HEAD acoustics

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*lab*HRT6 (Code 3743)

HEAD*lab* High Resolution Tacho Input Module

Overview

*lab*HRT6 is a 6-channel digital input module for high-resolution measurement of rotational speeds or other pulses for rotational analysis and vibration analysis.

For torsional vibration analysis or other analysis based on rotational angle, it is necessary to record rotational speeds as precisely as possible. In order to achieve a highly accurate measurement, it is necessary to detect a high count of pulses for each revolution, e.g. with optical sensors to detect markings on rotating components or inductive sensors, detecting each tooth of a sprocket.

The HEAD*lab* module *lab*HRT6 offers numerous functions to assist in these measurement tasks. Recording various signal sources is made possible by the variable configuration of the measurement inputs. The measurement inputs can be used in single-ended and differential mode. They offer adjustable voltage supply for sensors and switchable pull-up resistors for the single-ended mode and switchable termination for the differential mode. By aggregation of multiple input channels, a sampling rate of up to 6.9 MHz can be achieved. The preview function for the rpm-signal of the Recorder helps to find the optimum trigger threshold levels. Together with the time-based, adjustable debouncing function, the *lab*HRT6 helps you record insightful data.

Features

Connections to frontends from HEAD acoustics

- *lab*CTRL II.1/*lab*CTRL I.2 (HEAD*lab* Controller)
- *lab*HSU
  High-end dual-channel data acquisition system
- *lab*COMPACT12-V1/ *lab*COMPACT24-V1 (compact systems)
- HMS V (artificial head measuring system)

Operation modes

- Pulse sampling
- Pulse duration

Edge detection

- The adjustable, high-resolution edge detection helps to identify even the smallest fluctuation in rotational speed, e.g. for torsional vibration analysis

Input circuit options

- Differential
- Single-ended

Channel aggregation

- Aggregation of multiple input channels for a sampling rate of up to 6,9 MHz

Functions

- Adjustable power supply for sensors
- Adjustable trigger threshold
- Switchable termination in differential mode
- Switchable pull-up resistor in single-ended mode
- Monitoring-function (preview) in single-ended mode to determine an optimal trigger threshold
- Adjustable, time-based debouncing function for undisturbed recording of the useful signal
- 10 W maximum power consumption

Scope of supply

- *lab*HRT6 (Code 3743) HEAD*lab* High Resolution Tacho Input Module
- 3 x connectors (Code 9890) for assembly with your sensors, suitable for cable diameter 3.2-4.2 mm, AWG 24
- 3 x connectors (Code 9891) for assembly with your sensors, suitable for cable diameter 4.2-5.2 mm, AWG 24

Optional

- CLL X.xx (Code 3780-xx) HEAD*link* cable LEMO 8-pol. ↔ LEMO 8-pol.

Technical Data

General

Number of channels:	6 (LEMO 6-pin)
Modes of operation:	Pulse sampling, Pulse duration
Sampling frequencies (in Pulse sampling mode):	
@ F_S=48 kHz: @ F_S=51.2 kHz:	6 x 1.15; 3 x 2.31; 2 x 3.46; 1 x 4.61; 1 x 6.91 MHz 6 x 1.23; 3 x 2.46; 2 x 3.69; 1 x 4.92; 1 x 7.37 MHz In order to use a higher sampling frequency, up to six channels can be aggregated. When channel aggregation is used, less than six channels are available.
Time resolution (in Pulse duration mode):	
@ F_S=48 kHz: @ F_S=51.2 kHz:	3.014 ns 2.826 ns
Power supply:	10 V to 28 V

Electric strength of measurement inputs
    Single-ended mode:
    differential modus:
	
	-50 V to +50 V
	-7 V to +12 V

Maximum level single-ended modus:	Max. ±15 V
Pull-up resistor single-ended mode:	1 kΩ or 5 kΩ, switchable

Differential level
    maximum:
    minimum:
	
	12.8 V_{pp}
	0.2 V_{pp}

Termination in differential mode:	120 Ω, switchable
Voltage supply for sensors:	0 V or +5 V or +24 V, adjustable; max. 1 W per channel, max. 4 W in total
Power consumption:	10 W max.
Maximum cable length to the Controller:	60 m (with cable CLL X)
Cooling:	Convection, fanless
Dimensions incl. LEMO connectors: incl. locking mechanism and rubber pads:	140 x 175 x 42 mm (W x D x H) 148 x 175 x 48 mm (W x D x H)
Weight:	784 g
Operating temperature:	-10 °C to 60 °C
Storage temperature:	-20 °C to 70 °C

HEAD*link* (HEAD acoustics standard)

Controlling/data transfer via Controller::	LEMO 8-pin