



DEGEM
SYSTEMS

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Modern Communication

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Global Position Systems

Satellite Communication

Microwaves

Telecommunication Networks

MDC-3252

GPS Navigation Training System

Global Positioning System technology is rapidly changing how people find their way around the planet. Whether it is for fun, saving lives, getting there faster, or whatever uses you can dream up, GPS navigation is becoming more common every day.

Degem's MDC-3252 GPS Navigation Training System is an ideal training equipment to provide a basic understanding of the GPS fundamentals, satellites, protocols and design aspects of a GPS Receiver by actually connecting to the navigation satellite by a GPS antenna.

The experiment manual provides essential theory and detailed instructions to carry out the various experiments.

- 12 channel GPS & carrier
- Fast cold/warm/hot start, TTFF time of 45/38/8 sec
- Fast reacquisition time of 0.1second
- NMEA 0183 Ver2.2 GGA, GLL, GSA, GSV, RMC and VTG sentences output
- SiRf binary protocol output
- On-board, real time RTCM SC-104 differential
- 1PPS (one pulse per second) signal
- Serial port for communicating with a PC
- GPS analysis software



Specifications

TECHNICAL CHARACTERISTICS

- Channels (12)
- Frequency band (L1 C/A)
- Position accuracy (25m CEP without SA)
- Velocity accuracy (0.1m/second, without SA)
- Channel Spacing (200KHz)
- Update rate (1 per second)
- Receiver sensitivity (-175 dB)
- Input supply voltage (+5 VDC)
- Supply current (180mA)
- Serial communications (4800 baud)
- Protocol messenger (NMEA0183V2.2, SiRf binary)
- RTCMSC-104V2.0
- Maximum speed (550m/sec)
- Acceleration (4g maximum)
- Jerk (20m/sec³)
- Maximum altitude (18,000m)
- Time to first fix (45/38/8 seconds)
- Power supply (10/220V ±10%, 50/60Hz)
- Operating temperature (-40 to +85°C [GPS unit only])

EXPERIMENTS

- Understanding GPS concepts
- Establishing a link between a GPS Satellite and the GPS trainer.
- Measurement of latitude and longitude.
- Effect of DOP.
- Become familiar with HDOP & VDOP.
- Analysis of NMEA 0183 Protocols.
- Analysis of elevation, azimuth, SNR.
- Familiarization with PRN code.
- Common NMEA sentence protocols: GPGGA, GPGLL, GPGSA, GPGSV, GPRMC, GPVTG
- Study other GPS NMEA sentences: GPALM, GPGRS, GPGST, GPMSS, GPZDA.
- UTC Data & Time.
- Study useful conversion formulas.

RECOMMENDED ACCESSORIES

Internet connection for obtaining maps and photographs

REQUIRED ACCESSORIES

Personal computer with MS-Windows

INSTRUCTIONAL MATERIALS

The experiment manual was written by pedagogical experts in modern GPS navigation technology. The essential theory to understand and perform the experiments is provided. The procedure for each experiment is clearly written to allow the students to easily complete each experiment.