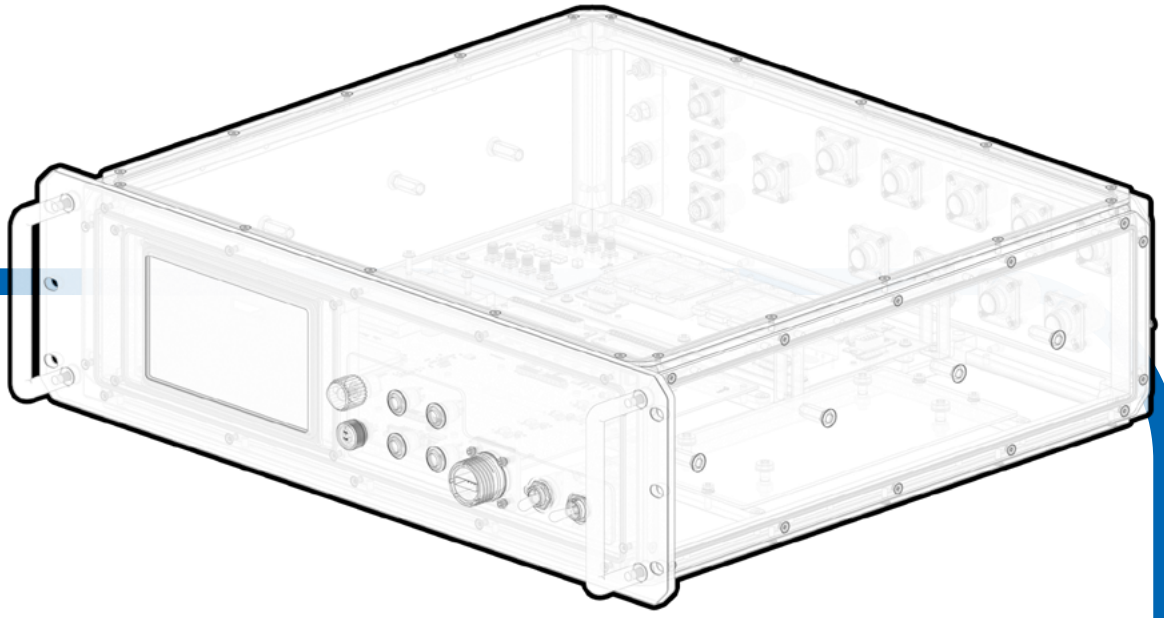
Datasheet



DE5000

NavyGate®

GPS Navigation System

DEICO

www.deico.com.tr

Contents

1. Description

DE5000 NavyGate® GPS Navigation System is a high-tech system that provides all the necessary data for external electronic systems through NMEA0183 and custom format messages, with flexible and independent settings. Optionally, the system can be equipped with an ICD-GPS-153–compliant interface for standardized data output to host platforms. The system includes a control and display unit, where users can view navigation and satellite information, as well as control the device settings. It also includes critical functions like MOB/GOTO and can accurately determine a ship's position by resolving radio beacon messages on land using DGPS. Suitable for harsh conditions with the support of Controlled Reception Pattern Antenna (CRPA). Overall, this system meets all the navigation requirements of any vessel with accurate and secure measurements.

DE5000 has a display and keypad on the front panel, which allows operators to select different usage codes, provide and confirm information, display results, and show basic scanning and satellite information. The keypad includes on/off, zeroize, MOB, GOTO, and DIM functions. Additionally, two custom function keys can be added upon request.

Figure 1: Front Side of DE5000 NavyGate® GPS Navigation System

Figure 2: Rear Side of DE5000 NavyGate® GPS Navigation System

2. Hardware Overview

2.1. Hardware Specifications

Table 1: Hardware Specifications

Connector Type	Description
2 x Military Connectors	Power inlets (AC & DC independent)
1 x Military Connector	Power out for anti-jam antenna
6 x Military Connectors	Isolated RS-422 ports for navigation data
1 x Military Connector	External display unit isolated CAN communication port
2 x Military Connectors	HQIIA out
1 x TNC PLUG	GPS L1/L2 antenna RF input
2 x TNC PLUG	1 PPS outs compatible with ICD-GPS-060A
1 x TNC PLUG	RF input dedicated DGPS (RTCM data with MSK modulation)

2.2. Control & Display Unit

Table 2: Control & Display Unit Specifications

Function	Description
Unit Control	• CIT (internal test) • MODE selection (SPS, DGPS etc.) • Contrast adjustment (dim) • Zeroize (deleting records)
Port Control	• RS-422 baud, frequency, parity etc. • NMEA0183 output message types • NMEA0183 input message types • HQIIA, 1PPS open/close
Route	• Lat-Lon-Altitude, UTM, UTC, GMT, TFOM, PFOM, COG, SOG displaying • Coordinate transformation • Antenna leakage data register for lever-arm • Unit transformations (meter-notik etc.) • Datum selection • Route point and route selection • MOB page and warning
Satellite	• Visible satellites • Tracked satellites • Satellite status info • Elevation, azimuth, SNR info

2.3. Electrical Specifications

Table 3: Electrical Specifications

Specification	Description
Input Voltage	DC / 18 – 36 V DC ** AC / 85-264 V AC (upon request)
Power Consumption	<50 W
Power On/Off	Open/close switch
EMI	MIL-STD-461F

2.4. Physical Specifications

Table 4: Physical Specifications

Specification	Description
Dimension	15.8” (401 mm) x 19” (482,6 mm) x 3U (133,35 mm)
Weight	6 kg

2.5. Environmental Specifications

Table 5: Environmental Specifications

Specification	Description
Operating Temperature	-40 °C - +85 °C
Vibration	MIL-STD-810G
Humidity	MIL-STD-810G
Ingress	—
Shock	MIL-STD-810G

3. Signal Connections

3.1. Interfaces

Table 6: Interfaces

Interface	Description
RS-422	6 x galvanic isolated (250 kb/s) – NMEA 0183 / Custom; ICD-GPS-153 (optional)
CAN (1x)	1 x galvanic isolated
CAN	2.0
Ethernet	1 x 10/100/1000
USB	2
HQIIA	2 x (ICD-GPS-060A compatible)
1 PPS	2 x (ICD-GPS-060A compatible)
Button	1 x MOB, 1 x GOTO
Switch	1 x zeroize, 1 x power on/off

3.2. Protocols

Table 7: Protocols

Protocol	Description
NMEA0183	v2.x, v3.x, v4.x
RTCM	v2.x
NMEA2000	—

3.2. GPS

Table 8: GPS

GPS	Specification
Frequency	GPS: L1, L2
Correction	RTCM, CMR
Navigation Outputs	NMEA-0183: DTM, GGA, GLL, GNS, GSA, GST, GSV, RMC, VTG, ZDA etc. GLONASS: L1CA, L2CA, L2P, L3 CDMA Beidou: B1I, B1C, B2a, B2I, B312 Galileo: E1, E5a, E5b, E5 AltBoc, E612 QZSS: L1C/A, L1C, L2C, L5, L612 SBAS: Egnos, WAAS, GAGAN, MSAS, SDCM (L1, L5)
TTFF	Cold: 50, Hot: 2
GPS Receiver	448 Channels – GPS: L1C/A, L1C, L1PY, L2C, L2P, L5
GPS Antenna	CRPA, 4 elements, GPS L1 / L2, BeiDou (B1C)/Galileo (E1,E5a,E5b)/SBAS GLONASS (L1,L2)/GPS (L1,L2)/QZSS (L1)
Horizontal Accuracy	Standalone: 1.2 m, SBAS: 0.6 m, DGPS: 0.4 m
Vertical Accuracy	Standalone: 1.9 m, SBAS: 0.8 m, DGPS: 0.7 m

4. Safety Guidelines

The DE5000 shall not be operated in any manner not specified in this document. Misuse of the product may result in a hazard. Safety protection features may be compromised if the product is damaged. In the event of damage, the product shall be returned for repair.

5. Compatibility Guidelines

This product has been tested and found to comply with the applicable regulatory requirements and limits for electromagnetic compatibility (EMC). These requirements and limits are intended to provide reasonable protection against harmful interference when the product is operated within the specified electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in certain installations if the product is connected to peripheral devices or test objects, or if it is used in residential or commercial areas. To minimize interference with radio and television reception and to prevent unacceptable performance degradation, the product shall be installed and operated in strict accordance with the instructions specified in the product documentation.

Any changes or modifications to the product not expressly approved by DEICO may void the user's authority to operate the equipment under local regulatory rules.

To ensure the specified EMC performance, the product shall be operated only with shielded cables and accessories.

To ensure the specified EMC performance, the length of any cable attached to the front connectors shall not exceed 3 m (10 ft.).