CERN – European Organization for Nuclear Research
European Laboratory for Particle Physics

CTF3 Note 028 (Tech.)
(Injector)

SPECIFICATIONS FOR THE CTF3 GUN

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Geneva, Switzerland
4 July 2001

CTF3 Note 2000-028
(Injector)
2th April 2001

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This note summarizes the technical specifications that will be used by LAL, as a "Cahier des charges" for the manufacture of the CTF3 thermionic gun. The triode assembly is provided by SLAC, equipped with a Faraday-cup which will be used for all acceptance measurements. The gun will be used for both the "Initial" and "Nominal" stages of CTF3.
The nominal beam current pulse of the gun is shown in Figure 1.

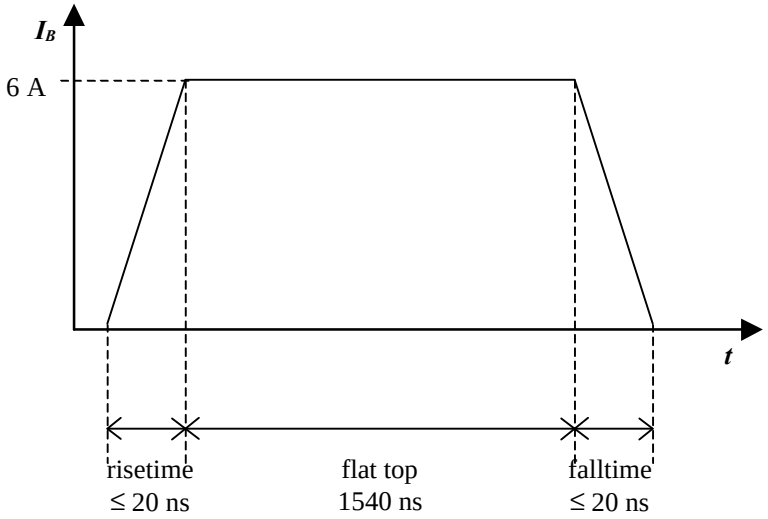

Figure 1: Nominal pulse at the CTF3 gun exit

The nominal characteristics are for the long flat-top and are given in the Table 1.

Table 1: Parameters for the CTF3 gun for the nominal working point

Parameters	**Unit**	**Initial and Nominal**
Voltage (Running)	kV	140
Voltage (Conditioning)	kV	160
Pulse flat-top	ns	200 - 1600
Gun current	A	6
Max mean current	mA	0.5
Rise/ Fall time	ns	≤ 20
Charge flatness on flat top	%	≤ 0.1
Voltage stability ΔV/V for 200 to 1600 ns (flat-top)	%	≤ 0.1
Repetition rate	Hz	5

The gun current should be variable between 0.1 A to 9 A. When the current is outside the nominal working point by more than 30%, the voltage and current stability are relaxed to ± 2.5 %.

For the nominal working point (6 A), the possibility of a ± 5 % current modulation by an external signal with bandwidth of up to 20 MHz is required.

The flat top pulse length should be variable between from 20 to 1600 ns. For pulse length shorter than 200 ns the tolerance for current stability is relaxed to ± 2.5%.
It is foreseen to use the Drive Beam Linac (Initial phase) as an intermediate CTF3 power source in order to test 30 GHz structures. Therefore the gun pulser has to allow operation of up to 100 Hz repetition frequency. In the case of repetition rate above the nominal 5 Hz the voltage stability and charge flatness along the pulse are relaxed to ± 1%.
Repetition rate, pulse-length and beam current will be always set such that the average current of the gun stays below 0.5 mA.

The gun must be adequately protected against damage due to arcing.

The final design shall be presented to CERN before manufacturing begins.