

Boston Scientific ICD and CRT-D Device Replacement Indicators

The following tables provide battery status information for applicable ICD and CRT-D device families. Each table contains battery status and the associated device behaviors.

SUMMARY

Boston Scientific COGNIS® CRT-Ds and TELIGEN® ICDs utilize capacity consumed, battery voltage and charge time to calculate battery status. In these devices, a battery status of "Explant" indicates that device replacement must be scheduled.

All other Boston Scientific ICDs and CRT-Ds utilize two independent battery status monitors. Either **monitoring voltage** or **charge time** can trigger an Elective Replacement Indicator (ERI), which signals that device replacement should be scheduled.

CRM PRODUCTS REFERENCED

Boston Scientific ICDs and CRT-Ds. See tables.

Products referenced herein are identified by trademarks of Cardiac Pacemakers Inc., a Boston Scientific company, and may not be approved in all geographies. For comprehensive information on device operation, reference the appropriate product labeling.

CRT-D: Cardiac Resynchronization Therapy Defibrillator
ICD: Implantable Cardioverter Defibrillator

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TELIGEN® (ICD) Models E102, E110, F102, F103, F110, F111		
Battery Status	Device Behavior	How Battery Status is Derived
BOL	All therapy available. Auto cap reform every 90 days.	Capacity consumed* combined with battery voltage.
One Year Remaining	All therapy available. First 6 months, auto cap reform every 90 days. Second 6 months, auto cap reform every 30 days.	Capacity consumed* combined with battery voltage.
Explant	Device replacement must be scheduled. Sufficient battery capacity remains to monitor and pace 100% under existing conditions for three months and to deliver six maximum-energy shocks. No auto cap reforms.	– Capacity consumed* combined with battery voltage Or – Second [†] consecutive charge time > 15 sec
End of life reached on <date>	Device is past recommended replacement time. – Device reverts to one ventricular zone (VF) with a rate threshold of 165 bpm. – ATP therapy and low-energy shocks are unavailable. – The programmed mode reverts to VVI/BiV. – LRL defaults to 50 ppm. – The following features are disabled: <ul style="list-style-type: none"> ♦ RF telemetry ♦ Daily measurement trends ♦ Brady enhancement features ♦ Episode storage ♦ Diagnostic and EP tests ♦ Device programming (Brady Mode and Ventricular Tachy Mode can be programmed to Off) – Wanded telemetry interrogation is available. – Manual cap reform can be selected. If the device reaches a point where insufficient battery capacity is available for continued operation, the device will revert to Storage Mode.	– 90 day timer Or – Capacity consumed* combined with battery voltage Or – Second [†] consecutive charge time > 30 sec

*Capacity consumed is the *energy used* while pacing and delivering shocks.

†For a charge time greater than the charge time limit, a second confirmation cap reform is scheduled one hour later.

CONFIENT® RF HE (ICD) Models E030, F010, F030				
Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.89 V		≤ 12.0 sec
MOL1	All therapy available. Auto cap reform every 90 days.	2.89 V to > 2.75 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.75 V to > 2.60 V		> 12.0 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 90 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 6 maximum-energy shocks.	2.60 V to > 2.40 V		> 13.1 Sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode. No ZIP telemetry available.	≤ 2.40 V		> 30.0 sec
VITALITY® 2 EL DR/VR (ICD) Models T167, T177				
Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 9.0 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.48 V		> 9.0 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.48 V to > 2.17 V		> 13.1 sec and > 3.0 V
				> 18.9 sec and 3.0 V – 2.52 V
			> 13.1 sec and < 2.52 V	
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.17 V	> 30.0 sec	
VITALITY 2 DR/VR (ICD) Model T165, T175				
Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 9.5 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.50 V		> 9.5 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.50 V to > 2.17 V		> 13.1 sec and > 3.0 V
				> 18.9 sec and 3.0 V – 2.53 V
			> 13.1 sec and < 2.53 V	
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.17 V	> 30.0 sec	

[†]The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.

**VITALITYDR HE (ICD)
Model T180**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 10.5 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.50 V		> 10.5 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 120 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 6 maximum-energy shocks.	2.50 V to > 2.20 V		> 14.6 sec and > 3.0 V
				> 26.1 sec and 3.0 V – 2.55 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.20 V	> 14.6 sec and < 2.55 V	
				> 30.0 sec

**VITALITY DS DR/VR (ICD)
Model T125, T135**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 9.5 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.48 V		> 9.5 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.48 V to > 2.17 V		> 13.1 sec and > 3.0 V
				> 18.9 sec and 3.0 V – 2.53 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.17 V	> 13.1 sec and < 2.53 V	
				> 30.0 sec

**VITALITY EL (ICD)
Model T127**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 9.0 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.48 V		> 9.0 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.48 V to > 2.17 V		> 13.1 sec and > 3.0 V
				> 18.9 sec and 3.0 V – 2.52 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.17 V	> 13.1 sec and < 2.52 V	
				> 30.0 sec

[†]The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.

**VITALITY VR/DR/DR+ (ICD)
Models 1870, 1871, 1872**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.8 V		≤ 15.9 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.8 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.48 V		> 15.9 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.48 V to > 2.15 V		> 17.9 sec and > 3.0 V
				> 23.0 sec and 3.0 V – 2.53 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.15 V	> 17.9 sec and < 2.53 V	> 30.0 sec

**VITALITY AVT (ICD)
Model A155**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 9.5 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.50 V		> 9.5 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.50 V to > 2.17 V		> 13.1 sec and > 3.0 V
				> 18.9 sec and 3.0 V – 2.53 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy ventricular shocks and Atrial Mode is OFF. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.17 V	> 13.1 sec and < 2.53 V	> 30.0 sec

**VITALITY AVT (ICD)
Model A135**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 15.9 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.48 V		> 15.9 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.48 V to > 2.15 V		> 17.9 sec and > 3.0 V
				> 23.0 sec and 3.0 V – 2.53 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy ventricular shocks and Atrial Mode is OFF. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.15 V	> 17.9 sec and < 2.53 V	> 30.0 sec

[†]The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.

VENTAK® PRIZM® 2 DR/VR (ICD) Models 1860,1861				
Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 3.0 V		≤ 15.9 sec
MOL1	All therapy available. Auto cap reform every 90 days.	3.0 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.50 V		> 15.9 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.50 V to > 2.1 V		> 17.4 Sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.1 V		> 30.0 sec
VENTAK PRIZM VR HE/DR HE (ICD) Models 1852, 1853, 1857, 1858				
Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 3.0 V		≤ 15.9 sec
MOL1	All therapy available. Auto cap reform every 90 days.	3.0 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.45 V		> 15.9 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.45 V to > 2.1 V		> 17.9 Sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.1 V		> 30.0 sec
VENTAK PRIZM DR/VR, VENTAK PRIZM AVT (ICD) Models 1850, 1851, 1855, 1856, 1900				
Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 3.0 V		≤ 15.9 sec
MOL1	All therapy available. Auto cap reform every 90 days.	3.0 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.45 V		> 15.9 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.45 V to > 2.1 V		> 17.9 Sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.1 V		> 30.0 sec

[†]The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.

**VENTAK MINI IV (ICD)
Models 1790, 1793, 1796**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 3.0 V	OR	≤ 20.0 sec
MOL1	All therapy available. Auto cap reform every 90 days.	3.0 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.45 V		N/A
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.45 V to > 2.30 V		> 20.0 sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.30 V		> 30.0 sec

[†]The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.

COGNIS® (CRT-D) Models N118, N119, N106, N107, P106, P107		
Battery Status	Device Behavior	How Battery Status is Derived
BOL	All therapy available. Auto cap reform every 90 days.	Capacity consumed* combined with battery voltage.
One Year Remaining	All therapy available. First 6 months, auto cap reform every 90 days. Second 6 months, auto cap reform every 30 days.	Capacity consumed* combined with battery voltage.
Explant	Device replacement must be scheduled. Sufficient battery capacity remains to monitor and pace 100% under existing conditions for three months and to deliver six maximum-energy shocks. No auto cap reforms.	– Capacity consumed* combined with battery voltage Or – Second [†] consecutive charge time > 15 sec
End of life reached on <date>	Device is past recommended replacement time. – Device reverts to one ventricular zone (VF) with a rate threshold of 165 bpm. – ATP therapy and low-energy shocks are unavailable. – The programmed mode reverts to VVI/BiV. – LRL defaults to 50 ppm. – The following features are disabled: <ul style="list-style-type: none"> • RF telemetry • Daily measurement trends • Brady enhancement features • Episode storage • Diagnostic and EP tests • Device programming (Brady Mode and Ventricular Tachy Mode can be programmed to Off) – Wanded telemetry interrogation is available. – Manual cap reform can be selected. If the device reaches a point where insufficient battery capacity is available for continued operation, the device will revert to Storage Mode.	– 90 day timer Or – Capacity consumed* combined with battery voltage Or – Second [†] consecutive charge time > 30 sec

LIVIAN® RF HE (CRT-D) Models H227, H229, H247, H249				
Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.89 V		≤ 12.0 sec
MOL1	All therapy available. Auto cap reform every 90 days.	2.89 V to > 2.75 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.75 V to > 2.60 V		> 12.0 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 90 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 6 maximum-energy shocks.	2.60 V to > 2.40 V		> 13.1 Sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode. No ZIP telemetry available.	≤ 2.40 V		> 30.0 sec

*Capacity consumed is the energy used while pacing and delivering shocks.

†For a charge time greater than the charge time limit, a second confirmation cap reform is scheduled one hour later.

†The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.

**LIVIAN RF (CRT-D)
Models H220, H225, H240, H245**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.89 V		≤ 9.5 sec
MOL1	All therapy available. Auto cap reform every 90 days.	2.89 V to > 2.75 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.75 V to > 2.60 V		> 9.5 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 90 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 6 maximum-energy shocks.	2.60 V to > 2.40 V		> 10.5 Sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode. No ZIP telemetry available.	≤ 2.40 V		> 30.0 sec

**CONTAK RENEWAL[®] 3 RF HE, CONTAK RENEWAL 4 RF HE (CRT-D)
Models H217, H219, H239**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 10.5 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.50 V		> 10.5 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.50 V to > 2.15 V		> 13.1 sec and > 3.0 V
				> 26.1 sec and 3.0 V – 2.55 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode. No ZIP telemetry available.	≤ 2.15 V	> 30.0 sec	

**CONTAK RENEWAL 3 RF, CONTAK RENEWAL 4 RF (CRT-D)
Models H210, H215, H230, H235**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 7.9 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.50 V		> 7.9 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.50 V to > 2.15 V		> 12.5 sec and > 3.0 V
				> 20.0 sec and 3.0 V – 2.55 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode. No ZIP telemetry available.	≤ 2.15 V	> 30.0 sec	

[†]The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.

**CONTAK RENEWAL 3 HE , CONTAK RENEWAL 4 HE (CRT-D)
Models H177, H179, H197, H199**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 12.0 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.50 V		> 12.0 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.50 V to > 2.18 V		> 13.1 sec and > 3.0 V
				> 26.1 sec and 3.0 V – 2.55 V
				> 13.1 sec and < 2.55 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.18 V	> 30.0 sec	

**CONTAK RENEWAL 3, CONTAK RENEWAL 4 (CRT-D)
Models H170, H175, H190, H195**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 8.5 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.48 V		> 8.5 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.48 V to > 2.15 V		> 12.5 sec and > 3.0 V
				> 20.0 sec and 3.0 V – 2.53 V
				> 12.5 sec and < 2.53 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.15 V	> 30.0 sec	

**CONTAK RENEWAL 3 AVT HE, CONTAK RENEWAL 4 AVT HE (CRT-D)
Models M157, M159, M177, M179**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 12.0 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.50 V		> 12.0 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.50 V to > 2.18 V		> 13.1 sec and > 3.0 V
				> 23.0 sec and 3.0 V – 2.55 V
				> 13.1 sec and < 2.55 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy ventricular shocks and Atrial Mode is OFF. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.18 V	> 30.0 sec	

[†]The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.

**CONTAK RENEWAL 3 AVT, CONTAK RENEWAL 4 AVT (CRT-D)
Models M150, M155, M170, M175**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 2.80 V		≤ 8.0 sec
MOL1	All therapy available. Auto cap reform every 30 days.	2.80 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.48V		> 8.0 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.48 V to > 2.18 V		> 12.0 sec and > 3.0 V
				> 20.0 sec and 3.0 V – 2.53 V
				> 12.0 sec and < 2.53 V
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy ventricular shocks and Atrial Mode is OFF. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.18 V	> 30.0 sec	

**CONTAK RENEWAL, CONTAK RENEWAL 2 (CRT-D)
Models H135, H155**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 3.0 V		≤ 15.9 sec
MOL1	All therapy available. Auto cap reform every 90 days.	3.0 V to > 2.65 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	2.65 V to > 2.45 V		> 15.9 sec
ERI	Device replacement should be scheduled. All therapy available. Auto cap reform every 30 days. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum-energy shocks.	2.45 V to > 2.1 V		> 17.9 sec
				> 30.0 sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 2.1 V		> 30.0 sec

**CONTAK CD (CRT-D)
Model 1823**

Battery Status	Device Behavior	Monitoring Voltage Indicator	OR	Charge Time Indicator [†]
BOL	All therapy available. Auto cap reform every 90 days.	> 6.19 V		≤ 17.9 sec
MOL1	All therapy available. Auto cap reform every 90 days.	6.19 V to > 5.29 V		N/A
MOL2	All therapy available. Auto cap reform every 30 days.	5.29 V to > 4.90 V		N/A
ERI	Device replacement should be scheduled. All therapy available. Beeps 16 R-wave sync tones every 6 hours if Beep-On-ERI feature is programmed On. Auto cap reform every 90 days. Three months of monitoring and 100% brady pacing (under nominal conditions) and 10 maximum- energy shocks.	4.90 V to > 4.40 V		> 17.9 sec
				> 30.0 sec
EOL	Replace the device as therapy cannot be guaranteed. No ATP or low-energy shocks. The device attempts to deliver the maximum-energy shocks unless there is insufficient battery capacity, at which time it will revert to storage mode.	≤ 4.40 V		> 30.0 sec

[†]The device will declare ERI when a charge time exceeding the ERI limit has been confirmed by a second charge (capacitor reform or therapeutic shock at maximum energy) above the ERI limit within a 24 hour period. End of Life (EOL) is declared if one charge time measurement exceeds the specified limit.