

# TELEPHONE TROUBLESHOOTING GUIDE: PARTY-LINED TELEPHONES APPEAR OFF-HOOK

Summary	
<b>News Type</b>	Engineering Note
<b>Purpose</b>	To provide a troubleshooting guide for users of Ampcontrol's Telephone range that are experiencing issues with party-lined telephones appearing off-hook when they have been confirmed to be on-hook.
<b>Product Range</b>	IS2000 Telephones & VoiceCom Phones
<b>Target Audience</b>	Electrical Engineering Managers of Sites with Party-Lined Telephone Installations
<b>Date of Issue</b>	6 <sup>th</sup> July 2015

## OVERVIEW

This document will provide a troubleshooting guide for users of the Ampcontrol IS2000 Telephone and VoiceCom Phone range of products that are experiencing false off hooks in their party-line installed telephones.

The factors that need to be considered when attempting to troubleshoot this issue are: the critical operational values for the telephone system, the type of cable used for the installation, whether there is any defective equipment and whether there are any earth leakage currents affecting the installation.

## RELEVANT PART NUMBERS

Part Number	Range	Description
159133	IS2000 Telephone	TELEPHONE IS 2000 H AVA
159134	IS2000 Telephone	TELEPHONE IS 2000 H AVA PTT
159135	IS2000 Telephone	TELEPHONE IS 2000 D AVA
159136	IS2000 Telephone	TELEPHONE IS 2000 D AVA PTT
169890	VoiceCom Telephone	TELEPHONE VCOM
169893	VoiceCom Telephone	TELEPHONE VCOM PTT
142036	IS2000 & VoiceCom	AUTO AUTO LINK V6 NO BARRIER

## CRITICAL OPERATIONAL VALUES FOR TELEPHONE SYSTEMS

The critical operating values for the two types of Ampcontrol Telephone systems are as per the below tables. Both the IS2000 Telephone System and the VoiceCom Phone system are compatible with the same Auto Card.

	IS2000 Telephone	VoiceCom Phone
<b>On-Hook Current</b>	0mA	350µA
<b>Off-Hook Current</b>	4.5mA minimum	3.5mA minimum
<b>On-Hook Voltage</b>	24VDC	Depends on Cable
<b>Off-Hook Voltage</b>	7.5V minimum	5.5V minimum

	Auto Card
<b>Off-Hook Detect Current</b>	2mA nominal
<b>Output Voltage</b>	24VDC approx.
<b>Current Draw</b>	60mA approx.

## NORMAL OPERATION

During normal operating conditions, the Ampcontrol range of Telephones detects the position of the handset by measuring the current that is drawn from the Auto Card. When this current rises above the threshold, a handset is recognised as “off hook”.

The key parameters for this operation are the Auto Card “off-hook” detection current (2mA) and the “on-hook” current draw of the two types of telephone: the IS2000 Telephone (0mA) and the VoiceCom Phone (350µA).

Ampcontrol recommends that the maximum number of telephones to be installed in a party-line configuration is three. For the VoiceCom Phone, this results in an “on-hook” current draw of approximately 1mA (3x350µA). This current draw is approximately 50% of the nominal “off-hook” current detection threshold.

## POTENTIAL ROOT CAUSE OF ISSUE

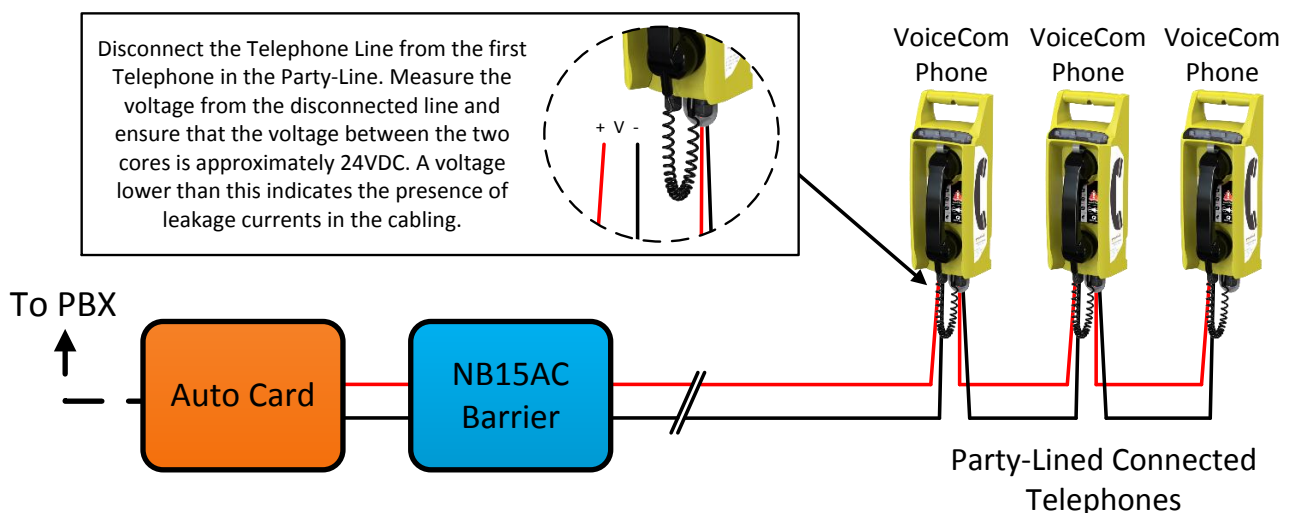
If the Auto Card is detecting that handsets are “off hook” when they have been confirmed to be “on hook”, then the following scenarios are possible:

1. The Auto Card off-hook current detect threshold is too low (i.e. a defective Auto Card). The Auto Card should have a nominal “off-hook” current threshold of 2mA. If the Auto Card is defective, this current threshold may be lower, approaching that of the normal “on-hook” current draw of a party-line VoiceCom Phone installation.
2. There is earth leakage current on the cable, either between cores or from one of the cores to earth.

## ISOLATING THE ROOT CAUSE

In order to isolate the root cause of the handsets of the party-lined telephones appearing off-hook, follow this procedure:

1. Go to the first telephone on the party line circuit.
2. Disconnect this phone from the line. Note that the VoiceCom Phone draws current while the handset is on-hook. This means that the voltage that appears at the terminals of the VoiceCom Phone is indeterminate when the line cables are connected.
3. Measure the voltage between the two line cables at this point (see insert below).
4. If the measured voltage at this point is lower than the 24VDC, then this indicates that there is leakage current in the line.
5. If the voltage is stable at 24VDC, then it is probable that the Auto Card is defective.



## FIND OUT MORE

For more information on this product, contact Ampcontrol Customer Service on +61 1300 267 373 or [customerservice@ampcontrolgroup.com](mailto:customerservice@ampcontrolgroup.com) or visit the Ampcontrol website: [www.ampcontrolgroup.com](http://www.ampcontrolgroup.com)

## DISCLAIMER

While every effort has been made to assure the accuracy of this document at the date of issue, Ampcontrol assumes no liability resulting from any omissions or errors in this document, and reserves the right to revise content at any time.