

# Sampling Oscilloscope with Built-in Clock Recovery Unit

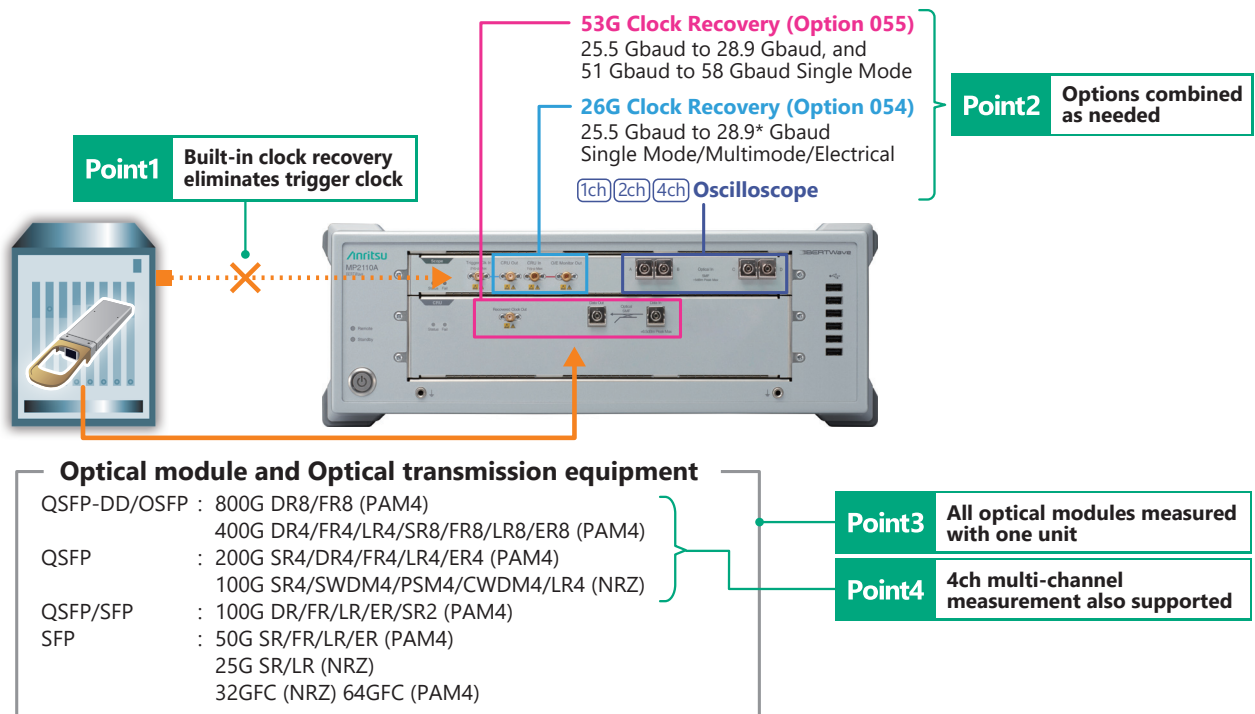
26G/53G Clock Recovery (SMF) MP2110A-055

26G Clock Recovery (SMF/MMF/Electrical) MP2110A-054

BERTWave™ MP2110A



Sampling oscilloscopes for signal waveform quality evaluation require a separate trigger clock signal synchronized with the data signal, but transmission equipment with built-in optical modules and 50G to 800G optical modules outputting PAM4 signals sometimes do not have a trigger signal. In this case, the trigger signal is generated from the data signal using clock recovery. This optional Clock Recovery Unit (CRU) can be installed in the BERTWave MP2110A Sampling Oscilloscope.



\*: Requires Option 059 with Option 054 when using 28.2 Gbaud to 28.9 Gbaud.

MP2110A Optical Module Measurement Solution using Clock Recovery Options

Two optional built-in clock recovery units are available according to the application. With both options installed, one unit can evaluate various types of optical modules without requiring a trigger signal. Moreover, multiple channels can be measured at once when used in combination with a 4ch oscilloscope.

## Features

### Excellent Operability at Lower Cost

Since this clock recovery is built-in, it offers excellent operability at a lower price. The space-saving design and reduced need for complex cable connections as well as the easy-to-use settings help cut initial capital costs.

### Wide Range of High-Performance Applications

The following clock recovery unit options are available:

- Option 055: Supports 25.5 Gbaud to 28.9 Gbaud & 51 Gbaud to 58 Gbaud single mode
- Option 054: Supports 25.5 Gbaud to 28.9 Gbaud single mode/multimode/electrical

These options can be combined freely to configure a flexible test system matching the site requirements at optimum cost.

When all options are installed, various types of 50G to 800G optical modules can be evaluated without a trigger signal using one MP2110A unit. In addition, combination with a 4ch oscilloscope supports all-at-once measurement using the recovered trigger signal to help cut evaluation times for multichannel optical modules.

### High Performance

When using high-sensitivity modules, the impact of insertion loss on the data waveform is minimized by optimizing internal division ratios, demonstrating its usefulness when monitoring signal waveforms requiring high sensitivity. Additionally, there is no waveform degradation due to multimode splitting because Option 054 performs signal splitting for input to the CRU and oscilloscope using electrical signals after O/E conversion.

### Target Applications

Evaluation of signal waveforms of optical modules and optical transmission equipment

- When unable to provide trigger signal: Optical modules, transmission equipment and switches with no Clock output
- When unable to use trigger signal: When monitoring signal of after long-distance transmission; when trigger signal quality is poor, etc.

### Typical Specifications

	Option 055	Option 054
Data Format	NRZ, PAM4	
Input	SMF 1260 nm to 1620 nm	SMF 1260 nm to 1650 nm*1 MMF 800 nm to 860 nm*1 Electrical
Data Rate, Recovered Clock Output Division Ratio	25.5 Gbaud to 28.9 Gbaud, 1/4 51 Gbaud to 58 Gbaud, 1/8	25.5 Gbaud to 28.9*2 Gbaud, 1/2
Input Sensitivity	Outer OMA 100 $\mu$ W (typ.)	10 mVp-p (typ.)
Jitter	200 fs rms (typ.)	250 fs rms (typ.)
Insertion Loss	1.5 dB (typ.)	1.5 dBo (typ.)
Loop Band	Select from 4 MHz, 10 MHz, and bit rate/1667	

\*1: Supports O/E conversion for optical Ch B.

\*2: Requires Option 059 with Option 054 when using 28.2 Gbaud to 28.9 Gbaud.

### Ordering Information

Please specify the model, name and quantity when ordering.

The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Model	Name
MP2110A-054*3	Clock Recovery (Electrical/Optical)
MP2110A-055	26G/53Gbaud Clock Recovery (SM Optical)
MP2110A-059*4	25G Clock Recovery Range Extension
MP2110A-154	Clock Recovery (Electrical/Optical) Retrofit
MP2110A-155	26G/53Gbaud Clock Recovery (SM Optical) Retrofit
MP2110A-359*4, *5	25G Clock Recovery Range Extension Retrofit

\*3: Option 054 can be installed only when the Sampling Oscilloscope is installed.

\*4: Option 059/359 can be ordered when Option 054 installed.

\*5: Option 359 can be ordered for serial numbers 6262201559 or larger.