



Isolation Amplifier

(electrically isolated input-output) ISO 6, ISO 4 and ISO 2

Instrumentation Amplifier

(low drift) IA 6, IA 4, IA 2

Low Noise Amplifier

LNA6, LNA4, LNA2

Square Wave Stimulator

DST8 (Digitally Controlled Output)

Electrocardiogram amplifier

ECGA 1

Isolation Unit

IU10A



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Isolation Amplifier

(electrically isolated input-output) ISO 6, ISO 4 and ISO 2

- Isolated input
 - digitally modulated-demodulated barrier
 - barrier impedance: 1014 Ohm / 2 pF
 - leakage current at 240 Vrms: 0.18 Arms
 - 100 % test: 1500 V
 - no battery required
- Input
 - impedance: 1M0hm
 - input bias current: 50 pA
 - voltage range: +/- 12V
 - common-mode rejection: 100 dB
- DC/AC switch
- Gain: 1, 2, 5, 10, 20
- Low pass filter:
 - Bessel, 4'th order
 - 1, 3, 10, 30, 100 Hz (-3dB)
 - x 1 / x 100
 - 100, 300, 1000, 3000, 10000 Hz (-3dB)
 - other options may be required
- Voltage offset
 - On/Off switch
 - coarse +/- 10 V
 - fine +/- 0.5 V
- Output
 - voltage range: +/- 12 V
 - current output: +/- 35 mA
 - resistance: 100 Ohm
 - short-circuit protected
- Power requirements: 115 - 230 AC, 50 - 60 Hz, 50 W, fuse T 0.6A or T0.3A (ISO6 and ISO4), 25 W, fuse T 0.3A or T0.1A (ISO2).
- Physical size: high quality metal 19" rack mounting; 134 x 487 x 236 mm, weight cca. 2.5kg (ISO6 and ISO4), 89 x 487 x 236 mm, weight cca. 2.0kg (ISO2).

(Specifications subject to change without notice.)

Instrumentation Amplifier

(low drift) IA 6, IA 4, IA 2

- Input
 - Impedance: 1M Ω
 - Voltage range: +/- 12V
 - Equivalent input noise voltage: 10.3 nV/sqrt(Hz) at 1kHz
 - Input offset voltage (typ.): 6 V
 - Temp. drift: 0.1 V/ C
- DC/AC switch
- Gain: 1, 2, 5, 10, 20
- Low pass filter
 - Bessel, 4'th order
 - 1, 3, 10, 30, 100 Hz (-3dB)
 - x 1 / x 100
 - 100, 300, 1000, 3000, 10000 Hz (-3dB)
 - other options may be required
- Voltage offset
 - On/Off switch
 - coarse +/- 10 V
 - fine +/- 0.5 V
- Output
 - voltage range: +/- 12 V
 - current output: +/- 35 mA
 - resistance: 100 Ω
 - short-circuit protected
- Power requirements: 115 - 230 AC, 50 - 60 Hz, 50 W, fuse T 0.6A or T0.3A (IA6 and IA4), 25 W, fuse T 0.3A or T0.1A (IA2).
- Physical size: high quality metal 19" rack mounting; 134 x 487 x 236 mm, weight cca. 2.5kg (IA6 and IA4), 89 x 487 x 236 mm, weight cca. 2.0kg (IA2).

(Specifications subject to change without notice.)

Low Noise Amplifier

LNA6, LNA4, LNA2

- Input
 - Impedance: 1M Ω
 - Voltage range: +/- 12V
 - Equivalent input noise voltage: 3.8 nV/sqrt(Hz) at 1kHz
 - Input offset voltage (typ.): 25 V
 - Temp. drift: 0.6 V/ C
- DC/AC switch
- Gain: 1, 2, 5, 10, 20
- Low pass filter
 - Bessel, 4'th order
 - 1, 3, 10, 30, 100 Hz (-3dB)
 - x 1 / x 100
 - other options may be required
- Voltage offset
 - On/Off switch
 - coarse +/- 10 V
 - fine +/- 0.5 V
- Output
 - voltage range: +/- 12 V
 - current output: +/- 35 mA
 - resistance: 100 Ω
 - short-circuit protected
- Power requirements: 115 - 230 AC, 50 - 60 Hz, 50 W, fuse T 0.6A or T0.3A (LNA6 and LNA4), 25 W, fuse T 0.3A or T0.1A (LNA2).
- Physical size: high quality metal 19" rack mounting; 134 x 487 x 236 mm, weight cca. 2.5kg (LNA6 and LNA4), 89 x 487 x 236 mm, weight cca. 2.0kg (LNA2).

(Specifications subject to change without notice.)

Square Wave Stimulator

DST8 (Digitally Controlled Output)

- Triggering
 - Repeated T.B.P. (time between pulses): 1...10 linearly adjustable, multiplied by: 0.001, 0.01, 0.1, 1, 10 s (optional as required)
 - Single (manual trigger)
 - Gated (TTL compatible)
 - TTL down slope
 - TTL up slope
 - External, with adjustable trigger level: -10 to +10 linear adjustable in 3 decades (0.1, 1, 10 V)
- Delay
 - On/Off switch
 - 1...10 linear adjustable, multiplied by: 0.1, 1, 10, 100, 1000 ms (optional as required)
 - Control Error indication
- Width
 - Auto/Var. switch
 - 1...10 linearly adjustable, multiplied by: 0.001, 0.01, 0.1, 1, 10 s (optional as required)
 - Control Error indication
- Amplitude
 - Analogue/Digital switch
 - Analogue: 0-10 linearly adjustable, multiplied by: 0.001, 0.01, 0.1, 1 V.
 - Digital: 0.00-9.99, multiplied by: 0.001, 0.01, 0.1, 1 V.
 - TTL compatible
- DC Baseline
 - On/Off
 - -5 V...+5 V linear adjustable
- Twin Pulses switch
- Polarity: normal/reverse
- Pulse Shape: normal/reverse
- Pulses/DC switch
- Normal/Bipolar switch
- Stand By switch
- Optical Monitor
- Sync. Output
- Trigger Output
- Stimulus Output
 - Max. voltage range: Pulses +/- 10 V, DC Baseline +/- 5V
 - Max. current output: +/- 35 mA (optional as required)
 - Resistance: 50 Ohm
 - Short-circuit protected
- Isolation Unit connector (see specifications of Isolation Unit: Model IU10A)
- Power requirements: 110...130 V AC or 200...240 V AC, 50 - 60 Hz, 50 W, fuse T 0.6A slow or T 0.3A slow
- Physical size: high quality metal 19" rack mounting; 89 x 487 x 236 mm, weight cca. 3.0kg

(Specifications subject to change without notice.)

Electrocardiogram amplifier

ECGA 1

PROBE:

Input resistance: 2.5 G Ω / 2.5 pA
Input bias current: +/-15 nA
Stand-by: on/off

ISOLATION:

Voltage rated continuous:
AC (50 Hz) - min. 3500 Vrms
DC - min. 4950 Vrms
Isolation mode rejection:
AC (50 Hz) - 115 dB
DC - 160 dB
Barrier impedance: 10¹⁴ Ω / 2 pF
Leakage current (240 Vrms, 50 Hz): 0.18 Arms

ECG AMPLIFIER:

Gain: 600 ...7500, continuously variable
Input max. measurement range: 0.7 ...8 mV
Filter: band-pass, Butterworth type of the 2nd order
frequency response (-3 dB): 0.3-100 Hz
Notch filter: 50 Hz, Q = 6 (on/off)
Output voltage (max): 10 V
Output resistance: 1 k Ω

TRIGGER CHANNEL:

TTL compatible pulse (width 40 ms) triggered by the maximal positive slope of the wave.

POWER REQUIREMENTS:

115 - 230 AC, 50 - 60 Hz, 25 W, fuse T 0.3A or T0.1A.

PHYSICAL SIZE:

45 x 220 x 250 mm, weight cca. 1.5kg

(Specifications subject to change without notice.)

Isolation Unit

IU10A

- Isolation
 - Digitally modulated-demodulated barrier
 - Barrier impedance: 1014 Ohm / 2 pF
 - Leakage current at 60 Hz, 240 Vrms: 0.18 Arms
 - Isolation mode rejection: 140 dB
 - Continuous voltage: 1000 Vrms
- Gain
 - Nominal gain: 1
 - Nonlinearity: 0.02 % max.
- Input
 - Voltage range: +/- 12 V
 - Resistance: 200 kOhm
- Output
 - Voltage range: +/- 12V
 - Current drive: +/- 15 mA (optional as required)
 - Ripple voltage: 20 mVp-p
- Frequency response
 - Signal bandwidth: 50 kHz
 - Slew rate: 2 V/ s
- Power requirements: no battery required
- Physical size: 45 x 25 x 80 mm, with 1.5m connecting cable, weight cca. 0.2 kg.

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