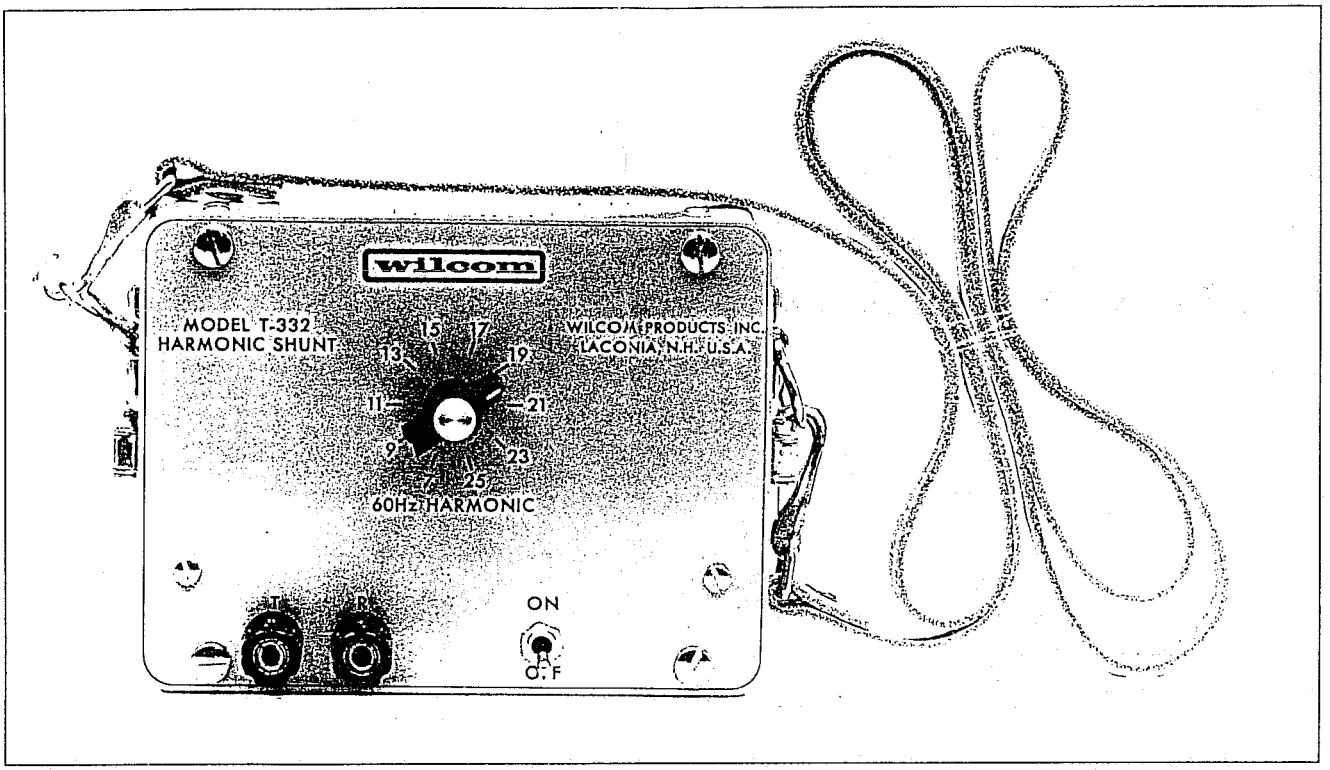
harmonic shunt

T332



Features

- Provides a means of identifying the predominant odd harmonics of 60 Hz in the noise spectrum from 420 to 1500 Hz.
- Provides a means of determining the effect of these harmonics on the overall circuit noise measurement.
- Can be used with any C-Message Weighted Noise Measuring Set.
- Can be used with CCS105 Exploring Coil in combination with a Noise Measuring Set.
- Lightweight, rugged construction.
- Passive device - no batteries required.

Description

The Model T332 Harmonic Shunt is designed to facilitate measuring the effect on the overall circuit noise of the odd harmonics of 60 Hz in the inductive noise spectrum from 420 to 1500 Hz (7th through the 25th harmonic). Experience has indicated that in today's 60 Hz magnetic induction environment these are the most frequently encountered harmonics. Usually one or two of these harmonics are the dominant factor in the noise-to-ground or power influence measured by a C-Message Weighted Noise Measuring Set. If these predominant or controlling harmonics can be identified, measures can be taken in the power system to reduce them. This will cause the noise-to-ground induced into the telephone plant to be reduced.

The operation of the harmonic shunt is the inverse of the operation of a spectrum analyzer. A spectrum analyzer measures the level of each harmonic in the noise frequency spectrum in dBrnc. These harmonic levels can then be summed on a power ratio basis by computation and the contribution of each harmonic to the total noise level determined.

The harmonic shunt, on the other hand, when used in conjunction with a C-Message Weighted Noise Measuring Set rejects the particular harmonic to which its harmonic control switch is set. The noise measuring set then reads the effect of removing that harmonic on the overall measured noise. No computation is required to get the answer.

The harmonic shunt is in no way designed to replace the spectrum analyzer which is a more complex, precision insturment. The shunt is used to advantage, on relatively simple noise problems, by personnel who are not trained in inductive coordination work. Due to its relatively low cost it can be supplied to smaller maintenance areas where the

cost of a spectrum analyzer is not justified. Its use in these areas can provide data that will be of value to inductive coordination groups and help eliminate some of their required field trips.

The harmonic shunt is a passive device that is connected to the tip and ring input terminals of the noise measuring set. When the ON-OFF switch is set in the OFF position, no loss is caused in the circuit noise or noise metallic reading of the measuring set. When the switch is operated to ON and the HARMONIC switch is rotated to the various harmonic settings only a small reduction, usually less than 1 dB is noted in the noise measuring set reading until a predominant harmonic is reached. If the level of a harmonic, from the 7th through the 17th, is 10 dB or more above the power sum of all other harmonics, selection of this harmonic by the HARMONIC switch will reduce it by at least 10 dB and the total combined reading of the meter by at least 7 dB. If two harmonics are predominant or controlling, and are of equal level, the meter reading of the noise measuring set will be reduced by 2 to 3 dB when the HARMONIC switch is set on either of these harmonics. It is not practical to determine the relative level of more than 2 harmonics. The T332 Harmonic Shunt may also be used in combination with the CCS105 Exploring Coil and a noise measuring set to provide an estimate of the location, magnitude and frequency of the interference.

It is desirable in any noise investigation to have a means of recording the variations in the noise level being investigated relative to the time-of-day. This can be accomplished easily by the use of the T132B Spectrum Analyzer tuned to the harmonic of interest, its output driving a strip of x-y recorder. This, of course, ties up the T132B preventing its use in running down the source or sources of the harmonic. As a second T132B is not always readily available, the T332 Harmonic Shunt provides a lightweight, low cost and readily portable means of sectionalizing sources of harmonics in a power system when used with the T132B or T132EZ Circuit Test Set and the CCS105 Exploring Coil.

Specifications

Provides over 10 dB attenuation selectively to any odd harmonic of 60 Hz from the 7th through the 17th; 8 dB to any odd harmonic from the 19th through the 25th.

Dimensions: 3 7/8" H x 5 3/8" W x 3 5/8" D including cover.

Weight: 2 lbs.

wilcom

A Subsidiary of North Atlantic Industries, Inc.

Daniel Webster Highway
Laconia, NH 03246
Tel: 603-524-2622
800-222-1898
Fax: 603-524-3735

Specifications and prices are subject to change without notice.
6/92
06812628, Issue 1