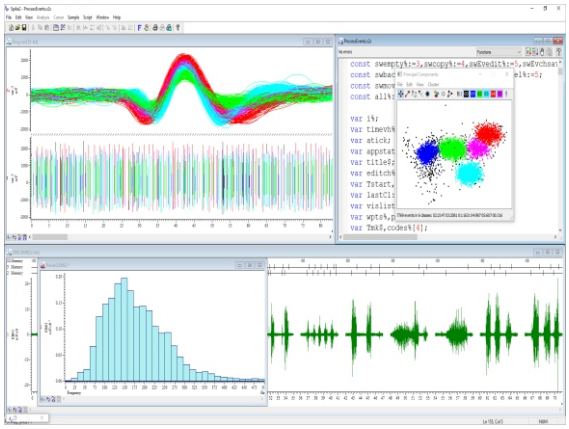
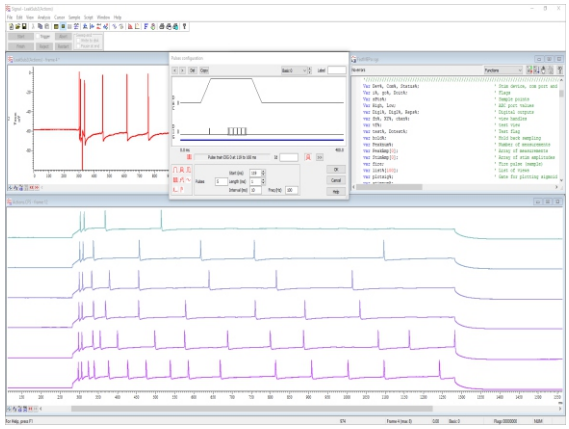
The MICRO1401-4



Spike2 – continuous data acquisition and analysis



Signal – sweep-based data capture and analysis

A selection of expansion units allows enhancement of the Micro4 to suit your application

The Micro1401-4 is a low-cost, versatile data acquisition unit. The on-board processor with high-speed memory is optimised for real-time processing, free from the constraints of the host computer operating system. Fast and accurate sampling coupled with simultaneous output offers extensive on-line experiment control.

Fast data acquisition and analysis

The Micro4 records waveform, digital (event) and marker data information and can simultaneously generate waveform and digital outputs in real-time for comprehensive experiment control. It features high-speed waveform data capture at sampling rates up to 1 MHz with 16-bit resolution. The 400 MHz 32-bit RISC processor and 32 MB of memory allow complex on-line analysis while freeing time for the host computer to perform other tasks, such as data manipulation and further analysis.

Expandable for advanced applications

The expandable design of the Micro4 enables users to configure their systems to suit specific requirements. For more demanding applications, options include:

12 or 24 additional channels of BNC terminated waveform input

128 channels of mass terminated waveform input

Time lock (synchronization) of multiple Micro1401s and Power1401s to employ more channels at faster rates

CED application software

The CED Spike2 and Signal applications customize the system for use in a wide range of research areas. Advanced software features such as on-line spike sorting in Spike2 and fast sweep modes in Signal are enhanced when using the Micro4.

Tetrode and *n*-trode recording

Single and multi-unit spike processing

Evoked response, TMS and rTMS

In vivo and in vitro studies

Gastrointestinal studies

Cardiovascular studies

Sports physiology

Dynamic Clamp

ECG, EEG, EMG and EOG

Patch and Voltage clamp

LTP, LTD capture and analysis

and many more...

CED Micro4 technical specifications

Waveform I/O
Waveform input: 4 channels on base unit
Total of 16, 28, 64 or 128 waveform inputs via expansion units
ADC: 16-bit, 1 MHz maximum aggregate sampling rate
Waveform output: 2 channels, option of 4
DACs: 16-bit, 1 microsecond settling time
Waveform I/O user selectable ±5V or ±10V
System accuracy and noise: 0.05% of full scale ±1.5 bits RMS

Digital I/O
Digital inputs and outputs 5V TTL compatible, inputs over-voltage protected
16 digital inputs, 8 with change-of-state detection to microsecond accuracy
16 digital outputs, 8 with clocked outputs for microsecond accurate switching
Handshake lines for byte input and output

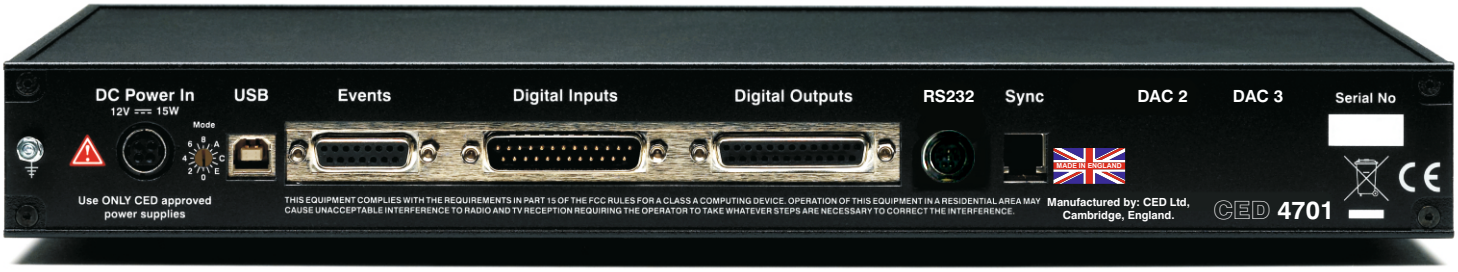
Clocks and events
4 programmable clocks with 100ns resolution
BNC socket for clock inputs and event (clock start) connections

Processor and memory
32-bit ARM processor running at 400 MHz
32 MBytes of fast read-write memory

Case and power supply
Size: 366 x 46 x 217mm (14.4 x 1.81 x 8.5 ins) (W x H x D)
Rack mount for standard 19 inch laboratory racks
12 Volt DC power option for mobile, trolley or remote applications
External 100-250V 50-60 Hz auto-sensing power supply, 15W approx.

Synchronization
Synchronize (time lock) multiple Micro1401-3s and Power1401 MkII's or later

Host interface
USB 2.0



Rear view of the Micro4

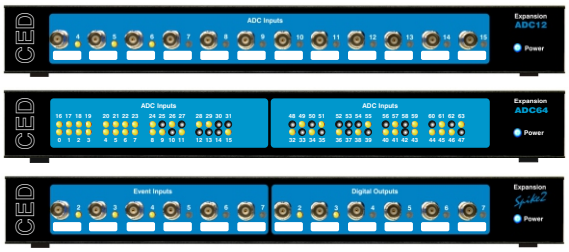
Expansion units

For users who require more inputs and outputs than are available on the standard unit, we offer several expansion options in the form of top-boxes.

ADC12 (3001–3) – 12 additional channels of waveform input; fit two units for 24 additional channels

ADC64 (3701-64) – 64 additional channels of waveform input via rear-panel D type connectors; fit two units for 128 channels (application dependent)

Spike2 (3001–9) – 6 channels of event input and 6 digital outputs brought to front panel BNC connectors



Compatibility

Software compatible with Power3A, Power3, Micro3 and Micro MkII at application level.
Runs CED Spike2, Signal and applications written for the CED 1401 family of interfaces.
Drivers for Windows 7, 8, 10 and Intel Macintosh running Windows.

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