



MRI™ SureScan® pacemaker system



# Q70DR

## Specifications

Dvikamerinis EKS, turintis dažnio adaptacijos funkciją (DDDR)

Model Q70A2

Dual chamber MRI™ SureScan®  
pacemaker system

**vitatron** • The Pace Makers

# Q70DR Specifications

Model Q70A2

Dual chamber pacemaker system

2.1 p.d. dvikamerinis programuojams

## Mechanical

Model	Q70A2
Size (HxWxD mm)	44.7x47.9x7.5
M (g)	27.1 <b>2.3 p.d. Svoris mažesnis nei 30 g</b>
V (cc)	12.1
Connector	IS-1 BI or UNI
Radiopaque ID	V5
<b>Battery</b>	
Type	Lithium-iodine
Voltage	2.8 V
Average projected capacity	1.3 Ah

<b>Longevity</b>	12.1 years* 10.2 years†
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## Bradycardia Pacing

<b>Programmable parameters</b>	
SVP Modes	AAIR<-->DDDR, AAI<-->DDD
Pacing Modes	DDDR, DDD, DDIR, DDI, DVIR, DVI, DOOR, DOO, VDD, VVIR, VDIR, VVI, VDI, VVT, VOOR, VOO, AAIR, ADIR, AAI, ADI, AAT, AOOR, AOO, ODO, OVO, OAO
Mode Switch	On, Off
Lower Rate	30, 35, 40... <b>60</b> ...170 min <sup>-1</sup> (exc. 65, 85)
Upper Tracking Rate <sup>a</sup>	80, 90, 95... <b>130</b> ...180, 190, 200, 210 min <sup>-1</sup>
Upper Sensor Rate	80, 90, 95... <b>130</b> ...180 min <sup>-1</sup>
A and RV Pulse Amplitude <sup>b</sup>	0.5, 0.75, 1.0... <b>3.5</b> ...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, <b>0.4</b> , 0.46, 0.52, 0.64, 0.76, 1, 1.25, 1.5 ms
Atrial Sensitivity	0.18, 0.25, 0.35, <b>0.5</b> , 0.7, 1, 1.4, 2, 2.8, 4 mV
Ventricular Sensitivity	<b>0.5</b> , 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... <b>150</b> ...350 ms
Sensed AV (SAV)	30, 40, 50... <b>120</b> ...350 ms
PVARP	Auto, Varied, 150, 160, 170...500 ms
Minimum PVARP	150, 160, 170... <b>250</b> ...500 ms
PVAB	130, 140, 150... <b>180</b> ...350 ms
Atrial Refractory Period	180, 190, 200... <b>400</b> ...500 ms
Atrial Blanking Period	130, 140, 150... <b>180</b> ...350 ms
Ventricular Refractory Period	150, 160, 170... <b>230</b> ...500 ms
Ventricular Blanking (after atrial pace) (PAVB)	20, <b>28</b> , 36, 44 ms

## Therapies to promote intrinsic activation

SVP Modes	AAIR<-->DDDR, AAI<-->DDD
Reduced VP <sup>+</sup>	On, Off
Max Increase to AV	10, 20, 30... <b>170</b> ...250 ms
Sinus Preference <sup>™</sup>	On, Off
Sinus Preference Zone	3, 5, <b>10</b> , 15, 20 min <sup>-1</sup>
Search Interval	5, <b>10</b> , 20, 30 min
Sleep	On, Off
Sleep Rate	30, 35, 40... <b>50</b> ...90 min <sup>-1</sup> (exc. 65, 85)
Bed Time	00:00, 00:15, 00:30... <b>22:00</b> ...23:45
Wake Time	00:00, 00:15, 00:30... <b>8:00</b> ...23:45
Single Chamber Hysteresis	Off, 40, 50, 60 min <sup>-1</sup>

Nominal values indicated in **bold**

## 2.4 p.d. Stimuliacijos adaptacija fiziniam kruiui

### Rate Response Pacing

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

### Rate Drop Response

Detection Type	Low Rate, Drop, Both, <b>Off</b>
Intervention Rate	60, 70, 75, 80... <b>100</b> ...180 min <sup>-1</sup> (exc. 65, 85)
Intervention Duration	1, 2, 3...15 min
Detection Beats	1, 2, 3 beats
Drop Rate	30, 40, <b>50</b> ...100 min <sup>-1</sup>
Drop Size	10, 15, 20, <b>25</b> ...50 min <sup>-1</sup>
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 <sup>®</sup> Pacing Mode	AOO, VOO, DOO,ODO
SureScan Lower Rate Interval	60, 70, 75, 80 ... 115, 120 <sup>c</sup> min <sup>-1</sup>
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... <b>175</b> ...200, 210, 220 min <sup>-1</sup>
Detect Duration	<b>No Delay</b> , 10, 20...60 sec
Blanked Flutter Search	On, Off

### Atrial Preference Pacing (APP) parameters

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

### Post Mode Switch Overdrive Pacing (PMOP) parameters

PMOP	On, Off
Overdrive Rate (min <sup>-1</sup> )	70, 75, <b>80</b> , 90, 95...120
Overdrive Duration (min)	0.5, 1, 2, 3, 5, <b>10</b> , 20, 30, 60, 90, 120

Tarnavimo trukmė,

2.2 p.d DDDR ir paprastesni programavimo režimai

2.15 p.d. Automatinis stimuliacijos režimo perjungimas

2.16 p.d. atskirai programuojamas automatiškai perjungto režimo bazinis

2.5 p.d. Impulso amplitudė ne mažiau 7.5V

2.6 p.d. Impulso trukmė

2.8 p.d. Jautrumas vidiniams signalui priešird=iuose

2.9 p.d. Jautrumas vidiniams signalui skilveliuose

2.7 p.d. Keičiams impulso poliškuma

## Conducted AF Response<sup>d</sup>

Regularize V-V during AT/AF On, Off  
Maximum Rate (min<sup>-1</sup>) 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, SVP modes are enabled; 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<sup>™</sup> is enabled and Sensitivity becomes adaptive.

Implant Detection On/Restart, Off/Complete  
Lead Monitor (A and V) Off, Configure, Monitor Only, Adaptive (Auto Polarity Switch)  
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<sup>™</sup>+ 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 hold test

Marker Channel

Threshold margin test

Exercise test

EP studies

Magnet test

Underlying rhythm test

Sensing test

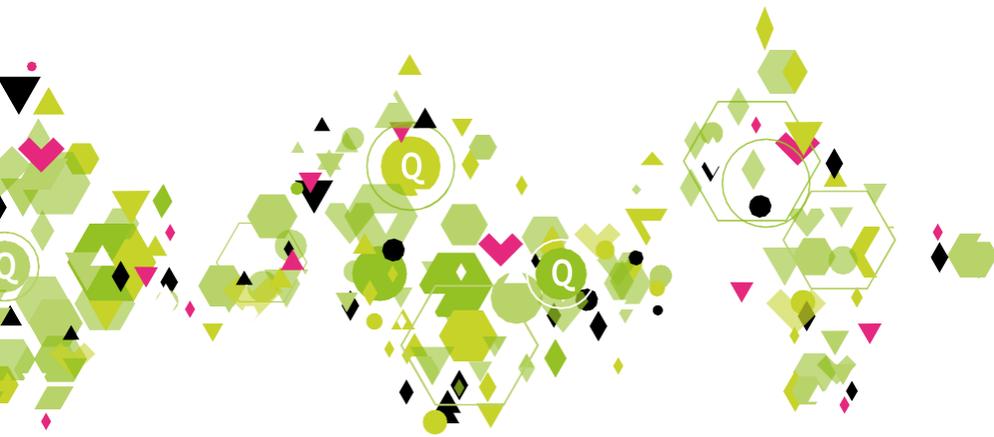
Temporary test

### Magnet mode operation

	BOS	ERI
Dual chamber mode	DOO 85 min <sup>-1</sup>	65
Single chamber atrial mode	AOO 85 min <sup>-1</sup>	65
Single chamber ventricular mode	VOO 85 min <sup>-1</sup>	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.

### Head Office: Vitatron Holding BV

Endepolsdomein 5,  
Maastricht  
NL 6229 GW  
The Netherlands  
[www.vitatron.com](http://www.vitatron.com)

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### References

\*SVP mode on 50% atria and 5% ventricular, 1.5 V and 2.0 V, 60 min<sup>-1</sup>, 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<sup>-1</sup>, 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).

<sup>a</sup> If the Upper Tracking Rate is set to 190 min<sup>-1</sup> or higher, the atrial and ventricular Rate Limit is 227 min<sup>-1</sup> (± 17 min<sup>-1</sup>). Otherwise, the atrial and ventricular Rate Limit is 200 min<sup>-1</sup> (± 20 min<sup>-1</sup>).

<sup>b</sup> 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.

<sup>c</sup> User selection will not include 65 min<sup>-1</sup> or 85 min<sup>-1</sup>.

<sup>d</sup> Conducted AF Response is functional during Mode Switch episodes, DDIR, VVIR and VDIR modes.



Q70DR • Dual chamber

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