

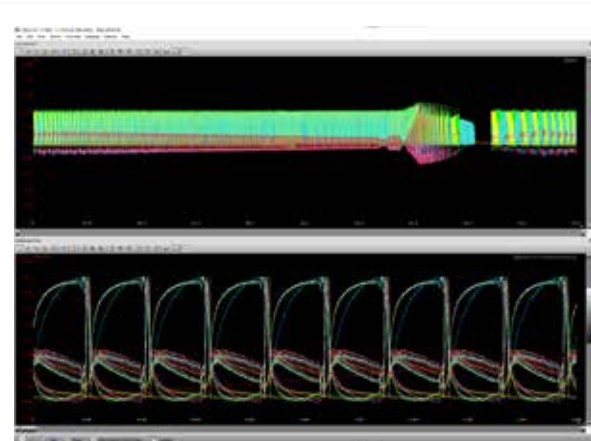
Software LTTpro for LTT24 and LTTsmart

LTTpro is the associated software for display, analysis and storage of the data, so that the measurement chain from sensors to data acquisition to software can be offered from a single source.

Thanks to a patented solution, no driver installation is required to get the devices up and running. As a result, the software is easy to configure. Simply connect the LTT device to the PC and plug in all sensors: the sampled analog and digital signals are immediately available in LTTpro for real time visualization, analysis by internal mathematics and direct storage into many different file formats (Famos, DASyLab, matlab, Diadem and many others).

LTTpro Power Analyser

The software option "LTTpro PowerAnalyzer", specially developed for the LTTsmart, delivers high-performance electrical power analysis that is perfectly designed for modern electric motors at varying speeds. LTTsmart devices rely on highly optimized algorithms to precisely determine and display the rotation cycles, even at highly distorted phase current waveforms with heavy noise.



LTT Pro Software

Apart from all typical power characteristics (RMS values, active/reactive/apparent power, power factors, speed, efficiency,...), the distortion (THD = Total Harmonic Distortion) of all phase currents and phase voltages is continually calculated and displayed. Calculations based on half cycles and averaging across multiple cycles are also possible.

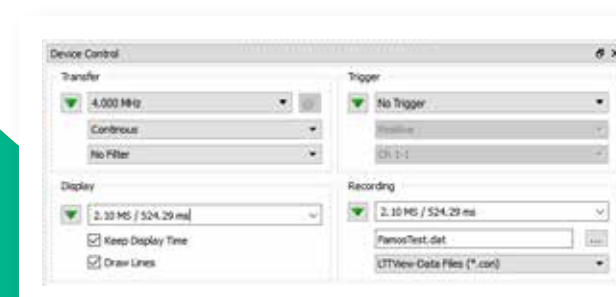
The parallel view of raw data and calculated PowerAnalyzer data immediately reveals the causes behind any anomalies in the key performance indicators.

At the press of a button or by setting an appropriate trigger event, entire time windows of raw data can be stored along with the corresponding calculated data from the PowerAnalyzer, down to the precise rotation, while the continuous power calculation keeps running.

The compact LTTsmart systems allow for both: operation at a test stand facility and mobile operation in a vehicle itself. In addition, the software LTTpro can also display, analyze and share previously recorded or emulated data, covering all requirements around driving cycles, vehicle testing and production monitoring.

This LTT-hardware/software package thus offers an efficient solution for measuring the power of an electric motor in testing environments as well as in real operation.

Furthermore the LTT PowerAnalyzer may as well get implemented into many third party solutions including Gl.bench, DASyLab, m.lab, LabVIEW.



LTTsmart

ALSO AVAILABLE IN 19-INCH-VERSION WITH
16 MODULES AND 32 CHANNELS.

- FLEXIBLE
- FAST
- PRECISE



Input Characteristics	Range	Bandwidth		
		5 kHz	50 kHz	1 MHz
Dynamic Range	±1000 V	110 dB	104 dB	94 dB
	±90 V	113 dB	107 dB	96 dB
	±10 V	115 dB	109 dB	98 dB
	±500 m V	102 dB	94 dB	82 dB

ENOB (THD+ noise)	Range	effective bits	dB @ 125 kHz
			sampling rate
ENOB (THD+ noise)	±1000 V	typ 15.3 Bit	-95 dB
	±90 V	typ 15.5 Bit	-96 dB
	±10 V	typ 15.6 Bit	-97 dB
	±500 m V	typ 14.3 Bit	-89 dB

Signal Conditioning

ICP@/IEPE*	Constant current supply: 4 mA. Input coupling: AC and DC
Charge*	1 mV/pC, range: ±5 nC (optional up to ±500 nC) High-pass: 0.15 Hz auto charge clear; manual clear
Pulse/Counter Input*	Input signal: TTL Time resolution 1.20 ns (832 MHz)
Strain-Gauge*	Quarter (120 Ω, 350 Ω) / Half / Full Bridges Constant voltage supply: 0 ... 10 V

WE MEASURE IT ALL



- FLEXIBLE
- FAST
- PRECISE



Technical Data



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- FLEXIBLE
- FAST
- PRECISE



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LTTsmart – Technical Data

2-channels per module: High precision data acquisition system incl. analog frontend

Technical Specifications – Optional Specifications marked with *

Specifications are subject to change without notice.

Available per Module

2-Channel high precision data acquisition system with 2 analog inputs:

- Synchronously sampling 2 MHz // 24 Bit ADC per channel (optional 4 MHz)
- ± 500 mV, ± 10 V, ± 90 V*
- ± 1000 Vrms*
- Extremely high precision: $\pm(0.015\% \cdot \text{Signal} + 0.015\% \cdot \text{Range})$
- ICP®/IEPE with 4 mA supply*
- Charge input*
- Pulse/Counter Inputs with 1.20 ns resolution*
- Strain-Gauge*
- 2.5 kV galvanic isolation

USB 3.0 Interface, Digital-I/O (3.3 V LVCMOS/LVTTL), LinkUp/LinkDown-Sync-Interface to cascade multiple devices

Size: ca. 146 x 31 x 140 mm³ (L x W x H) per module

Input Characteristics

Max. Bandwidth	DC – 900 kHz (optional 1.7 MHz)
Filter	Analog: 900 kHz low-pass filter (optional 1.7 MHz) Digital: a variety of selectable filters
Inter-Channel Phase Difference	≤ 10 ns
Input Connectors	BNC, High Voltage Banana and/or DIN
Galvanic Isolation	2500 VDC
Volt Input Ranges	± 500 mV, ± 10 V, ± 90 V*, ± 1000 Vrms*
Volt Input Impedance	1M Ω _50pF, [10M Ω _5pF at ± 1000 Vrms]*
Volt Input Couplings	single-ended (AC/DC) (AC available only at ± 500 mV and ± 10 V)

Operation Conditions

Power Supply	<ul style="list-style-type: none"> • 12-16 VDC (absolute max. rating 10-35 VDC) • 5 W typical per channel • external power supply: 100-240 VAC
Environmental Temperature	+10 °C to +30 °C
Operating System	Windows 7 / 8 / 10, Linux and others

Data Recording and Formats

RAM	64 MByte per channel 512 MByte RAM with 8 channels
Interface to PC	USB 3.0, USB 2.0
Recording Media	internal RAM, PC's hard disk
Available file formats	Famos, DASyLab, DIAdem, Excel, m.lab

Data Transfer Rates

PC with USB	≥ 170 MByte/s (USB 3.0), 35 MByte/s (USB 2.0)
Recording Media	internal RAM, PC's hard disk
Internal RAM	64 MByte per channel 512 MByte RAM with 8 channels

Number of Channels

max. No. of Devices	Any number of devices with up to 8 modules each (max. 16 channels per device)
Synchronization	Yes (max. delay between devices: < 20 ns)
External Clock	1 input and 1 output with 3.3 V LVPECL
External Trigger	1 input and 1 output with 3.3 V LVCMOS/LVTTL
Digital in/out	8 inputs and 8 outputs with 3.3 V LVCMOS/LVTTL



LTTsmart - Modules



Type	Base	HH	MM, LL, Li	LDi / LDiP	LLp	LH
Front	A	B	C	D	E	F

Module variants - Detailed information

	Base	HH	LH	MM	LL	LLp	Li	LDi	LDiP	
1000 Vrms		✓(2 x)	✓(1 x)							1000Vrms
+/- 90 V				✓						+/- 90 V
+/- 10 V		✓	✓	✓	✓	✓	✓	✓	✓	+/- 10 V
+/- 500 mV		✓	✓	✓	✓	✓	✓	✓	✓	+/- 500 mV
+/- 100 mA								✓	✓	+/- 100 mA
ICP								✓	✓	ICP
Resistance								✓	✓	Resistance
PT 100, PT 1000								✓	✓	PT 100, PT 1000
Charge								✓	✓	Charge
Strain Gauge								✓	✓	Strain Gauge
Pulse/Counter									✓	Pulse/Counter
Digital I/O	✓(8 x)						✓(2 x)		✓(2 x)	Digital I/O
Sync Up/Down	✓									Sync Up/Down
USB 3.1	✓									USB 3.1
Power Input	✓									Power Input
Front-Style	A	B	F	C	C	E	C	D	D	Front-Style

About us

Labortechnik Tasler GmbH with its headquarters in Würzburg, Germany, has been developing, producing and selling patented real-time data acquisition systems around the globe for over 25 years.

Through many years of cooperation with its renowned customers from a wide variety of sectors, such as **electric motors, the power industry, mechanical and plant engineering, research and development, aerospace, the automotive industry and the military**, Labortechnik Tasler GmbH has been able to gather relevant experience that has contributed to the development of the **LTTsmart**. The modular concept now makes it possible to assemble the devices individually with different function modules for each customer according to his individual requirements.



Labortechnik Tasler GmbH – fast, flexible and precise measurement technology



Michael Tasler
General Manager

Michael Tasler founded Labortechnik Tasler GmbH based on one of his patents concerning high performance real-time data acquisition systems.

He is a specialist in physics as well as in high performance analog and digital design. He graduated from the University Of Texas at Austin, USA.

