

Fermilab Computing Sector

[About](#)
[Services](#)
[Science & Computing](#)
[Internal](#)

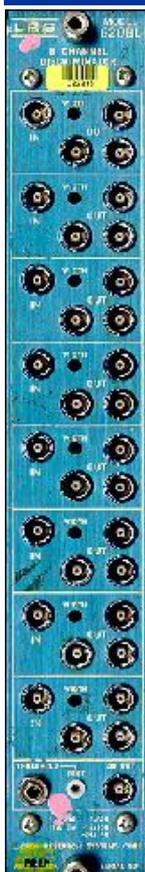
 Search


Electronic Systems Engineering

620BL/BLP Octal Discriminator

[ESE Home](#) | [Metrics](#) | [Useful Links](#) | [Vendors List](#)
[Return to LeCroy Directory](#) | [Return to Pool Catalog](#)

GENERAL DESCRIPTION



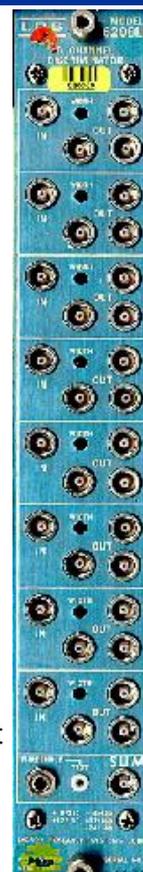
The Models 620BL and 620 BLP utilize the proven circuit design of the popular Model 620AL Octal Discriminator. Additional features have been included to augment the usefulness of this discriminator under the increasingly demanding conditions of physics research.

The 620BL and 620BLP offer a low minimum threshold of -30mV, which is continuously variable up to -1 volt via front panel screwdriver adjustment. A threshold monitor point is provided to permit the measurement of the threshold level with a common voltmeter. The stability of the threshold is $< 0.2\%/^{\circ}\text{C}$ to assure accurate results in varied operating environments. As is characteristic of all LRS 600 Series Discriminators, the low input reflections of $< 4\%$ provide substantial protection against multiple-pulsing due to reflections, a special necessity when working with low thresholds.

Designed to operate at maximum CW rates in excess of 100 MHz, the 620B's offer a double-pulse resolution of 9 nsec and a propagation delay of 7.5 nsec. These discriminators are non-updating, requiring that the output returns to zero before retriggering can occur.

The discriminator outputs are low impedance voltage outputs providing output levels greater than -800 mV into a 50 Ohm load. The output durations are presettable via front panel screwdriver adjustment from 5 nsec to 22 nsec. Output risetimes and falltimes are < 2.5 nsec.

On both units a front panel summing output supplies a current pulse of -2mA amplitude and 2.5 nsec risetime for each discriminator output which is in the logical 1 state. This feature may be used for multiplicity logic decisions in hodoscope systems, leadglass, or scintillator arrays.



The model 620BLP offers the ability to remotely program the threshold setting of the discriminator. When an externally generated DC level is applied via a 20-pin rear panel connector, the front panel setting is overridden. This feature permits on-line compensation for system gain changes caused, for example, by photomultiplier high voltage drift.

SPECIFICATIONS

INPUT CHARACTERISTICS

Signal Input: Threshold, - 30 mV to approximately -1.0 volt (common to all channels, continuously variable); front-panel screwdriver adjust (screwdriver included) 50 Ohm $\pm 1\%$, protected to $\pm 5\text{A}$ for 0.5uSec clamping at +1 and -7volts; DC protection to $\pm 5\text{volts}$; reflections $< 2\%$ for input pulses of 2 nSec risetime; stability $< 0.2\%/^{\circ}\text{C}$ to 60°C operating range; offset 0 ± 1 mV; threshold monitor 10:1 ratio of

monitor voltage to actual voltage.

Gate: Slow gate via rear connector and rear panel ON-OFF switch; risetimes and falltimes approximately 50 nSec; clamp to ground from +5 inhibits; direct-coupled.

OUTPUT CHARACTERISTICS

Logic Outputs: 3 NIM-level voltage outputs, quiescently 0 volts, -800 mV during output; duration: 5 nSec to > 20 nSec continuously variable via front-panel screwdriver control (narrower minimum width possible at slight expense of amplitude), risetimes and falltimes typically 2.0 nSec (max. 2.5 nSec, 10% to 90%). Width stability better than +/- 0.20%/°C maximum. At least two outputs should be terminated in 50 Ohms for optimum pulse shape.

Summing Output: A front panel summing output supplies a 2.5 nSec risetime current pulse of -2 mA amplitude for each output which is in the logical 1 state. Although this output is a current source, it cannot be cascaded (wire ORed with other summing outputs) since it is internally back-terminated in a complex impedance. For optimum waveshape in fast decision logic applications all normal outputs must be terminated in 50 Ohm. Output widths should be set to >= 10 nSec for multiplicity detection > 3. Input-to-"OR" output delay, 8 +/-1 nSec.

GENERAL

Maximum Rate: > 100 MHz, input and output.

Double-Pulse Resolution: 9 nSec (at minimum width setting).

Time Slewing: 1 nSec for input amplitudes 110% of threshold and above.

Input-Output Delay: 7.5 nSec nominal.

Multiple-Pulsing: None; one and only one output pulse of preset duration is produced for each input pulse, regardless of input pulse amplitude or duration.

Packaging: In RF shielded AEC/NIM #1 module; Lemo-type connectors.

Current Requirements: +6V at 160mA
+12V at 12mA
-24V at 39mA
-6V at 400mA
-12V at 172mA

620BLP REMOTE PROGRAMMING CHARACTERISTICS

Threshold Control: Actual threshold = (VT at rear panel pin/10, where -300 mV <= VT <= -10 volts. Input impedance = 1 KOhm (front-panel threshold control should be set to <= -500 mV). Input impedance approaches 200 Ohm at -1 volt threshold.

Pin Connections:

Pin	Function
A	VT
B	Ground

Rear-Connector Type: LRS Model CK-20M Connector Kit or AMP #201356-1, male pins.

Mating Connector Type: LRS Model CK-20 Connector Kit or AMP #200346-2, female sockets.

For assistance, contact [Help Desk, helpdesk@fnal.gov](mailto:helpdesk@fnal.gov)
Information compiled and maintained by W. Barker ; last modified on October 22nd, 2008.
(Address comments about page to ese-pcadmin@fnal.gov)