



## Specification For The MSB Design Ringing Generator RG1-c

### Introduction

When installing multiple telephones or extension bells, there is a limit to the number that can be used, due to the ringing capacity of the telephone line. Each apparatus has a REN number, usually of value 1, that when totalled up should not exceed the capacity limit. In the UK this is approximately 6. In order to ring more than this, the ringing voltage has to be regenerated locally, and this is the function of the MSB Design Ringing Generator RG1-c.

The RG1-c is a sine-wave generator with an output of approx. 65v rms at 25Hz. It has a current capability to drive up to six high-impedance extension bells, ( the old type 4kohm bells ) or the same or a greater number of modern tone callers, as found in extension buzzers or standard telephone handsets. I say "the same or a greater number" because tone callers are notoriously incompatible with each other, and in some instances putting several of a different make in parallel will only allow some of them to ring. This situation is sometimes experienced when installing several different telephone handsets in parallel so is not a function of the RG1-c. Nonetheless, in normal circumstances the RG1-c will ring in excess of 6 tone callers.

In addition to this, if even more capacity is required, then because the output voltage is within its input range, more than one RG1-c can be cascaded, to give a potential infinite capacity.

### Application

The unit has four possible modes of operation, as follows :-

- 1) Ringing enabled by application of a dc voltage to the input terminal. The unit will output ringing voltage for as long as the signal is applied.
- 2) Ringing enabled by application of an ac voltage to the input terminal. The unit will output ringing voltage for as long as the signal is applied.
- 3) Ringing enabled by the mechanical connection of the +15v output to the input terminal. If a switch or a relay are used to connect the +15v terminal to the enable terminal, then the unit will output ringing voltage for as long as the contacts are closed.
- 4) Ringing enabled and self-cadenced by application of a dc voltage to the input terminal or connecting the +15v output to the input terminal, AND selecting the self-cadence jumper option.

The output will withstand an indefinite short-circuit of the output terminals with no damaging effect. In addition, the unit can ring continuously without problems. In a continuous ringing installation it is assumed that the units output will be switched to the bells / tone callers as required, and this can be achieved by connecting the units to the load via a mechanical switch or relay, and enabling these contacts as necessary.

## Installation Instructions

Installation is quite straightforward and you will see that the unit can be used in various situations. In the instructions the following terms are used :-

<b>ENABLE INPUT</b>	in order to make the unit generate an output the enable input must have a voltage applied to it.
<b>CADENCE</b>	the cadence is the name used for the pattern of ON and OFF of the ringing output.
<b>JUMPERS</b>	these are the two small plastic shorting links that sit on the 6 pin connector on the edge of the PCB.

### Installation

Mount the unit at a convenient location where there is access to both the telephone lines and a mains supply. The unit is suitable for wall mounting via the holes in the base unit. Mains is connected to the 2-way screw terminal block at the rear of the PCB. An earth connection is not needed as the enclosure is non-conducting.

The telephone system connection is by way of the 4 way IDT connector, and the connections are as follows :-

r1 = generator output  
r2 = 0v  
r3 = 15v dc o/p  
r4 = enable input

The way the unit is connected will depend on the installation requirements, but generally the unit's output ( r1 & r2 ) will connect to the extra bells or telephones, and the enable input ( r4 ) will be connected to the enabling signal, be it incoming ringing or a switch closure. Note that if the input is dc then the positive side should go to the input. In the case of a switch or relay closure as enable then the contacts are used to connect the 15v dc ( r3 ) to the enable input ( r4 ).

Once installed the two on-PCB jumpers must be set, and this is also detailed overleaf. In summary, if the enable input is incoming ringing then the first jumper is set to position 'a'. If the enable is a dc signal then the first jumper is set to position 'b'. If the ringing cadence is to follow the input then the second jumper is set to position 'c'. If the enable signal is constant and you want the unit to self-cadence then the second jumper is set to position 'd'.

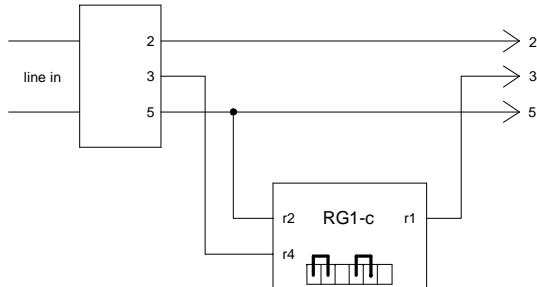
Once the unit is mounted, connected to the mains, and the IDT connections are made, the installation is complete

## Specification

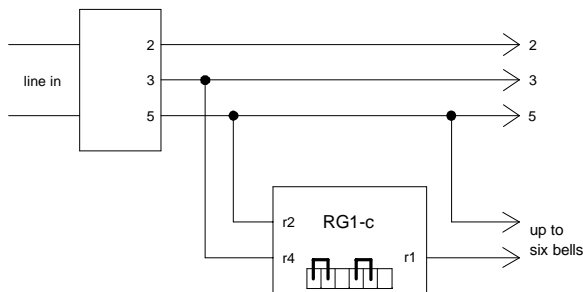
enclosure	white vacuum formed ABS box
dimensions	105mm x 150mm x 45mm
supply voltage	240v ac @ 50Hz
power consumption	quiescent = 1.7 VA full load = 4 VA
output voltage	65v rms nominal sinewave
output frequency	25 Hz
control input	dc 1.5v to 140v ac 23v to 100v rms @ 14 to 50Hz relay or similar contacts
cadence option	follow control input self-cadence 1S on, 2S off
input impedance	normal = >36k ohms self-cadence = >10k ohms
short circuit	indefinite

## Installation Examples

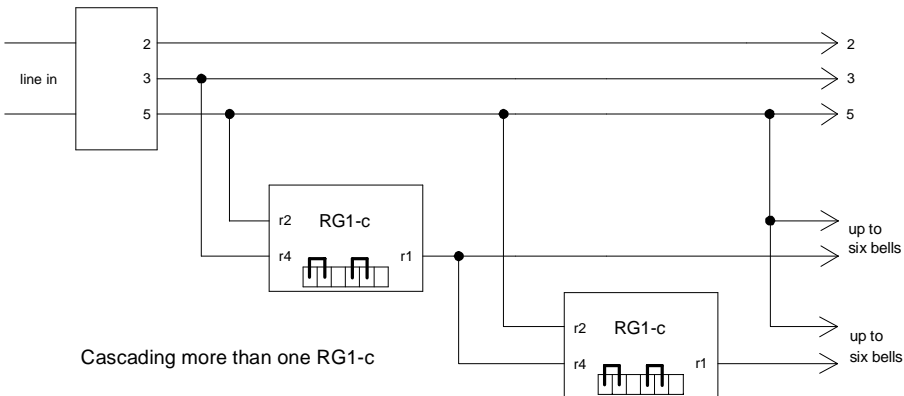
Here are four example applications. The first shows a standard configuration, the second shows how to add to the capacity of your line, the third shows how to increase this capacity even more by cascading two RG1-cs, and the fourth shows how to enable the unit via an external switch or relay. That last example has been set up for self cadencing, but it could easily be set to allow ringing to follow the external contacts by setting the jumpers to the positions shown in the previous circuits.



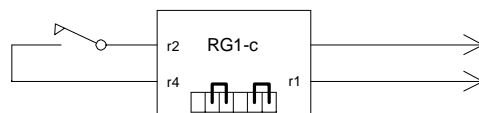
A normal connection, with the RG1-c providing the ringing capacity instead of the usual system



The RG1-c providing extra ringing capacity in addition to the usual system



Cascading more than one RG1-c



Enabling the RG1-c from a switch or relay closure. The jumpers are configured for the unit to self-cadence with a continuous input.