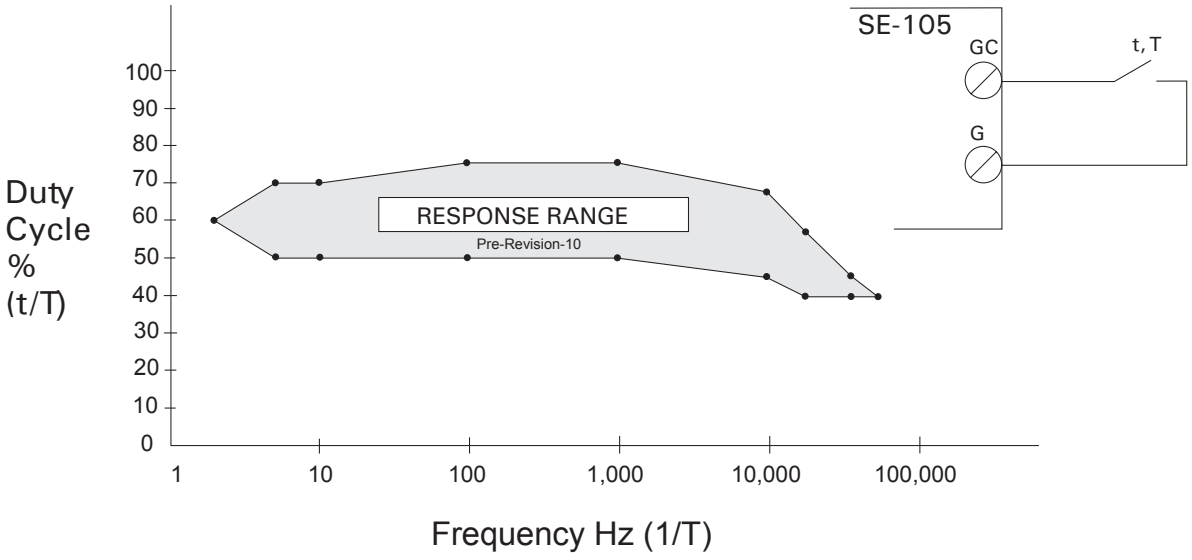
SE-105 & SE-107 GROUND-CHECK TERMINATION AND FREQUENCY RESPONSE

The SE-105/SE-107 ground-check circuit has a 12-Vdc open-circuit voltage at terminals GC and G, and an output resistance that switches from a high value to a low value during ground-check-loop validation. Ground-check-loop voltage must be within the correct range at both output-resistance values for the SE-105/SE-107 to recognize the loop as valid. The circuit cannot be validated when an active chopper operates in the ground-check loop.[1]

When a 5.6-V Zener termination[2] completes the ground-check loop, 27 mA of sensing current will flow when there is zero resistance in the loop. If sensing current increases above 37 mA, the SE-105/SE-107 ground-check circuit recognizes a shorted-loop condition and trips. Similarly, the SE-105/SE-107 ground-check circuit recognizes an open-loop condition and will trip when loop resistance is more than 50 ohms and sensing current is below 22 mA. This acceptable-current window translates into an acceptable-voltage window of 3.1 to 6.7 Vdc. Any termination that keeps the voltage between terminals GC and G in the 3.1- to 6.7-Vdc range when the SE-105/SE-107 output resistance switches between high and low is a valid completion. A 3.1-V Zener to 6.7-V Zener is the only passive characteristic that can satisfy this condition. However, a 3.1- to 6.7-V battery connected between terminals G and GC can also validate the ground-check circuit.

SE-105 and SE-107 monitors manufactured prior to hardware-revision levels 10 and 02, respectively, did not feature ground-check-circuit chopper filtering. For those units, a chopper with a duty cycle (t/T) between 26% ((3.1/12)x100%) and 56% ((6.7/12)x100%) will produce an average 3.1- to 6.7-Vdc voltage between open terminals GC and G. They will respond to a frequency between 2 Hz and 50 kHz as shown in the following graph. Where a chopper-filtering (hacksaw-filtering) characteristic is required, use a new-revision unit.



[1] It is possible that induced-ac voltage from a parallel power cable will prevent loop validation.

[2] 1N5339B, SE-TA6, SE-TA6-SM, SE-TA6A, SE-TA6A-WL, SE-TA6ASF or SE-TA6ASF-WL.

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