

# Public Switch Telephone Network (PSTN) Technical Requirements

**Based on PERDIRJEN POSTEL NO. 250/DIRJEN/2005**

## 1. Operating requirements

- a. Function  
Customer analog interface device must be able to interact with the PSTN network.
- b. Power Supply  
When using an AC power supply, the device must be able to use the applicable power supply in Indonesia (nominal 110/220 Vac and frequency of 50 Hz). When using a DC power supply, the device must be able to use a nominal power supply of 48 Vdc and /or 24 Vdc.
- c. Outgoing signaling  
The device must provide dual multi-frequency signaling (dual tone multi frequency / DTMF) to make outgoing calls with characteristics referring to electrical requirements point 6.
- d. Relationship compatibility  
For devices whose compatibility is set out in the recommendations of the International Telegraph and Telephone Consultative Committee (CCITT), they must be able to connect with other devices in the same group, while for devices that has not been set out in the CCITT recommendation, it require compatibility with other equivalent devices.

## 2. Electrical Requirements

- a. Resistance  
In the open state, the resistance is measured by 100 Vdc between a-b (tip-ring) wire, at least 1 mega Ohm.
- b. Impedance
  - i. Open and enter condition  
In case the device provides an incoming call facility, the AC impedance is at least 4000 Ohm which is measured at a frequency of 25 Hz and a voltage of 70 Vac.
  - ii. The condition of the lid is out  
Maximum DC Impedance of 400 Ohms is measured at a nominal voltage of 48 Vdc with a supply current of 20 mA.



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c. Loss of Return (return loss)

The return loss caused by the device impedance inequality against network impedance must meet the following conditions:

- i. For frequencies of 300Hz - 600 Hz, the reverse loss must be  $\geq 12$  dB;
- ii. For frequencies of 600 Hz - 3400 Hz, the return loss must be  $\geq 15$  dB.
- iii. NOTE Measurements are made at:
  - a) nominal power supply voltage of 48 Vdc;
  - b) supply current of 20 mA;
  - c) 600 Ohm (resistive) impedance reference;
  - d) signal levels send 0 dBm and -10 dBm.

d. Voltage Leaks

For devices that use an AC power supply, the leakage voltage from the power supply on the terminal connects to the outlet and is open and the cap must be  $<1$  Volt (AC / DC).

e. DC Current During Shielding.

In the event that the device provides facilities for incoming DC currents during swallowing it must be less than 1 mA. Measurements are carried out in a simulation with the following parameters:

- i. Voltage: 70 Vac (RMS) condition without load;
- ii. Frequency: 25 Hz  $\pm$  3 Hz or 50 Hz  $\pm$  5 Hz;
- iii. The minimum signal length is 9000 ms.

f. Signaling Outgoing Calls

Measured at a nominal 48 VDC power supply with a supply current of 20 mA, the signaling characteristics are as follows:

**DTMF**

- i. Frequency  
Digits sent to PSTN are a combination of low and high frequency with a tolerance value of  $\pm 1.8\%$  of the nominal value for each frequency (see Table 1 DTMF).

Nominal Frequency		High Frequency Group		
		1209	1336	1477
(Hz)				
Group	697	1	2	3
frequency	770	4	5	6
Low	852	7	8	9
	941	*	0	#

- ii. Power level  
DTMF power is in the area from -11 dBm to -4 dBm
- iii. Different levels  
The high frequency group level must be greater than 0.5 dB to 3.5 dB compared to the low frequency group.



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iv. Signal length and interval

The signal length (tone on) is in the region of 40 milliseconds - 500 milliseconds and the interval between signals (tone off) is in the region of 40 milliseconds - 500 milliseconds for sending digits in sequence.

g. Requirements for environmental conditions

Requirements for nominal environmental conditions that must be met by the device as follows:

- i. Temperature:  $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$ ;
- ii. Changes in temperature:  $<5^{\circ}\text{C}$  per hour;
- iii. Relative humidity:  $40\% < H < 80\%$ ;
- iv. Change in humidity:  $<5\%$  per hour.

