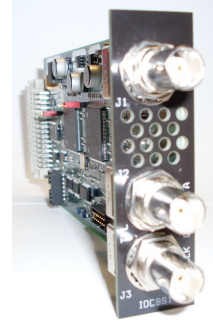# APOGEE LABS

IOCRM3
CLOCK RECOVERY MODULE

FEATURES

- Clock recovery from data only
- Analog input
  ◊ Bipolar or uni-polar, auto detect
  ◊ Accommodates baseline shifts and variations
- Bit rate from 1 Kbps to 20 Mbps NRZ codes
  ◊ 1 Kbps to 10 Mbps BiØ codes
- TTL level outputs
- Loop bandwidth from 0.7% to 6%

- Selectable input and output codes
  ◊ BiØ-L/M/S, NRZ-L/M/S, and RNRZ
- 250 bit nominal acquisition
- Programmable features
  ◊ Nominal bit rate
  ◊ Tracking limit
  ◊ Data detector type
  ◊ Input code and polarity
  ◊ Output code and polarity

OVERVIEW

The Model IOCRM3 provides a flexible, cost effective means of reconstructing a clock from data-only signal lines and recovering the data. It can handle signal corruptions commonly found in cable runs and RF links such as noise, baseline shifts, and amplitude variations. Bit code conversion is provided at both the input and output interfaces.

Up to fourteen IOCRM3 cards can be housed in the Model 2873 chassis. Optionally, by installing standard AL2073 interfacer modules, a wide variety of output signal formats may be produced.

SPECIFICATIONS

INPUT

- Signal:
  ◊ Data only
  ◊ Amplitude: 0.5Vp-p to 10Vp-p
  ◊ Baseline shift: Up to +/- 10V baseline offset
  ◊ Baseline variation: Up to the signal amplitude (p-p) with a frequency up to 0.1% of the bit rate
  ◊ Amplitude variation: Up to the signal amplitude
- Termination: 51/75Ω
- Connector: BNC
- Rates:
  ◊ 1 Kbps to 20 Mbps—NRZ codes
  ◊ 1 Kbps to 10 Mbps—BiØ codes
- Codes: NRZ-L, M, S; BiØ-L, M, S; RNRZ-15

CLOCK RECOVERY

- Tracking: 6.2%, 3.1%, 1.6%, 0.7%
- Capture: equal to tracking range

- Acquisition: < 250 bits
- Retention: Retains synchronization in input signals with transition gaps up to 100 bits occurring once every 500 bit times

OUTPUT

- Signal:
  ◊ RS-422; Differential
  ◊ Minimum differential output with 50Ω load: 2.0V
  ◊ Nominal common mode output voltage: 2.5V
- Signal Format:
  ◊ 0° clock & data
  ◊ 51/75 Ω driver
- Connector: Triax
- Codes: NRZ-L, M, S; RNRZ-15

ENVIRONMENTAL

- Operating temperature: 0° to 50° C
- Relative humidity: 15% to 95%; non-condensing
- Altitude: Sea level to 10,000 feet