



The HEATH IB-102 PRESCALER

With the greatly increased activity on 6 and 2m FM the average ham is in dire need of a means for frequency measurement above 30 MHz. The Heath Company had a nice 15 MHz counter (the IB-101) well within the normal ham's equipment budget. But a method or device was needed to allow their 15 MHz counter to measure to better than 150 MHz. To fill this need Heath introduced the IB-102 prescaler. This unit will take a 150 MHz signal and divide it by 10 and thus allow the counter to read it as a 15 MHz signal.

The Heath IB-102 prescaler is enclosed in the same attractive case as their counter. The unit is all solid state of course, using both FET and bipolar transistors plus TTL integrated circuits. With Heath's excellent instructions and assembly manual the kit goes together in four or five evenings of work.

The 50 Ω input to the IB-102 is fed to a broad band amplifier. This amplifier in turn feeds an IC that functions both as a trigger circuit and as a level translator to get the input signal to the proper TTL switching

levels. The output of the trigger circuit is fed to a second IC that provides a divide by 2 function. The divide by 2 stage is followed by an IC divide by 5 stage for a total division of 10. An additional IC decode (divide by 10) stage can be switched in to give a divide by 100 as well as a divide by 10 function. The output from the various divide stages is fed to an output buffer amplifier. This gives the proper impedance transformation from the relatively low impedance used in the ICs to a high impedance output that will match the high impedance input of a frequency counter. Provisions are also made to operate the scaler "straight-through" when the divide by 1 function is selected.

The Heath IB-102 offers several important features not found on any of the other prescalers offered on the ham market.

First: It has an input level meter so that you know that the prescaler has an adequate input signal level for proper operation. No more do you have to adjust the input coupling to the prescaler and see if your counter reading changes. The meter tells you the whole story.

Second: The IB-102 has an input sensitivity control on the front panel so you can adjust the input broadband amplifier gain to keep the input level meter in the green area. There is even an input test button on the front panel. If you push it (with a signal applied to the prescaler) and the input meter stays the same, you have enough input gain. If the meter level changes you need to adjust the input gain control or provide more input to the prescaler.

Third: The IB-102 is the only prescaler to have a divide by 100 function. This doesn't

mean much to you if you have a 15MHz counter and thus can use the divide by 10 function to read 2 meter signals. BUT if you are one of those who has one of those surplus 2 MHz or 10 MHz counters from MARS, the divide by 100 function saves the day — you too can read 2 meter signals. True, you lose a significant figure on the right and thus only read to the nearest 100 Hz with a 1 second gate time. But on most of those counters you also have a 10 second gate time. By using 10 second, you regain your lost digit and read to the nearest 10 Hz!

The input sensitivity for 2 meter work is excellent. A 90° right angle BNC connector was put on the input jack. A little 19 inch whip antenna was fitted to a male BNC connector and that in turn was plugged in the right angle connector. Now the prescaler was all set with a 1/4 wave 2 meter vertical antenna. No trouble was encountered in getting the input meter "in the green" and good counter readings from a 2W hand-held 2 meter transceiver across the room. Even mobiles pulling up in the driveway 15 feet away could be read.

Once again the Heath Company has seen the ham's need and has zeroed in on the problem. Result: a new product that exactly fills the need and is less than \$100. That's a hard act to follow. The IB-102 is a most satisfactory piece of test gear and should be a companion to the counter in your lab. It lets you accurately measure frequencies that you could only guess about before. With the IB-102 available, there's no excuse for being off frequency whether it be on FM or moonbounce or one of the MARS VHF channels.

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