

Reference Chart

The longevity estimates provided are mean values calculated for the parameters given. The actual longevity achieved for any device while implanted will depend on the actual programmed parameters and patient factors, and may differ significantly from these estimates.

Model Number	Family	Connector Style	Volume/ Mass*	Delivered Energy	Estimated Longevity					Elective Replacement (ERI)**		End of Life (EOL) Battery Voltage
					Charging Frequency**	100% Pacing#	50% Pacing#	15% Pacing#	100% Sensing	Battery Voltage	Charge Time	
7227	GEM	B, Cx, D, E	49 cc* 90 g	35 J	Monthly	5.3	5.7	6.0	6.1	≤ 2.55 V	—	≤ 2.40 V [§]
					Quarterly	7.7	8.5	9.3	9.6			
					Semiannual	8.8	10.0	11.0	11.5			
7230	Marquis VR	B, Cx, E	36 cc 75 g	30 J	Monthly	4.9	5.2	5.4	5.5	≤ 2.62 V	> 16-second charge time	3 months after ERI
					Quarterly	7.3	8.0	8.5	8.7			
					Semiannual	8.5	9.3	10.0	10.4			
7231	GEM III VR	Cx	39 cc 77 g	30 J	Monthly	4.3	4.7	5.0	5.2	≤ 2.55 V	—	≤ 2.40 V
					Quarterly	6.0	6.8	7.4	7.8			
					Semiannual	6.6	7.5	8.5	8.9			
7232	Maximo VR	B, Cx, E	39 cc 76 g	35 J	Monthly	4.4	4.7	4.8	4.9	≤ 2.62 V	> 16-second charge time	3 months after ERI
					Quarterly	7.0	7.5	8.0	8.3			
					Semiannual	8.2	9.0	9.7	10.0			
7271	GEM DR	DR	62 cc 115 g	35 J	Monthly	6.0	6.9	7.5	7.8	≤ 4.91 V	—	≤ 4.57 V [§]
					Quarterly	7.4	8.4	9.3	9.8			
					Semiannual	7.9	9.0	10.0	10.6			
7274	Marquis DR	DR+LV	36 cc 75 g	30 J	Monthly	4.0	4.4	4.8	4.9	≤ 2.62 V	> 16-second charge time	3 months after ERI
					Quarterly	5.6	6.4	7.1	7.5			
					Semiannual	6.2	7.2	8.1	8.6			
7275	GEM III DR	DR	39.5 cc 78 g	30 J	Monthly	3.3	3.8	4.3	4.4	≤ 2.55 V	—	≤ 2.40 V
					Quarterly	4.2	5.0	5.8	6.3			
					Semiannual	4.5	5.5	6.5	7.0			
7276	GEM III AT	DR	39 cc 77 g	30 J	Monthly	3.3	3.8	4.3	4.5	≤ 2.55 V	—	≤ 2.40 V
					Quarterly	4.3	5.1	5.9	6.3			
					Semiannual	4.5	5.5	6.5	7.0			
7278	Maximo DR	DR	39 cc 77 g	35 J	Monthly	3.7	4.1	4.3	4.5	≤ 2.62 V	> 16-second charge time	3 months after ERI
					Quarterly	5.3	6.1	6.8	7.1			
					Semiannual	6.0	7.0	8.0	8.5			
7287	Intrinsic 30	DR	36 cc 75 g	30 J	Monthly	4.0	4.3	4.7	4.8	≤ 2.62 V	> 16-second charge time	3 months after ERI
					Quarterly	5.5	6.3	7.0	7.4			
					Semiannual	6.2	7.2	8.2	8.6			
7288	Intrinsic	DR	38 cc 76 g	35 J	Monthly	3.7	4.1	4.3	4.5	≤ 2.62 V	> 16-second charge time	3 months after ERI
					Quarterly	5.4	6.1	6.8	7.1			
					Semiannual	6.1	7.0	8.0	8.5			
7290	Onyx	Cx	39 cc 77 g	30 J	Monthly	3.8	4.1	4.3	4.5	≤ 2.55 V	> 16-second charge time	≤ 2.40 V
					Quarterly	5.0	5.6	6.2	6.4			
					Semiannual	5.4	6.1	6.7	7.0			

* Volume and mass differ by connector style.

** A full charge is a full energy therapeutic shock or capacitor reformation.

*** The minimum time between ERI and EOL is 3 months (100% pacing, two charges per month).

‡ Pacing mode is VVI for single chamber models and DDD for dual chamber and CRT models. Parameter settings; lower rate at 60 ppm, sensing rate at 70 bpm, (A, RV, LV) 3.0 V amplitude, 0.4 ms pulse width, and 510-ohm pace load per applicable channel. CRT models with shared biventricular pacing; InSync Marquis 7277 (LV impedance set to 510 ohms), InSync ICD 7272 (RV amplitude set to 4.0 V).

‡‡ For Model 7223 devices, if charge time exceeds 60 seconds, the devices are at EOL. If two consecutive charge cycles exceed 60 seconds, the “charge circuit inactive” indicator is tripped and all therapies except emergency output VVI pacing are disabled.

‡‡‡ For Model 7271 and 7227 devices, if charge time exceeds 30 seconds, the device is at EOL. Immediate replacement is recommended. If three consecutive charge cycles exceed 30 seconds, the “charge circuit inactive” indicator is tripped and all therapies except emergency VVI pacing are disabled.

continued

Reference Chart continued

Model Number	Family	Connector Style	Volume/ Mass*	Delivered Energy	Estimated Longevity					Recommended Replacement (RRT)***		End of Service (EOS)
					Charging Frequency**	100% Pacing‡	50% Pacing‡	15% Pacing‡	100% Sensing	Battery Voltage	Charge Time	
D153ATG, D153DRG	EnTrust	DR	33 cc 63 g	30 J	Monthly	3.5	3.8	4.1	4.2	≤ 2.61 V	—	3 months after RRT or > 16-second charge time
					Quarterly	4.8	5.4	6.0	6.3			
					Semiannual	5.3	6.1	6.9	7.2			
D153VRC	EnTrust	Cx	32 cc 63 g	30 J	Monthly	4.4	4.7	4.9	5.0	≤ 2.61 V	—	3 months after RRT or > 16-second charge time
					Quarterly	6.8	7.4	7.9	8.1			
					Semiannual	7.9	8.7	9.5	9.8			
D154ATG, D154DRG	EnTrust	DR	35 cc 68 g	35 J	Monthly	3.8	4.2	4.4	4.6	≤ 2.61 V	—	3 months after RRT or > 16-second charge time
					Quarterly	5.5	6.1	6.8	7.0			
					Semiannual	6.1	7.0	7.9	8.3			
D154AWG, D164AWG	Virtuoso	DR	37 cc 68 g	35 J	Monthly	4.1	4.5	4.8	5.0	≤ 2.62 V	—	3 months after RRT or > 16-second charge time
					Quarterly	6.3	7.3	8.3	8.8			
					Semiannual	7.3	8.7	10.1	11.0			
D154VRC	EnTrust	Cx	35 cc 68 g	35 J	Monthly	4.8	5.0	5.2	5.3	≤ 2.61 V	—	3 months after RRT or > 16-second charge time
					Quarterly	7.5	8.3	8.8	9.0			
					Semiannual	9.0	10.0	10.7	11.0			
D154VWC, D164VWC	Virtuoso	Cx	37 cc 68 g	35 J	Monthly	4.8	5.1	5.3	5.4	≤ 2.62 V	—	3 months after RRT or > 16-second charge time
					Quarterly	8.1	9.0	9.6	10.0			
					Semiannual	10.0	11.2	12.3	12.9			
D224DRG	Secura DR	DR	37 cc 68 g	35J	Monthly	3.60	4.08	4.50	4.67	≤ 2.63 V	—	3 months after RRT or > 16-second charge time
					Quarterly	5.07	6.05	7.00	7.50			
					Semiannual	5.70	7.00	8.27	9.00			
D224VRC	Secura VR	Cx	37 cc 68 g	35J	Monthly	4.33	4.67	4.92	5.00	≤ 2.63 V	—	3 months after RRT or > 19-second charge time
					Quarterly	6.67	7.45	8.05	8.41			
					Semiannual	7.76	8.85	9.79	10.25			
D284DRG	Maximo II DR	DR	37 cc 68 g	35J	Monthly	3.60	4.08	4.50	4.67	≤ 2.63 V	—	3 months after RRT or > 16-second charge time
					Quarterly	5.07	6.05	7.00	7.50			
					Semiannual	5.70	7.00	8.27	9.00			
D284VRC	Maximo II VR	Cx	37 cc 68 g	35J	Monthly	4.33	4.67	4.92	5.00	≤ 2.63 V	—	3 months after RRT or > 19-second charge time
					Quarterly	6.67	7.45	8.05	8.41			
					Semiannual	7.76	8.85	9.79	10.25			

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** A full charge is a full energy therapeutic shock or capacitor reformation.

*** The minimum time between RRT and EOS is 3 months (100% pacing, two charges per month).

‡ Pacing mode is VVI for single chamber models and DDD for dual chamber models. Parameter settings; lower rate at 60 ppm, sensing rate at 70 bpm, (A, RV, LV) 3.0 V amplitude, 0.4 ms pulse width, and 510-ohm pace load per applicable channel.