



multi-beam klystron

**NELSON Created AB**

NELSON is a Swedish manufacturing company which offers unique multi-beam klystrons (MBK).

Frequency range from S to X-Band and peak power from 3 to 60MW.

**Advantages of MBK compared single-beam klystron (SBK)**

- Low Working voltage (less than half) when compared to similar RF power single beam klystrons.
- Reduction of harmful X-rays during operation.
- High efficiency performance due to the state-of-art Bunching Alignment Collecting (BAC) beam technology.
- Ability to work in air, without an oil tank, which reduces the installation weight.
- It can operate in spatial position and on mobile installations.
- Total cost of ownership (TCO) is much better since you need less power and the overall systems becomes smaller.
- Permanent magnet focusing that significantly reduces the MBK weight and additionally increases overall system efficiency due to absence of solenoid power losses.
- Application for the NS6 is Medical, Industry and Science.

# NC4

## NELSON multi-beam klystron C-band 3MW

### GENERAL DATA CHARACTERISTICS

Electrical	Min.		Max.	Unit
Frequency		5.712		GHz
Peak RF Output Power		3.5	4.0	MW
Heater Voltage			14	V
Heater Current			28	A
Heater Current (Surge)			30	A
Heater Warm-up Time	10			min
Peak Beam Voltage			45	kV
Peak Cathode Current			130	A
Peak RF Drive Power			200	W
Collector Dissipation			20	kW
Efficiency	50			%
Gain	45		50	dB
Average RF Output Power		9.5	10	kW
Pulse Width (Beam Voltage)	1	16.5	17	µs
Pulse Width (RF Output Power) <sup>(1)</sup>	1	15.5	16	µs
Pulse Repetition Rate <sup>(1)</sup>			180 <sup>(1)</sup>	pps
Load VSWR			1.2	
Ground		Tube Body		
Irradiation with X-ray shield at 1meter distance			3	mR/hour

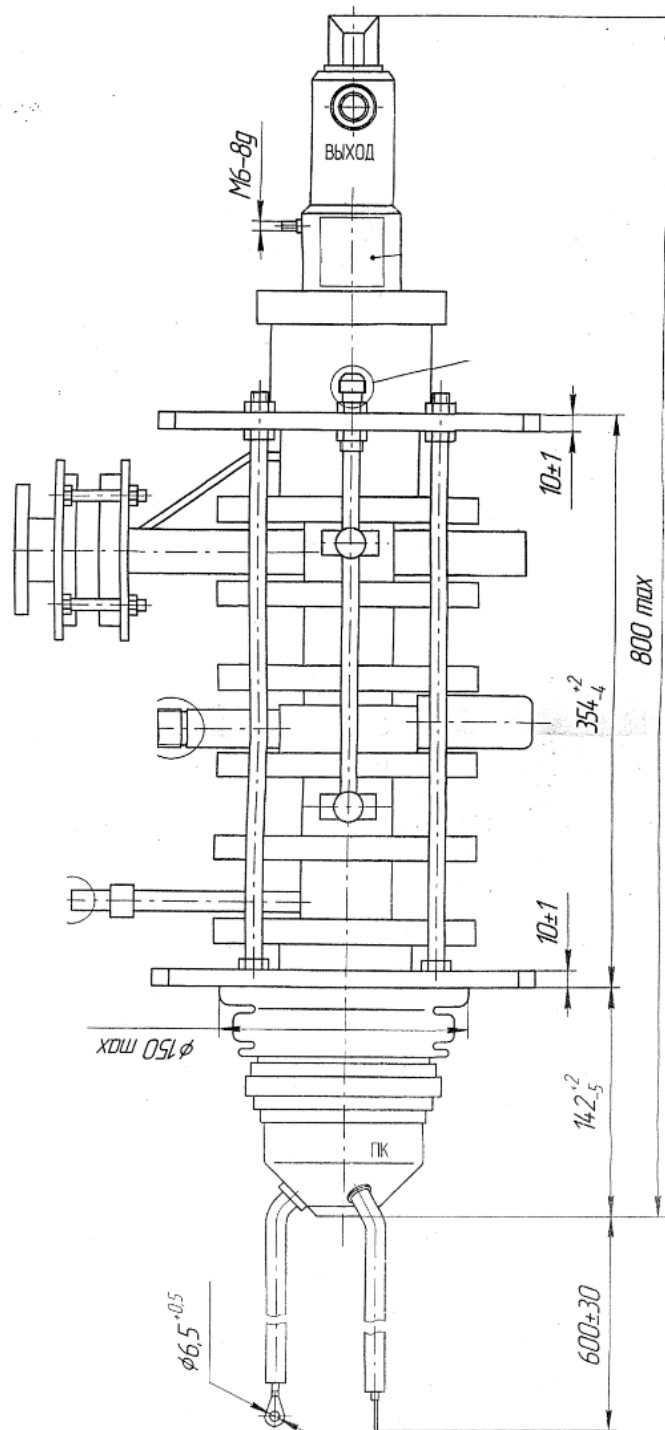
Physical	Min.	Max.	Unit
<b>Mechanical</b>			
Dimensions			
Length		Approx. 800	mm
Net Weight		Approx. 85	kg
Mounting Position	Vertical, Cathode down, horizontal position is also permitted, in the case of necessity		
Cathode	Impregnated Cathode		
Ion Pump	1.5		L/s
Focusing Magnet	Permanent magnet (PPM), it is mounted on the klystron		
X-ray Shields	NELSON X-ray Shielding KIT VD-115		
<b>Connection</b>			
Heater/Cathode	External screw M8		
Heater	External screw M8		
RF Input	Coaxial, Type N receptacle		
RF Output	WR-159		
Ground	External screw M8		
Ion Pump	Coaxial, see outline drawing		
<b>Cooling</b>			
Collector	Water		
Flow Rate	30		L/min
Pressure Drop	0.15		MPa
Coolant Pressure		0.7	MPa
Inlet Coolant Temperature	4	40	°C
Inlet/Outlet Connector	M24x1.5 tubing		
Body	Water		
Flow Rate	7		L/min
Pressure Drop	0.15		MPa
Coolant Pressure		0.7	MPa
Inlet Coolant Temperature	4	40	°C
Inlet/Outlet Connector	M24x1.5 tubing		
<b>Environmental</b>			
Temperature	5	45	°C
Humidity	30	65	%

#### Note

(1) The RF pulse width shall be measured between the 3dB points of the output pulse. Maximum pulse repetition rate is 560pps in case maximum pulse width is 5µs and 2800pps in case maximum pulse width is 1µs.

### DIMENSIONAL OUTLINE OF THE KLYSTRON (Reference)

Unit: mm



Dimensional outline will be submitted within Three (3) months after P/O