BridgeMaster E

Series Radar

Technical Manual

(Scanner Units & Transceivers, Display Monitors, Processor Electronic Units and Control Modules)

Litton Marine Systems B.V.

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WARNINGS AND CAUTIONS

The Radar features, functionality and capability which are described in this manual are not necessarily present in all versions or configurations of the BridgeMaster E.

WARNING: Lethal Voltage Hazard

When access covers are removed, lethal voltages may be exposed. Some capacitors used in the equipment take several minutes to discharge their stored voltages after switch OFF, this is a lethal voltage hazard. Always set the supply switch-fuse to OFF and remove the fuses, before removing the access covers of the equipment.

WARNING: Health Hazard

When cleaning the inside of the equipment, take care not to inhale dust. The dust is a temporary health hazard, depending on individual allergies.

WARNING: Radiation Hazard

Keep outside the hazard zone around an antenna or open waveguide radiating power. Refer to the table below for hazard zones. When it is necessary to work on the Scanner Unit, make sure that radar is switched OFF, and that both the Mains Isolator and the Scanner Control Unit are turned to the OFF position.

Never look directly into an open waveguide.

Radar and other forms of RF radiation can cause Cardiac Pacemakers to malfunction. If you use a Cardiac Pacemaker and suspect a malfunction, leave the vicinity of the radar system immediately and seek medical advice.

Most countries accept that there is no significant radiation hazard at RF power density levels of up to 10 mW/cm^2.

	Hazard Zones	
Antenna Length	**10 mW/cm^2**	**1 mW/cm^2**
1.2 m X-Band	1.7 m	17 m
1.8 m X-Band	1.05 m	10.5 m
2.4 m X Band	0.75 m	7.5 m
2.7 m S-Band	0.73 m	7.3 m
3.7 m S-Band	0.55 m	5.5 m

CAUTION: Electrostatic Sensitive Devices (ESSDs)

This equipment contains ESSDs. Take care not to damage these devices by discharge of electrostatic voltages.

REVISION RECORD

Revision No.	Issue Date	Date Incorporated	Incorporated By
Issue 1	May 1999		

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PREFACE

HOW TO USE THIS MANUAL

This manual is intended for use by the Installation Engineer and Radar Operator. It is intended also to be used in conjunction with the User Guide 65800010A and other related documents (see Page (ix) for full list).

- Chapter 1 - **S-Band Scanner Units and Transceivers**. This chapter gives technical specifications, descriptions and parts lists for S-Band Scanner Units and Transceivers.

- Chapter 2 - **X-Band Scanner Units and Transceivers**. This chapter gives technical specifications, descriptions and parts lists for X-Band Scanner Units and transceivers.

- Chapter 3 - **Display Monitor Units and Consoles**. This chapter gives technical specifications, descriptions and parts lists for Display Monitor Units and Consoles.

- Chapter 4 - **Processor Electronics Units** This chapter gives technical specifications, descriptions and parts lists for Processor Electronics Units.

- Chapter 5 - **Radar Control Modules**. This chapter gives technical specifications, descriptions and parts lists for Radar Control Panels and individual Control Modules.

- Chapter 6 - **Fault Reporting and First Line Servicing**. This chapter gives procedures for fault reporting and details of items that may be replaced as part of First Line Servicing Procedures.

- Chapter 7 - **Maintenance**. This chapter gives details of any procedures required for routine maintenance of the units covered in earlier chapters.

- Chapter 8 - **Modifications**. This chapter is used for the recording of modifications and information released after publication.

NOTICE

Litton Marine Systems BV have a policy of continuous development. This may lead to the equipment described in this manual being at variance with equipment manufactured after its publication.

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BridgeMaster E Radar Series

Technical Manual

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RELATED DOCUMENTS

Other documents in the series:

- BridgeCard . . . . . (Publication Ref 65800008)
- User Guide . . . . . (Publication Ref 65800010A)
- Ship's Manual . . . . . (Publication Ref 65800010B)
- Ancillary Units & Radar Systems Manual . . . . . (Publication Ref 65800012)
- BridgeMaster II S-Band Supplement . . . . . (Publication Ref 65601012)
- BridgeMaster II X-Band Supplement . . . . . (Publication Ref 65601013)

Note that the BridgeMaster II S-Band Supplement, and the BridgeMaster II X-Band Supplement, cover Hybrid Systems containing BridgeMaster II Series Display Units with BridgeMaster E Series Scanner Units.

Note that for original BridgeMaster, the 180/250 and 340 Display Technical Manuals are Publication Ref 65600011 and 65626011 respectively.

GLOSSARY OF TERMS

Scanner Unit	Comprises the Antenna and Turning Unit.
Antenna	Slotted waveguide array for transmitting and receiving microwave signals.
Turning Unit	Contains the Antenna rotation motor, the microwave rotating joint, and may contain an integral Transceiver.
Integral Transceiver	Transmitter/Receiver housed in the Turning Unit.
Bulkhead Transceiver	Transmitter/Receiver mounted below decks with microwave or co-axial connection to the Turning Unit.
Display Unit	The radar screen and control panel(s).
Display Console	Combined Display Unit and Pedestal/Plinth (340 Series only).
Performance Monitor	A unit which warns the operator of reduced radar performance. May be integral with the Turning Unit (X-Band) or separate (S-Band).
Scanner Control Unit	A unit which switches power to the S-Band Turning Unit, under the control of the Display.
Interswitch Unit	Enables two radar systems to be connected together so that either Display may be connected to either Scanner Unit.
A	Ampere
AC	Alternating Current
ARPA	Automatic Radar Plotting Aid
CRT	Cathode Ray Tube
dB	decibel
DC	Direct Current
ft	foot or feet
GPS	Global Positioning System
Hz	Hertz (unit of Frequency)
I/O	Input/Output
Kt	Knot
kW	Kilowatt
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LNFE	Low Noise Front End
m	metre
nm	nautical mile
NMEA	National Marine Electronic Association
NNF	Not Normally Fitted
PCB	Printed Circuit Board
PPI	Plan Position Indicator
PSU	Power Supply Unit
RFI	Radio Frequency Interference
rpm	revolutions per minute
sm	statute mile
TX/RX	Transmitter/Receiver (Transceiver)
V	Volt

SOFTWARE LICENCE AGREEMENT

When you receive your radar, it will include factory installed software, the use of which is subject to the following Licence Agreement below.

★★★ IMPORTANT ★★★

READ THE LICENCE TERMS PRINTED BELOW BEFORE USING THE EQUIPMENT. USE OF THE EQUIPMENT INDICATES YOUR ACCEPTANCE OF THE TERMS OF THE LICENCE AGREEMENT.

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MARINE EQUIPMENT DIRECTIVE COMPLIANCE STATEMENT

The series of equipment that this manual covers has met the requirements of EN60936-1, EN60936-2, EN60945, EN60872-1 (EN60872-2, EN60872-3 Draft) where applicable.

The equipment has been issued with European Union EC Type-Examination Certificates for the Marine Equipment Directive.

The assessment of this was carried out by the Defence Evaluation Research Agency, Fraser, which is appointed as a Notified Body No. 0191 by the Department of Trade and Industry under the European Union Marine Equipment Directive 96/98/EC.

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S-BAND SCANNER UNITS AND TRANSCEIVERS

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The following ten diagrams all relate to the fitting of the S-Band Co-axial Cable.

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