NScan

Neutron Counter with Motor Control Unit

The NScan device is a computer controlled module which measures counts from a counting detector as a neutron detector, a Geiger-Mueller-counter or similar and controls a motor which moves the detector.

The main application of NScan is automated verification measurements on nuclear waste storage sites.

Communication between program and hardware works via USB interface. The device gets its power from the USB port.

The motor unit is connected via a SUB-D9 connector and the neutron counter input is accessible via the small Lemo connector. The larger Lemo connector supplies 5V or 12V of power at 50mA (selectable by internal switch). An integrated high voltage supply delivers up to 2000V of bias voltage for the neutron detector on the SHV connector. The green LED indicates that the device is working.

NScan is designed for operation by a modified WinSCAN program (version 1.01 or higher), but it also can be operated by other applications. We give all information and support to you to develop your own application or we develop the application that you want.

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Technical Data

General	
Power supply	USB – High Power Device
Communication interface	USB1.1
Temperature range	0 °C ... 40 °C
Protection class	IP42
Relative humidity	0% ... 100%, non condensing
Dimension (W x D x H)	95 mm x 170mm x 46mm

Counter input	
Input Level Lo	0V ... 0.8V
Input Level Hi	2,0V ... 5,5V
Pulse width	>100ns
Dead time	<500ns
Number of time channels	65536 (infinite, rolls over on channel 65536)
Measuring time per channel	0.2s ... 51.0s (changeable in steps of 0.2s)
Channel depth	24 bit (16 Mcounts, rolls over)

Motor control unit

All control signals for the motor unit are available on the SUB-D9 connector. All inputs and outputs are TTL compatible (5V). The three lines SPEED_2, SPEED_1 and SPEED_0 are static signals which controls the motor speed. The line DIRECTION sets the direction of movement. On the START line a pulse with 1ms length is generated to start the motor, the same happens on the STOP line to stop the motor. A low-pulse of more than 1.5ms length on the STOP_IN line will abort a running measurement and generates a 1ms pulse on the STOP line. The INC_PULSE line is an input. When the motor is moving, pulses are generated on this line. The controller uses this signal to detect the end of a measurement (counts the pulses and compares it with a preset) and to detect a malfunction of the motor. If there is no pulse for more than 3s on the INC_PULSE line during a measurement the controller sends a stop pulse on the STOP line and stops the measurement.

Input level Lo	0V ... 0.8V
Input level Hi	2,0V ... 5,5V
Output level Lo	0V ... 0.6V
Output level Hi	5,0V ... 5,5V
Pulse width Start / Stop	1ms
Pulse width INC_PULSE	>500ns
Pulse width STOP_IN	>1.5ms
Counter depth of INC_PULSE counter	16 bit (max. 65536 pulses possible for one scan)

Preamp power supply	
Output voltage	5V ±5% or 12V ±5% (selectable by internal switch)
Output current	50mA, short circuit protected

High voltage power supply	
Output voltage range	0V ... +2000V
Output power	<1W (depends on power consumption of external power supply)

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