



General

The HEIM DATaRec 4 DEBU Module is a 2 channel digital audio input and 4 channel voltage / ICP™ data acquisition system. The module can operate as a standalone front-end (PC connection via USB 2.0) or linked together with additional HEIM DATaRec 4 Modules to a multi channel system via HeimLink. Each analogue input channel is completely independent and consists of sensor supply, amplifier, 24 bit A/D converter and anti aliasing filter. The HEIM DATaRec 4 represents leading edge technology. A special module feature is that one of the analogue input channels can be set to RPM mode.

Voltage and AES/EBU Module

Number of channels 2 channel digital audio input and
 4 Voltage/ICP™ input channels

Voltage/ICP™ channels

Sampling frequency (Fs) 800 Hz – 200 kHz, settable in steps
 of 10 Hz,
 each module can work with a
 dedicated sampling frequency, which
 is a binary divider of the overall
 system Fs

Bandwidth DC to max. 80 kHz (settable)

Sampling ratio 2.5; no mirroring effect

Dynamic range (SFDR) > 93 dB at 2 V_{peak} range
 in 16 bit mode

A/D converter 24 bit

Data resolution 16 bit or 32 bit

THD <-92 dB at 2 V_{peak} range

Phase accuracy <0.2° at 20 kHz bandwidth
 (without optional high or low pass
 filter)

AC accuracy

DC – 50 kHz ±0.1% or ±1 mV typical
 max. 0.2%

50 kHz-80 kHz
 DC accuracy max. 0.3%
 Input impedance ±0.1% or ±1 mV
 Signal level 500 kΩ
 ±10 mV_{peak} to ±10 V_{peak}
 settable in steps

Coupling DC, AC (-3dB at 2 Hz)

Optional filter version HS310-0061/1

Analogue high pass filter 22 Hz

Analogue low pass filter 500 Hz, 1 kHz or 4 kHz

ICP™ power 24V DC, 4 mA constant current

Connector 4 x BNC

Functions (analogue channels)

Integrated calibration unit 1 ppm reference calibration

Galvanic isolation yes

Max. isolation voltages power input (48 V)
 digital / analogue part (48 V)

Input channel voltage safety ± 35 V

TEDS sensor identification IEEE 1451.4 standard for all
 4 analogue channels

RPM channel one channel is useable as RPM input

RPM sampling frequency 16 x Fs (max. 3.2 MHz)
 (16 bit mode)
 32 x Fs (max. 6.4 MHz)
 (32 bit mode)

Threshold level 0 – 100% of the selected amplifier
 step

Mode single ended

Joint mode yes

AES/EBU channels

Digital input AES/EBU data according AES3
 standard

Digital re-sampling yes

Clock rate 1/60 x Fs <= Fs <= 8 x Fs

Sampling rate max. 192 KHz

Connector 1 * 9 pin female D-Sub

Signal level RS422

Technical Specification HEIM DATaRec[®] 4 DEBU 2 Hz

Coupling	galvanically isolated (transformer-coupled)
Input termination	110 Ω switchable
Input synchronization	empty AES/EBU frame supported on the outputs for synchronization of the input signal
Artificial head setup function	RS232 interface
Dimensions	37.1 x 184 x 124.5 mm (w x h x d) including fixing system
Weight	940 g typical
Cooling	conduction cooled
Power consumption	9 W typical 10.2 W typical with filter option
Power input range	17 - 28 V DC
Input DC power	low power detection
Communication	HeimLink, USB 2.0 and RS232

Link chain system	-30 °C - 70 °C ¹⁾ -10 °C - 55 °C -20 °C - 55 °C ¹⁾
Storage	-40 °C - 85 °C
Humidity	0 - 93% relative, non-condensing
EMI	DIN EN61000 / DIN EN61326 ²⁾

Notes

Performance varies depending on the installation environment. The shown values were measured using an appropriately designed test system including the HEIM DATaRec 4 power supplies under nominal conditions of temperature, voltage, etc..

Performance is significantly influenced by storage medium type, host computer performance and load, used acquisition software, signal module configuration, power supplies and cabling.

- 1) special start-up procedure required
- 2) for operation in industrial environment (according to DIN EN 61326) earthing of the module and / or shielded cable is necessary to prevent influences by external electromagnetic distortions.

Environmental specifications

Vibration	5 g
Shock	10 g
Temperature operational	IEC 60068-2-14-Nb
Standalone module	-20 °C - 70 °C

Applications



Miniature system
Single module system with direct link to the PC via USB 2.0



Distributed data acquisition system
Remotely located modules (up to 768 channels)



Compact system
Centralized acquisition system with up to 768 channels



Distributed multi channel system
Remotely located groups of modules (up to 768 channels)

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