



MRI™ SureScan® pacemaker system



G70DR

Specifications

Model G70A2

Dual chamber MRI™ SureScan®
pacemaker system

vitatron • The Pace Makers

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Dual chamber pacemaker system

Mechanical

Model	G70A2
Size (HxWxD mm)	44.7x47.9x7.5
M (g)	27.1
V (cc)	12.1
Connector	IS-1 BI or UNI
Radiopaque ID	V5

Battery

Type	Lithium-iodine
Voltage	2.8 V
Average projected capacity	1.3 Ah

Longevity	11.4 years*
	10.2 years [†]

Bradycardia Pacing

Programmable parameters

Pacing Modes	DDDR , DDD, DDIR, DDI, DVIR, DVI, DOOR, DOO, VDD, VVIR, VDIR, VVI, VDI, VVT, VOOR, VOO, AAIR, ADIR, AAI, ADI, AAT, AOOD, AOO, ODO, OVO, OAO
Mode Switch	On , Off
Lower Rate	30, 35, 40... 60 ...170 min ⁻¹ (exc. 65, 85)
Upper Tracking Rate ^a	80, 90, 95... 130 ...180 min ⁻¹
Upper Sensor Rate	80, 90, 95... 130 ...180 min ⁻¹
A and RV Pulse Amplitude ^b	0.5, 0.75, 1.0... 3.5 ...4, 4.5, 5, 5.5, 6, 7.5 V
A and RV Pulse Width	0.12, 0.15, 0.21, 0.27, 0.34, 0.4 , 0.46, 0.52, 0.64, 0.76, 1, 1.25, 1.5 ms
Atrial Sensitivity	0.18, 0.25, 0.35, 0.5 , 0.7, 1, 1.4, 2, 2.8, 4 mV
Ventricular Sensitivity	1, 1.4, 2, 2.8 , 4, 5.6, 8, 11.2 mV
Pacing Polarity (A and V)	Bipolar, Unipolar, Configure
Sensing Polarity (A and V)	Bipolar, Unipolar, Configure
Paced AV (PAV)	30, 40, 50... 150 ...350 ms
Sensed AV (SAV)	30, 40, 50... 120 ...350 ms
PVARP	Auto , Varied, 150, 160, 170...500 ms
Minimum PVARP	150, 160, 170... 250 ...500 ms
PVAB	130, 140, 150... 180 ...350 ms
Atrial Refractory Period	180, 190, 200... 400 ...500 ms
Atrial Blanking Period	130, 140, 150... 180 ...350 ms
Ventricular Refractory Period	150, 160, 170... 230 ...500 ms
Ventricular Blanking (after atrial pace) (PAVB)	20, 28 , 36, 44 ms

Therapies to promote intrinsic activation

Reduced VP ^{TM+}	On , Off
Max Increase to AV	10, 20, 30... 170 ...250 ms
Sinus Preference TM	On , Off
Sinus Preference Zone	3, 5, 10 , 15, 20 min ⁻¹
Search Interval	5, 10, 20, 30 min
Sleep	On , Off
Sleep Rate	30, 35, 40... 50 ...90 min ⁻¹ (exc. 65, 85)
Bed Time	00:00, 00:15, 00:30... 22:00 ...23:45
Wake Time	00:00, 00:15, 00:30... 8:00 ...23:45
Single Chamber Hysteresis	Off, 40, 50, 60 min ⁻¹

Rate Response Pacing

ADL Rate	60, 65, 70... 95 ...175, 180 min ⁻¹
Rate Profile Optimization	On , Off
ADL Response	1, 2, 3 , 4, 5
Exertion Response	1, 2, 3 , 4, 5
Activity Threshold	Low, Medium Low , Medium High, High
Acceleration	15 s, 30 s , 60 s
Deceleration	2.5 min, 5 min, 10 min, Exercise
RAAV	On , Off
Start Rate	50, 55, 60... 80 ...175 min ⁻¹
Stop Rate	55, 60, 65... 120 ... 180 min ⁻¹
Maximum Offset	-10, -20, -30... -40 ...-300 ms

Rate Drop Response

Detection Type	Low Rate, Drop, Both, Off
Intervention Rate	60, 70, 75, 80... 100 ...180 min ⁻¹ (exc. 65, 85)
Intervention Duration	1, 2 , 3...15 min
Detection Beats	1, 2 , 3 beats
Drop Rate	30, 40, 50 ...100 min ⁻¹
Drop Size	10, 15, 20, 25 ...50 min ⁻¹
Detection Window	10, 15, 20, 25 , 30 s; 1, 1.5, 2, 2.5 min

Additional pacing features

PMT Intervention	On , Off
PVC Response	On , Off
Ventricular Safety Pacing	On , Off

MRI Pacing Parameters

SureScan [®] Pacing Mode	A00, V00, D00, O00
SureScan Lower Rate	
Interval	60, 70, 75, 80 ... 115, 120 ^o min ⁻¹
SureScan PAV	50, 60 ... 110 ms
SureScan Atrial	
Amplitude	5.0, 5.5, 6.0, 7.5 V
SureScan Atrial	
Pulse Width	1.0, 1.25, 1.5 ms
SureScan Atrial	
Sensitivity	0.18, 0.25, 0.35, 0.5, 0.7, 1.0, 1.4, 2.0, 2.8, 4.0 mV
SureScan Ventricular	
Amplitude	5.0, 5.5, 6.0, 7.5 V
SureScan Ventricular	
Sensitivity	1.0, 1.4, 2.0, 2.8, 4.0, 5.6, 8.0, 11.2 mV
SureScan Ventricular	
Pulse Width	1.0, 1.25, 1.5 ms
SureScan Timeout Duration	24 hr
SureScan MRI Compatibility	1.5 and 3 Tesla, full body scan

Atrial Tachyarrhythmia Therapies and Interventions

Mode Switch	On , Off
Detected Rate	120, 125... 175 ...200 min ⁻¹
Detect Duration	No Delay , 10, 20...60 sec
Blanked Flutter Search	On , Off

Atrial Preference Pacing (APP) parameters

APP	On , Off
Maximum Rate (min ⁻¹)	80, 90, 95, 100 ...150
Interval Decrement (ms)	30 , 40, 50...100, 150
Search Beats	5, 10... 20 , 25, 50

Post Mode Switch Overdrive Pacing (PMOP) parameters

PMOP	On , Off
Overdrive Rate (min ⁻¹)	70, 75, 80 , 90, 95...120
Overdrive Duration (min)	0.5, 1, 2, 3, 5, 10 , 20, 30, 60, 90, 120

Nominal values indicated in **bold**

Conducted AF Response^d

Regularize V-V during AT/AF On, **Off**
 Maximum Rate (min⁻¹) 80, 85, 90...**110**...130

Non-Competitive Atrial Pacing On, Off

Automatic Pacing, Sensing, and Lead Monitor

Implant Detection and Initialization

At the completion of the 30-minute Implant Detection period, Rate Profile Optimization is enabled; the appropriate pacing and sensing polarities are automatically selected by the device; Atrial and Ventricular Output Management is enabled and Amplitude and Pulse Width become adaptive. Sensing Assurance™ is enabled and Sensitivity becomes adaptive. Reduced VP™+ is enabled 60 minutes after Implant Detection is complete.

Implant Detection On/Restart, Off/Complete
 Lead Monitor (A and V) Configure, Monitor Only, Adaptive (Auto Polarity Switch), Off

Notify If < **200 Ω**
 Notify If > 1000, 2000, 3000, **4000 Ω**
 Monitor Sensitivity 2, 3, 4 ... **8** ... 16

Atrial Output Management

Atrial Output Management Off, Monitor Only, **Adaptive**
 Amplitude Margin 1.5x, **2x**, 2.5x, 3x, 4x (times)
 Minimum Adapted Amplitude 0.5, 0.75...**1.5**...3.5 V
 Capture Test Frequency 1, 2, 4, 8, 12 hours; Day at rest;
Day at ...; 7 days at
 Capture Test Time 00:00, **1:00**...23:00
 Acute Phase Days Remaining Off, 7, 14, 21...84, **112**, 140, 168...
 252 days

Ventricular Output Management

Ventricular Output Management Off, Monitor Only, **Adaptive**
 Amplitude Margin 1.5x, **2x**, 2.5x, 3x, 4x (times)
 Minimum Adapted Amplitude 0.5, 0.75...**2.0**...3.5 V
 Capture Test Frequency 15, 30 min; 1, 2, 4, 8, 12 hours;
Day at rest; Day at...; 7 days at
 Capture Test Time 00:00, 1:00...23:00
 Acute Phase Days Remaining Off, 7, 14, 21...84, **112**, 140, 168...
 252 days
 V. Sensing During Search Unipolar, Bipolar, **Adaptive**

Sensing Assurance

Sensing Assurance (A and V) **On**, Off

Diagnostics

Cardiac Dashboard II

Highlights significant events, AT/AF and pacing summary, threshold and impedance trends

Atrial and ventricular pacing threshold trends
 Battery longevity
 Pacing summary and access to rate histogram
 Atrial and ventricular lead impedance trends
 Number of hours/day in atrial arrhythmia, percentage of time
 Access to atrial arrhythmia diagnostics
 Observations
 P-wave/R-wave amplitudes and access to A and V sensitivity trends

CardioTrend™

Trend data compiles up to 6 months of daily clinical information in an easy-to-interpret graphic format

Histogram reports

Heart rate histograms
 AV conduction histograms
 Reduced VP™+ histogram
 Sensor indicated rate profile

Atrial and ventricular episodes

Atrial and ventricular high rate episodes
 Ventricular rate during atrial arrhythmias
 Atrial arrhythmia durations
 Multiple EGM episodes
 Rate drop response episodes

Clinician selected diagnostics

Custom rate trend
 Rate drop response detail
 Atrial output management detail
 Ventricular Output Management detail
 High Rate Detail

Patient data stored in device

Patient identification
 Leads implanted
 Device implanted
 Clinician's stored notes

Data management

Automatic printing of initial interrogation report
 Full page printing
 Save-to-Disk capacity for electronic file management

Follow-up and Troubleshooting

Telemetry features

Transtelephonic monitor On, Off
 Extended telemetry On, Off
 Extended marker Standard, Therapy Trace

Key parameter history

Initial interrogation report
 Strength duration threshold test
 Ventricular threshold test
 Marker Channel™
 Threshold margin test
 Exercise test
 EP studies
 Magnet test
 Underlying rhythm test
 Sensing test
 Temporary test

Magnet mode operation

	BOS	ERI
Dual chamber mode	D00 85 min ⁻¹	65
Single chamber atrial mode	A00 85 min ⁻¹	65
Single chamber ventricular mode	V00 85 min ⁻¹	65

Recommended Replacement Time (RRT) and Elective Replacement Indicator (ERI)

Replacement message on programmer (Cardiac Dashboard II)
 Battery/lead information Replacement message and battery voltage displayed on programmer
 RRT and ERI initiation date Displayed on programmer



Vitatron. The Pace Makers

Vitatron - based in Europe - is the only medical device company that specializes exclusively in pacemakers. Since 1962, Vitatron pacemakers have helped restore more than 1,000,000 people in more than 60 countries to a full life. We strive to achieve perfection in everything we do. This results in unique patient-focused therapies, as well as highly cost-effective pacemakers that are easy to use.

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References

*DDDR or DDD 50%, 1.5 V and 2.0 V, 60 min⁻¹, 0.4 ms, 500 OHM. For Atrial Output Management the Minimum Adapted Amplitude is 1.5 V (nominal). For Ventricular Output Management, the Minimum Adapted Amplitude is 2.0 V (nominal).
†DDDR or DDD 100%, 1.5 V and 2.0 V, 60 min⁻¹, 0.4 ms, 500 OHM. For Atrial Output Management the Minimum Adapted Amplitude is 1.5 V (nominal). For Ventricular Output Management, the Minimum Adapted Amplitude is 2.0 V (nominal).

^a The atrial and ventricular Rate Limit is 200 min⁻¹ (± 20 min⁻¹).

^b Tolerance for amplitudes from 0.5 V through 6.0 V is ± 10%, and for 7.5 V is -20/+0%. Tolerances are based on 37 °C and a 500 Ω load. Amplitude is determined 200 μs after the leading edge of the pace.

^c User selection will not include 65 min⁻¹ or 85 min⁻¹.

^d Conducted AF Response is functional during Mode Switch episodes, DDIR, VVIR and VDIR modes.



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