Using an EXTERNAL Clock with the Yokogawa DL750 ScopeCorder
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The occasion may arise where a customer wishes to create a specific and custom acquisition duration, Time/Div, or custom Sample Rate. There may be occasions, too, when a customer may wish for complete control of the clock..

Using a high-performance function generator or the customer's custom external clock, these custom Time/Div and Sample Rates may be created. The max EXT CLK which the DL750 can accept is 1MHz.

The following two equations describe how the EXT CLK works with the DL750. In this example, we are using a 701251 1 MSa/sec Module. *Keep in mind the limitations of each module – providing a higher rate EXT CLK will not force the module to sample at a higher rate. For example, this module will not sample beyond 1 Msa/sec and will ignore a input rate EXT CLK above 1 MHz.*

$$Time / Div = \frac{\mathrm{Re}\,cord\_Length}{10 \bullet ExtClk}$$

$$Sample\_Rate = ExtClk$$

SOLUTION:
First, determine the desired Time/Div or Sample Rate.
Use the equations above to calculate the EXT Clock frequency.
Select the correct Record Length in the DL750 (ACQ menu).
Select Time Base = EXT (ACQ menu).
Input a square wave at calculated frequency into EXT CLK connector using an RCA jack adaptor at 5Vpeak TTL level (0 to 5Vpeak).
The DL750 does not display either the Sample Rate, or the Time/Div.
The Record Length, however, continues to be displayed at the top of the graticule and waveform display area.
It is required that an external clock source for the DL750 should have a pulse width of 400 nanoseconds, or more; and the *valid edge* is the *rising edge*.

See next page for example.

EXAMPLE:

In this case a customer wished to achieve a specific Time/Div of 1/190 seconds in order to display one exact full-cycle waveform of 19 Hertz across the ten time intervals on the DL750 display; the record length would also include one exact full-cycle. In this example, the customer was using a 701251 1 MSa/sec module. The Record Length which he chose was 10k.

$$Time/Div = \frac{Re\,cord\_Length}{10 \bullet ExtClk}, \text{ solving for ExtClk,}$$

$$ExtClk = \frac{Re\,cord\_Length}{10 * \frac{Time}{Div}}, \text{ and in this case, } ExtClk = \frac{Re\,cord\_Length}{10 * \frac{Time}{Div}} = \frac{10,000}{10 * \frac{1}{190}} = 190,000 \text{ Hertz.}$$

In this case, the sample rate is calculated as, $Sample\_Rate = ExtClk = 190 \text{ kSa/sec.}$

Driving the EXT CLK input with a 190 kHz external clock yields a Time/Div 1/190 sec/division. In the screenshot below, you will see one cycle of a 19 Hertz sine wave being displayed as an single, integral cycle.

19 Hertz Sine Wave sampled at 190 kSa/sec Time/Div = 1/190 second.