ROGA Instruments INTELLIGENT TESTING EQUIPMENT

MULTIFUNCTIONAL MEASUREMENT TECHNOLOGY

LTT24 – fast, flexible and precise

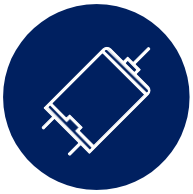
ROGA Instruments INTELLIGENT TESTING EQUIPMENT

LTT24 – High Speed measurement technology

Winner
of the
MESSTEC & SENSOR Masters 2013
AWARD

The multifunctional, patented real-time data acquisition device LTT24 with 24 Bit ADC and 4 MSample/s per channel, including the functionality of a measuring amplifier for volts, current, ICP®, strain gage, charge, resistance, pulse, temperature etc.

Liquid metal flows



Electric motors

Tape drive replacement

Automotive industry

Power quality

LTT24 – fast, flexible and precise

ROGA Instruments INTELLIGENT TESTING EQUIPMENT

LTT24 – up to 4 MHz at 24 Bit

LTT24 front

LTT24 back

AT FULL SPEED WITH HIGHEST PRECISION

- 24 Bit AD-conversion at up to 4 MHz sampling rate
- Digital measurements accurate to nanoseconds
- Pulse/counter inputs: 832 MHz ≙ 1.20 ns resolution
- 20 Bit analog outputs up to 2 MHz

INCREDIBLY FLEXIBLE

- Recording with a PC or an internal SSD (500 GB)
- Modular housing concept 4, 8, 12, 16 channel inserts
- USB 3.0 | USB 2.0 and Gigabit Ethernet interface to PC
- Synchronization interface for device cascading ofmultiple LTT24 devices
- Digital I/O and synchronization interface
- Extendable at any time

INCREDIBLY PRECISE

- Best signal quality (16 ENOB – Effective Number of Bits)
- Best CMRR – Common Mode Rejection Ratio
- Best galvanic isolation
- Flat bandwidth: DC - 1 MHz or 1.7 MHz

HIGH PRECISION INPUTS AND OUTPUTS

- For volts, current, charge, ICP®, strain gage, LVDT, resistance, also All-in-one
- Sensor supply output: constant voltage, constant current,carrier frequency
- Single-ended and differential-ended: AC or DC
- Status LEDs for all channels

SOFTWARE

- LTTpro: Control and visualization software
- LTT2API: Library for integration into customer applications
- Compatible with DASYLab, LabVIEW, Matlab, FlexPro, Famos etc.

LTT24 – Fields of application

HIGH SPEED MEASUREMENT TECHNOLOGY IN USE

The LTT24 is used for a wide variety of applications in almost all industries. We will give you concrete examples of how you can benefit from our fast, flexible and precise measurement technology.

Military

Offshore wind farms

Universities

EMC measurements in rail traffic

OEM test bench construction

Ultrasonic / Underwater acoustics

FATIGUE AND CRACK DETECTION
Material tests with structure- borne sound, DMS, ICP® andcharge

PRODUCTION MONITORING
Development of turbochargers

ROGA Instruments

POWER MEASUREMENT
on battery-powered electric motors

TRANSIENT RECORDERS
with extensive sensor support

AEROSPACE
Qualification test of satellite systems

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V2.4.81

LTT24 – Technical Data
Transient recorder including Sensor-Preamplifiers

*Technical Specifications – Optional Specifications marked with **

Available Housings

LTT24-4	4 channel housing: 142 x 400 x 75 mm³ / 3,7 kg
LTT24-8	8 channel housing: 244 x 400 x 75 mm³ / 5,9 kg
LTT24-16	16 channel housing: 447 x 400 x 75 mm³ / 10,4 kg

Data Transfer Rates

Internal SSD	256 MByte/s*
PC with USB	170 MByte/s (USB 3.0) 35 MByte/s (USB 2.0)
PC with Gigabit LAN	27 Mbyte/s*

Input Characteristics

Quantization	24 Bits
max. Sampling Rate	4 MSample/s per channel
max. Bandwidth	DC – 1.7 MHz
Filter	analog: 1.7 MHz low pass filter digital: a variety of selectable filters
Inter-Channel Phase Difference	< 1 ns
Input Connectors	BNC and DIN
Galvanic Isolation	±200 V
Volt Input Ranges	±250 mV, ±5 V, ±50 V, ±200 V*
Volt Input Impedance	1MΩ_50pF, [10MΩ_5pF at ±200 V]*
Volt Input Couplings	single-ended (AC/DC), differential (AC/DC)
Current Input	±50 mA range with internal5 Ω shunt resistor

Number of Channels

max. No. of Channels per Device	4, 8 or 16 (dependent on housing)
max. No. of Devices	1024
Synchronization*	yes (max. delay between devices: ±1 ns)
External Clock*	1 input and 1 output with 3.3 V LVPECL
External Trigger*	1 input and 1 output with 5 V
TTL Digital Inputs*	16 inputs and 16 outputs with 5 V TTL

Dynamic Range	**Range**	**Bandwith**		
		5 kHz	**50 kHz**	**1 MHz**
	±50 V	116 dB	110 dB	100 dB
	±5 V	118 dB	112 dB	101 dB
	±250 mV	105 dB	97 dB	85 dB
ENOB (THD + noise) effective numberof bits	**Range**	**effective bits**	**dB @ 125 kHz sampling rate**	
	±50 V	typ 15.6 Bit	-96 dB	
	±5 V	typ 15.9 Bit	-98 dB	
	±250 mV	typ 14.6 Bit	-90 dB	
Crosstalk	< -120 dB (DC – 200 kHz)			
CMRR without Trimming common mode rejection ration	**Range**	**0-20 kHz**	**0-100 kHz**	**0-1 MHz**
	±250 mV	typ 95 dB	87 dB	70 dB
	±5 V	typ 88 dB	74 dB	55 dB
	±50 V	typ 78 dB	73 dB	53 dB
CMRR with Trimming* common mode rejection ration	**Range**	**0-20 kHz**	**0-100 kHz**	**0-1 MHz**
	±250 mV	> 100 dB	88 dB	70 dB
	±5 V	> 100 dB	75 dB	55 dB
	±50 V	> 100 dB	74 dB	53 dB
Input Protection	±17.5 V @ range ±250 mV, ±5 V; ±175 V @ range ±50 V; ±220 V @ range ±200 V			

Operating Conditions

Power Supply	12-16 VDC (absolute max. rating 10-35 VDC)
	11 W typical per channel without sensor supply
	external power supply: 100-240 VAC
Environmental Temperature	+10 °C to +40 °C
Extended Temperature Range	0 °C to + 50 °C on request
Operating System	Windows 7 / 8 / 10, Linux and others

Data Recording

RAM	32 MByte per channel 512 MByte RAM with 16 channels
Interface to PC	USB 3.0, USB 2.0, Gigabit Ethernet*
Recording Media	internal RAM, internal SSD*, PC's hard disk
Size of internal SSD	500 GB*

Signal Conditioning

Strain Gage*	full-, half-, quarter-bridge, sense, no sense constant voltage supply: 0 … 10 V, 0 … 20 V* input coupling: AC and DC
IEPE (ICP®)*	constant current supply: 0 … 10 mA; input coupling: AC and DC
Resistance*	input coupling: AC and DC; 2-wire, 3-wire and 4-wire
Charge*	1 mV/pC, range: ±5 nC (optional up to ±500 nC) high-pass: 0.15 Hz; 1.5 Hz; 15 Hz auto charge clear; manual clear
LVDT*	carrier frequency with up to 100 kHz and 0 … 5 V Amplitude synchronous demodulation; unipolar and bipolar output
Pulse/Counter Input*	signal input: ±30 V input coupling: AC and DC time resolution 1.20 ns (832 MHz)direction detection; zero marker

Analog Output Characteristics

No. of Channels per Device	one analog output channel for each analog input channel
Synchronization of several Devices	yes (max. delay between devices: 2 ns)
Sampling Rate	max. DAC rate 2 MSample/s per channel
max. Bandwidth	DC – 500 kHz
Quantization	18 Bit, 20 Bit*
Output Impedance	100 Ω
Connector	BNC
Galvanic Isolation	input to output of same channel: yes (±200 V) output to LTT24 housing: no
Output Ranges	±10 V, ±5 V; ±500 mV, ±250 mV
Coupling	DC
DC Offset	digital
Dynamic Range	100 dB with 20 Bit DAC*
Inter-Channel Phase Difference	< 2 ns
Output Signal Sources	monitoring: online ADC data from analog input replay: recorded ADC data from internal SSD arbitrary function generator: PC data from internal SSD

Specifications are subject to change without notice.