

CMC070 FASTCAMAC Deadtimeless time digitizer and scaler

PRELIMINARY DATA SHEET, SUBJECT TO CHANGE

This module was developed for a Neutron time of flight system. It employs four LeCroy MTD133 time digitizer ICs (0.5 ns lsb), three Xilinx logic arrays, and a 32kX24 buffer memory. The CAMAC interface is designed for both normal CAMAC and FASTCAMAC, level 1 and 2, up to 30 Mbytes/sec transfer rate.

For the time of flight application, it has been programmed as a 32 channel scaler and as a 16 channel time digitizer and histogrammer. The onboard eeprom can hold two different program loads and changing between them takes less than 1 second

There are 32 differential ECL inputs which are used as the scaler inputs. The maximum rate is 50 MHz, 24 bit width (16M counts). This mode is used to calibrate the system using two discriminator outputs as a single channel analyzer.

When reprogrammed as a 16 channel Time digitizer, every other input is used. The tdc chips alternate in pairs, every 800 ns. When one pair (16 channels) is acquiring, the other pair is being read out and histogrammed. The system is designed for an average rate up to 2 MHz per channel, peak rate 50 MHz. The histogram depth is 24 bits.

The hardware can be reprogrammed for other modes of operation.

As a generally useful commercial TDC, we will offer a version which ping pongs the TDC chips every 8 microseconds, to create a 16 channel long time range time stamper with 0.5 ns resolution. The exact details of this configuration are still being determined, but both continuous and triggered modes will be provided. In the triggered mode, a variable width acquisition window can be before, after, or including the trigger time.

The hardware can also be programmed as a multipurpose 32 channel scaler. This can be a normal gated scaler, a latching scaler, or a multiscaler system, using the 32kX24 buffer memory.

I/O, all differential ECL:

Common hit

External clock

Auxiliary input

Auxiliary output

32 signal inputs, 0-31, even = tdc and scaler, odd = scaler only

Single width CAMAC module.

+6V, 2.5A, -6V, 1A, +24V, <0.1A

ORDERING INFORMATION

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