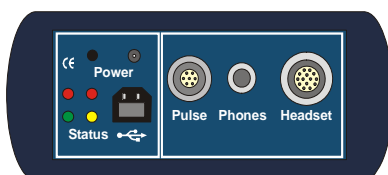




Features

- Mobile four-channel front end, also for stand-alone operation
- Internal flash memory; four-channel recordings of up to 160 minutes at 48 kHz without compression. The maximum recording time increases if the number of channels or the sampling rate is reduced.
- Four BNC analog inputs (Line/ICP®) with individual sensitivity adjustment and ICP® supply
- Compact dimensions (16 x 8.3 cm / 6.3 x 3.3") and light weight (430 g / 0.95 lb)
- USB interface
- Connectors for the recording and playback headset BHS I (Code 4822), the dynamic headphone HD IV.1 (Code 2380), and analog output to other audio devices
- Two electrically isolated pulse inputs and outputs
- LCD display with clearly arranged control keys for operation and configuration
- Real time clock
- Up to six hours of battery-powered operation with quick recharging and intelligent battery management
- Uninterruptible power supply via USB, power adapter, or internal battery
- Aurally accurate recording and playback



Front view and rear view



DATA SHEET

SQuadriga (Code 1369)

Mobile four-channel front end with internal flash memory

Applications

- Mobile measurements
- Quality control
- Sound engineering
- Product development
- Environmental testing
- Research and education
- Troubleshooting
- Technical/field service

The four-channel front end SQuadriga

is versatile, powerful and extremely portable making it suitable for a wide range of applications. SQuadriga's compact size, light weight, and internal flash memory allow it to be easily carried to wherever the operator needs to make measurements making it ideal for mobile use.

The built-in battery allows operating times between three and six hours, enabling SQuadriga to work independently even for extensive tasks.

Alternatively, the frontend can be powered with a mains adapter or via USB from a notebook computer.

Even at a sampling rate of 48 kHz, the built-in memory card allows four-channel recordings of at least 160 minutes without compression. Longer recordings can easily be saved on a notebook or PC via the USB interface and with assistance of the recording software HUS II.1.

Four separate BNC inputs with individual sensitivity settings provide connection possibilities for line or ICP® sensors. Two electrically separated pulse inputs allow RPM or speed pulses to be embedded into the recorded signal. These data are also available at the pulse outputs for further applications, such as for triggering.

For convenient, aurally accurate recordings and playback, HEAD acoustics offers the combined headphone/microphone headset BHS I (Code 4822). SQadriga provides the required connectors for this headset, as well as for the dynamic headphone HD IV.1 from HEAD acoustics.

The headset connector can alternatively be used as a two-channel line output.



The digital signal processor (DSP) automatically detects which headphone (headset or HD IV.1) is connected, and offers the corresponding equalization options.



Standard Delivery Items:

- SQadriga (Code 1369)
Four-channel Front End
- HUS II.1 (Code 1319)
HEAD Audio Recorder Software
- PSH I.2 (Code 1373)
External Power Adapter
- CBL IV.1 (Code 9827)
Cable Pulse-in/-out
- CLB IV.1 (Code 9826)
Cable Line out
- CUSB II.05 (Code 5478-05)
Cable USB, 0.5 m (20")
- CUSB II.1.5 (Code 5478-1.5)
Cable USB, 1.5 m (60")
- Carry Case
- Manual

Optional

- SQadriga Headphone Booster (Code 1369X)
Optional Headphone Amplifier for SQadriga
- Headset BHS I (Code 4822)
Combined Recording and Playback Unit
- BHM III.3 (Code 1303) Binaural
HEAD Microphone, ICP® Version
- HD IV.1 (Code 2380)
Dynamic Headphone
- SCA I (Code 1375)
Car Adapter for SQadriga
- HEAD Recorder (Code 4630)
Programmable Recording Software

Technical Data

Analog inputs (4 BNC connectors)

Range (+Headroom):	+4 dB(V)	-6 dB(V)	-16 dB(V)	-26 dB(V)	-36 dB(V)
S/N_{FS}:	90 dB	90 dB	88 dB	87 dB	81 dB
V_{rms FS}	3,17V	1,0V	317mV	100mV	31,7mV
V_{ss FS}	8,97V	2,38V	897mV	283mV	89,7mV
S/N_{FS} (A-weighted):	91 dB(A)	92 dB(A)	90 dB(A)	90 dB(A)	83 dB(A)
THD+N_{FS}:	-69 dB (0,007%)	-74dB (0,008 %)	-74 dB (0,01 %)	-76 dB (0,01 %)	-74 dB (0,018 %)
Cross-talk attenuation:	> 94 dB	> 93 dB	> 71 dB	> 90 dB	> 92 dB
Input impedance:	12 k	20 k	20 k	20 k	20 k
Recording with headset BHS I (optional):	-	124 dB _{SPL}	114 dB _{SPL}	104 dB _{SPL}	94 dB _{SPL}

ICP® supply: 18 V, 2 mA, activated separately

Headphone output (3.5 mm / 1/8" stereo jack)

Output impedance:	approx. 3 Ohm
Sound pressure with HD IV.1 :	max. 96 dB _{SPL} (without headroom)
Short-circuit-proof:	max. 30 seconds

Line output (14-pin Lemo connector)

Nominal output level:	0.5 V _{eff} (without headroom)
Output impedance:	560 Ohm
S/N _{FS} :	77 dB
THD+N _{FS} :	0.01 % (-80 dB) at 1 kHz, -1 dB _{FS}

USB 1.1 in bulk mode, up to 1,5 MByte/s, four-channel recordings with 16 bit/channel, 48 kHz possible, remote control

USB power supply

Operation as USB high-power device:	5 V (+/-10 %), max. 350 mA
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Pulse inputs (7-pin Lemo connector)

Pulse frequency:	max. 5 kHz
Input impedance:	36 kOhm, electrically isolated
Input voltage:	TTL-compatible; low level: <1.2 V, high level: >2.4 V -1 V to + 10 V, max.

Pulse outputs

Level:	3 V (TTL-compatible)
Output impedance:	1 kOhm

Headset connection

2 microphone inputs, microphone supply, headphone output, line out

Digital section

Signal processor:	Motorola, DSP (100 Mips)
Codec:	Resolution: 24 bit, oversampling: 64 times

Flash memory

Four-channel recordings on internal flash card possible with 16 bit/channel and 48 kHz (max. 160 minutes). The maximum recording time increases if the number of channels or the sampling rate is reduced.

Capacity:	4 GB
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Technical Data (continued)

Real-time clock: Accuracy +/- 30 ppm, backup battery up to 5 years

Filter

FIR filter with 100 taps

Analog filters: 2 Hz (+/- 10 %) highpass 1st order, passive (always enabled)

Sampling frequencies

48 kHz; 44,1 kHz; 32 kHz (24 kHz; 22 kHz; 16 kHz; 12 kHz; 11 kHz; 8 kHz as of firmware 1.3 by resampling)

Frequency range: 4 Hz – 20 kHz

Equalizations (playback): LIN, FF, ID, DF, USER

Power supply

Uninterruptible power supply via USB, external power adapter, or battery; intelligent battery management

Input voltage: 9 V DC (8.5 – 12 V), inverse polarity protection

Charging and operation: 770 mA / 7 W

Trickle charging and operation: 350 mA / 3.2 W

Internal power supply (battery)

Power consumption: 220 mA (typ.), 350 mA (max.)

Charging method: Quick charging (3 h) and transition to trickle charging, switch-off with dU/dt; temperature monitoring; charging timer

Operating time on battery: 6 h (typ.) without ICP® supply; 3.5 h (typ.) with ICP® supply

External power supply (mains adapter): 100 – 240 V AC, 9 V DC, 10 W

Dimensions (SQuadriga): W x H x L: 83 x 35 x 160 mm / 3.3 x 1.4 x 6.3"

Weight (SQuadriga): 430 g / 0.95 lb

Operating temperature range: Discharging, USB supply: 0 – 50 °C / 32 – 122 °F

Charging: 0 – 40 °C / 32 – 104 °F

Storage temperature range: -20 – 50 °C / -4 – 122 °F

Headset BHS I (optional) via 14-pin Lemo connector

Recording:

Sound pressure level, max.: 130 dB_{SPL}, at ca. 1% distortion factor

Inherent noise: 33 dB(A)_{SPL}, typ.

Microphone supply: 5 V, typ. 200 µA/channel with BHS I

Equalization: ID

Playback:

Sound pressure level, max.: 104 dB_{SPL} (without headroom)

Inherent noise: 32 dB_{SPL}, 30 dB_{SPL}(A)

S/N: 72 dB, 74 dB(A)

THD+N_{FS}: 0,03% (-70 dB) at 1 kHz, at 104 dB_{SPL FS}