

Lumax 740 DR-T

MR Conditional implantable cardioverter defibrillator (ICD) **ProMRI®**

- ProMRI®
- SafeSync® RF telemetry
- Capture Control
- BIOTRONIK Home Monitoring®
- Extended longevity of 9.6 years¹



Lumax 740 DR-T
Home Monitoring

Physical parameters	
Dimensions	66 mm x 55 mm x 13 mm
Volume/weight	37.2 cc/92 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	9.6 years ¹

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde conduction test

Program sets	
Programs	individual program (1-3, individually programmable), standard program, first interrogated program, SAFE program, MRI program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics, Heart Failure Monitor® diagnostics, detection and therapy counters, rhythm control, statistics, lead integrity measurements, battery and system status, ICD program parameters
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Message types	
Trend message	triggered automatically once every 24 hours
Event message	triggered automatically after certain cardiac events
Test message	triggered manually via programmer

Findings	
Device	device status, battery status, programmer-triggered message received, device in MRI mode
Leads	sensing amplitude (RA, RV), ⁷ pacing impedance (RA, RV), ⁸ shock impedance (painless, at last shock), RV pacing threshold, ⁷ Capture Control disabled (RV)
Arrhythmias	atrial arrhythmia detected (monitor, long [ongoing], SVT), ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF), ineffective max. energy shock
Heart Failure Monitor®	mean ven. heart rate (24 h, at rest), ⁷ atrial burden, ⁷ mean PVC/h, ⁷ mean ventricular heart rate during atrial burden
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, ven. episode with acceleration of atrial rhythm, ⁷ episode details received, ven. therapy episode with long duration, ⁷ ven. monitoring episode with long duration ⁷
Data transmission	remote follow-up trigger occurred, first message received, no message received for (days)

Programmer settings	
Home Monitoring	OFF, ON
Time of transmission	Std., 00:00...[01:00]...23:00 (hh:mm)
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Ongoing atrial episodes	OFF, 6 h, 12 h, 18 h

Periodic IEGM for remote follow-up	
Cycle duration/date of transmission	OFF, 30 days, 60 days, 90 days, 120 days, 180 days/1-5 individual programmable dates
Transmitted data	Periodic IEGM, rate histogram (A,V) device settings and statistics

Technical data	
Transmitter frequency	403 MHz
Transmitting power	< 25 µW

Ordering information	
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1 RA/RV 2.5 V/0.4 ms, 60 ppm, 700 ohm; RA 50%, RV 15% pacing; 4 max. energy charges per year; Home Monitoring ON (daily transmission), diagnostics ON.
 2 OFF cannot be programmed if SMART is active.
 3 NIPS = Noninvasive Programmed Stimulation.

4 Mode for electrocautery and MRI.
 5 PVARP = Post-Ventricular Atrial Refractory Period.
 6 PMT = Pacemaker-Mediated Tachycardia.
 7 Programmable upper or lower limit.
 8 Programmable upper and lower limit.

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Technical data

MR Conditional	
ProMRI®	MR Conditional (for combination of MR Conditional leads, please see the ProMRI manual)
Therapy and monitoring zones	
Bradycardiac	30...(5)...100...(10)...160 bpm
Tachycardiac	
▪ AT/AF	100...(10)...250 bpm
▪ VT1	OFF...270...(10)...600 ms
▪ VT2	OFF...270...(10)...500 ms
▪ VF	OFF...240...(10)...400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	interval counter, onset, stability, SMART Detection®, persistent VT
Detection counter VT1 and VT2	10...(2)...60 for VT1; 10...(2)...40 for VT2
Redetection counter VT1 and VT2	10...(2)...30
Detection/redetection counter VF (X/Y)	6/8, 8/12, 10/14, 12/16,16/20, 18/24, 20/26, 22/30, 24/30
Onset	OFF, ² 4...(4)...32%
Stability	if SMART = ON ± 8...(4)...± 48 %, if SMART = OFF ± 8...(4)...± 48 ms
Sustained VT	OFF, 1 min, 2 min, 3 min, 5 min, 10 min, 20 min, 30 min
SMART detection and redetection	OFF, ON
Forced termination	OFF, 1...(1)...10 min
Interval counter for termination	12 out of 16 (fixed)
Tachycardia therapy in VT1/VT2	
ATP types	Burst, Ramp
▪ Attempts	OFF, 1...(1)...10
▪ Number S1	1...(1)...10
▪ Add S1	OFF, ON
▪ R-S1 interval	70...(5)...95 %
▪ S1 decrement	5...(5)...40 ms
▪ Scan decrement	OFF, 5...(5)...40 ms
ATP optimization	OFF, ON
Pacing mode ATP	VOO
Pulse amplitude ATP	7.5 V
Pulse width ATP	1.5 ms
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy in VF	
ATP type (ATP One Shot)	OFF, Burst, Ramp
▪ Stability criterion	12 %
▪ ATP attempts	1 (fixed)
▪ R-S1 interval	70...(5)...95 %
▪ Number S1	1...(1)...10
Cardioversion/defibrillation therapy	
Number of shocks	for VT zones: OFF, 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF, ON
Polarity (in VT1, VT2, VF)	normal, reversed, alternating
Waveform for shock (in VT1, VT2, VF)	biphasic, biphasic 2
Shock path	RV → SVC + Can, RV → Can, RV → SVC
Energy	1 st shock: OFF (VT1/VT2), 2...(2)...20...(5)...40 J; 2 nd shock: OFF (VT1, VT2) 4...(2)...20...(5)...40 J
Atrial therapy (NIPS ³)	programmed stimulation, Burst
▪ S1 cycles	0...(1)...10
▪ S1-S1 interval	None, 80...(10)...1000 ms; simply alterable via (+/-) buttons
▪ S1-S2 interval	None, 80...(10)...1000 ms; simply alterable via (+/-) buttons
▪ S2-S3 interval	None, 80...(10)...1000 ms; simply alterable via (+/-) buttons
▪ S3-S4 interval	None, 80...(10)...1000 ms; simply alterable via (+/-) buttons
▪ Burst rate min.	30...(10)...250 bpm
▪ Burst rate start	30...(10)...800 bpm
▪ Burst rate max.	250...(10)...800 bpm
Post Shock mode	DDI if permanent DDD(R), DDI(R), AAI(R); VDI if permanent VDD(R), VDI(R), VVI if permanent VVI(R), OFF
Post Shock pulse amplitude	7.5 V (RA, RV)
Post Shock pulse width	1.5 ms (RA, RV)
Post Shock duration	OFF, 10 s, 30 s, 1 min, 2 min, 5 min, 10 min
Post Shock AV delay	fixed (50...(10)...350 ms)
Post Shock basic rate	30...(5)...100...(10)...160 bpm

Pacing parameters	Bradycardia/CRT
Mode	DDD, DDI, VDD, VDI, AAI, VVI, DDDR, DDIR, VDDR, VDIR, AAIR, VVIR, VOO, ⁴ DOO, ⁴ OFF
Pulse amplitude (A/RV)	0.5...(0.25)...4.0...(0.5)...6.0, 7.5 V
Pulse width (A, RV)	0.4; 0.5...(0.25)...1.5 ms
RV Capture Control	OFF, ATM, ON
▪ Threshold test start	2.5...(0.5)...5.0 V (ON)
▪ Min. amplitude	1.0...(0.25)...4.0 V
▪ Safety margin	1.0, 1.2 V
Basic rate	30...(5)...100...(10)...160 bpm
▪ Rate hysteresis	OFF, -5...(5)...-25...(20)...-65 bpm
▪ Scan and Repetitive	OFF; ON (= 10 cycles)
▪ Night rate	OFF, 30...(5)...100 bpm
AV dynamics	low, medium, high, fixed, individual
AV delay after sense and pace	15, 40...(5)...350 ms
Sense compensation	OFF, -5...(5)...-120 ms
AV hysteresis mode	positive, negative, IRS ^{plus} , OFF
AV hysteresis (IRS ^{plus})	400 ms
AV scan/repetitive (IRS ^{plus})	ON (= 5 cycles)
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10...(10)...150 ms
AV scan/repetitive (positive)	OFF; ON (= 5 cycles)
AV scan/repetitive (negative)	180 cycles
Upper rate (UTR)	90...(10)...160 bpm
Upper rate atrium	OFF, 175, 200, 240 bpm
Mode Switch	DDI, DDIR at permanent DDD(R); VDI, VDIR at permanent VDD(R)
▪ Intervention rate	OFF, 120...(10)...200 bpm
▪ Change basic rate during Mode Switch	OFF, +5...(5)...+30 bpm
▪ Post Mode Switch rate	OFF, +5...(5)...+50 bpm
▪ Post Mode Switch duration	1...(1)...30 min
▪ Onset criterion (out of 8)	3...(1)...8
▪ Resolution criterion (out of 8)	3...(1)...8
PVARP ⁵	AUTO, 175...(25)...600 ms
Far-Field protection after Vp	50...(25)...225 ms
Far-Field protection after Vs	OFF, 25...(25)...225 ms
PMT ⁶ detection/termination	OFF, ON
VA criterion	250...(10)...500 ms
Sensing RV	Std. – Standard, TWS – Enhanced T-wave suppression, VFS – Enhanced VF sensitivity, (Individually programmable sensing parameters)
Sensing A	Standard, OFF, Individual

Sensor parameters (accelerometer)	
Max. sensor rate	80...(10)...160 bpm
Rate increase	1, 2, 4, 8 bpm/cycle
Rate decrease	0.1, 0.2, 0.5, 1.0 bpm/cycle
Sensor gain	auto, very low, low, medium, high, very high
Sensor threshold	very low, low, medium, high, very high

Lead connections	
Pacing/sensing	IS-1 bipolar (2x)
Shock	DF-1 (2x)

Diagnostic functions	
IEGM for AT/AF	OFF, ON, Advanced ON
IEGM for SVT	OFF, ON
Periodic recordings	OFF, 30 days, 60 days, 90 days, 120 days, 180 days
IEGM Holter	3 x 32 min (Far-Field, A and RV)
Length of prehistory	fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Event recording	ON, OFF
▪ Trigger	Atr. detection, Atr. termination, SVT detection, Ven. detection, Ven. termination, Periodic IEGM
Thoracic impedance (TI)	OFF, ON
Start resting period	00:00...(01:00)...23:00 (hh:mm)
Resting period duration	0.5...(0.5)...12 (h)
AV delay adj. sensing test	OFF, 300 ms