

Using the 585B/588B Pulse Counters for Single Pulse Measurement

The EIP 585B/588B pulse counters are designed to measure the frequency of repetitive pulsed signals, however if you know some information about your frequency, and the pulse is sufficiently wide it is possible to measure a single pulse.

The approximate frequency of the pulse (± 5 MHz) must be known, and the pulse must be wide enough to include the counter gate time $+50 \mu\text{s}$. For example, if the resolution is set to 1 MHz in band 2 the gate time is $1 \mu\text{s}$ and the minimum single pulse width is $1.05 \mu\text{s}$.

The general procedure is to prepare the counter ahead of time so it is ready when the pulse arrives. To do this you will need a signal that is within ± 5 MHz of the single pulse. See the equipment setup shown in Figure 1.

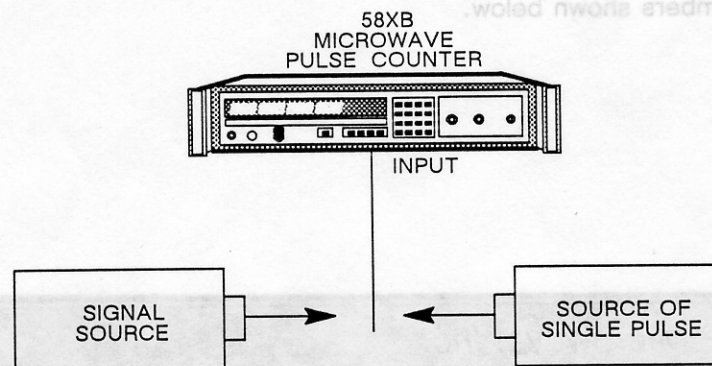


Figure 1. Equipment Setup

The procedure for measuring a single pulse is as follows:

1. Input a signal into the appropriate band of the 585B/588B, within ± 5 MHz of the single pulse frequency.

The counter should display the frequency.

2. On the 585B/588B select Special Function 61 to disable signal tracking and Special Function 63 to disable sample rate control. To do this, press the SPECIAL FUNC key, key 9 on the keyboard, followed by 61, and then the SPECIAL FUNC key followed by 63.

The counter should continue displaying the frequency.

3. On the 585B/588B set the MIN PRF (minimum pulse repetition frequency) to 0 HZ. To do this press the MIN PRF key, key 6 on the keyboard, followed by 0 and then the HZ terminator.

The counter should continue displaying the frequency.

4. On the 585B, place the counter in hold using the front panel sample rate control. Turn it fully clockwise, until it clicks into hold.

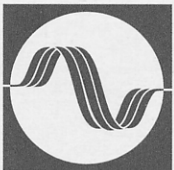
The gate light should go out, but the counter should continue displaying its last measurement.

5. At this point, with the signal still applied to the Band 2 Input on the 585B, the counter should flash the gate light every time you press the TRIG key, key 0 on the keyboard.
6. Disconnect the signal from the source and connect the non-recurring pulse into Band 2.
7. Press the TRIG key on the 585B to arm the counter. The gate light should come on, but the counter will not actually be counting. It is simply armed to count.

As soon as the pulse appears the counter will count it, display the results, and the gate light will go out. To arm the counter to make another measurement, press the TRIG key again. Each time you press the TRIG key the gate light should come on. As soon as the counter makes a measurement the gate light should go out.

The above approach describes how the EIP 585B/588B pulse counters, primarily designed for measuring repetitive pulsed signals, can be used for measuring single pulses. Using the above method we have counted single pulses as narrow as $1.03 \mu\text{s}$.

For more information about these, or other EIP products, contact your nearest EIP sales representative or contact us at the numbers shown below.



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