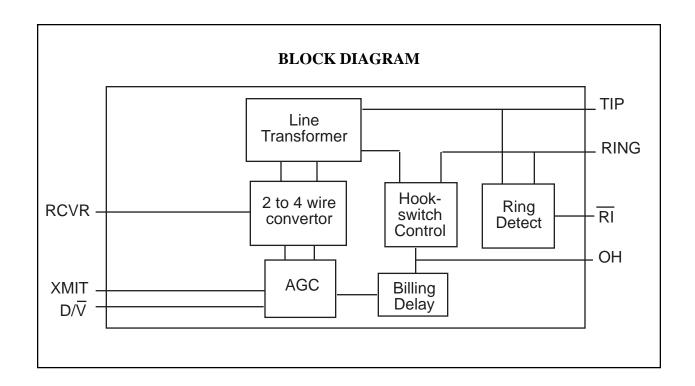## FCC Registered Phone Line Interface

Description

The XE0068 is a compact, FCC registered telephone line interface. Designers can use the XE0068 in their telecom designs without going through the time and expense of FCC Part 68 Registration. This makes the XE0068 perfect for low volume and prototype designs.
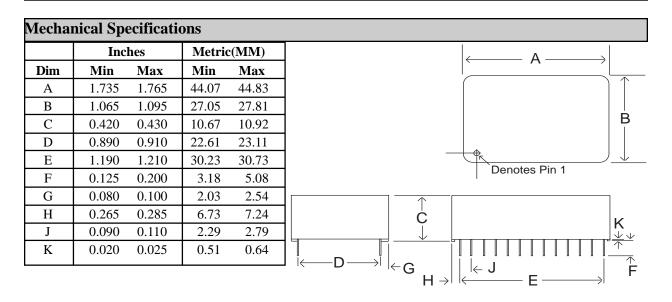
To attain FCC part 68 Registration on the XE0068, Xecom was required to control the output level to the telephone line and provide a 2-second billing delay. Xecom designed an Automatic Gain Control circuit to meet FCC rules limiting transmit level. Xecom's Automatic Gain Control circuit optimizes a wide range of input signal levels for placement on the telephone line.

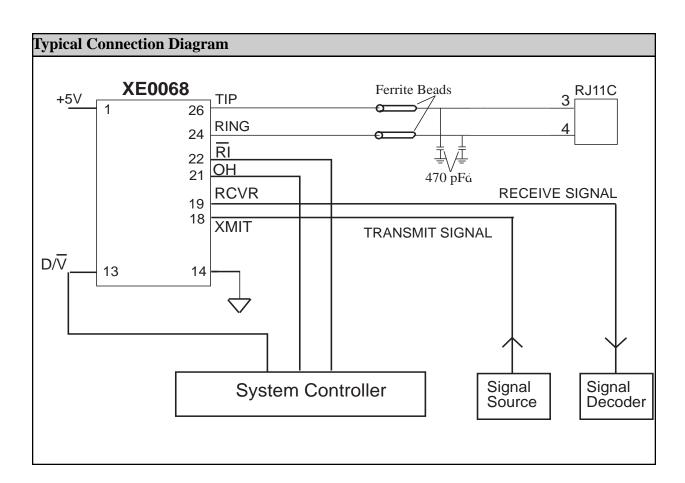The XE0068 can support data, fax, voice, and DTMF signalling applications.

Features

*   Small Size - 1.75" x 1.08" x 0.42";
*   User Transferrable FCC Part 68 Registration;
*   Ring Detection and Hookswitch Control;
*   1500 Volt Isolation;
*   800 Volt Surge Protection;
*   Integrated supplemental lightening protection
*   Integral 2-Second Billing Delay;
*   Automatic Gain Control of transmit signal;
*   Integral 2 to 4 wire convertor;
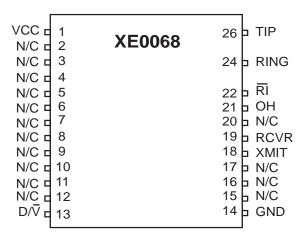*   Suitable for broad bandwidth applications;

BLOCK DIAGRAM

Mechanical Specifications

Dim	Inches Min	Inches Max	Metric(MM) Min	Metric(MM) Max
A	1.735	1.765	44.07	44.83
B	1.065	1.095	27.05	27.81
C	0.420	0.430	10.67	10.92
D	0.890	0.910	22.61	23.11
E	1.190	1.210	30.23	30.73
F	0.125	0.200	3.18	5.08
G	0.080	0.100	2.03	2.54
H	0.265	0.285	6.73	7.24
J	0.090	0.110	2.29	2.79
K	0.020	0.025	0.51	0.64

Pins are 0.025 inch square, tin plated.
Recommended PCB hole size is 0.056 inches (0.86 MM)

Typical Connection Diagram

XE0068 PIN CONFIGURATION

```
              ┌──────────────────────┐
      VCC ─┤ 1    XE0068       26 ├─ TIP
      N/C ─┤ 2                      
      N/C ─┤ 3                 24 ├─ RING
      N/C ─┤ 4                      
      N/C ─┤ 5                 22 ├─ R̄Ī
      N/C ─┤ 6                 21 ├─ OH
      N/C ─┤ 7                 20 ├─ N/C
      N/C ─┤ 8                 19 ├─ RCVR
      N/C ─┤ 9                 18 ├─ XMIT
      N/C ─┤ 10                17 ├─ N/C
      N/C ─┤ 11                16 ├─ N/C
      N/C ─┤ 12                15 ├─ N/C
      D/V̄ ─┤ 13                14 ├─ GND
              └──────────────────────┘
```

PIN DESCRIPTIONS

PIN	NAME	I/O	DESCRIPTION
1	VCC	---	+5 Volt power;
13	D/V̄	I	A TTL Low on Data/Voice selects a transmit level output of 0 dBm for voice or DTMF signaling applications. A High on Data/Voice sets a maximum -9 dBm transmit level for data transfer.
14	GND	---	Ground reference for the XE0068;
18	XMIT	I	XMIT is the Analog input signal to the XE0068. The input impedance on XMIT is typically 10 Kohms at 1800 Hz. Signals placed on XMIT less than 0 dBm will be placed on the telephone line at a maximum of -9 dBm when the Data/Voice signal is driven high and a maximum of 0 dBm when Data/Voice is driven low.
19	RCVR	O	RCVR is the Analog output signal from the 2-4 wire converter. The output impedance of RCVR is typically 10 ohms at 1800 hz. The signal level on RCVR will be within 1 dBm of the received signal level present on the telephone line.
21	OH	I	Hookswitch control. A High on OH closes the internal relay to connect the equipment to the phone line.
22	RI	O	Ring Indicate, output, active low, TTL, indicates the modem is receiving a ring signal.
24	Ring	---	Ring connection to the phone line (RJ11 Pin 4).

Absolute Maximum Ratings*

Supply Voltage	+6.5 Volts
Storage Temperature Range	-25° C to 85° C
Operating Temperature Range	0° C to 70° C
Lead Temperature	260° C
Maximum Soldering Duration	2 seconds

 * Exceeding these levels may result in permanent damage to the device.

Electrical Specifications *(VCC = +5.0 Volts $\pm$ 5%; Ta = 0° C to +70° C)*

Parameter	Conditions	Min	Typ	Max	Units
Supply Current	Off hook		16	20	mA
Line Impedance	At 1000 Hz	540	600	660	Ohms
AGC Input Range	Output level <-9dBm; D/V high	-40		0	dBm
AGC Output Level	D/V held high	-20		-9	dBm
AGC Output Level	D/V held low	--11		0	dBm
Billing Delay	OH activated	2.0	2.3		sec
Transhybrid Loss	at 1000 Hz		40		dB
Receive Loss	at 1000Hz	-1.0	0.0	1.0	dB
Ring Detect Sensitivity	Min. AC voltage between Tip & Ring Type B ringer	38			Vrms
Ring Indicate Output Voltage	Ring Voltage present on Tip & Ring		0.2	0.5	Volts
Loop Current Switch Control Voltage	ON: (off-hook)	2.0	3.0		Volts
	OFF: (on-hook)		0.2	0.5	Volts
Loop Current Switch Control Current	OFF-Hook		0.1	2.0	mA
Loop Current	OFF-Hook current draw from	0	20	100	mA

FCC Information

This product complies with Part 68 of the FCC Rules and Regulations. With each device shipped, there is a label which contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this product. You must, upon request, give this information to your telephone company.

Mounting this device in the final assembly must be made in such a manner as to preserve the high voltage protection between the TIP/RING connection and the rest of the system. Typically, this may be accomplished by maintaining a minimum spacing .100 mils between the TIP/RING trace to the RJ-11C Jack and low voltage portion of the system. No additional circuitry may be attached between TIP/RING and the telephone line connection unless specifically allowed in the rules.

The REN is useful to determine the quantity of devices you may connect to the telephone line and still have all of these devices ring when the number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to the line, as determined by the REN, you should contact the local telephone company to determine the maximum REN for your calling area.

If your system causes harm to the telephone network, the telephone company may discontinue service temporarily. If possible, they will notify you in advance. If advance notification is not practical, you will be notified as soon as possible.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted service.

If you experience trouble with the device, please contact XECOM an (408) 945-6640 for information on obtaining service or repairs. The telephone company may ask you to disconnect this device from the network until the problem has been corrected or until you are sure that the device is not malfunctioning.

There are no repairs that can be made by the customer to the XE0068.

The device may not be used on coin service lines provided by the telephone company (this does not apply to private coin telephone applications which use standard telephone lines). Connection to party lines is subject to state tariffs.

FCC Registration Number	DWEUSA-75283-DP-W
Ringer Equivalence	0.5B
Telephone Jack	RJ11C

Terms of Sale

Devices sold by XECOM are covered by the warranty provisions appearing in its Terms of Sale only. XECOM makes no warranty, express, statutory, implied, or by description regarding the information set forth herein, or regarding the freedom of the described devices from patent infringement. XECOM makes no warranty of merchantability or fitness for any purposes. XECOM reserves the right to discontinue production and change specifications and prices at any time and without notice. This product is intended for use in normal commercial applications. Applications requiring extended temperature range, unusual environmental requirements, or high reliability applications, such as military, medical life-support or life-sustaining equipment, are specifically not recommended without additional processing and authorization by XECOM for such application.

Xecom assumes no responsibility for the use of any circuitry other than circuitry embodied in a Xecom

Life Support Policy

Xecom's products are not authorized for use as Critical Components in Life Support Devices or Systems.

Life Support Devices or Systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions provided in the labeling, can be reasonably expected to result in significant injury to the user.

A Critical Component is any component of a life support device or system whose failure to perform can be reasonably expected to cause failure of the life support device or system, or to affect its safety or effectiveness.

xecom®