the detection frequency is below 200 Hz and 100 s is the time constant and the frequency increases above 200 Hz, the time constant WILL change to 30 s. Decreasing the frequency back below 200 Hz will NOT change the time constant back to 100 s.

The absolute minimum time constant is 10 µs. The actual minimum time constant depends upon the filter slope and the DC gain in the low pass filter (dynamic reserve plus expand). The minimum time constant is only restricted if the dynamic reserve plus expand is high and the filter slope is low - not a normal operating situation. The tables below list the minimum time constants for the different filter slopes and gains.

6 dB/oct	DC gain (dB)	min time constant
	<45	10 µs
	<55	30 µs
	<65	100 µs
	<75	300 µs
	<85	1 ms
	<95	3 ms
	<105	10 ms
	<115	30 ms
	<125	100 ms
	<135	300 ms
	<145	1 s
	<155	3 s
	<165	10 s
	<175	30 s

12 dB/oct	DC gain (dB)	min time constant
	<55	10 µs
	<75	30 µs
	<95	100 µs
	<115	300 µs
	<135	1 ms
	<155	3 ms
	<175	10 ms

18 dB/oct	DC gain (dB)	min time constant
	<62	10 µs
	<92	30 µs
	<122	100 µs
	<152	300 µs
	<182	1 ms

24 dB/oct	DC gain (dB)	min time constant
	<72	10 µs
	<112	30 µs
	<152	100 µs
	<182	300 µs

To use these tables, choose the correct table for the filter slope in use. Calculate the DC gain by adding the reserve to the expand (expressed in dB). Find the smallest DC gain entry which is larger than the gain in use.