The Model 2313 16-channel CAMAC ECL discriminator is a high performance module which offers external programmability. It has 16 inputs which accommodate a wide range of input signal levels and operates with input rates up to 100 MHz. The 2313 has differential ECL logic outputs (which offer noise immunity). These outputs are compatible with LeCroy's ECLine family of CAMAC modules including the following: Model 2366 Universal Logic Module, Model 4448 Coincidence Register, Model 4508 Programmable Lookup Unit, Model 4516 Logic Unit, Model 4532 Majority Logic Unit and many more. Descriptions and specifications of the above units can be found on their own separate data sheets.

The 2313 uses 16 of LeCroy's new, state-of-the-art, monolithic integrated circuits, MDC100, which offer a Double Pulse Resolution (DPR) of < 10 nsec and output widths from 10 to > 100 nsec. The MDC100 also features built-in hysteresis which eliminates multiple pulsing on slow input transitions.

The 2313 accepts negative-going pulses via front-panel Lemo connectors and offers a variable threshold range from -1.024 V to +0 V. The threshold can be adjusted remotely by CAMAC control or locally by a front-panel potentiometer. A monitor point is provided to permit accurate measurement of the threshold with a voltmeter.

Each channel has two separate differential ECL outputs. The output width can be adjusted from 10 nsec to > 100 nsec. Each channel can be masked by either externally applied signals from the rear-panel veto connector, or by CAMAC control. In Local mode, only the external mask will be active.

A built-in test feature simulates an input signal for each channel upon receipt of either an F(25) command or a NIM level signal applied to the test input connector. This permits rapid, simultaneous testing of all enabled discriminator channels.

INPUT

Signal Inputs: Sixteen inputs via Lemo front-panel connectors. Protected to ±2 A for 0.5 µsec. Reflections < 5% for input pulses of 3.5 nsec rise time for amplitudes < 5 V; < 10% for amplitudes between 5 and 10 V. Input offset voltage typically ±3 mV. Minimum input width is 3 nsec.
Signal Input Threshold (see note below): -1.023 V to +0 V ±(5% or 1 mV, whichever is greater) common to all channels; front-panel screwdriver adjustment in local mode or through 12-bit DAC in remote mode (0.25 mV resolution). Stability better than 0.3%/°C to 60°C operating temperature. Threshold monitor point on front panel has 10:1 ratio of monitor voltage to actual voltage ±5%; minimum usable threshold is 10 mV.
Signal Input Hysteresis: Approximately 7 mV.
Test Input: One Lemo connector on front panel, 50 Ω ±2%, triggers all enabled channels. Requires NIM level signal (< -600 mV). Minimum width, 6 nsec. Maximum rate, 20 MHz. Rise time < 2 nsec.
Veto Input: One Lemo front-panel connector, 50 Ω ±2%. Permits simultaneous fast inhibiting of all channels. Requires NIM level signals. Direct coupled. Must precede input signal by approximately 6 nsec. Minimum duration, 8 nsec.
Individual Inhibits (masking): 16 differential (110 Ω twisted pairs) ECL lines ("Emitter ORed" with CAMAC mask) inhibit selected discriminator channels. Differential True signals inhibit channel; unconnected inputs go to False or uninhibited state; 34-pin rear-panel connector.

OUTPUT

Discriminator Outputs: Two separate outputs per channel. ECL level (-0.8, -1.7 V) into 100 Ω twisted-pair. Duration: approximately < 10 nsec to > 100 nsec, continuously variable via screwdriver control in the Local mode or by CAMAC control in Remote mode. Common to all channels. Rise times and fall times < 2 nsec. Output pulse width matching < ±10% at widest width.
Current Sum Out: Rear-panel Lemo, high impedance current source sinks a current proportional to the input multiplicity at a rate of 1 mA ±10% per hit (50 mV per hit into a 50 Ω load) for output width > 15 nsec.

GENERAL

Maximum Rate: 100 MHz guaranteed.
Time Jitter: 30 psec for inputs of constant amplitude.
Mode Select: Local mode and remote mode selectable via CAMAC command, or front panel push-button to enable Local mode.
LED Indicators: Two front-panel LEDs indicate that Remote mode and N have been selected.
Double Pulse Resolution: 8 nsec typical, 10 nsec maximum.
Time Slewing: Less than 500 psec for input amplitudes from 2x to 20x over threshold.
Input-Output Delay: < 8 nsec. Delay matching better than ±950 psec.
Test-Output Delay: 11 nsec typical, 13 nsec maximum.
Remote to Local Switch: Recessed front panel forces unit from remote to Local mode.
Packaging: RF-shielded, CAMAC #1 module.
Power Requirements: 2.5 A at -6 V; 1.4 A at +6 V; 30 mA at -24 V; 60 mA at +24 V.
Environment: Proper operation of the 2313 requires +25°C air intake with sufficient airflow to maintain temperature rise of exhaust air to < 20°C.

Note:

$$V_T = \frac{-X}{4095} (1024) - 10\,mV$$

where V_T = Threshold Voltage in (mV)
X = DAC Counts (0-4095)