



Features

- Input module with integrated charge amplifiers for 6 charge or ICP sensors

Connections to frontends from HEAD acoustics

- *labCTRL II.1/labCTRL I.2* (HEADlab Controller)
- *labHSU*
High-end dual-channel data acquisition system
- *labCOMPACT12-V1/ labCOMPACT24-V1* (compact systems)
- HMS V (artificial head measuring system)
- MMF III.0/MMF III.0-V1 (BrakeOBSERVER frontends)

Connections for sensors

- Each channel can be used in charge or ICP mode
- Charge mode (via Microdot-Adapter CMB I)
 - Charge amplifiers for charge sensors (individually shielded)
 - Fixed measuring ranges can be adjusted per channel: 10 pC, 100 pC, 1 nC, 10 nC, 100 nC, 1 μ C
- ICP mode
 - ICP switchable for AC/DC coupling
 - Fixed measuring ranges can be adjusted per channel: 10 mV, 100 mV, 1 V, 10 V, 30 V

0 Hz ICP/DC coupling from HEAD acoustics

- 0 Hz to 45 kHz frequency range

Functions

- Low power consumption (8 W)
- Peak detector function (for each channel)
- Charge overload function (e.g. when connecting mismatched sensors)
- Power supply via HEADlink interface
- Electrical isolation of *labCF6* inputs to inputs of other HEADlab modules and the PC interface

Filters

- Analog low-pass filters (switchable): 1 kHz and 5 kHz
- Analog high-pass filter 0.16 Hz, 1. order, not switchable in AC mode
- Analog high-pass filter (switchable): 22 Hz, 2nd order

Handling

- Silent (no fan), rugged design
- Integrated locking mechanism (the modules can easily be mated to a system)

DATA SHEET

labCF6 (Code 3725)

6-channel charge/ICP input module with integrated charge amplifiers

Overview

labCF6 is used for connecting charge and ICP sensors, whereby each channel can be used individually in charge or ICP mode.

In charge mode, *labCF6* is equipped with charge amplifiers for charge sensors.

A *labCF6* highlight is the "0 Hz ICP/DC coupling" developed by HEAD acoustics, which allows ICP measurements from 0 Hz to 45 kHz. For example, users are allowed to connect seismic ICP sensors for measuring extremely low-frequency signals.

The premium and flexible module *labCF6* can be easily connected to other modules and forms a stable and easily-manageable unit.

Scope of supply

- *labCF6* (Code 3725)
6-channel charge/ICP input module
- 6 x *CMB I* (Code 3798)
Adapter Microdot
[BNC ↔ Microdot]

Optional

- *CLL X.xx* (Code 3780-xx)
Cable *HEADlink*
LEMO 8-pin ↔ LEMO 8-pin

Technical data

General

Connectors data acquisition/data generation	6 x Charge In or alternatively Line-/ICP In
Communication interfaces	1 x <i>HEADlink</i>
Supply connection	<i>HEADlink</i>
Supply voltage	10 V _{DC} to 28 V _{DC}
Max. power consumption stand-alone operation	7.2 W
Max. power consumption with sensors connected	8 W
System sampling frequency	44.1 kHz, 48 kHz, 51.2 kHz
Min. to max. sampling frequency @ 44.1 kHz	1.837 kHz to 88.1 kHz
Min. to max. sampling frequency @ 48 kHz	2 kHz to 96 kHz
Min. to max. sampling frequency @ 51.2 kHz	2.133 kHz to 102.4 kHz
Synchronization	External <i>HEADlink</i>
Max. sampling frequency	102.4 kHz
Cooling	Convection, no fan
Operating temperature	-10 °C to +60 °C
Storage temperature	-20 °C to +70 °C
Dimensions	148 x 173 x 48 mm (W x D x H)
Weight	840 g

Digital *HEADlink*

Connector	1 x Lemo 8-pin
Number of interfaces	1
Supply voltage	10 V _{DC} to 28 V _{DC}
<i>HEADlink</i> version	<i>HEADlink</i> 1.0
Electrical isolation	Yes
Synchronization	44.1 kHz, 48 kHz, 51.2 kHz
Maximum cable length	60 m

Analog input voltage/ICP

Connector	6 x BNC
Number of channels	6
Quantity	Voltage
Ranges	0.01 V _p , 0.1 V _p , 1 V _p , 10 V _p , 30 V _p
Input impedance	1000 kΩ
Frequency range	0 Hz to 45 kHz
Coupling	DC, AC, ICP, ICP-DC
Analog highpass filter	0.16 Hz, 1st order, ±10% 22 Hz, 2nd order, switchable, ±10%
Analog lowpass filter	1 kHz, 2nd order, switchable, ±10% 5 kHz, 2nd order, switchable, ±10%
Digital highpass filter @ fs = 48 kHz, proportional to fs	1 Hz
Resolution	24 bit (delta sigma ADC and DA converter)
Electrical isolation input/output	Yes
Electrical isolation channel by channel	No
Electric strength	±35 V
TEDS (IEEE 1451.4) read	TEDS class 1, shared signal wire (version 0.9 and 1.0)
ICP voltage	22.4 V
ICP current	4 mA (±25%)

Analog input charge

Connector	6 x BNC
Number of channels	6
Quantity	Charge
Ranges	10 pC, 100 pC, 1000 pC, 10000 pC, 100000 pC, 1000000 pC
Input impedance	10 GΩ (10 pC, 100 pC), ... , 10 MΩ (100 nC, 1 μC)
Coupling	AC
Analog highpass filter	0.16 Hz, 1st order, ±10% 22 Hz, 2nd order, switchable, ±10%
Analog lowpass filter	1 kHz, 2nd order, switchable, ±10% 5 kHz, 2nd order, switchable, ±10%
Digital highpass filter @ fs = 48 kHz, proportional to fs	1 Hz
Resolution	24 bit
Electrical isolation input/output	Yes
Electrical isolation channel by channel	No
Electric strength	±35 V

Analog input voltage/ICP – ranges

Range	10 mVp	100 mVp	1 Vp	10 Vp	30 Vp
S/N	79.6 dB(A)	98 dB(A)	108 dB(A)	108 dB(A)	89 dB(A)
THD+N	-73.5 dB	-91.5 dB	-100.5 dB	-99 dB	-82.5 dB
Frequency response 20 Hz to 20 kHz @ fs = 48 kHz Tolerance	0.26 dB 3%	0.061 dB 0,7%	0.061 dB 0,7%	0.061 dB 0,7%	0.061 dB 0,7%
DC accuracy DC mode at 0 Hz Tolerance	0.16 dB 1.8%	0.0173 dB 0.2%	0.009 dB 0.1%	0.009 dB 0.1%	0.009 dB 0.1%

Analog input charge – ranges

Range	10 pCp	100 pCp	1 nCp	10 nCp	100 nCp	1 μ Cp
S/N	73 dB	93 dB	108.5 dB	107.5 dB	108 dB	108.5 dB
THD+N	-68.5 dB	-88.5 dB	-99.5 dB	-100 dB	-101.5 dB	-102.5 dB
Frequency response 20 Hz to 20 kHz @ fs = 48 kHz	0.052 dB	0.052 dB	0.052 dB	0.052 dB	0.052 dB	0.052 dB

ICP is a registered trademark of the PCB Group, Inc.; LEMO is a registered trademark of the LEMO SA.