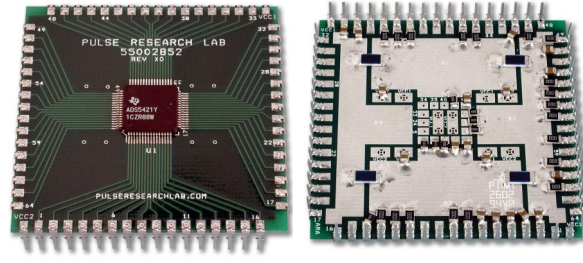




**PRL Prototyping Kits** and tools enable you to build custom circuits quickly and affordably. Patented features allow for maintenance of a matched impedance environment throughout your prototyping project. Build anything from a low-noise custom amplifier to an A/D evaluation board to a GHz frequency divider.

Our prototyping products are offered as complete kits or as individual parts, including our patented line of surface-mount to through-hole adapters. Please visit our website at <http://www.pulseresearchlab.com> for pricing and specifications, or to order online.



### SMT Device Adapters

Designed for use with our SMT Development Kits (below), these SMT device adapters have standard 100-mil pin spacing and can also be used with any standard breadboard. Patented features for DC to 3+ GHz bandwidth. Pads on backside of adapter allow for close placement of decoupling, termination, and shunt components. The following package types are currently supported, with more to come:

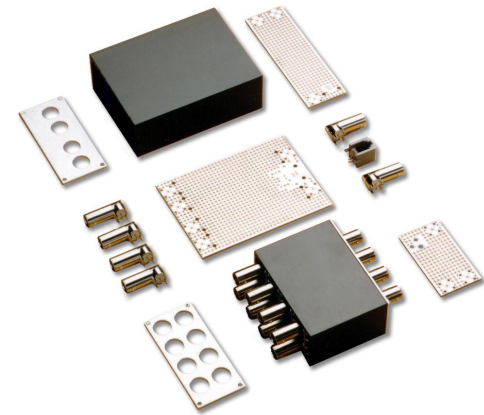
- **SO device adapters**, from 8 to 20 pins
- **SSO device adapters**, from 8 to 48 pins
- **PLCC device adapters**, from 20 to 28 pins
- **QFP device adapters**, from 32 to 64 pins



### SMT Device Development Kits

Assorted surface-mount adapters and a reusable prototyping motherboard with ground plane, voltage busses, and I/O footprints. All kits contain I/O connectors and voltage regulator modules; selected kits contain AC adapters, cables and enclosures as well. Patented features for DC to 3 GHz bandwidth:

- **SSODK**, SMT development kit for SO or SSO devices
- **PLCCDK**, SMT Development Kit for PLCC devices or small QFP devices plus supporting SO and SSO devices
- **QFPDK**, SMT Development Kit for large QFP devices, up to 64 pins, plus supporting PLCC, SO and SSO devices (shown to the left, with optional accessories)



### Breadboarding/Prototyping Kits

Three families of prototyping kits. Each contains a PCB with ground plane and I/O footprints, plus I/O connectors, matching end-plates, and an extruded aluminum enclosure. Many different configurations available, in three form factors:

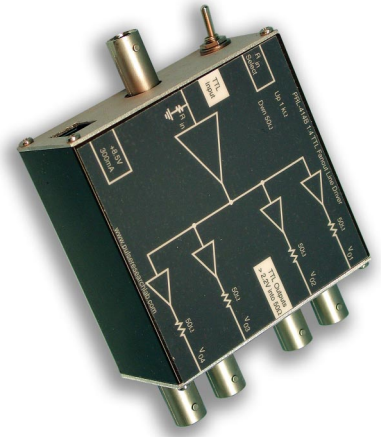
- **950 Series**, 1.2"-wide PCB (shown below) for small circuits such as amplifiers, attenuators, filters, opto-isolators, etc.
- **970 Series**, 2.8"-wide PCB (shown to the left) for more complex circuits such as A/D or D/A converters, serial/parallel converters, laser diode drivers, etc.
- **980 Series**, 6.6"-wide PCB for larger digital circuits, device evaluation, small custom instruments, etc.

### Coming Soon

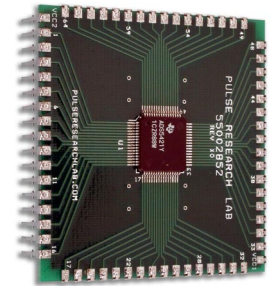
- **PRL-174**, 8-bit manually programmable xtal clock source with NECL and PECL or NECL and TTL outputs
- **PRL-260**, 8-bit manually programmable frequency divider with NECL and PECL or NECL and TTL outputs
- **PRL-436N**, 2 Ch. Differential Input NECL OR gate
- **PRL-437N**, 2 Ch. NECL multiplexer
- **PRL-854T**, 4 Ch. RF absorptive scanner/signal router
- **PRL-854**, 4 Ch. NECL/PECL or LVPECL scanner/terminator

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### Basic Lab Tools



### Surface-Mount Adapters



### Prototyping Kits



## Basic Lab Tools

PRL Basic Lab Tools (BLT's) are ready-to-use modules that provide commonly needed functions, such as logic-level translators, fanout buffers, clock sources, frequency dividers, etc. BLT's are used in testing, systems integration, and general lab use in a variety of industries.

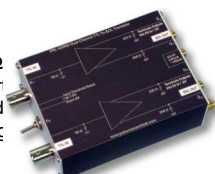
These affordable modules are designed for high performance, with low-jitter clocks, low skew across multiple outputs, and back-matched output drivers that will drive long cables up to 200'. TTL models run up to 300 MHz, and NECL/PECL/LVPECL models run up to 3 GHz.

Modules may appear in more than one functional category. For example, the PRL-258 is both a clock source and a frequency divider. All modules include an AC/DC adapter, and are ready to use, out of the box. Please visit [www.pulseresearchlab.com](http://www.pulseresearchlab.com) for pricing and specifications, or to order online.

## Logic Level Translators

A family of translators/level shifters for interconnecting different logic levels. Translate to/from TTL, Differential TTL, NECL, PECL, LVPECL, 124 Ω NECL and RS-422. Comparator models convert sine waves to square waves, and terminator models allow connection of NECL/PECL/LVPECL signals to ground-referenced instruments

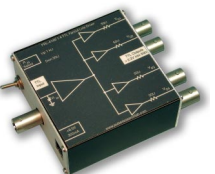
- **PRL-350NECL**, 2 Ch. small signal or sine wave to NECL comparator/converter
- **PRL-350TTL**, 2 Ch. small signal or sine wave to TTL comparator/converter
- **PRL-420ND**, 2 Ch. TTL to NECL translator
- **PRL-420PD**, 2 Ch. TTL to PECL translator
- **PRL-420TD**, 2 Ch. Single-ended TTL to Diff. TTL translator
- **PRL-422NECL**, 2 Ch. NECL to RS-422 translator
- **PRL-422RS**, 2 Ch. RS-422 to NECL translator
- **PRL-432N**, 2 Ch. Diff. 124 Ω NECL to 50 Ω NECL translator for Sony DFC-1800 Variable Rate Buffer
- **PRL-433N**, 2 Ch. 50 Ω NECL to Diff. 124 Ω NECL translator for Sony DFC-1800 Variable Rate Buffer
- **PRL-470A**, Variable output pulse driver
- **PRL-550NQ4X**, 4 Ch. NECL terminator/attenuator
- **PRL-550PQ4X**, 4 Ch. PECL terminator/attenuator
- **PRL-550LPQ4X**, 4 Ch. LVPECL terminator/attenuator



## Fanout Buffers

Low-skew fanout buffers for distributing high-speed signals to multiple destinations. Outputs can drive long lines, up to 200' (depending on model).

- **PRL-414B**, 1:4 TTL Fanout Buffer
- **PRL-431N**, 1:2 NECL Fanout Buffer
- **PRL-431P**, 1:2 PECL Fanout Buffer
- **PRL-431LP**, 1:2 LVPECL Fanout Buffer
- **PRL-434**, 1:4 NECL Fanout Buffer

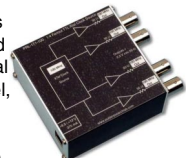


Products covered by U.S. Patents 6,407,652 or 6,265,952

## Clock sources

Precision crystal-clock sources for testing, systems integration, and general lab use. TTL, NECL, and PECL models in a variety of stock or custom crystal frequencies from kHz to 622.08 MHz. Multi-channel, multi-phase, and programmable models available:

- **PRL-170N**, 2 Ch. NECL xtal clock source
- **PRL-170P**, 2 Ch. PECL xtal clock source
- **PRL-171**, 1:4 Fanout TTL xtal clock source
- **PRL-172**, 4-φ TTL xtal clock source (f, f/2, f/4, f/8)
- **PRL-173**, 2-φ TTL xtal clock source (f, f/5)
- **PRL-258**, 4-φ NECL xtal clock source and frequency divider (f, f/2, f/4, f/8)



Please specify desired crystal frequency, in MHz, at the time of order. For example, order **PRL-170N-622.08** for a 622.08 MHz NECL clock source.

## Frequency Dividers

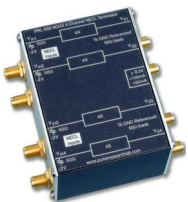
Accurate, low-jitter frequency dividers for scope triggering, split-cycle timing, counter output simulation, and general lab use. TTL models run up to 100 MHz, NECL/PECL/LVPECL models up to 3 GHz:

- **PRL-220A**, 4-φ TTL frequency divider (±2, ±4, ±8, ±16)
- **PRL-240A**, 2-φ TTL frequency divider (±2, ±10)
- **PRL-255N**, 2 Channel NECL frequency divider (±2, ±4)
- **PRL-255P**, 2 Channel PECL frequency divider (±2, ±4)
- **PRL-255CN**, 2 Channel small signal frequency divider (±2, ±4)
- **PRL-258**, 4-φ NECL xtal clock source and frequency divider (f, f/2, f/4, f/8)



## NECL/PECL/LVPECL Terminators

These modules provide proper termination of NECL/PECL/LVPECL signals while providing attenuation and level translation for monitoring of signals via a 50 Ω oscilloscope. Ideal for monitoring outputs from multi-channel optical transceivers.

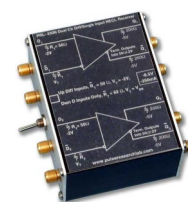


- **PRL-550NQ4X**, 4 Ch. NECL terminator/translator
- **PRL-550PQ4X**, 4 Ch. PECL terminator/translator
- **PRL-550LPQ4X**, 4 Ch. LVPECL terminator/translator

## Line Drivers/Receivers

A variety of line drivers and receivers for sending and receiving signals over long lines, up to 200' (depending on model).

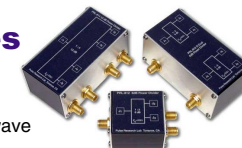
- **PRL-414B**, 1:4 TTL Fanout Buffer
- **PRL-430N**, 2 Ch. Differential NECL line driver/receiver
- **PRL-430P**, 2 Ch. Differential PECL line driver/receiver
- **PRL-431N**, 1:2 NECL Fanout Buffer
- **PRL-431P**, 1:2 PECL Fanout Buffer
- **PRL-431LP**, 1:2 LVPECL Fanout Buffer
- **PRL-434**, 1:4 NECL Fanout Buffer



## RF Splitters, Switches and Probes

Passive RF tools for handling RF and microwave signals up to 4.6 GHz:

- **PRL-812**, 6 dB RF power splitter (1:2)
- **PRL-814**, 12 dB RF power splitter (1:4)
- **PRL-852**, 2 Ch. RF reflective A/B switch/scanner
- **PRL-854**, 4 Ch. RF reflective scanner/signal router
- **PRL-860**, 10:1 attenuating signal tap/splitter for in-line probing of GHz signals



## Other

Other modules include logic function modules, coupling capacitors, and more:

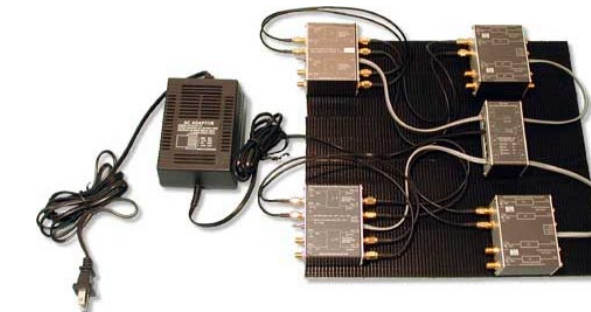
- **PRL-435N**, 2 Ch. Differential Input NECL AND gate
- **PRL-470A**, Variable Output Pulse Driver
- **PRL-480N**, 2 channel programmable NECL delay
- **95000 series**, coupling capacitor/DC block



## Prototyping Accessories

A variety of useful accessories to complete, enhance, and protect your prototyping project.

- **I/O connector SIP/DIP adapters** (patented)
- **Voltage distribution modules**, power multiple boards or BLT's from a single AC/DC adapter (shown to the left)
- **Voltage regulator SIP modules**, instant power for CMOS/TTL, ECL, PECL and LVPECL devices
- **AC adapters, coax interconnect modules, cables, discrete components, mounting brackets, and SMA finger wrenches**



## Kit Parts

Individual components of our prototyping kits can be ordered separately:

- **Extruded aluminum enclosures**, three cross-sections in a variety of standard or custom lengths, with extruded slots for mounting PCBs. These are the same extrusions that house our BLT modules.
- **Prototyping PCBs** with ground plane and I/O footprints
- **Matching endplates** for prototyping PCBs

