

Technical description for the CLIO gun

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The note summarizes the technical specifications that have been discussed with LAL [1], as a "Cahier des charges" for the design and the construction of the CLIO gun. This gun should be used in the CLIC Test Facility (CTF3) "Preliminary stage".

E-GUN simulations will be performed to check that the beam radius does not exceed 10 mm between the anode and the exit of the gun monitor that allows measuring the beam current. These simulations should be performed for nominal beam characteristics, i.e. 90 kV, 2 A.

The gun pulser should be able to deliver the train of pulses given in Figure 1 with a repetition rate of 50 Hz. The train is composed of 7 identical pulses, spaced by 420 ns with a pulse length adjustable in the range 4 to 10 ns (FWHM).

Table 1 gives the CLIO gun characteristics.

The CLIO gun will be installed on the LIL injector and should be fitted to the LIL existing plug-in system [2].

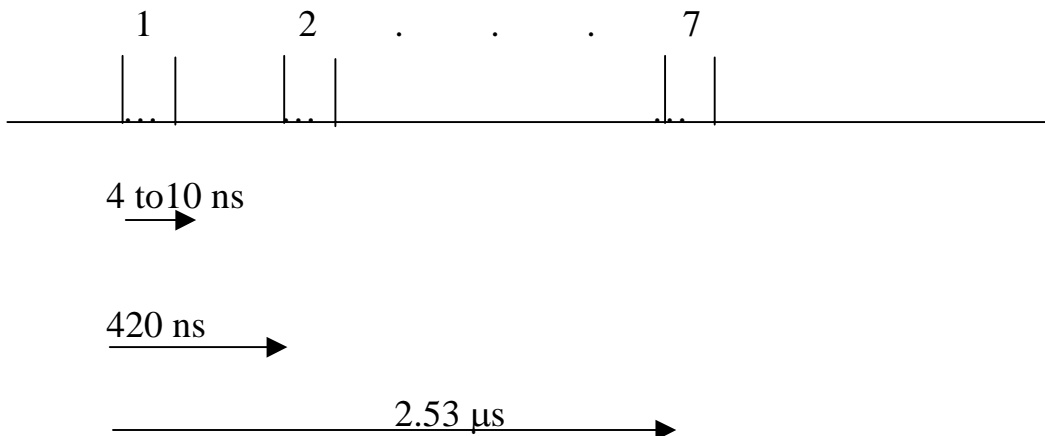


Figure 1: The 7 pulses from the gun pulser

Table 1: Parameters for the CLIO gun used for the CTF3 Preliminary stage

Parameters	Unit	Preliminary
Voltage (for beam)	kV	90
Voltage (for conditioning)	kV	100
Length of pulse train	μs	2.6
Gun current	A	1 - 2
Rise/Fall time	ns	≤ 2
Pulse spacing jitter (420 ns)	ns	$\leq \pm 0.5$
Voltage stability $\Delta V/V$	%	0.1
Emittance (norm., rms)	mm.mrad	≤ 10
Beam repetition rate	Hz	50

[1] R. Pittin, L. Rinolfi, "Visite LAL - 16 et 17 septembre 1999", CTF Note 99-34

[2] G. Bienvenu, "Compte rendu de la réunion générale du 16 mars 2000",
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