

Specification DENEX 200TN

(Status: January 2008)

Line	Parameter	Value	Comments
1	Active area	200 x 200 mm ²	Size of the free space of electrode frames; Neutron sensitive area: ~ 180mm x 180mm
2	Depth of detection volume	30mm	Limited by drift electrodes
3	Detection gas	³ He: ~4,8bar CF ₄ : ~1,2 bar	Maximal total detection gas pressure: 6 bar
4	Position resolution (FWHM):	~ 1,5mm x 1 mm	
5	Efficiency for neutrons	0,30 Å: 27 % 0,60 Å: 46,7 % 1,00 Å: 65 % 2,00 Å: 87,7 % 4,00 Å: 98,5 % 6,00 Å: 99,8 % 8,00 Å: 100 %	i) nominal neutron capture probability ii) absorption in neutron window not taken into account iii) electronic detection of every captured neutron assumed
6	Window material Window thickness Transmission	Al Mg 4,5 Si alloy 6 mm 0,60 Å: 96,31 % 1,00 Å: 93,92 % 2,00 Å: 88,21 % 4,00 Å: 77,81 % 6,00 Å: 68,64% 8,00 Å: 60,55 % 16,0 Å: 36,66 % 20,0 Å: 28,53 % 30,0 Å: 15,24 %	Material and thickness is optimized
7	Uncorrected differential non-linearity of position detection	< 3 %	Measurement: Starting from the centre of an uncorrected spectrum and assuming a constant ratio "change in x- or y-position per channel" the relative distortion will not exceed 3%, that is less than 4.5 mm at the border.
8	Background rate without neutrons		Depends on the surrounding, the analogue electronics and its adjustment.
9	Electronic components inside the detector	Delay lines	
10	Anode wire	Ø 8 µm	Au-coated Tungsten/Rhenium wire
11	Cathode wire	Ø 30 µm	Au-coated Tungsten/Rhenium wire
12	Drift electrodes	----- Ø 30 µm	Metallic-coatings on isolating layers on window. Bottom of the detector
13	Connector for HV supply	SHV, 50Ω	
14	Connector for delay lines signal	SMA, 50Ω	
15	Valve for pumping and gas filling Manufacturer Type	Swagelok 6L-ELD8-DDXX	
16	Gas quality	99,91 % ³ He 0.09 % ⁴ He	The detector housing is heated to ~ 70 °C and evacuated for more than 100h before the detection gas is filled in.
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21	Dead zones	70 mm max . around the active area	
22	Gaskets	Metallic, Indium wire	
23	Gas loss	10 ⁻⁹ mBar/s	
24	Monitoring pressure: Manufacture; Type:	Druck (EG) PTX 660	
25	Dimension	329mm x 329mm x 100 mm	
26	Weight	Ca. 40kg	