

Theoretical Conversion Between Square and Exponential Decay Wave Parameters

When converting protocol parameters from an exponential decay wave (ECM 395, 399 or ECM 600, 630) to square wave (T820 or ECM 830):

1. Choose appropriate mode: either high voltage (HV) or low voltage (LV).
2. Keep the set voltage, gap size, and pulse number the same.
3. No need to set the resistance (R) or the capacitance (C) on the square wave machine.
4. Set the pulse length to **one half** the time constant of the exponential decay protocol.

When converting protocol parameters from square wave to exponential decay wave:

1. Choose appropriate mode: either high voltage (HV) or low voltage (LV).
2. Keep the set voltage and gap size the same.
3. No need to set the pulse number: always 1 pulse!
4. **Double** the time constant (pulse length). You will need to adjust the **C** (capacitance) and **R** (resistance) on the ECM600 to get the right pulse length. The type of media (or buffer) used will also affect the time constant.

Square Wave Universal Protocol

Universal parameter settings in **High Voltage (HV)**: refer to protocols PR0291-295.

Cell line:	Lymphoma, B-cells (white blood cells)
Plasmid:	pGL2-CMV(DNA)
Set Voltage:	0.7-1.3kV
Desired Pulse length:	90 μ s
Set Number of Pulses:	3 pulses
Desired Field Strength:	1.75- 3.25 kV/cm

Universal parameter settings in **Low Voltage (LV)**: refer to protocols PR0296-298.

Cell line:	Hepatoma (liver cells)
Plasmid:	pGL3(DNA)
Set Voltage:	155-190V
Desired Pulse length:	70ms
Set Number of Pulses:	1 pulse
Desired Field Strength:	388-475 V/cm

Exponential Decay Wave Universal Protocols

Universal parameter settings: refer to protocol PR0304.

Cell line:	Mammalian (general)
Plasmid:	DNA
Set Voltage:	200-300V
Desired Pulse length:	27-40 msec
Set Number of Pulses:	1 pulse
Desired Field Strength:	500-750 V/cm

