

NIMbox DNAE

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NIMbox DNAE - 1 channel 100 MHz flash ADC with 3 programmable TTL I/O ports, 2 channel DAC 100 MHz, 4 LE discriminators and 5 NIM or TTL I/O

This single slot wide NIM module is a pre-configured NIMbox version with 1 x SU706, 1 x SU703, 1 x SU710 and 1 x SU704 sub-modules. DNAE is a 1 channel 14-bit 100MHz flash ADC with FIFO and with 3 programmable TTL I/O ports, 2 channel DAC 100 MHz, 4 LE discriminators and 5 NIM or TTL I/O. DNAE can be used as digitizer / oscilloscope with signal generator and logic analyzer.

Programming the internal FPGA allows to set-up the ADC channels and their data read out but also to define logic functions for the I/O ports. This includes AND/OR coincidences and majorities fan in / fan out etc. but also include more complex features as timer, counter, and even multi-hit dead-time less Time-to digital converter. All logic functions are

programmed into the FPGA via the high speed USB-2 interface.

Using the provided LabView VI library "Toolbox" easy and fast programming of all configurations settings and functions is possible.

Main Features

- 1 channel 14-bit 100MHz flash ADC with FIFO and with 3 programmable TTL I/O ports, 2 channel DAC 100 MHz, 4 LE discriminators and 5 NIM or TTL I/O
- USB-2 interface for programming, control and read-out
- Pre-configured firmware with standard functions for logic and built-in hardware (I/O and ADC's)
- "Logic box" tool set for virtual wiring, configuring and read-out within National Instruments LabView
- Single width NIM module
- 1 channel flash ADC, 14-bit, maximum 100MHz (programmable sampling frequency divider),
- Input range -0.5V to +0.5V (other ranges on request)
- Internal (threshold) and external trigger, pre- and post-trigger sampling
- automatic calculation of pulse characteristics as integral charge, maximum with position
- 2 channel DAC, 14-bit, maximum 100MHz with programmable frequency divider
- 2 outputs per channel, one is amplified, the other is inverted
- On board memory for 1024 values
- 4 channel leading edge discriminator, inputs with Lemo connectors
- Individual thresholds, programmable from -2.5V to +2.5V (12bit resolution)
- 5 programmable TTL or NIM inputs / outputs, Lemo connectors 50 Ohm impedance
- Programmable logic functions as AND / OR / XOR / NOT, Fan In / Fan Out, complex multi-level logic conditions possible, configurable FPGA embedded functions as 32-bit scaler / counter, clock, pulse / delay and gate generator, synchronizer
- EEPROM to save programmed configuration
- High-speed USB-2 interface for programming, read-out and firmware upgrades
- Power consumption: 6V x 800mA (2A fuse)

Standard configurations

Items	Description
DNAE-N	1 channel 100 MHz flash ,2 channel DAC 100MHz, 4 LE discriminators and 5 NIM I/O
DNAE-T	1 channel 100 MHz flash ,2 channel DAC 100MHz, 4 LE discriminators and 5 TTL I/O

NEMbox/NIMbox Submodules

NIMBox/NEMbox submodules are to be used in the slots on the main FPGA carrier board. Submodule programming is done through the FPGA using the USB 2 link. Different submodules can be combined. I/O connectors: LEMO^T (except SU701 and SU705).

- **SU703: 4 channel leading edge discriminator with 1 channel TTL Input / Output**
 - Programmable threshold (-2.5 ... +2.5V, 12 bit)

- Programmable hysteresis (0 to 60 mV, 12 bit)
- 5 programmable LED/s
- **SU704: 5 channel NIM or TTL Input / Output**
 - 50 Ohm, Lemo connectors
 - NIM or TTL for each channel jumper selectable
 - Output -16 mA (NIM) or 0 – 3.3V (TTL)
 - Delay 4-5 ns
- **SU706: 1 channel sampling ADC with 2 channel TTL Input / Output**
 - 14 bit resolution, 100 MHz maximum sampling rate
 - pre and post trigger sampling
 - FIFO 1024 values
 - AC coupled and DC coupled versions
- **SU707: 8 channel LVDS I/O**
 - RJ45 connectors
- **SU709: 8 temperature sensors**
 - Digital, duty cycle output
 - Calibrated on chip
 - Range: -45 to 130 °C
 - Absolute accuracy +/- 0.7 °C, chip resolution 0.005 °C
- **SU710: 2 channel DAC**
 - 100 MHz / 14 bit, +/-1V range (at 50Ohm)
 - Memory for 1024 values
- **SU711: 5 channel delay**
 - 0.5 to 128 ns (other ranges on request)
 - ground delay < 20ns

Standard VHDL modules included in all firmwares:

- Discriminator (only if SU703 is present)
- Digital I/O (for all NIM / TTL I/Os)
- ADCH (ADC and histogrammer, only if SU706 is present)
- DAC (only if SU710 is present)

Standard VHDL modules included in specific firmwares:

- L – Logic (AND, OR, XOR, Flip Flops...)
- C – Counter, Clock, Timer, Gate Generator (32 bit)
- G – Counter, Clock, Timer, Gate Generator
- B – Time to Digital Converter

Item	Description
SU 703	4 channel discriminator with 1 x TTL I/O and LED's, Lemo ^T
SU 704	5 channel NIM or TTL I/O, jumper selectable, Lemo ^T
SU 706	100MHz 14 bit F-ADC with 2 x TTL I/O, Lemo ^T
SU 707	8 channel LVDS I/O with RJ45 connectors

SU 709	8 channel temperature sensors
SU 710	2 channel 100MHz 14 bit DAC, Lemo ^T
SU 711	5 channel delay 0.5 to 128 ns

Product Data Sheet

NIMbox DNAE: [Print Product Data Sheet](#)

Documentation

Manual and Tech-Notes : [NIMbox-NEMbox](#)

Introduction: [WIENER NIM CAMAC introduction](#)

Downloads

CD-ROM: [NEMbox NIMbox](#)

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