

Lifelines R40 Amplifier

32 monopolar/8 bipolar touch proof inputs
(2 Aux high-level DC inputs)



Lifelines EEG Systems and Applications

- Lifelines' clinical and portable systems
- Research and laboratory capabilities
- Various mounting options for cart mount, wall mount and Lifelines Photic stand

Amplifier Features

- Acquisition of EEG in referential mode
- DC recording capabilities on all channels
- 32 monopolar channels
- 8 channels configurable as bipolar or referential
- 2 channels aux high-level inputs
- Full International 10-20 system including extend inputs (FT7-TP8) – see below



- All inputs are BF isolated
- Front end calibration
- Continuous impedance check
- Integrated impedance measurement: amplifier and software display
- High sampling rates: 250-2000 Hz simultaneous sampling on all channels (wired and wireless)
- Data storage on optional SD card
- Transmits data either wireless or wired
- Nonin interface gives HR, SaO2 and pulse-wave (plethysmogram)
- Battery powered options
- Overall sampling rate per channel of 16Khz, with the storage rate dependent on the number of channels used, for example 24ch@2Khz with 24 bit resolution.

Amplifier Specifications

EEG inputs: 32 monopolar touch proof inputs/ 8 bipolar touch proof polygraphy inputs

- ADC Resolution 24 bits
- Sampling 250-2000 Hz simultaneous sampling all channels
- Input impedance >20 MΩ
- Common mode rejection ratio >120dB @ 50 and 60 Hz
- Equivalent input noise <1.5μVpp, <0.2uV rms
- Gain 12 ±0.5%
- DC offset tolerance 750mVpp (+/-375)
- Quantization 0.17uV/bit @ Gain = 12
- Bandwidth (-3dB) DC to 524Hz @ 2000Hz sampling
- Max common mode input voltage 0.4Vpp
- Input bias current < ±0.3 nA
- Front-end Calibration 8mVpp ±5% at 0.98Hz
- Impedance Check current 24nA ±20% at 7.8Hz
- Aux, high-level Inputs 2 (channels 39 and 40)
- ADC Resolution 24 bits
- Sampling 250-2000 Hz simultaneous sampling all channels
- Input impedance 100 kΩ
- Gain 4 ±0.5%
- Max Input Vdiff 2.25Vpp dynamic range
- Bandwidth (-3dB) DC to 524Hz @ 2000Hz sampling

(continues overleaf)

Lifelines R40 Amplifier (contd)

32 monopolar/8 bipolar touch proof inputs
(2 Aux high-level DC inputs)



Amplifier Specifications (continued)

Auxiliary Input/output

- Isolated SpO2 (HR and plethysmogram) from integrated Nonin module
- Isolated patient event button, TTL digital pulse (5V or 3.3V)
- Trigger input from Photic

Connections, ports and controls

- 55 Electrode Input Connectors, BF isolated, touch proof 1.5mm
- E-cap connector, standard 25-pin D socket
- 2 Aux DC Inputs
- Patient Event Button
- Front-panel push-buttons (2) to increase/decrease Imp Check threshold (2-5-10-20-50)
- Host PC Connector (USB), isolated from patient
- Nonin Xpod (Binder 710 series 3-pin socket) for SaO2 – Nonin interface gives HR, SaO2 and pulse-wave (plethysmogram)
- Micro-SD card port

LED indicators

- Impedance Check indication on all 40 channels
- Impedance Check Level (2-5-10-20-50)
- Power On
- Wireless operation

Battery

- Internal Battery - type LIR2450 Lithium-ion rechargeable Coin cell

Amplifier Memory

- Optional micro SD card

Operating Environment

- Temperature: +10°C to +40°C
- Relative humidity: 25% to 95% non-condensing
- Atmospheric pressure: 700mB to 1060mB

Dimensions and Weight

- Dimensions: 17cm x 11cm x 4cm/6.7in x 4.3in x 1.6in
- Weight: 400 g/0.88 lbs

Quality System

- ISO 13485

Compliance with Regulatory Standards

Designed, tested, manufactured and certified to meet the following standards:

- **IEC 60601-1 and IEC 60601-2-26**
Standard for medical electrical equipment, general requirements and particular requirements for EEG systems
- **ANSI/AAMI ES 60601-1**
US national differences
- **CAN/CSA 22.2 No 60601-1:14**
Canadian national differences
- **IEC 60601-1-2**
Standard for medical electrical equipment, EMC requirements
- **IEC 60601-1-11**
Standard for medical electrical equipment used in the home environment
- European Community Class IIa Medical Device Directive (MDD) product to comply to EC Directive 93/42/EEC, as amended by Directive 2007/47/EC
- FDA 510(k) clearance for marketing K151600
- RoHS Directive 2011/65/EU
- WEEE Directive 2002/96/EC



Lifelines reserves the right to change the specifications of this product without notice in line with the company's policy of continual product development

V 01 2019