Anritsu

PRODUCT INTRODUCTION

MP1632C

Digital Data Analyzer

MEASUREMENT SOLUTIONS

ANRITSU CORPORATION

MP1632C Digital Data Analyzer

Product Introduction

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The MP1632C Digital Data Analyzer is a comprehensive digital signal analyzer that contains the clock source, pulse pattern generator (transmitter), and error detector (receiver) in a single compact and light-weight cabinet and can conduct waveform quality evaluations, such as eye margin measurement based on the error rate measurement.
A large screen and Graphical User Interface (GUI) are employed to make it easy to use the wide range of functions. In addition to the regular mouse operation, input is also possible using a touch screen, rotary encoder, or ten-key. A keyboard is also provided as an optional accessory.

MP1632C Front View

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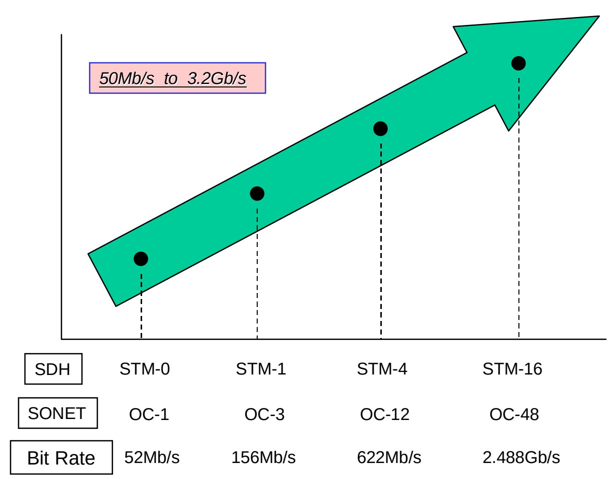
This shows the representative features of the many features available in the MP1632C.

Main Features

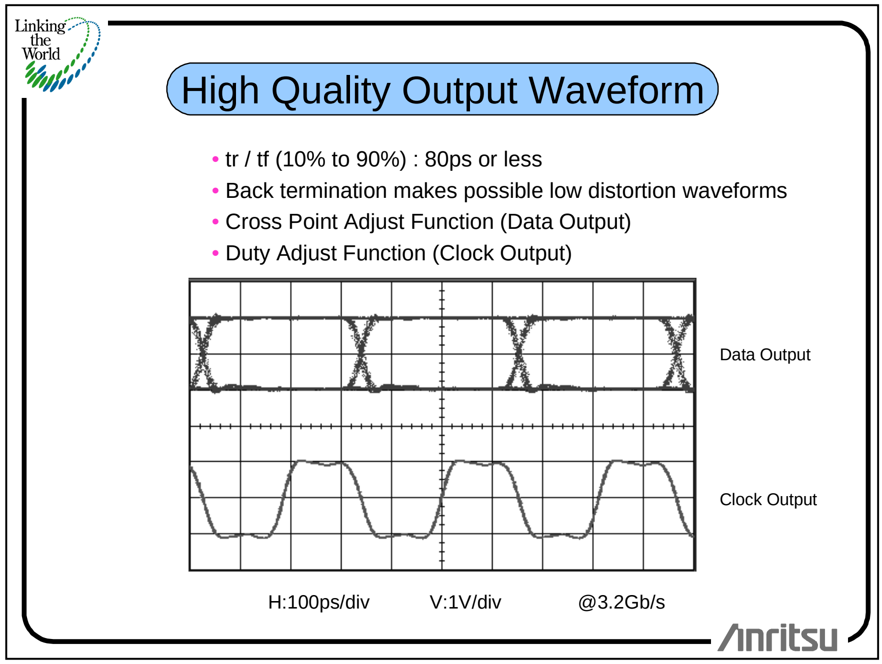
- Wide Band Area Operating Frequency (50MHz to 3.2GHz)
- High Quality Output Waveform
- One Box Contains Synthesizer, Pulse Pattern Generator, and Error Detector
- Burst Data Bit Error Measurement for Optical Circulating Loop Test
- Eye Margin and Eye Diagram Measurement
- LCD and GUI Make for Good Operability
- Wide Selection of Functions

The operation frequency when the built-in synthesizer is used is 50M to 3.2GHz, which makes possible wide band area signal error measurement and covers all of the major SDH and SONET bit rates. When an external clock is used, the lower limit can be expanded to 10MHz.

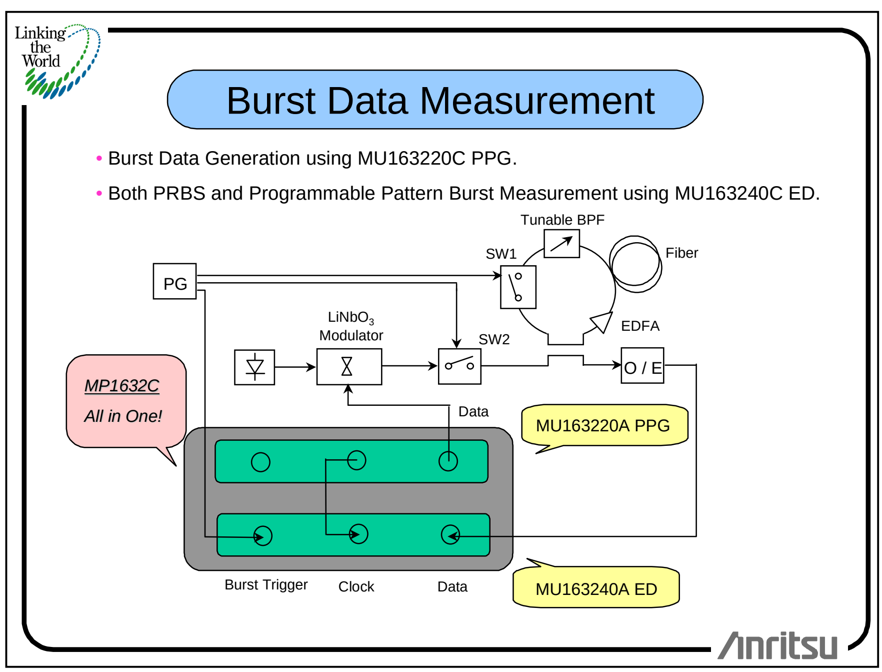
Wide Band Area Operating Frequency



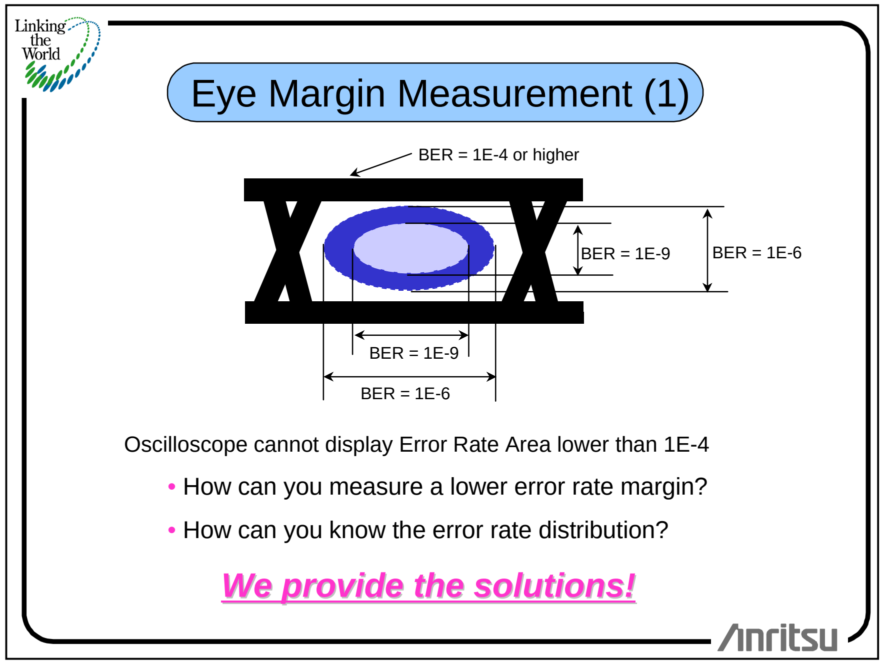
An output circuit with back termination reduces the waveform distortion caused by the connected DUT termination conditions like impedance mismatch. High-speed rising/falling time as well as a low-jitter waveform are also provided.



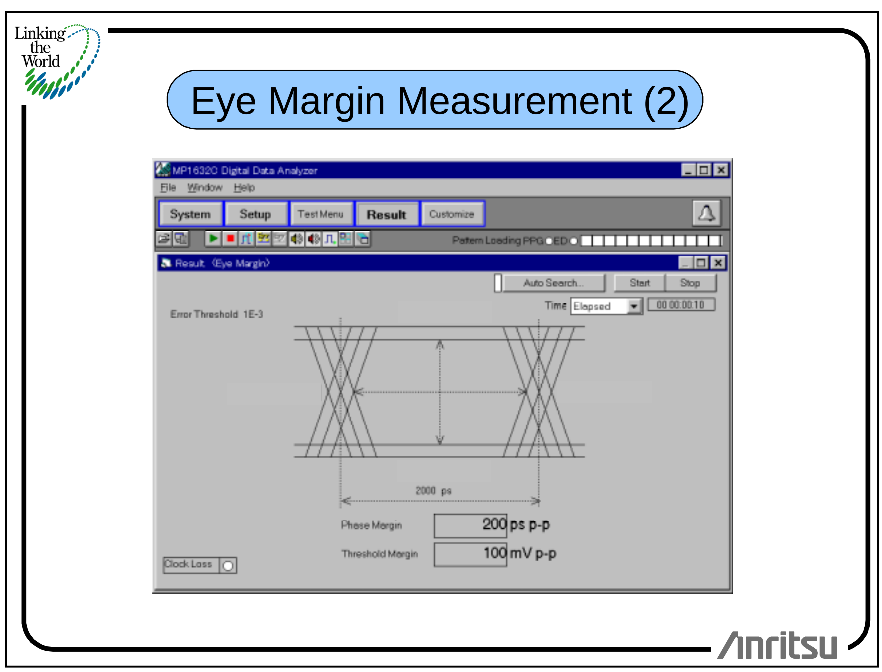
The MP1632C cannot only measure continuous data but can also measure burst data error. The burst data generation and measurement functions support optical circulation loop testing carried out at a development of the long distance optical transmission line.



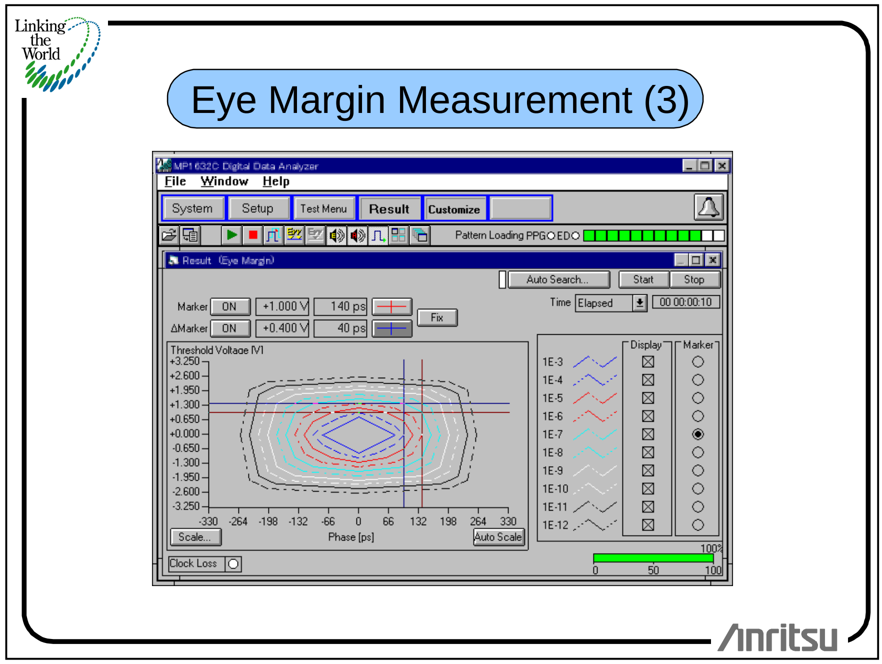
Eye margin measurement, which is used to evaluate input waveform quality, can conduct not only phase margin and threshold margin measurements but also eye diagram measurement which combines the first two parameters to find the two-dimensional eye opening. Unlike when using an oscilloscope to observe the waveform, this measurement shows the waveform(eye opening) based on the error existence and is considered to be a waveform quality evaluation method following the fundamental purpose of an error-free transmission. The error occurrence distribution in the waveform can also be checked because of this evaluation is based on the error existence.



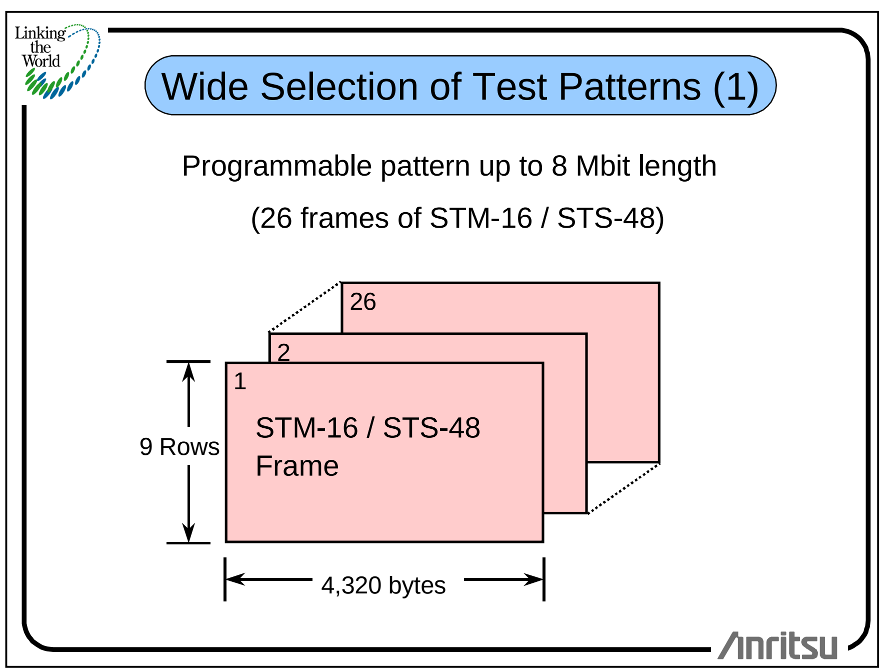
This is the phase margin and threshold margin measurement screen. These measurements check the extent of the phase margin and threshold margin that guarantees the previously defined error rate.



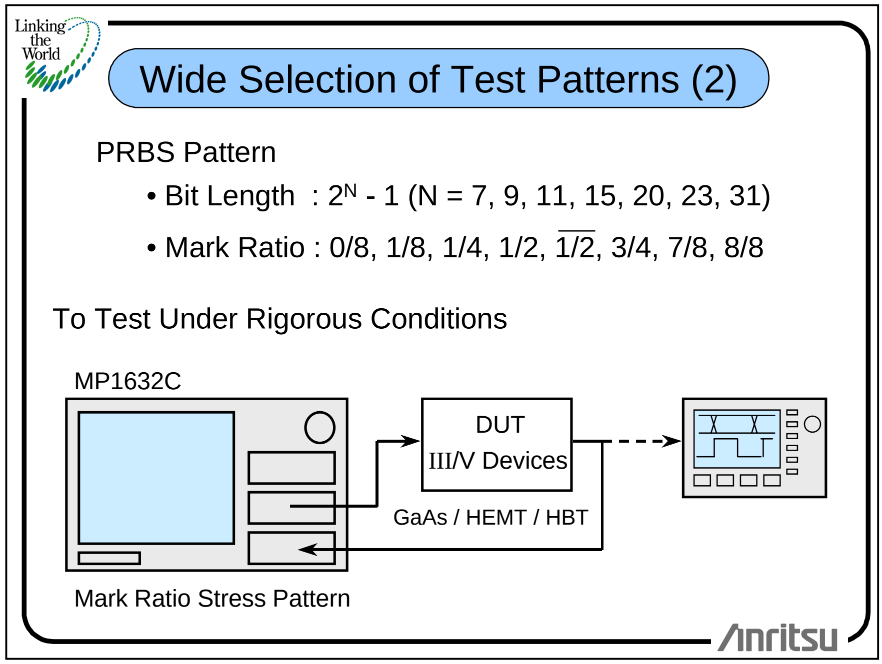
This is the eye diagram measurement display, the other eye margin evaluation method. The correlation between clock phase and the threshold level is shown two-dimensionaly based on the error detection. The size of the area means how wide the area which guarantees the previously defined error rate is. This drawing for each error rate is called an eye map or eye diagram.



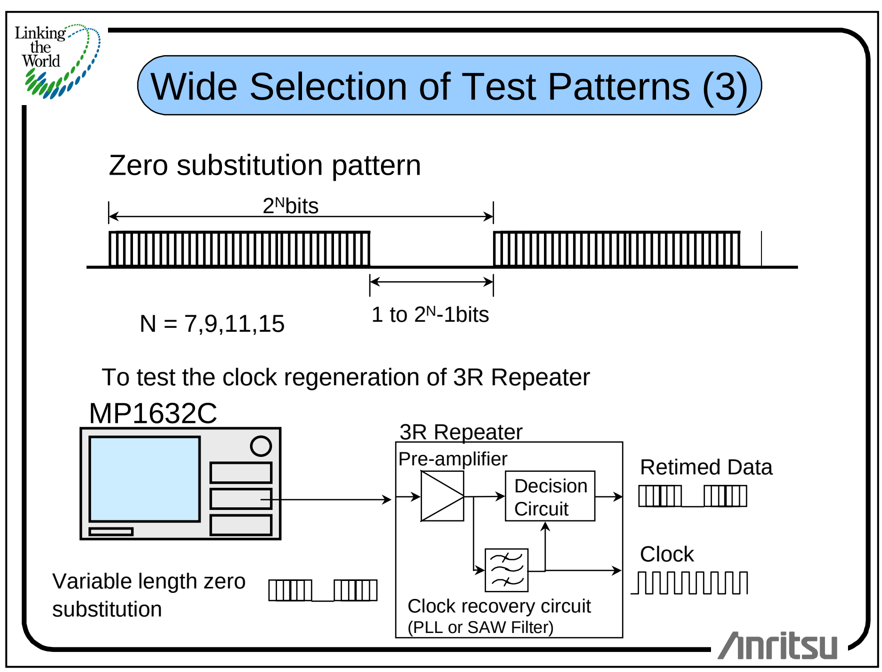
The generated test pattern contains a programmable pattern and a PRBS pattern.
For the programmable pattern, the maximum pattern length is 8M bits (8,388,608 bits), which is enough capacity to accommodate 26 frames of STM-16/STS-48 (8,087,040 bits).



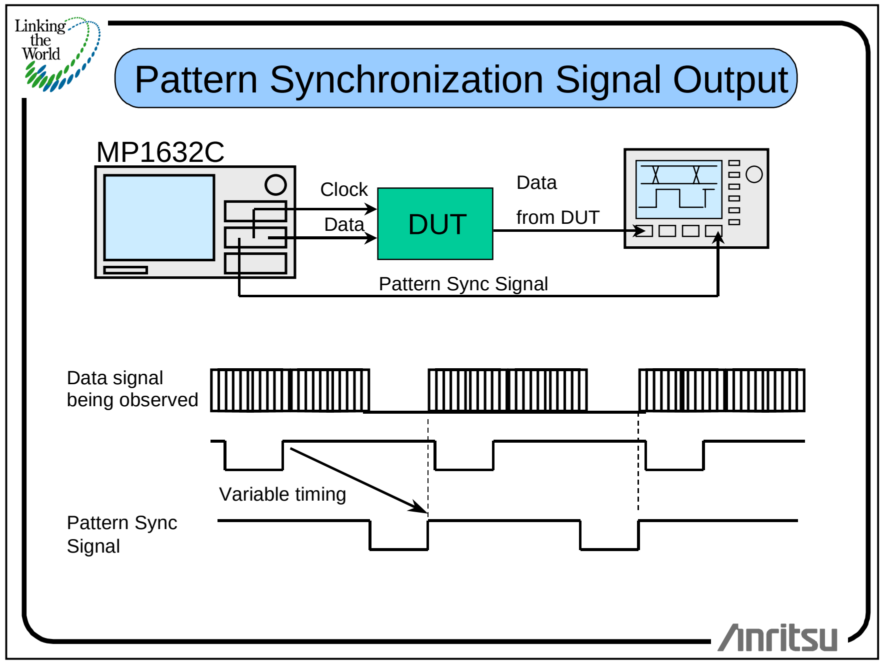
For the PRBS pattern, in addition to seven different PRBS bit lengths, each mark ratio of PRBS can be changed. This is useful for operation tests of devices that are affected by a variation of the mark ratio, such as GaAs (gallium arsenate) semiconductors.



The zero substitution pattern is a quasi PRBS pattern in which part of the pattern has been substituted with zeros. When the continuous zeros (or ones) become too long for the clock regeneration circuit, which regenerates clock signal from the data transition, the clock cannot be correctly regenerated. The zero substitution pattern is used to test the clock regeneration capability against continuous zeros of this sort in the clock regeneration circuit. MP1632C creates this pattern by using a programmable pattern with a bit length of 2^N.



When observing high-speed digital data using an oscilloscope, a trigger signal is commonly used. If this trigger signal is synchronized to the observed data pattern cycle, the actual pattern stream can be observed (the 1/0 change looks fixed). The portion of the pattern stream displayed on the screen varies according to the timing relationship between the data pattern and the pattern synchronous signal.
The MP1632C can vary this pattern synchronous signal timing to the observed pattern cycle in order to observe any portion of the pattern stream on the oscilloscope.



An error detector must have the capability to receive a variety of quality input signals. For example, the input sensitivity of the MP1632C gives it the high performance shown in the right. This is effective in monitoring split and attenuated signals by a high probe and for measuring errors.
And not just simple error measurement, but it differentiates between insertion error and omission error to measure them individually.

High performance Error Detector

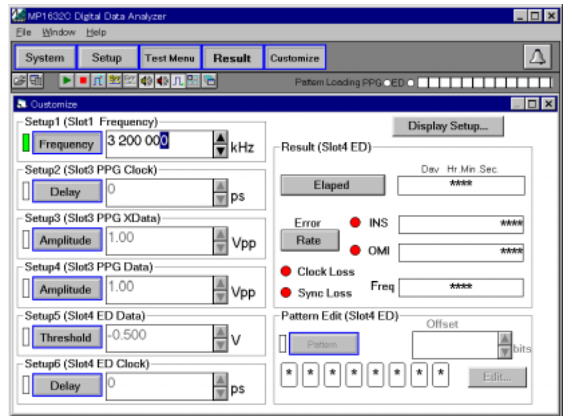
- High input sensitivity : 25mVp-p *
- Wide phase margin : 250ps *
- Simultaneous measurement of Insertion and Omission errors

*Typical Values at 3Gb/s, PRBS2^{23}-1

Of the parameters distributed throughout the various menu screens, only those that are required can be gathered into one customized screen and all of the parameters selected can be set or changed in a screen. This makes it possible to omit the screen changing operations and to easily check the mutual relationship between the parameters and the measurement results.

One key / One Parameter Settings

Customize Screen makes possible one key / one parameter setting operations



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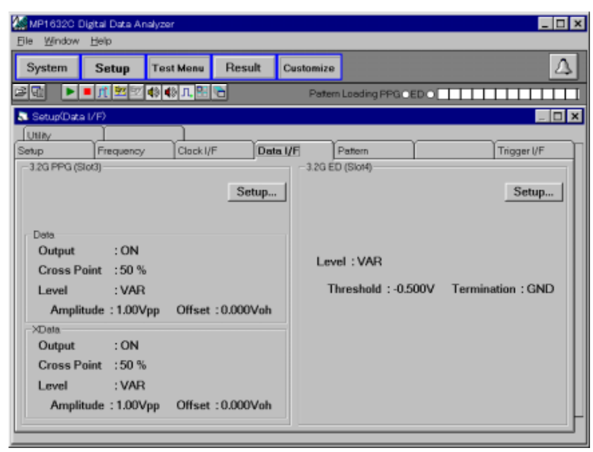
This is the data I/O interface screen. The settings are made at the following screen.

Data Interface Setup Screen (1)



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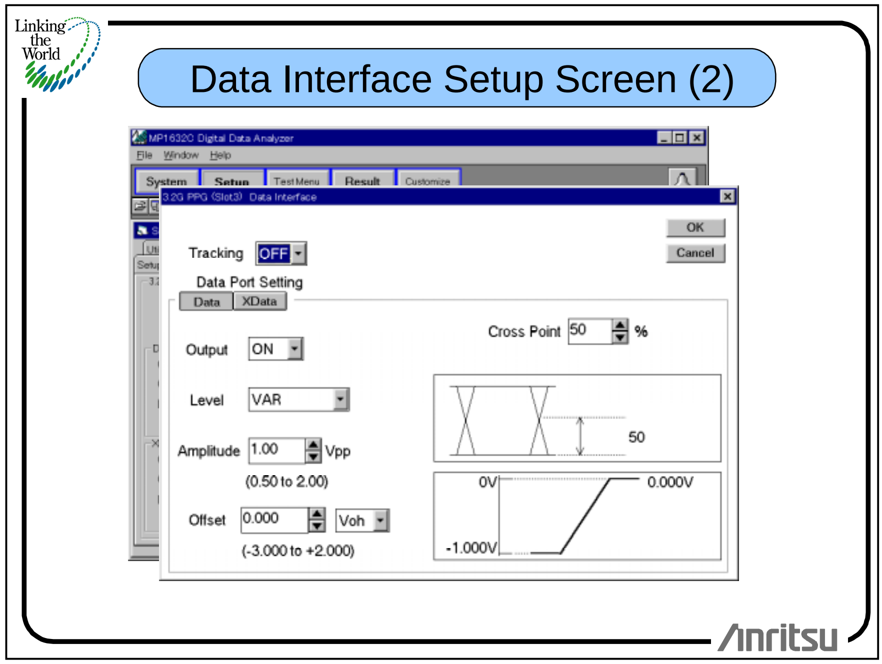
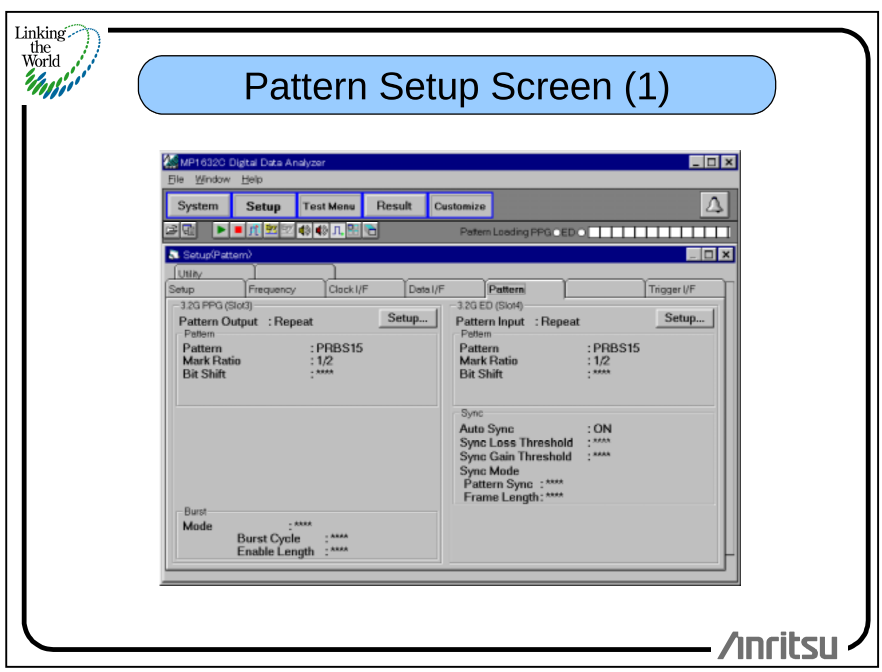
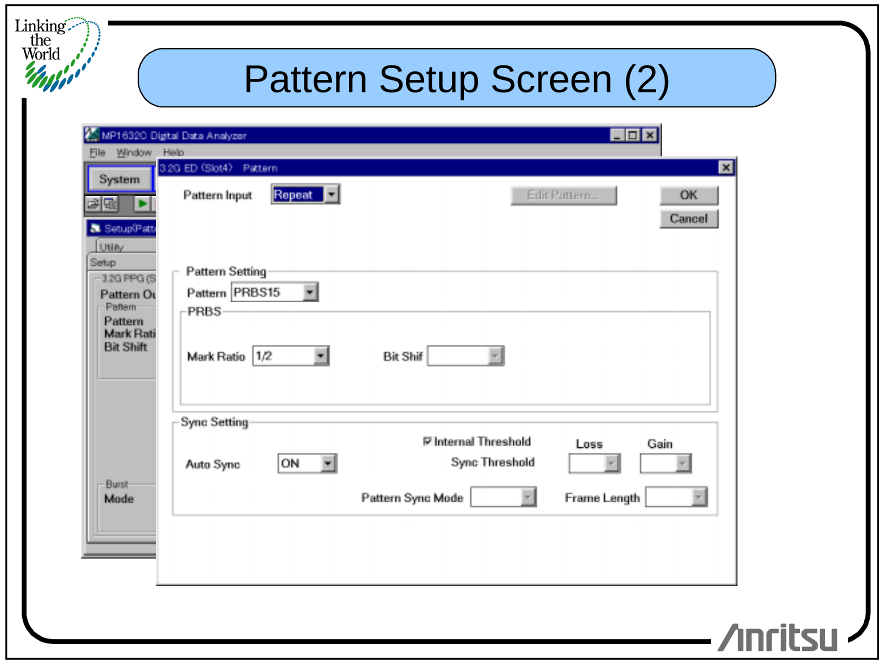
This is the data output settings screen. MP1632C provides two output data - Data and XData (reverse data), and each parameter can be individually set. In addition, the tracking function makes the Data and XData settings interlocked. Needless to say about variable amplitude and offset level setting capability, the output level can be set to the ECL level with one touch. And for the offset setting, the offset voltage display can be selected from high state, low state, or threshold (center) depending on the DUT. For the amplitude control, the amplitude changes based on the selected offset voltage.



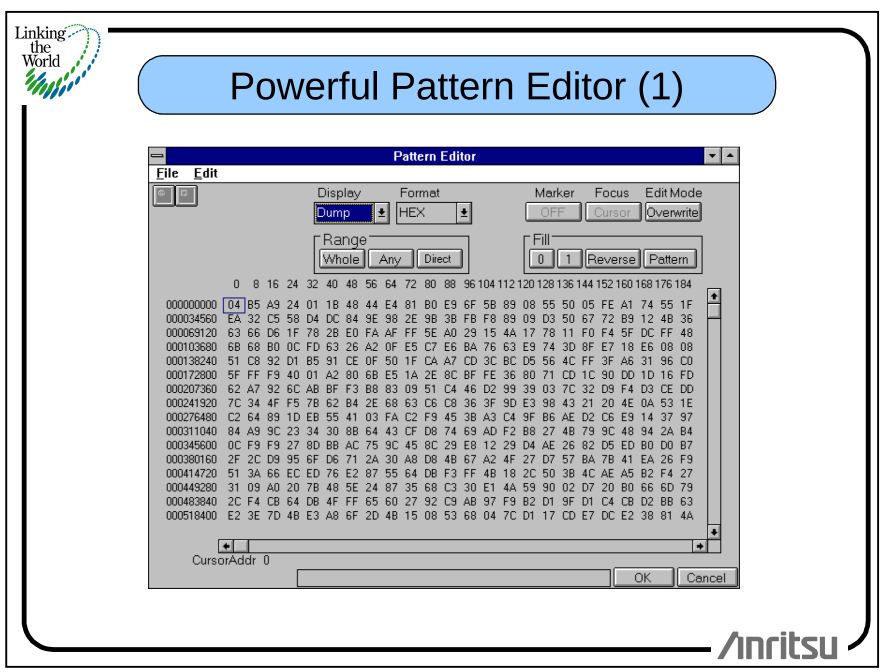
This is the test pattern display screen. The settings are made at the following screen.



At this screen, the test pattern (PRBS, programmable) is selected and the programmable pattern length is defined. The synchronous lead-in function settings are also made at this screen.

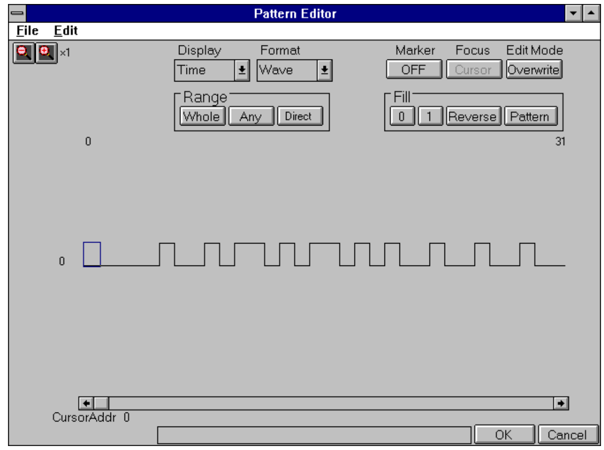


This is the Pattern Editor [Table] screen. At this screen the pattern is entered as a matrix. The numerical value display can be switched between binary and hexadecimal.



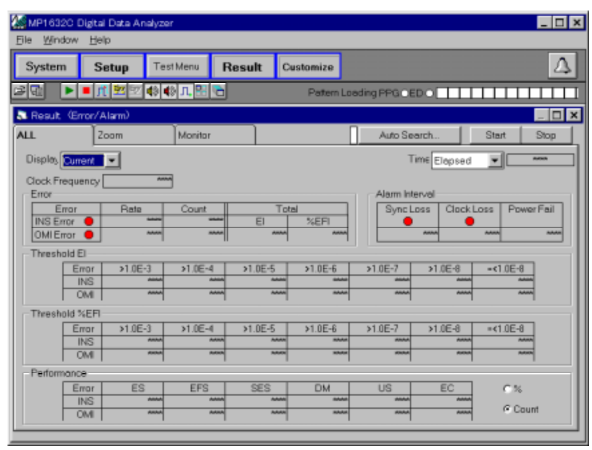
This is the Pattern Editor [Time] screen. At this screen the pattern is entered as a time series. The display can be switched between the waveform and the binary value.

Powerful Pattern Editor (2)



This is the measurement results [All] screen.
This screen shows all of the error and alarm measurement results. The display can be selected to show either the latest value during measurement or the final value at the end of measurement.

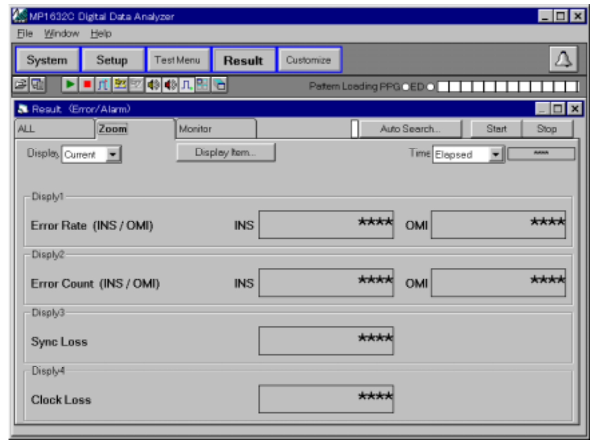
Measurement Results Display (1)



This is the measurement results [Zoom] screen.
Of all the error and alarm measurement results, this screen shows a zoom-in display of only the selected items. When all the items are not required, using this screen simplifies the results display, making it easy to read the measurement values. The display can be selected to show either the latest value during measurement or the final value at the end of measurement.

Linking the World

Measurement Results Display (2)



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Specifications are subject to change without notice.

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