

Troubleshooting Intermittent TCB-2 Issues

Occasionally our repair department receives a TCB-2 with the complaint that it is intermittent. In all but a very few cases we find nothing wrong with the unit. Just to be sure, we go over the unit with a fine-tooth comb. We retest the unit as though it had been newly manufactured. We never send a unit back unless we are convinced that it is in perfect working order. We care that our equipment works for our customers.

The most often heard complaint is that the unit hangs up on an intermittent basis and we can certainly understand that a customer could become annoyed if a unit just back from the factory “fails” again. But not every failure is the result of equipment failure. Anyone with technical experience can appreciate that sometimes failures occur because perfectly good equipment is misused or misapplied. This engineering note is to point out possible external factors that can be the root of intermittent problems.

Feeding too much level down the line

If you are using the TCB-2 for “listen line” feeds you may be driving the line at too high a level. The proper line drive level is -9dBm. Don’t let anyone tell you that it is OK to drive the line at higher levels. The line drop detector in the TCB-2 detects the line current that flows in the loop. When the calling party disconnects, your telephone exchange momentarily interrupts the loop current or momentarily reverses it. When the loop current drops to zero for a period longer than 8 milliseconds, the loop current detector in the TCB-2 resets the line pickup flip-flop and the line is dropped. If you are feeding the line at a level that is too high, the audio voltage can be high enough to cause the loop current to go through a zero. To the loop current detector, a zero is a zero, whether it results from a true calling party disconnect or from overdrive.

Another telephone set on the line

If your TCB-2 is holding the line and someone picks up a telephone set which is connected to that line, the loop voltage may momentarily drop low enough for the loop current detector to sense a loop current zero. Remember that the telephone set has several inductive or capacitive components and the transients which may result when these are charging or discharging may be high enough to cause loop current to go to zero. It is also possible for the TCB-2 to drop the line when the other telephone set is hung up.

Too long a loop between you and the telco central office

This doesn’t happen too often but it is possible that the telephone line is too long. The CCITT (which is a worldwide telephone standard setting group) has established a maximum length for local telephone loops. Most modern and responsible telephone companies adhere to these standards, but, a few don’t bother and run loops as long as they wish. If this happens, the loop current will start out very low and any transient induced in the line by adjacent power lines or the like can result in loop current zeroes. If you suspect that your line is too long, put a milliammeter in series with the TCB-2 and the line. The current should be 16 mA or greater.

We are always happy to assist our customers to obtain the maximum utility from our products. We are very careful about the way we design and construct COMREX products. If you have problems, let us know. Together we will find an answer.