

MODEL 2873 Chassis with RS422 CLOCK RECOVERY Module, IOCRM4

FEATURES

- Clock Recovery from Data Only
- RS422 Nominal Input
- RS422 Data and Clock outputs
- Bit Rate from 1 kbps to 20 Mbps NRZ
 - 1 kbps to 10 Mbps BiØ codes
- Input Bit Codes
 - BiØ-L/M/S, NRZ-L/M/S RNRZ
- Acquisition of Signal Nominally 250 bits
- Loop Bandwidth from 0.7% to 6%
- Programmable Features
 - Nominal Bit Rate
 - Tracking Limit
 - Input & Output Codes
 - Input & Output Polarities
- Added Feature : Bit Error Rate Estimation based on Frame Sync Errors
 - Contains Minor Frame Synchronizer
 - Counts Frame Sync Pattern bits received and bit in error
 - Presents counts and the BER value derived

OVERVIEW

This combination of Model 2873 chassis and Model IOCRM4 provides a flexible, cost effective means of reconstructing a clock from data-only signal lines and recovering the data. Bit code conversion is provided at both the input and output interfaces.

This combination implements a Multi-channel Clock Recovery Unit (CRU) which is contained in a general purpose 3 1/2" tall chassis which houses up to fourteen independent digital Clock Recovery Modules. Optionally, by installing standard Interfacer modules, a wide variety of output signal formats may be produced. Mounting brackets are supplied that accommodate either front or rear rail installation in a standard EIA 19" rack cabinet. The basic unit contains a processor module, a number of IOCRM modules and optional interface converters.

The input to the IOCRM4 is an RS-422 signal on Triaxial connectors and the outputs are also RS-422 signals on Triaxial connectors.

A bright, high contrast LCD display and 20 position keypad are used for local control of the unit. Remote control is by means of an optional Serial link which uses simple ASCII commands.

SPECIFICATIONS

CHASSIS:

Size: 19" W, 9" D, 3.5" H
Weight: Less Than 15 Pounds
Card Slots: 14

INPUT:

Signal:

RS-422, Differential
Minimum Differential Threshold Voltage : 250mV
Hysteresis : 25 mV
Common Mode Range : 0V to +5V
Overvoltage Range (without damage) : -7V to +12V

Termination: 120 ohm line to line

Connector: Triaxial

Rate: 1 kb/s to 20 Mb/s – NRZ Codes
1 kb/s to 10 Mb/s - BiΦ Codes

Codes: NRZ-L, M, S BiΦ-L, M, S

CLOCK RECOVERY:

Tracking: 6.2%, 3.1%, 1.6%, 0.7%

Capture: = 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 Level

Minimum Differential Output, 50ohm load: 2.0V
Nominal Common Mode Output Voltage: 2.5V

Signal Format:

0° Clock & Data
51/75 ohm Driver

Connector: Triaxial

Codes: NRZ-L, M, S BiΦ-L, M, S

POWER SUPPLY:

109-240 Vac (47-63 Hz) Auto Select
75 Watts _12V

ENVIRONMENT:

Operating Temperature:

0° to 50° C (32° to 122° F)

Relative Humidity:

15-95% Non-Condensing

Altitude:

Sea Level to 10,000 ft.

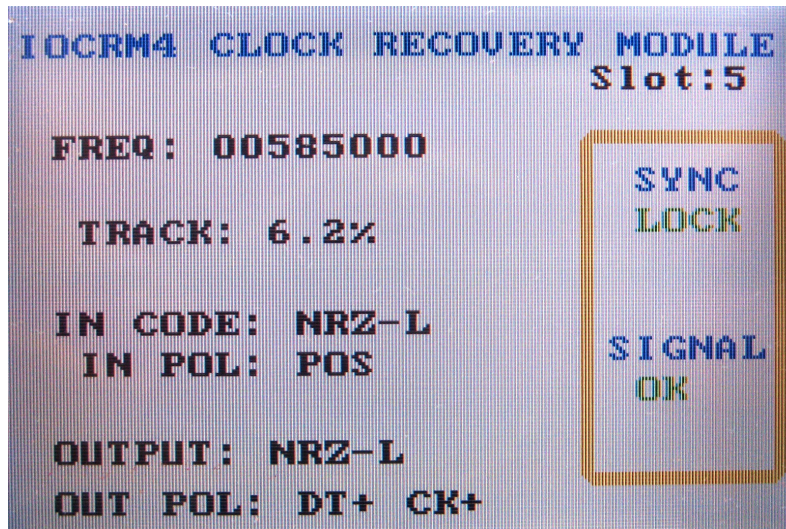
CONTROL:

Front Panel: LCD Display, 20 position keypad, 8 sets of LOCK & Signal PRESENT LEDs

Optional Serial RS-232 Remote Control

APPLICATION NOTES

Simple Setup...ONE page per Channel with Status Display:



STATUS BOX The SYNC indicator will show LOCK/SEARCH status. The SIGNAL indicator will show LOS/OK (Loss of Signal). OK indicates transitions occurring on the input signal line

FREQ: Use this field to set the expected incoming Bit Rate in bps.

TRACK: This sets the amount of frequency offset the IOCRM4 will follow to remain in LOCK.
Available options are : 0.7%, 1.5%, 3.1%, 6.2%

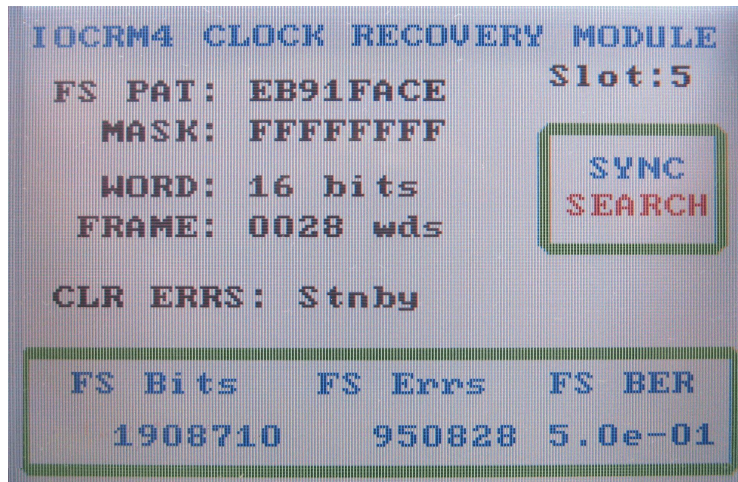
IN CODE: Set this field to match the incoming IRIG code.
Available selections are: NRZ-L, NRZ-M, NRZ-S, BiP-L, BiP-M, BiP-S

IN POL: Use this field to compensate for inverted input signal polarity
(A/B leads swapped in the cabling to the unit)

OUT CODE: Set this field to set the output IRIG code on the DATA connector.
Available selections are: NRZ-L, NRZ-M, NRZ-S, BiP-L, BiP-M, BiP-S

OUT POL: Use this field to control the signal polarity of the Clock and Data Outputs
Available options are : DT+ CK+, DT+ CK-, DT- CK+, DT- CK

An included Feature is the ability to setup a simple Frame Synchronizer and approximate the link error rate based on the Frame Sync Pattern bit errors detected. This is accessed on the Second Page of the IOCRM4 module (press the 2nd key and PgUp) :



STATUS BOX – The SYNC indicator will show SEARCH, CHECK, LOCK status of the Frame Sync.

FS PAT: Program the Frame Sync Pattern, up to 32 bits, in HEX format in this field. For A-F values, Press the 2nd key followed by the corresponding numeric key (multiple times if necessary to get to the 2nd or 3rd character), then the right or left arrow to accept that character and move the cursor. For patterns less than 32 bits, the pattern can be placed anywhere in the field.

MASK: Program the Sync Pattern Mask in HEX format in this field. ALL 32 bits must be properly set. Place a '1' value in each bit position that corresponds to an active FS PAT bit.

Examples:

16 bits	14 bits	8 bits
EB900000	EAC00000	000000F5
FFFF0000	FFC00000	000000FF

WORD: This is the Bits-Per-Word field. Available selections are 6 to 16 bits.

FRAME: This is the Words-Per-Frame field. Available selections are 4 to 8192 words.

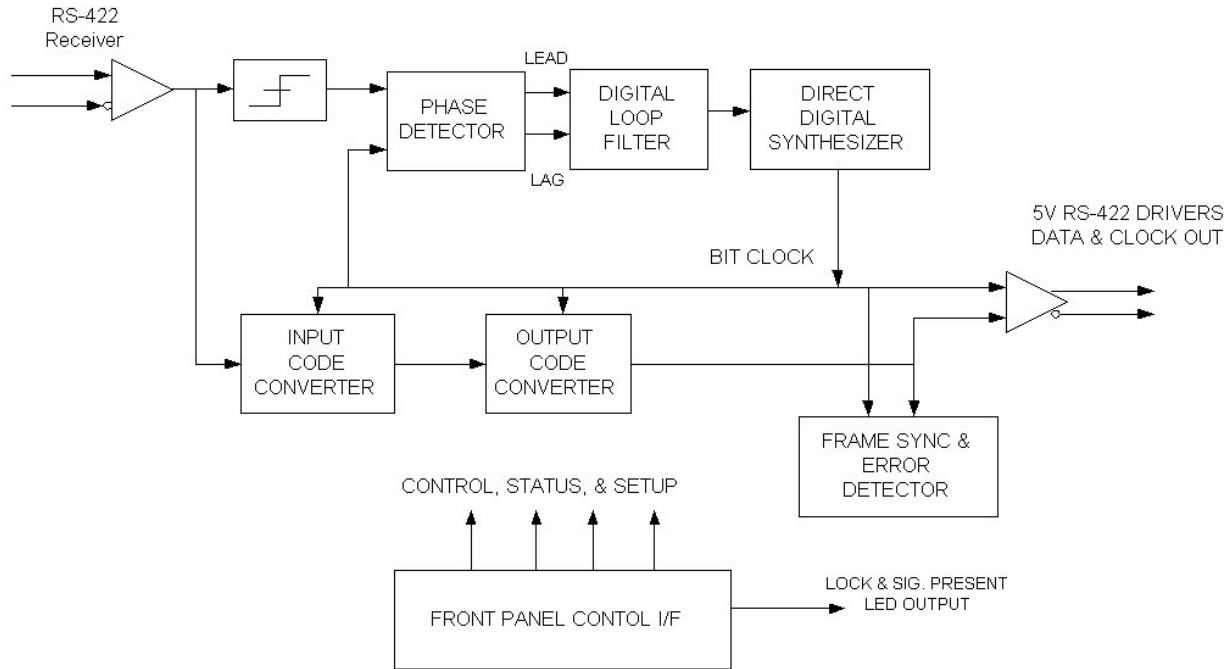
CLR ERRS: This field is used to clear the COUNTER VALUES. The selections available are Stnby and CLEAR. The CLEAR function is a momentary action. It will automatically revert to the Stnby value after the hardware counters are cleared.

COUNTER VALUES BOX – **FS BITS** : this is the number of FS Pattern bits received since the last CLR ERRS. It can accumulate up to 2³² counts, then will automatically reset to zero and clear the FS ERRS also.

FS ERRS : This is the number of FS Pattern bits received with errors since the last CLR ERRS.

FS BER: This is the calculated bit error rate, made from dividing the FS ERRS by FS BITS.

IOCRM4 OVERALL BLOCK DIAGRAM



Note *1: When the IOCRM4 module is inserted into slot number 1 thru 8, the LED's will indicate:
LED 'A' : Bit SYNC LOCK when lit
LED 'B' : Input Present when lit