

AP10 and AP400 Auto Disconnect Explained

Description

As an option to manually disconnecting the AP from the phone line via the front panel or remote control, the AP can also be configured to respond to disconnect signals sent by the phone provider, automatically disconnecting it from the phone line. These signals can vary from momentary interruptions of the phone lines DC loop current (Loop Drop) or they may be in the form of repeating tones such as a busy or fast busy tones (Call Progress).

The AP10 and AP400 telephone interface circuitry can be configured for multiple modes of auto disconnect.

- 1 – auto disconnect disabled
- 2 – auto disconnect on loop drop only
- 3 – auto disconnect call progress only
- 4 – auto disconnect on loop drop or call progress (AP400 only)

Loop Drop

Loop drop is the preferred method for auto disconnect detection. Loop drop disconnect requires a drop in the phone lines loop current that meets all of the following requirements:

AP400

- Loop current is less than 10ma.
- Loop drop duration is greater than 250ms.

AP10

- Loop current is less than 10ma.
- Loop drop duration is greater than 300ms.

Note: Units set up for loop drop disconnect can be susceptible to accidental disconnects due to unstable line conditions such as fluctuating loop current and voltage.

Call Progress

Call progress is used to detect the presence of call progress or reorder tones in the receive audio path. It is used as an auto disconnect option when the CO or PBX can not provide loop drop. The call progress circuit will simulate a loop drop after it receives the appropriate number of valid samples in succession. The call progress sample is valid if all of the following conditions are met:

AP400

- Audio frequency is between 400 Hz and 620 Hz.
- Audio cadence is between 200 ms and 3.5 sec. (ON to ON time)
 - ~ Cadence is measured from a valid tone ON to valid tone OFF to valid tone ON.
 - ~ An ON state is valid only when the energy in the call progress band is greater than or equal to 90% of the total band energy.
 - ~ An OFF state is valid only when the energy in the call progress band is less than or equal to 20% of the total band energy.
 - ~ A dual tone cadence is not valid.

AP10 – Same except:

- Audio cadence is between 200 ms and 2 sec.

When a valid call progress sample is taken, a cadence count is begun. A call progress disconnect will occur if:

AP400

- Six successive, valid samples are counted.
- All samples must be within +/-5% tolerance of the first sample or cadence.

AP10

- 12 successive, valid samples are counted.
- All samples must be within +/-3% tolerance of the first sample or cadence.

If a sample is not within tolerance, the cadence count will be reset.

Notes: *As a condition of using call progress disconnect vs. loop drop, there will be a noticeable delay before disconnect. The delay is a combination of several factors:*

- *The time it takes the phone system to begin sending valid reorder tones after call termination.*
- *The cadence time of the reorder tones sent.*
- *The time it takes the AP to count the appropriate number of samples.*
- *Recounts due to invalid samples.*

During this delay period all tones and signals will be passed through to the audio system.

False disconnects are also a risk when using call progress disconnect. The call progress frequency band being sampled also contains audio that occurs naturally within the course of a conference. It is possible, although unlikely, that this audio could meet the call progress disconnect conditions listed above, disconnecting the call. This is more of a risk when playing music or tones across the audio conference than it is with voice.