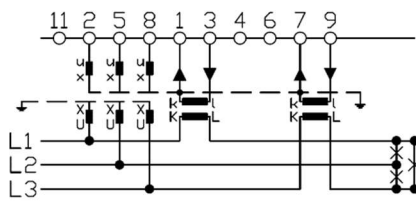
Technical Data		Details
<b>Input</b>	Voltage range (Un)	100 – 400 V (L-L) main voltage (nominal)
	Measuring range	1 – 520 V TRMS L-L 50/60 Hz 1 - 520 V TRMS L-L 16⅔ Hz
	Configurable measuring range	0 - 500 V L-L / 0 - 300 V L-N
	Frequency	50/60 Hz (10...40...70...120 Hz) 16⅔ Hz (10...15...18...120 Hz)
	Overload voltage	1.5 x Un – continuously 2 x Un – 10 s
	Consumption	≤U <sup>2</sup> / 1.32 MΩ
	Impedance	1.32 MΩ per phase
	Current (In)	1 – 5 A
	Measuring range	5 mA – 10 A TRMS
	Configurable measuring range	0 – 10 A
	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 V AC ±10 %
	Burden	max 7.2 W / 15 VA
<b>Output</b>	Analog outputs	4 or 2
	Programmable range	±20 mA, ±5 mA, ±10 V (settings within the range)
	External resistance load	Current output: max 750 Ω (15 V) Voltage output: min 750 Ω
	Response time	<50 msec
	Digital outputs	2 (Energy pulse output)
	Analogue output ripple	≤0.2%
	Communication	Modbus RS485 (RTU) (Map-001 100 msec) - (Map-002 25 msec)
	<b>Measured Quantities</b>	F, U12, U23, U31, U, I, P, S, IS, LF, PF, QF, PA (see matrix on page 3)
<b>General Data</b>	Accuracy U, I, P, Q (40...70 Hz) or (15...18 Hz) F	0.2 (Ref. temp. 23 °C) 10 mHz or 5 mHz with test certificate
	Galvanic isolation	Supply, in- and output are galvanically isolated
	Connection terminals/Torque	Input & auxiliary: 6 mm <sup>2</sup> / 0.8 Nm Output: 2.5 mm <sup>2</sup> / 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
	Inputs	overvoltage cat. III
	Pollution degree	2
	Dimension (W x H x D)	70 x 132 x 101 mm
	Weight	330 gr
	Protection	IP40 (housing), IP20 (terminals)
	Standards	SS-EN IEC 60688:2021 Transducers SS-EN 61010-1 Safety EN 61000-6-2 / -6-4 / -6-5

## Configurable System Connection

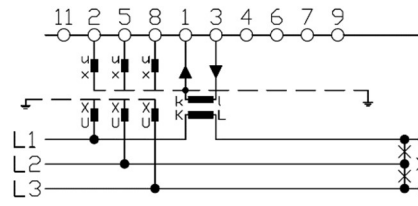
Code	Application	I1	I2	I3	N	U1	U2	U3	U12	U23	U31
00	4-wire, 3 phase symmetric load	X	-	-	X	X	-	-	-	-	-
01	1-wire, 1 phase	X	-	-	X	X	-	-	-	-	-
02	3-wire, 3 phase symmetric load	X	-	-	-	-	-	-	X	-	-
03	3-wire, 3 phase symmetric load	X	-	-	-	-	-	-	-	X	-
04	3-wire, 3 phase symmetric load	X	-	-	-	-	-	-	-	-	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



Connection -11



Connection -09



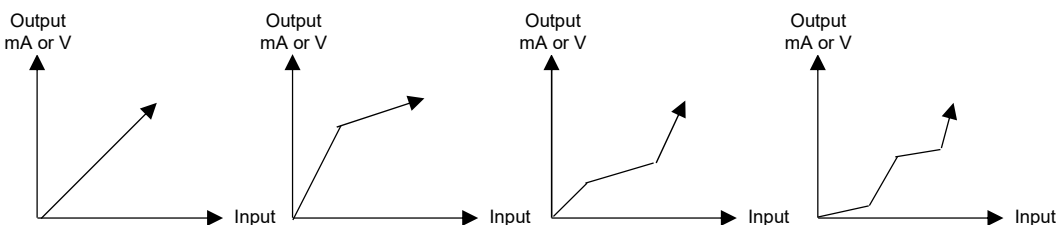
Connection -05

## Configuration Software - ConfigLQT

ConfigLQT, free configuration software, downloadable from our webpage, [www.tillquist.com](http://www.tillquist.com), configures all Tillquist's programmable transducers. The software connects to live transducers, changes the configuration, and visualizes live readings.

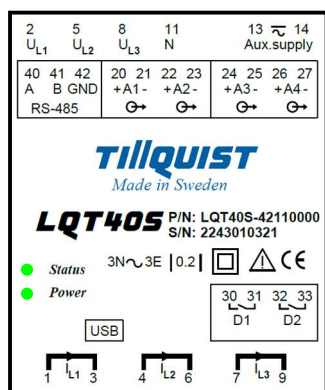
## Configurable Characteristic Points (Analog Outputs)

### Up to setting 5 points

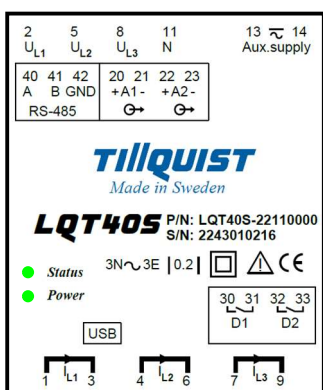


## Connections

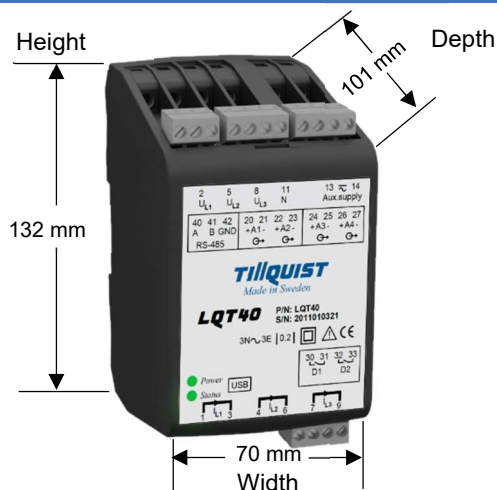
### LQT40S-4



### LQT40S-2



## Dimensions



## Measured Quantities

Quantity	Unit	Description	Measured	Value	Quantity	Unit	Description	Measured	Value
F	Hz	Frequency	System	F	S2	VA	Apparent Power	L2	$S2=U2 \times I2$
I	A	Current	System	$I = (I1+I2+I3)/3$	S3	VA	Apparent Power	L3	$S3=U3 \times I3$
I1	A	Phase Current	L1	I1	PF	-	Active Power Factor Cos( $\phi$ )	System	$PF = (1+2+3)/3$
I2	A	Phase Current	L2	I2	PF1	-	Active Power Factor Cos( $\phi1$ )	L1	PF1
I3	A	Phase Current	L3	I3	PF2	-	Active Power Factor Cos( $\phi2$ )	L2	PF2
U	V	Voltage	System	$U = (U1+U2+U3)/3$	PF3	-	Active Power Factor Cos( $\phi3$ )	L3	PF3
U1	V	Phase Voltage	L1-N	U1	QF	-	Reactive Power Factor Sin( $\phi$ )	System	$QF = (1+2+3)/3$
U2	V	Phase Voltage	L2-N	U2	QF1	-	Reactive Power Factor Sin( $\phi1$ )	L1	QF1
U3	V	Phase Voltage	L3-N	U3	QF2	-	Reactive Power Factor Sin( $\phi2$ )	L2	QF2
U12	V	Phase-Phase Voltage	L1-L2	U12	QF3	-	Reactive Power Factor Sin( $\phi3$ )	L3	QF3
U23	V	Phase-Phase Voltage	L2-L3	U23	LF	-	LF Factor	System	$LF = \text{sign}(Q) \times (1 -  PF )$
U31	V	Phase-Phase Voltage	L3-L1	U31	LF1	-	LF Factor	L1	$LF1 = \text{sign}(Q1) \times (1 -  PF1 )$
P	W	Active Power	System	$P = (P1+P2+P3)/3$	LF2	-	LF Factor	L2	$LF2 = \text{sign}(Q2) \times (1 -  PF2 )$
P1	W	Active Power	L1	P1	LF3	-	LF Factor	L3	$LF3 = \text{sign}(Q3) \times (1 -  PF3 )$
P2	W	Active Power	L2	P2	PA	Deg	Phase Angle $\phi$	System	$PA = (1+2+3)/3$
P3	W	Active Power	L3	P3	PA1	Deg	Phase Angle $\phi1$	L1	PA1
Q	Var	Reactive Power	System	$Q = (Q1+Q2+Q3)/3$	PA2	Deg	Phase Angle $\phi2$	L2	PA2
Q1	Var	Reactive Power	L1	Q1	PA3	Deg	Phase Angle $\phi3$	L3	PA3
Q2	Var	Reactive Power	L2	Q2	IS	A	Bidirectional Current	System	$IS = (1+2+3)/3$
Q3	Var	Reactive Power	L3	Q3	IS1	A	Bidirectional Current	L1	IS1
S	VA	Apparent Power	System	$S = (S1+S2+S3)/3$	IS2	A	Bidirectional Current	L2	IS2
S1	VA	Apparent Power	L1	$S1=U1 \times I1$	IS3	A	Bidirectional Current	L3	IS3

## Ordering Codes

### LQT40S Ordering Codes

	LQT40S-	X	2	1	X	X	XXX
Number of Analog Outputs							
	4	-----	4				
	2	-----	2				
Number of Digital Outputs							
	2	-----	2				
RS 485							
	with RS485	-----	1				
Range of Analog Outputs							
	$\pm 20\text{mA}$	-----	1				
	$\pm 5\text{mA}$	-----	2				
	$\pm 10\text{V}$	-----	3				
Frequency							
	50/60 Hz	-----	0				
	16 $\frac{2}{3}$ Hz	-----	1				
Special Requirements							
	Standard configuration						000
	Customer configuration (to provide ERF)						001
	High precision with frequency test certificate						205

### Ordering Codes Examples

- LQT40S-42110000: LQT40 with 4 analog outputs, 2 digital, RS485,  $\pm 20\text{ mA}$ , 50/60 Hz with standard configuration
- LQT40S-22130000: LQT40 with 2 analog outputs, 2 digital, RS485,  $\pm 10\text{ V}$ , 50/60 Hz with standard configuration
- LQT40S-22111000: LQT40 with 2 analog outputs, 2 digital, RS485,  $\pm 20\text{ mA}$ , 16 $\frac{2}{3}$  Hz, with standard configuration
- LQT40S-22110205: LQT40 with 2 analog outputs, 2 digital, RS485,  $\pm 20\text{ mA}$ , 50/60 Hz High precision with frequency test certificate

Other protocols and certificates are available on request.