

Boston Scientific ICD and CRT-D Device Replacement Indicators

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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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.

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
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
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	> 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	> 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	> 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		≤ 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
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.