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## V851 digital delay/pulse generator

### Features

- 6-channel VME digital delay generator
- Delay and width modes
- 40 (39.0625) picosecond LSB resolution with 32-bit (167.8 milliseconds) full-scale delay range
- Jitter < 25 picoseconds RMS typical from external trigger
- Adjustable trigger threshold and output levels
- Insertion delay of 25 nanoseconds
- Optional NIM level outputs for all delay channels

The V851 is a single-width, 6U VME digital delay generator that accepts a single trigger input and generates six separately programmable delay outputs. The module features 32-bit dynamic range, 40 picosecond resolution, low jitter, and high rep-rate capability. All channels are triggered simultaneously; the module generates a "T0" reference edge 25 nanoseconds after trigger, and six delay outputs, each programmable from 0 to 167.8 milliseconds.

The outputs can also be configured to generate widths. This mode uses paired channels to generate a pulse whose rising and falling edges are determined by channel programming. Up to three such delay+width outputs are available.

V851 delay parameters may be programmed on-the-fly at VMEbus speeds without generation of erroneous delays. All delay channels can be updated coherently.



## Specifications : V851 digital delay/pulse generator

|                       |  |
|-----------------------|--|
| FUNCTION              | 6-channel digital delay generator VME module   |
| DEVICE TYPE           | 16-bit VME register-based slave: A16:D16; implements 32 16-bit registers at switch-selectable addresses in the VME 0xC000 to 0xFFC0 address range  |
| OUTPUTS               | T0 reference output rises 25 ±0.5 ns after trigger<br>Six logic-level timing channels are provided<br>In DELAY mode, the V851 produces six independent delays<br>In WIDTH mode, paired channels allow the generation of up to three pulses with programmable delay and duration<br>Programmed delays are relative to T0<br>Outputs voltage levels are programmable as a group<br>Offset is programmable from 0 to -2.5 volts, and amplitude is programmable from 0 to +5 volts<br>Outputs are 50Ω, slew rates > 2 v/ns |
| INPUTS                | External Trigger, programmable ± 2.5 volt threshold, switchable 50Ω or HiZ<br>Clock, selectable 10 MHz input or output   |
| TRIGGERING            | Triggers can be selected from front panel EXT TRG, internal clock, or VMEbus command trigger<br>Trigger rate up to 2.5 MHz   |
| INSERTION DELAY       | 25 ns ± 0.5 ns, trigger to T0  |
| RESOLUTION            | 39.0625 ps LSB (equivalent to a clock rate of 25.6 GHz)  |
| RANGE                 | 32 bits allows a full scale delay range of 167.7722 ms on all channels   |
| ACCURACY              | ±(500 ps + timebase stability)   |
| JITTER                | Less than (50 ps + 1E-9 x programmed delay) RMS, external trigger to any output<br>Typically below 10 ps RMS for short delays  |
| TIMEBASE              | Ovenized oscillator<br>Temperature coefficient < 10 ppb/°C; aging below 1 ppm/year<br>Oscillator may be phase locked to a 10 MHz external reference via the front panel CLOCK I/O connector  |
| OPERATING TEMPERATURE | 0 to 60°C  |
| CALIBRATION INTERVAL  | One year   |
| POWER                 | Standard VME supplies:<br>+5 volts, 3A max<br>+12 volts, 1.5A max at startup, 825mA max after warmup<br>-12 volts, 1.1A max at startup, 550mA after warmup   |
| CONNECTORS            | SMB standard<br>Optional LEMO<br>Optional additional NIM-level LEMO outputs  |
| INDICATORS            | LEDs indicate trigger and VME access   |
| PACKAGING             | 6U single-wide VME module  |
| CONFORMANCE           | VMEbus per ANSI/VITA 1-1994 (R2002)  |



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