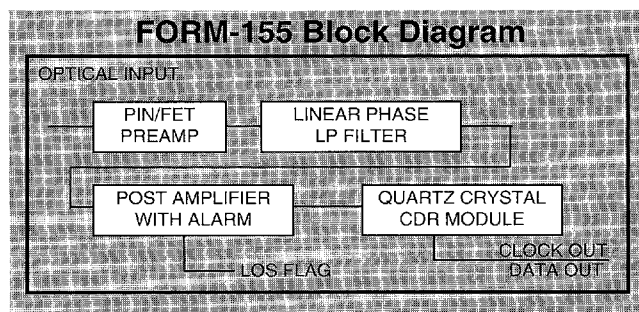
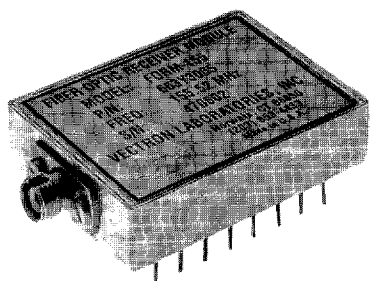


# Fiber Optic Receiver Module FORM-155

The Vectron FORM-155 is a self contained optical receiver that incorporates a high quality clock and data recovery circuit. Wide dynamic range coupled with exceptional jitter tolerance and attenuation allows superior performance in optical systems. Zero dB jitter peaking allows for virtually unlimited cascades. A  $\pm 20$  ppm internal clock is available upon loss of signal.

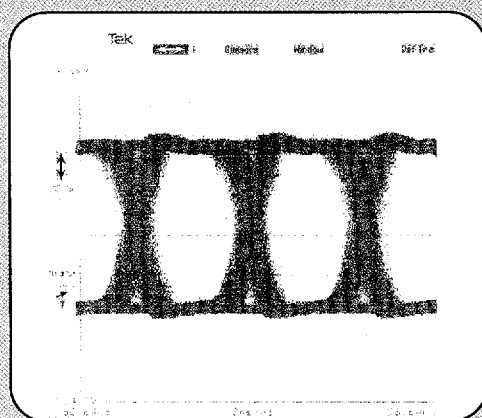
## FEATURES:

- OPTICAL RECEIVER
- FC/PC OPTICAL CONNECTOR
- DATA RATE 155.52 Mb/s
- BUILT-IN CRYSTAL OSCILLATOR CLOCK AND DATA RECOVERY
- LOW JITTER ( $2^\circ$  rms)
- WIDE BAND JITTER TOLERANCE
- NARROW BAND JITTER ATTENUATION
- SONET/SDH COMPATIBLE
- NO PATTERN JITTER
- 0 dB JITTER PEAKING
- LOW POWER CONSUMPTION (1.2W)
- COMPLEMENTARY OUTPUTS
- BUILT-IN LOS FLAG
- AUTOMATIC HOLDOVER

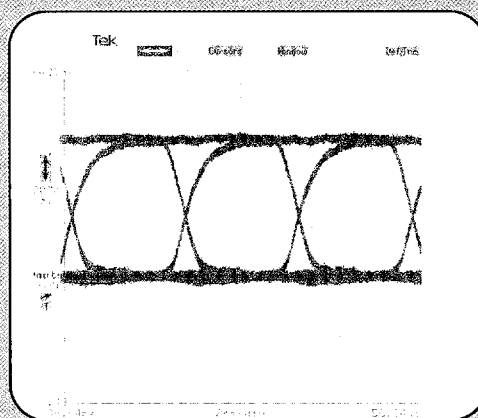


CHARACTERISTIC	CONDITION	SPECIFICATION
CLOCK RATE		155.52 MHz
ACQUISITION TIME	Input Density = 50%	40 bit period (260 nanosec)
PHASE DRIFT (due to input data)	20 non-transitions 60 non-transitions	<0.002 UI <0.006 UI
JITTER TOLERANCE (exceeds Bellcore and C.C.I.T.T. requirements)	10 Hz 300 Hz 6.5 kHz 65 kHz	> 40 UI > 10 UI > 2 UI > 2 UI
JITTER TRANSFER		
Peaking		0 dBm
Bandwidth		15.5 kHz typical
Residual Jitter	Input Density = 50% 2 <sup>7</sup> -1 PRB Sequence 2 <sup>23</sup> -1 PRB Sequence	<2° rms <2° rms <2° rms
TEMPERATURE STABILITY		
Free Running	0 to +70°C -40 to +85°C	$\pm 20$ ppm $\pm 20$ ppm (optional)

The FORM-155 Fiber Optic Receiver Module *re-times* and *cleans up* incoming optical signals



Low-level optical input to FORM-155 (2<sup>7</sup> PRBS)



Re-timed output (ECL) data stream with reduced jitter (2<sup>7</sup> PRBS)

9447320 0000967 450

## How to Order

FORM - 155 at 155.52 MHz

VECTRON P/N	TEMP. RANGE	OUTPUT	SUPPLY VOLTAGE
663Y3065	0°C to +70°C	ECL	-5.2Vdc
663Y3065-1	0°C to +70°C	PECL	+5.0Vdc
663Y3065-2	-40°C to +85°C	ECL	-5.2Vdc
663Y3065-3	-40°C to +85°C	PECL	+5.0Vdc

### MAXIMUM ABSOLUTE RATINGS

PARAMETER	SYMBOL	MIN.	MAX.	UNITS	NOTE
STORAGE TEMPERATURE	Ts	-55	+125	DEG.C	
OPERATING TEMPERATURE	Ta	-40	+90	DEG. C	
SUPPLY VOLTAGE	Vcc-Vee	-----	6.0	Vdc	
LEAD SOLDERING (TEMP)			260	DEG. C	
(TIME)			10	SEC.	

### ELECTRICAL SPEC.

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTE
SUPPLY VOLTAGE	Vcc-Vee	-5%	ECL -5.2V PECL +5V	+5%	Vdc	
SUPPLY CURRENT	Icc	-----	190	225	mA	
OUTPUT VOLTAGE HIGH LEVEL	Voh	-1.08	-----	-0.72	Vdc	50 ohms into -2.0V
OUTPUT VOLTAGE LOW LEVEL	Vol	-1.95	-----	-1.60	Vdc	
LOSS OF SIGNAL INDICATOR HIGH	VoH	-----	-0.85	-----	Vdc	NO FLAG CONDITION
LOSS OF SIGNAL INDICATOR LOW	VoL	-----	-1.85	-----	Vdc	FLAG CONDITION

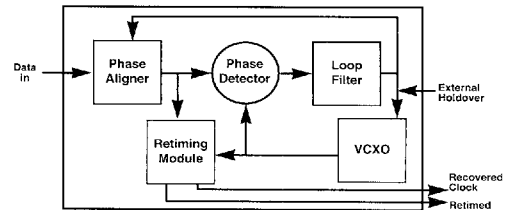
### OPTICAL SPEC.

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTE
BIT RATE RANGE			155.52 ±50 PPM		Mb/s	
MAXIMUM OPTICAL INPUT	P <sub>MAX</sub>	-----	-----	-7	dBm	
MINIMUM SENSITIVITY FOR 1E-10 B.E.R	P <sub>MIN</sub>	-30			dBm	
LOS FLAG LEVELS	P <sub>LOS</sub>		-28		dBm	
CLOCK JITTER			25	35	ps rms	Worst case optical input
WAVELENGTH			1300		nm	

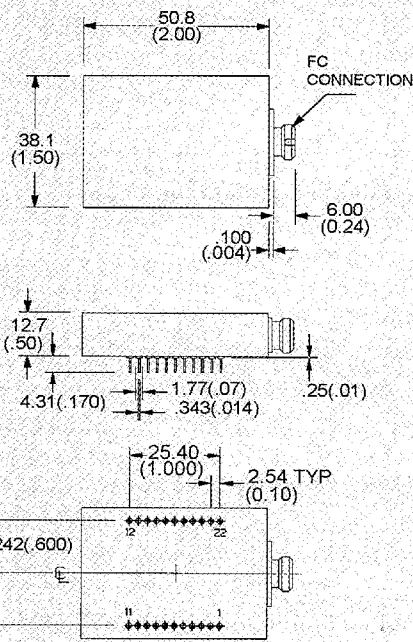
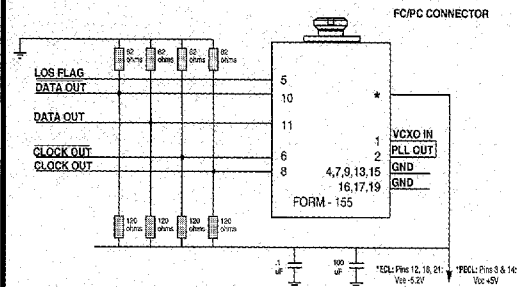
## The FORM - 155 incorporates the Sonet Clock Recovery Module SCRM - 155

The Vectron SCRM-155 Sonet Clock Recovery Module recovers clock and data from an incoming NRZ PCM data stream. It regenerates the original incoming data stream through the use of an optimally timed decision circuit. The internal VCXO in the SCRM-155 allows the user, without the need of an additional crystal oscillator, to set the clock frequency with an external control voltage (holdover). Compatible with both CCITT Type A and Type B interfaces.

### Internal SCRM - 155 Block Diagram



### FORM - 155 Applications Schematic



PIN	ECL	PECL
1	VCXO INPUT	VCXO INPUT
2	PLL OUTPUT	PLL OUTPUT
3	N/C	Vcc1(+5V)
4	GND	GND
5	LOS FLAG	LOS FLAG
6	CLOCK OUT (ECL)	CLOCK OUT (PECL)
7	GND	GND
8	CLOCK OUT (ECL)	CLOCK OUT (PECL)
9	GND	GND
10	DATA OUT (ECL)	DATA OUT (PECL)
11	DATA OUT (ECL)	DATA OUT (PECL)
12	Vee3(-5.2V)	N/C
13	GND	GND
14	N/C	Vcc1(+5V)
15	GND	GND
16	GND	GND
17	GND	GND
18	Vee2(-5.2V)	N/C
19	GND	GND
20	N/C	N/C
21	Vee1(-5.2V)	N/C
22	N/C	N/C

#### NOTES:

- PIN NUMBERS ARE FOR REFERENCE ONLY. THEY DO NOT APPEAR ON THE UNIT.
- DIMENSIONS IN MILLIMETERS (INCHES IN PARENTHESIS).