

## E5020 Pattern Generator & Checker

### Multi-rate Pattern Generator & Checker

(From 155Mbps to 3Gbps)



#### Features & Benefits:

- Integrated Device of Pattern Generator and Checker
- Fast Synchronization and Low Jitter Output, Test the Performance of Optical Modules & Components
- Multi-rate, from 125Mbps to 3.125Gbps
- Multi-wavelength, from 850nm to 1610 nm(Depend on the SFP module )
- Multi-Standard Test Patterns
- Multi-Channel, including SFP, CH1 and CH2(OPTION), Every Channel can be Turned ON/OFF Separately
- SFP Channel for Optical Signal Input/Output, CH1/CH2 for Electronic Signal Input/Output
- Every Channel has its own Data Input, Data Output and Clock Output (Synchronized with Data Output)
- LCD Screen shows the Menu, Current Working Mode, and Test Result, using the keyboard to set the working Mode
- Save Five Different Working Modes
- E5020 controlled by PC for building Auto Test System via USB (OPTION)
- Multi-rate Clock Recovery (OPTION)
- High sensitive Data Input (< 20mV) and Optional Amplitude Output (50mV - 1.8V) (OPTION)

## Applications:

- High Frequency signal transmission performance Test
- For pattern generation, Generate Multi-Standard Test Patterns on different rate
- With different Test Boards to test BER and Eye Pattern characters of different Optical Modules such as SFP, GBIC, SFF, 1x9, and different Optical Components such as PIN-TIA, APD-TIA(Eye Pattern Analyzer or High Performance Oscilloscope is needed in Eye Pattern Test)
  - E5020 with INSTELENT T5001 Test Board for SFP/GBIC modules
  - E5020 with INSTELENT T5002 Test Board for SFF2x5, SFF2x6, SFF2x10 and 1x9 modules
  - E5020 with INSTELENT T5003 Test Board for PIN-TIA, APD-TIA

## Characteristics:

### Rate:

- ✧ 125Mbps、155Mbps、200Mbps、622Mbps、1.0625Gbps、1.25Gbps、1.448Gbps、2.125Gbps、2.5Gbps、2.666Gbps、3.125Gbps、4.25Gbps (Option) (Other rate, Depend on the customer's requirement)
- \*The degree of frequency stability:  $< \pm 50\text{ppm}$
- \*For SDH rate (155Mbps、622Mbps、2.5Gbps), the absolutely difference of standard  $< 0.5\%$

### Test wavelength:

- ✧ Multi-wavelength, from 850nm to 1610 nm(Depend on the SFP module )

### Output Pattern:

- ✧ PRBS: PRBS $2^7-1$ 、PRBS $2^{15}-1$ 、PRBS $2^{23}-1$  and PRBS $2^{31}-1$
- ✧ K28.5: Mixed frequency test pattern for testing deterministic jitter
- ✧ CRPAT: Compliant Random Pattern
- ✧ CJTPAT: Compliant Jitter Tolerance Pattern
- ✧ Other high-frequency and low-frequency test patterns

### Save mode:

- ✧ The current working mode will be saved when turned off
- ✧ Save 5 different modes, to avoid setting parameters repeatedly

### **SFP Channel:**

- ✧ Input/Output characteristics compliant with SFP Standard, reference SFP MSA
- ✧ SFP Supply Voltage(typical):  $3.3V \pm 5\%$ , Maximum current: 600mA, Output ripple:  $< 10mV$
- ✧ SFP Clock Output: Sync with Optical Output, Amplitude: Tunable, 250mV, 450mV or 600mV

### **CH1 Channel:**

- ✧ Input Signal Amplitude(Diff): 150mV~1600mV
- ✧ Input Impedance: Diff: 100 $\Omega$ , Single Ended: 50 $\Omega$ , AC coupled
- ✧ Output Signal Amplitude(Diff): Tunable, 500mV, 900mV or 1200mV
- ✧ Output Impedance: Diff: 100 $\Omega$ , Single Ended: 50 $\Omega$ , AC coupled
- ✧ Average Duty Cycle:  $50\% \pm 5\%$
- ✧ Clock Output: Sync with Data Output, Amplitude(Diff): Tunable, 500mV, 900mV or 1200mV
- ✧ Rise/Fall Time(20%~80%):  $< 100ps$
- ✧ Random Jitter:  $< 4ps$ , typical: 3ps
- ✧ Deterministic Jitter:  $< 30ps$ , typical:  $< 15ps$

### **CH2 Channel (Option):**

- ✧ High sensitive Signal Input Channel, Input Signal Amplitude(Diff):  $< 20mV \sim 1200mV$
- ✧ Input Impedance: Diff: 100 $\Omega$ , Single Ended: 50 $\Omega$ , AC coupled
- ✧ Output Signal Amplitude(Diff): 10mV~2V
- ✧ Output Impedance: Diff: 100 $\Omega$ , Single Ended: 50 $\Omega$ , AC coupled
- ✧ Average Duty Cycle:  $50\% \pm 5\%$
- ✧ Clock Output: Sync with Data Output, Amplitude(Diff): Tunable, 500mV, 900mV or 1200mV
- ✧ Rise/Fall Time(20%~80%):  $< 100ps$
- ✧ Random Jitter:  $< 5ps$ , typical: 3ps
- ✧ Deterministic Jitter:  $< 50ps$ , typical:  $< 30ps$

## USB Interface (Option):

- ✧ USB interface on the rear panel, E5020 could be controlled by PC for building Auto Test System. The driver of E5020 is supplied by INSTELENT.

## Keyboard:

- ✧ Keyboard on the front panel, 12 buttons to control E5020, several functions, such as, Menu Selection, Mode Set, Save, Recall, Run, Stop and so on.

## LCD and Indicators:

- ✧ LCD on the front panel, the resolution is 4x20, every character is 8x6 lattice. Backlight of the LCD could be turned on/off in the menu. The Menu, Mode, and Test Result are displayed on the LCD.
- ✧ Six indicator lights on the front panel, three of them indicate on/off of CH1, CH2 and SFP respectively, other two indicate TX\_FAULT and RX\_LOS of SFP, and the last one indicates RUNNING.

## Environmental Requirement:

- ✧ Operating Temperature: 0°C ~ +50°C
- ✧ Nonoperating Temperature: -55°C ~ +80°C
- ✧ Operating Humidity: 20% ~ 80%
- ✧ Nonoperating Humidity: 10% ~ 90%
- ✧ Power: 220V±20%, 50Hz±10%

## Dimensions:

- ✧ Length: 320 mm
- ✧ Width: 297 mm
- ✧ Height: 120 mm
- ✧ Net Weight: 7 kg

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