



This trainer kit enables the practical study of **data conditioning and digital carrier modulation techniques**, covering both fundamental line coding formats and advanced digital modulation schemes. Learners can analyze the performance of **ASK, FSK, PSK, DPSK, QPSK, and DQPSK** modulation systems, observe the role of carrier synchronization, and evaluate system behavior under various fault conditions. The kit provides onboard signal generation, data sources, and conversion circuits, making it an essential tool for communication engineering education and laboratory experiments.

Application / Test Facility

- Study of **digital data conditioning formats**: NRZ, RZ, Phase-encoded, Multilevel
- Implementation of **carrier modulation schemes**: ASK, FSK, PSK, DPSK, QPSK, DQPSK
- Evaluation of **fault behavior in digital communication systems**
- Analysis of **unipolar-to-bipolar conversion, inversion, and line coding**
- Understanding the role of **carrier synchronization** in modulation

Product Features

Salient Features

- **On-board carrier generation circuit** with sine waves synchronized to transmitter data
- **In-phase and quadrature-phase carrier sources** for QPSK modulation
- Supports multiple **data conditioning formats**:
 - NRZ (L), NRZ (M), RZ
 - Bi-phase (Manchester, Mark)
 - AMI, Return-to-Bias (RB)
- **Carrier modulation techniques: ASK, FSK, PSK, DPSK, QPSK, DQPSK**

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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- On-board **Unipolar-to-Bipolar converter**
- On-board **Data Inverter**
- On-board **8-bit data source**
- On-board **Clock source**
- Option for **interactive PC software** for visualization and analysis

Technical Specifications

- **Crystal Frequency:** 4 MHz or higher
- **Supported Data Formats:** NRZ (L), NRZ (M), RZ, AMI, RB, Bi-phase (Manchester), Bi-phase (Mark)
- **Carrier Modulation Techniques:** ASK, FSK, PSK, DPSK, QPSK, DQPSK
- **On-board Carrier Sources:**
 - 1.6 MHz sine wave (synchronized to data)
 - 960 kHz sine wave (0° phase)
 - 960 kHz sine wave (90° phase)
- **Test Points:** 40 or more
- **Interconnections:** 2 mm sockets or better

Accessories / Spares

- Coaxial Cables
- Patch Cords

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