

**DATA SHEET**

**DEBU (Code 3616)**



**DEBU filter (Code 3617)**

4-channel ICP® module with a 2-channel, digital AES/EBU input, HP and LP filter

**Overview**

DEBU is a signal module being equipped with a 2-channel, digital audio input and four voltage / ICP® channels, which can be connected to an artificial head of both the HMS III or the HMS IV generation.

The module can either be used stand-alone via power supply or can be combined into a complex channel system by using a link module.

**Features**

- 4 ICP® inputs and a 2-channel, digital AES/EBU input
- HP and LP filter (for 4 DIC channels of the DEBU filter module)
- Integrated amplifier
- 24-bit A/D converter
- Anti-aliasing filter
- Two channels can be used as RPM input
- Direct connection of an Artificial Head of the HMS III and HMS IV generation (control unit included)
- Connection of TEDS sensors (analog channels)

**Scope of Supply**

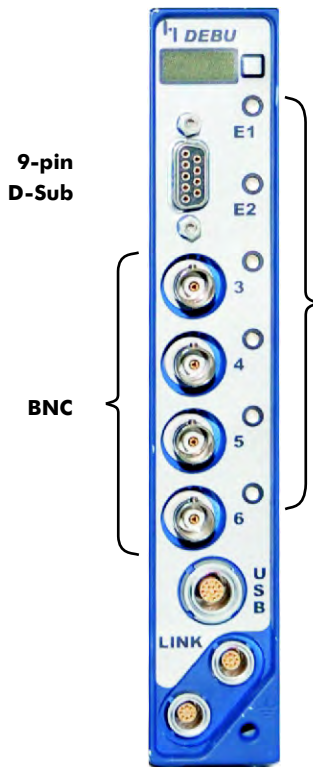
- DEBU (Code 3616)  
4-channel ICP® module with a 2-channel, digital AES/EBU input
- or  
DEBU filter (Code 3617)  
4-channel -ICP® module with a 2-channel, digital AES/EBU input, HP and LP filter (for 4 DIC channels)
- CLU IV.2 (Code 3673-2)  
Connection of the input module to the computer (without link module)  
Lemo 17-pin > USB, 2 m
- LBR I.01 (Code 3670-01)  
Link connection cable between 2 modules, for compact systems
- CMD V.3 (Code 9835-3)  
Connection of HMS III and HMS IV to DEBU  
DSUB9 to DSUB9 + XLR3, 3 m

**Accessories (optional)**

- PWD (Code 3651)  
9 - 36 V DC power supply for the DATaRec 4 series
- PWH9 (Code 3652)  
12 - 36 V DC power supply for the DATaRec 4 series
- PWAC (Code 3650)  
AC power supply for the DATaRec 4 series 90 - 130V, 180 - 260 V
- DSM (Code 3690)  
Seat Mount for DATaRec 4 systems

**Software (optional)**

- HEAD Recorder (Code 4630)  
Programmable recorder software
- ArtemiS (Code 4600)  
Analysis software



**Display, Toggle button**

Display firmware  
 Display input voltage  
 Module calibration

**Channel LEDs**

Status display: green  
 Overload: red  
 RPM channel: blue

**USB connection**

Single operation (PWD / PWH9 / PWAC required)

**Link connections**

Connection to other modules  
 Power supply

## Technical data DEBU / DEBU filter

|                              |   |
|------------------------------|---|
| Number of channels:          | 2 channel digital audio input and 4 Voltage / ICP® input channels   |
| <b>Voltage/ICP® channels</b> |   |
| Sampling frequency (Fs):     | 800 Hz to 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:                   | 0.4 x sampling frequency  |
| Dynamic range:               | > 93 dB at 2 V <sub>peak</sub> range in 16 bit mode   |
| A/D converter:               | 24 bit  |
| Data resolution:             | 16 bit or 32 bit  |
| THD:                         | < -92 dB at 2 V <sub>peak</sub> 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:             | Max. 0.3 %  |
| DC accuracy:                 | ± 0.1 % or ± 1 mV   |
| Input impedance:             | 500 kOhm  |
| Signal level:                | ± 10 mV <sub>peak</sub> to ± 10 V <sub>peak</sub> settable in steps   |
| Coupling:                    | DC, AC (-3 dB at 2 Hz)  |
| ICP® power:                  | 24 V DC, 4 mA constant current  |
| Connector:                   | 4 x BNC   |

### Functions (analog channels)

|                                |  |
|--------------------------------|--|
| Integrated calibration unit:   | 1 ppm reference calibration  |
| Galvanic isolation:            | Yes  |
| Max. isolation voltage:        | Power input 48 V (digital / analog part: 48 V)                             |
| Input channel voltage safety:  | ± 35 V   |
| TEDS sensor identification:    | IEEE 1451.4 standard for all 4 analog channels                             |
| RPM channel:                   | Two channels can be used as RPM input                                      |
| RPM sampling frequency:        | 16 bit mode: 16 x Fs (max. 3.2 MHz)<br>32 bit mode: 32 x Fs (max. 6.4 MHz) |
| Threshold level (RPM channel): | 0 - 100 % of the selected amplifier step                                   |
| Mode:                          | Single ended   |

### AES/EBU channels

|   |  |
|---|--|
| Digital input:                            | AES/EBU data according to AES3 standard  |
| Digital resampling:                       | Yes  |
| Sampling rate:                            | Max. 192 kHz   |
| Connector:                                | 1 x 9-pin D-Sub  |
| Signal level:                             | RS-422   |
| Coupling:                                 | Galvanically isolated (transformer coupling)   |
| Input termination:                        | 110 Ohm (switchable)   |
| Input synchronization:                    | Empty AES/EBU frame supported on the outputs for synchronization of the input signal |
| Artificial head control (setup function): | RS-232 interface   |
| Dimensions (W x H x D):                   | 37.1 x 184 x 124.5 mm (1.5" x 7.2" x 4.9") incl. attachment system                   |
| Weight:                                   | 940 g (2.1 lb), typ.   |
| Cooling:                                  | Conduction cooled  |
| Power consumption:                        | 9 W, typ. (10.2 W, typ. with filter option)  |
| Power input range:                        | 17 - 28 V DC   |

### Environmental specifications

|                         |                                      |
|-------------------------|--------------------------------------|
| Vibration resistance:   | 5 g                                  |
| Shock resistance:       | 10 g                                 |
| Temperature operational |                                      |
| Stand-alone module:     | -20° C bis +70° C (-4° F to 158° F)  |
| Link chain system:      | -10° C bis +55° C (14° F to 131° F)  |
| Storage:                | -40° C bis +85° C (-40° F to 185° F) |
| Humidity:               | 0 - 93 % relative, non-condensing    |

### DEBU filter version (4 DIC channels):

|                          |                        |
|--------------------------|------------------------|
| Analog high-pass filter: | 22 Hz                  |
| Analog low-pass filter:  | 500 Hz, 1 kHz or 4 kHz |