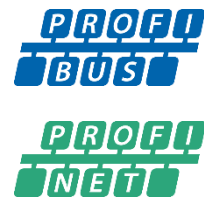


TILLQUIST

LQT60F TRANSDUCER FOR ELECTRICAL NETWORKS



LQT60F - is a transducer for 3-phase electrical networks. It is design for fast control loops with high accuracy, example control of excitation equipment for generator and fast frequency measuring (FFR).

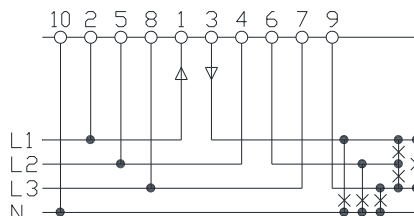
The transducers are connected to the mains directly or via measuring transformers (CT and PT). Galvanic separation between input, output and power supply.

All the measured and evaluated quantities are continuously available via Profibus or Profinet.

Input	Voltage	
	Voltage range (Un)	100 – 400 V main voltage (nominal)
	Measuring range	0 – 500 V TRMS
	Overload voltage	1.5 x Un – continuously, 2 x Un – 10 s
	Consumption	U x 1 mA / phase
	Frequency	10...40...70...120 Hz
	Current	
	Current (In)	1 – 5 A (nominal)
	Measuring range	0 – 12 A TRMS
	Overload current	2 x In continuously, 10 x In 15 s, 40 x In 1 s
Consumption	<0.05 VA / phase	
Supply voltage		
Power supply	24 – 250 VDC, 80 – 250 VAC	
Burden	max 8 VA	
Output	Communication	PROFIBUS DP-V1 PROFINET
Measured Quantity	U RMS	0-300 V (Phase – Neutral)
	I RMS	0 – 12A
	P RMS	± 10800 W
	Q RMS	± 10800 W
	Frequency	10 – 120 Hz
Measuring accuracy	U, I, P, Q	Class 0.2 (40 – 70 Hz)
	F	10 mHz (40 – 70 Hz) or 5 mHz with test certificate
Response time		< 20 ms (50 Hz)
General data	Galvanic isolation	Supply, in- and output are galvanically isolated
	USB	1 port for configuration
	Temperature	-10...+55 °C (operation), -40...+70 °C (storage) Temperature coefficient less than 0.1% / 10 °C
	Test voltage	4 kV AC / min
	Inputs	overvoltage cat. III
	Pollution degree	2
	Dimension (B x H x D)	150 x 70 x 73 mm – DIN-rail
	Weight	ca 0.5 kg
	Standards	SS-EN 60688 Transducers SS-EN 601010 Safety EN 61000-6-2 / -6-4 / -6-5

Connection diagram

3 phase 3 wire unbalance load
3 phase 4 wire unbalance load



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Process Data Set Mapping

3 different process data set mappings are available to select from.

Parameters						Data Set			
Parameter	Range		Bus value	Type	Byte	Note	A	B	C
Bus Inc Num	-	-	0-65535	Unsigned Word	1-2	-	X	X	X
Data Inc Num	-	-	0-65535	Unsigned Word	3-4	-	X	X	X
I_RMS	12	A	0-65535	Unsigned Word	5-6	$(I1+I2+I3)/3$	X	X	X
U_RMS	300	V	0-65535	Unsigned Word	7-8	$(U1+U2+U3)/3$	X	X	X
P_RMS	± 10800	W	± 10800000	Signed Double Word	9-12	$P=P1+P2+P3$	X	X	X
Q_RMS	± 10800	var	± 10800000	Signed Double Word	13-16	$Q=Q1+Q2+Q3$	X	X	X
F	300	Hz	0-65535	Unsigned Word	17-18	-	X	X	X
F_HIRES	300	Hz	0-300000	Unsigned Double Word	19-22	-		X	X
I1	12	A	0-65535	Unsigned Word	23-24	-			X
I2	12	A	0-65535	Unsigned Word	25-26	-			X
I3	12	A	0-65535	Unsigned Word	27-28	-			X
U1	300	V	0-65535	Unsigned Word	29-30	-			X
U2	300	V	0-65535	Unsigned Word	31-32	-			X
U3	300	V	0-65535	Unsigned Word	33-34	-			X
P1	± 3600	W	± 3600000	Signed Double Word	35-38	-			X
P2	± 3600	W	± 3600000	Signed Double Word	39-42	-			X
P3	± 3600	W	± 3600000	Signed Double Word	43-46	-			X
Q1	± 3600	var	± 3600000	Signed Double Word	47-50	-			X
Q2	3600	var	3600000	Signed Double Word	51-54	-			X
Q3	3600	var	3600000	Signed Double Word	55-58	-			X

A: Basic
 B: Basic + High Resolution F
 C: Extended

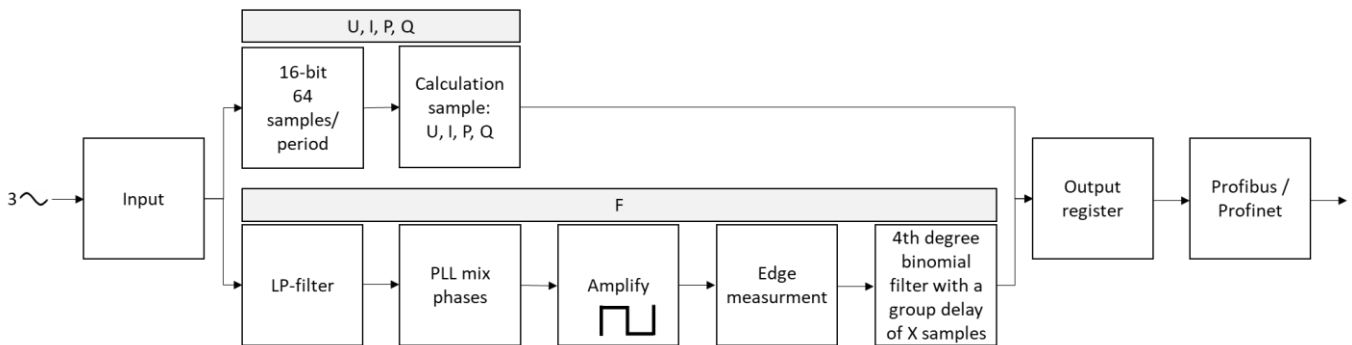
Bus Increment Number increase with every new message.
Data Increment Number increase with every new measured

Measuring

The measured values (64 sample/period) are calculated (U, I, P, Q) every samples and updated synchronously with the input frequency. @50 Hz = 1.25ms, @60 Hz = 1.04 ms.

Frequency measuring

The input signal from all three voltage pahases pass a low pass filter, are mixed together and amplified into a square wave. The edges are detected. It is possible to filter the frequency measuring with a fourth degree binomial filter with a group delay of adjustable numbers of samples. The measured frequency is updated in a measurement register and then sent out via Profibus or Profinet continuously.



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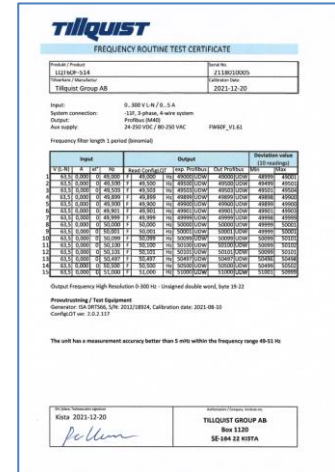


Frequency routine test certificate

Unit with frequency routine test certificate has an accuracy of frequency with 5 mHz (normal 10 mHz).

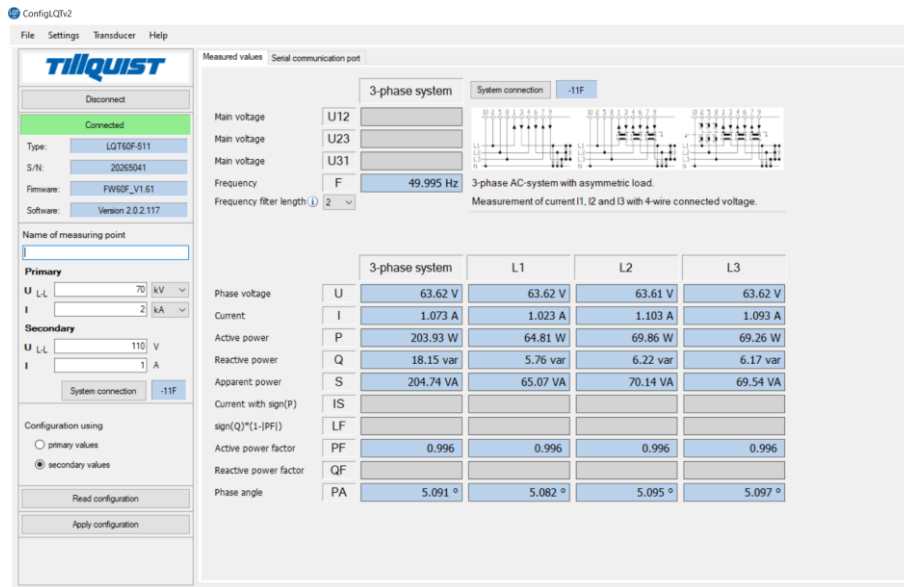
Frequency filter length 1 period (binomial)

Input				Output							Deviation value (10 readings)	
V (L-N)	A	el ^o	Hz	Read ConfigLQT	exp. Profibus	Out Profibus	Min	Max				
63,5	0,000	0	49,000	F	49,000	Hz	49000	UDW	49000	UDW	49000	49001
63,5	0,000	0	49,500	F	49,500	Hz	49500	UDW	49500	UDW	49499	49501
63,5	0,000	0	49,503	F	49,503	Hz	49503	UDW	49503	UDW	49501	49503
63,5	0,000	0	49,899	F	49,899	Hz	49899	UDW	49899	UDW	49899	49900
63,5	0,000	0	49,900	F	49,900	Hz	49900	UDW	49900	UDW	49900	49901
63,5	0,000	0	49,901	F	49,901	Hz	49901	UDW	49901	UDW	49900	49902
63,5	0,000	0	49,999	F	49,999	Hz	49999	UDW	49999	UDW	49998	49999
63,5	0,000	0	50,000	F	50,000	Hz	50000	UDW	50000	UDW	49999	50000
63,5	0,000	0	50,001	F	50,001	Hz	50001	UDW	50001	UDW	49999	50002
63,5	0,000	0	50,099	F	50,099	Hz	50099	UDW	50099	UDW	50099	50101
63,5	0,000	0	50,100	F	50,100	Hz	50100	UDW	50100	UDW	50099	50101
63,5	0,000	0	50,101	F	50,101	Hz	50101	UDW	50101	UDW	50099	50101
63,5	0,000	0	50,497	F	50,497	Hz	50497	UDW	50497	UDW	50495	50499
63,5	0,000	0	50,500	F	50,500	Hz	50500	UDW	50500	UDW	50499	50501
63,5	0,000	0	51,000	F	51,000	Hz	51000	UDW	51000	UDW	50498	51000



Output Frequency High Resolution 0-300 Hz - Unsigned double word, byte 19-22

ConfigLQT



Order Code

- LQT60F-511 Profibus
- LQT60F-611 Profinet
- LQT60F-514 Profibus with frequency routine test certificate 49-51 Hz
- LQT60F-614 Profinet with frequency routine test certificate 49-51 Hz

Our policy is one of continuous improvement and we reserve the right to make changes in design and specifications of any products as engineering advances or necessity requires and revise the above specifications without notice.

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