

NORTHSTAR 6000 AUTOMATIC Loran C RECEIVER



MICROPROCESSOR

NORTHSTAR 6000

AUTOMATIC Loran C RECEIVER

DIGITAL MARINE ELECTRONICS CORPORATION



Just Turn It On

The powerful microprocessor goes to work rapidly acquiring the selected signals. Northstar 6000 automatically rejects unpredictable skywaves, locks-on and tracks uncontaminated ground waves. Correct cycle selection is quickly accomplished and accurately maintained. Usually within 1 to 5 minutes after turn-on all warning lights are extinguished.

The TDs are now ready to be used for navigation. Automatically. You've no reason to touch it.

Fast, isn't it?

Fast Acquisition Speed

—A sure sign of careful design and superior performance.

Fast acquisition under normal conditions gives you confidence that under marginal conditions Northstar 6000 will seek-out and extract everything useful from the selected signals.

Cycle Selection

is fast, decisive, and very accurate. Using a new technique unique to Digital Marine Electronics Corp. (patent applied for) the microprocessor continuously analyzes the signals and refines its calculation of the proper track point. Correct cycle selection is consistently obtained at ranges from deepest

fringe areas down to within 3 miles of a transmitter.

If you wish to monitor the progress of acquiring and cycle selection, you may display the MODE of any state to determine its current status.

Simultaneously Tracks Up To Five Slaves

Thus you may swiftly cross-check your vessel's position with any LOP on your chart - each available instantly at the turn of a switch. There is no waiting for the unit to acquire and cycle-select additional LOPs to verify your position. All receivable slaves of the same GRI are tracked all of the time.

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Turning the TRANSMITTER switch to ALL will automatically display up to 5 TDs sequentially. A MEMORY switch freezes all five TD values at the same instant to make it possible to accurately record a number of LOPs at a given location.

Slave Assign

For convenient reference and continued operations you can assign specific slaves to specific switch positions. Having done it once, you need not do it again. The values are retained even when the set is turned off. They will remain there indefinitely - until you change them.

Signal Quality

SNR is continuously and automatically monitored on all transmitters and can be displayed as needed. SNR is a measure of the relative signal strength of a station. It is a microprocessor-calculated value ranging from 0 to 999 to constantly monitor proper performance of the set. The same information is also useful in locating sources of interference. And to find the optimum location for the antenna and ground aboard your vessel.

Your dealer will doubtless use this conveniently available information for the installation and on-board checkout of your new set. And its later servicing and maintenance.

Warning Indicators

These advise the user of unusual operating conditions. A "BLINK" light indicates that Coast Guard has detected a transmitter malfunction and is signaling a warning.

The "SNR" light indicates that the received signal is very weak - that it should be used with caution.

The "CYCLE" light indicates that the microprocessor is not yet convinced it is tracking the proper cycle. "MANUAL" cycle light reminds the user that he has set the Cycle Select switch to inhibit automatic cycle selection.

Data Display in either or both readouts is selectable by various positionings of the FUNCTION and TRANSMITTER switches.



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For most operations the user will simply display two TDs to fix

his position. He may manually select other TDs for cross-check. Or he may prefer to let the readouts sequentially display up to five TDs - each with a dwell time of about four seconds.



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Another switch position will hold any display

indefinitely without affecting the unit's continuing tracking and measurement.



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This shows SNR quality information for a given station. One, or any

two, or sequentially as many as five. This information is also useful in checking the overall performance of the Receiver; for locating sources of interference, and the determination of the best antenna and ground location.



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The user may enter preset values in order to assign specific Slaves

to specific switch positions. Once entered, they are "remembered" by the instrument until they are changed by the user.



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If the user wishes to confirm the progress of acquisition and cycle

selection by the microprocessor, he may display the MODE of any station to determine its present status.



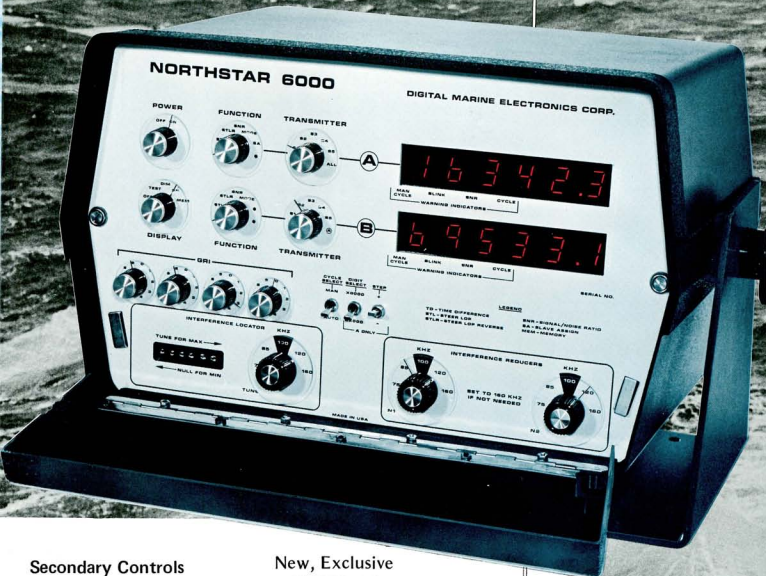
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This exclusive feature lets you steer along any LOP you select - very accurately. Just keep the vertical bar centered. It will



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move a step Left or Right to indicate an off-course error of about 50 feet. The other readout shows the distance travelled along that LOP.



Secondary Controls

These are conveniently located on the lower half of the front panel behind a flip-down door. For special purposes, automatic cycle selection may be suspended. TD values may be stepped manually in 10 "µsec" increments.

Notch Filters

Even under adverse conditions Northstar 6000 will usually acquire most of the desired transmitters without the notch filters being adjusted. But for extreme fringe area operation, and to reduce interfering frequencies, two externally adjustable and two internally adjustable notch filters are provided.

A solid state LED Interference Tuning Meter is used for greater operating accuracy and longer reliability.

New, Exclusive

STEER LOP Display

You can accurately steer along any selected LOP guided by a vertical bar of light which moves a step Right or Left to disclose a corresponding off-course error of 0.1 microsecond (50 feet). Either of the displays can be used for this purpose. The second readout monitors the distance travelled along that LOP. Thus you have a very precise pictorial/digital presentation of your vessel's position on the LOP. The flip of a switch conveniently indicates reciprocal course quite as accurately.

And note: you can enjoy the convenience of this feature without disturbing the microprocessor's continuous tracking and SNR measuring. You may shift the displays from one mode to another to steer a course, to verify a fix, or to monitor the set's performance

without losing a signal - or waiting for reacquisition and settle.

Antenna Coupler



Attractively styled and permanently sealed in solid epoxy, the antenna coupler unit is furnished with the set. It is designed to mount with standard marine antenna hardware and connects to the receiver by a standard coaxial cable and plug.

Optional Equipment

Ground Isolating Power Supplies for either 110 vac or 110 vdc are available.

A Remote Reading Display Unit, a Graphic Plotter, and latitude/longitude/course/speed converter are currently under development. Available soon. Ask us about them.

Just How Automatic is "Automatic" ?

... Completely !

... If it's Northstar 6000

Just set it to the Chain of your choice.

Turn on the power.

Northstar 6000 does the rest.

It relieves you of the tedious task of searching for

— and positively identifying — useable signals.

It precisely presents an accurate position fix — digitally.

You simply read the displayed LOP data and

easily find your exact position on your chart.

Northstar 6000 not only does its job automatically, but does it well. Very well.

Very fast and very accurately too.

Powerful in performance, simple in construction, Northstar 6000 is the direct result of DMEC's respected design and manufacturing experience in this exacting field. With unique, exclusive new circuitry it achieves the high standards of "True" Loran C at its very best.

A new, second generation microprocessor (a very powerful miniature computer) continuously performs all functions of signal acquisition, tracking, cycle selection, signal quality measurements and TD display. All of this much faster, more precisely and reliably than you could possibly do yourself. Or so far as we know, than any other commercial Loran C receiver either.

The Microprocessor Concept eliminates the need for literally hundreds of integrated circuits. Solid state techniques and modular construction—the outgrowth of recent Military and Space programs—now result in a fully automatic instrument that consumes less power, is more easily maintained, and has truly long-term reliability.

Confidence

Complete confidence is what you feel after navigating with your new Northstar 6000 for a few days. Confidence because

Northstar 6000 swiftly and correctly acquires stations. Confidence because Northstar 6000 rapidly and accurately selects the proper cycle to track. Confidence because Northstar 6000 is automatically tracking all receivable LOP's (not just two) so you can instantly cross-check your position with additional LOPs without waiting. Confidence because, if the signal degrades, Northstar 6000 tells you so - immediately. And Confidence because you know Northstar 6000 tests itself every time you turn it on.

Test Northstar 6000

Test it alongside any other Loran receiver - manual or "automatic". Put them through their paces. Then decide for yourself which one you would trust to get you through the really Tough Situations when the chips are down - and performance really counts.

Entirely New Design

Extensive field testing under widely varying conditions has been used to aid in refining its operation to the point where we believe Northstar 6000 to be without question the finest Loran receiver commercially available today.

FEATURES

Operation

Simple. Set all switches to Red position. Turn on power.

Automatic acquisition, cycle-selection and tracking. No CRT necessary.

Tracks up to 5 Slaves simultaneously.

Signal quality information automatically calculated for all stations.

Warning lights for abnormal conditions.

Manual override controls for extended range operations in extreme fringe areas.

User may assign any Slave into any display position.

Exclusive STEERLOP format.

"ALL" displays tracked slaves sequentially.

Automatic adaptive tracking provides maximum display stability for any vehicle speed.

Uses new standard 4 digit GRI format.

Display

Bright, dual, LED readouts.

Contrast-enhancing filters.

Dim position for nighttime operation.

Stable readings - updated 10 times per second.

0.1 microsecond resolution. Display test function.

Maintenance

100% modular construction.

High quality, conservatively rated components.

Fiberglass epoxy printed circuit boards.

Built-in test functions. RF and Scope sync test jacks for easy dealer service/adjustment.

Optional Equipment

(Ground Isolating)
Power Supply, 110 vac.
Power Supply, 110 vdc.

Dual Readout Remote Display connects with standard RG-58 coaxial cable.

X/Y Plotter.

Latitude/longitude converter with speed/course information.

SPECIFICATIONS

Receiver Module

Integrated circuit design.

Wide bandwidth for maximum pulse fidelity.

Low noise - Wide dynamic range - 110 db.

Sensitivity - 0.8 μ v

Four Notch Filters - two external - two internal.

Solid state LED type Interference Meter.

Antenna Coupler (included)

Permanently sealed in solid epoxy.

Minimum parts-count construction.

Connects to receiver with standard coaxial cable and plug.

Mounts with standard 1" - 14 hardware.

Length 7 $\frac{1}{2}$ " Weight 1 $\frac{1}{4}$ lbs.

Antenna (not included)

Fiberglass CB Whip (about 108") recommended. 3/8" - 24 mounting stud.

Electrical

Voltage 10 - 40 vdc standard

Optional 120 vdc or 120 vac adaptors available.

Power consumption 45 watts

Negative ground only. Ground isolating power supply required for positive ground or floating system.

Efficient switching regulator for low power consumption.

Automatic solid state fault protection.

Cabinet and Mounting

Rugged, welded, all-aluminum anodized and painted case and yoke. All fasteners stainless steel.

Serial number engraved on front panel for theft protection.

	<i>Case Only</i>	<i>Including Yoke</i>
Height	9 $\frac{1}{2}$ "	11 $\frac{1}{2}$ "
Width	16"	19-3/4"
Depth	11"	11"

Weight 25 lbs.

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