

## Single In-Line Telephone Line Interfaces for Europe

### Description

Xecom's XE10X0 Single In-Line telephone interfaces offer complete, highly compact telephone interfaces for Europe, Japan and North America.

The XE10X0 family includes six models. Each meets the regulatory requirements for connection to the telephone network in one or more countries. A common single in-line package provides maximum flexibility in component placement and permits world-wide connectivity from one, simple circuit board layout.

**XE1030** complies with the requirements of several European countries including the United Kingdom. It supplies 3750 volts isolation from the telephone line and has BABT, UL and CSA approval.

**XE1040** provides the circuitry to connect to the German telephone network. It includes the 16 Khz Meter Tone Filter and 3750 volts isolation. The XE1040 also has BABT approval.

**XE1050** meets French telephone network requirements. It includes BABT approval, over current protection on both tip and ring, and provides 3750 volt isolation.

**XE1060** meets telecom requirements for North America and Japan. It provides 1500 volts isolation from the telephone network and is FCC part 68 compliant.

**XE1070** provides a connection to the Italian telephone network. XE1070 includes BABT approval and provides 3750 volt isolation.

**XE1080** connects to the Spanish telephone network. XE1080 includes BABT approval and provides 3750 volt isolation.

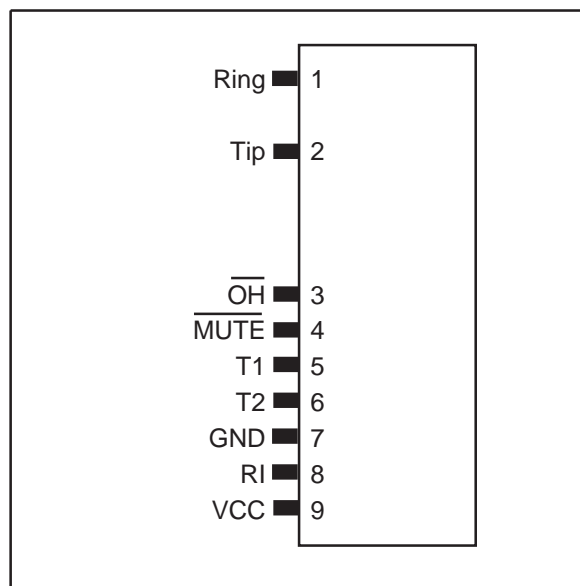
### Features

- \* Small Size: 1.6" by 0.5" by 0.45";
- \* EN41003 Compliant;
- \* Ring Detection;
- \* Internal hookswitch;
- \* Single +5V Operation;
- \* 3750 Volts RMS Isolation, 1500 Volts on XE1060;
- \* V.34.bis compatibility, 33.6 KBPS data transfer;

### Models

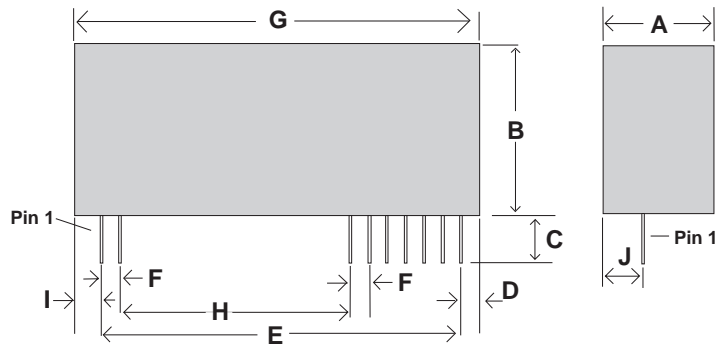
- \* XE1030 for the UK;
- \* XE1040 for Germany;
- \* XE1050 for France;
- \* XE1060 for US, Canada, and Japan;
- \* XE1070 for Italy;
- \* XE1080 for Spain

### XE10X0 Pin Configuration



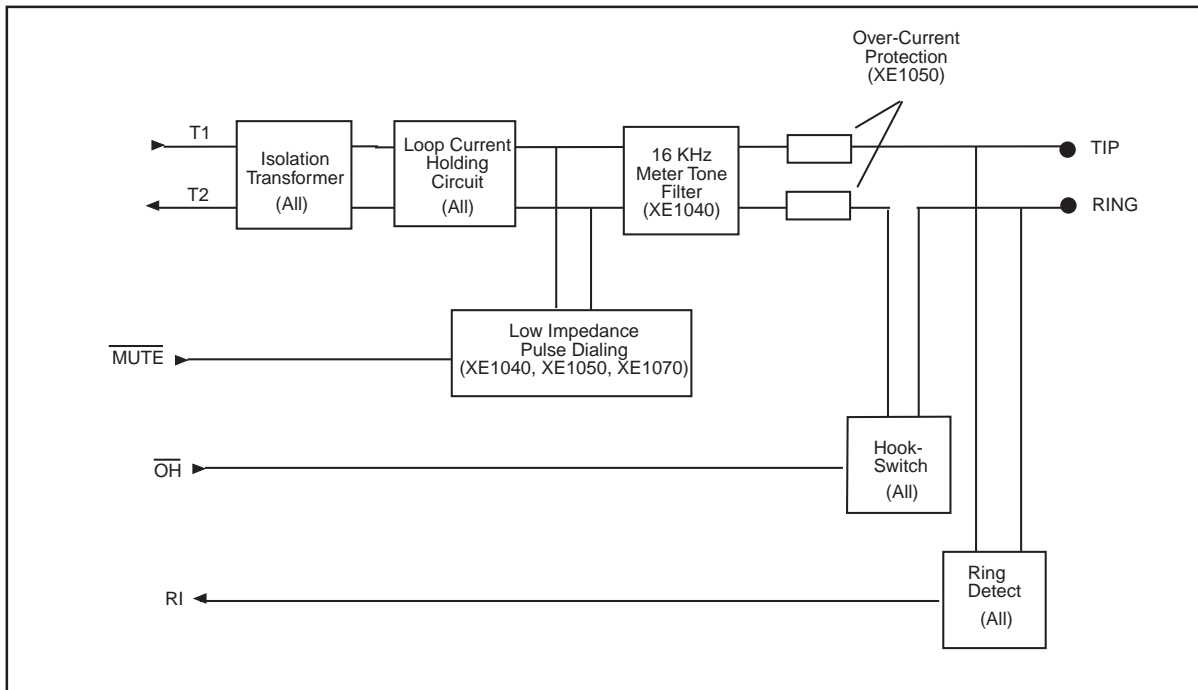
## XE10X0 Mechanical Specifications

Dim	Inches		Millimeters	
	Min	Max	Min	Max
A	0.420	0.460	10.80	11.56
B	0.490	0.530	12.45	13.46
C	0.120	0.140	3.05	3.56
D	0.015	0.035	0.38	0.89
E	1.410	1.440	35.81	36.58
F	0.040	0.060	1.02	1.52
G	1.590	1.630	40.39	41.40
H	1.070	1.080	27.18	27.43
I	0.040	0.060	1.02	1.52
J	0.100	0.140	2.54	3.56
K	0.300	0.340	7.62	8.64



Pin Size: 0.018" square  
All pins tin-plated.

## XE10X0 Block Diagram



## Pin Descriptions

PIN	NAME	DESCRIPTION
1	Ring	Ring provides one half of the two-wire connection to the telephone line. Ring is isolated from all other circuitry. The XE1060 provides a 1500 Volt isolation barrier; the remaining XE10X0 models provide a 3750 volt isolation barrier. This isolation must be preserved throughout the system. This isolation can be maintained by selecting properly rated components and maintaining sufficient creepage and clearance distances.
2	Tip	Tip provides one half of the two-wire connection to the telephone line. Tip is isolated from all other circuitry. The XE1060 provides a 1500 Volt isolation barrier; the remaining XE10X0 models provide a 3750 volt isolation barrier. This isolation must be preserved throughout the system. This isolation can be maintained by selecting properly rated components and maintaining sufficient creepage and clearance distances.
3	/OH	/OH is an active low input to the XE10X0 DAA module. It controls the internal hookswitch. A low on OH closes the hookswitch and connects the equipment to the telephone line.
4	/MUTE	This active low input provides low impedance pulse dialing in the XE1040, XE1050, and XE1070. Presenting a low impedance to the telephone line during pulse dialing is required in many European countries including Germany, France and Italy.
5	T1	T1 provides half of the differential input/output connection to the secondary side of the internal telephone line transformer.
6	T2	T2 provides half of the differential input/output connection to the secondary side of the internal telephone line transformer.
7	GND	This pin provides ground reference for the RI, /OH and /Mute control lines. There is no connection between ground and the telephone line (primary) side of the XE10X0 DAA.
8	RI	Ring Indicate is an active high output from the DAA module. When a valid ring signal appears on Tip and Ring, the DAA provides a pulse train at ring frequency on RI.
9	VCC	This pin provides 5 volt DC power for the RI, /OH and /Mute control lines. There is no connection between VCC and the telephone line (primary) side of the XE10X0 DAA.

## XE1030 Electrical Specifications *(V<sub>CC</sub>=+5V ±10%, T<sub>a</sub>=0 to 70 deg C)*

Parameter	Conditions	Min	Typ	Max	Units
Power Supply Current	Off-Hook		10	15	mA
Transmit Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Receive Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Line Impedance	At 1000 Hz	540	600	660	Ohms
Coupler Match input impedance	Input impedance to T1 & T2 for 600 ohm line impedance		430 6.8		Ohms nFd
Ring Detect Sensitivity	Minimum Ring voltage detected as a valid ring signal	10		20	Vrms
RI Output Voltage	Ring present at Tip & Ring		4.2		Volts
Loop Current Switch Control Voltage	OFF: (on-hook) ON: (off-hook)	2.0	3.0 0.2	0.5	Volts Volts
OH Control Current	Off-Hook		5		mA
Telephone Loop Current	Off-Hook	10		120	mA

## XE1040 Electrical Specifications *(V<sub>CC</sub>=+5V ±10%, T<sub>a</sub>=0 to 70 deg C)*

Parameter	Conditions	Min	Typ	Max	Units
Power Supply Current	Off-Hook		10	15	mA
Transmit Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Receive Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Line Impedance	At 1000 Hz		Complex		
Coupler Match input impedance	Input impedance to T1 & T2 for complex line impedance		820 82		Ohms nFd
Ring Detect Sensitivity	Minimum Ring voltage detected as a valid ring signal		20		Vrms
RI Output Voltage	Ring present at Tip & Ring		4.2		Volts
Loop Current Switch Control Voltage	OFF: (on-hook) ON: (off-hook)	2.0	3.0 0.2	0.5	Volts Volts
OH Control Current	Off-Hook		5		mA
Telephone Loop Current	Off-Hook	10		60	mA

## XE1050 Electrical Specifications *(V<sub>CC</sub>=+5v ±10%, T<sub>a</sub>=0 to 70 deg C)*

Parameter	Conditions	Min	Typ	Max	Units
Power Supply Current	Off-Hook		10	15	mA
Transmit Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Receive Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Line Impedance	At 1000 Hz	540	600	660	ohms
Coupler Match input impedance	Input impedance to T1 & T2 for 600 ohm line impedance		430 6.8		Ohms nFd
Ring Detect Sensitivity	Minimum Ring voltage detected as a valid ring signal		20		Vrms
RI Output Voltage	Ring present at Tip & Ring		4.2		Volts
Loop Current Switch Control Voltage	OFF: (on-hook) ON: (off-hook)	2.0	3.0 0.2	0.5	Volts Volts
OH Control Current	Off-Hook		5		mA
Telephone Loop Current	Off-Hook	10		45	mA

## XE1060 Electrical Specifications *(V<sub>CC</sub>=+5v ±10%, T<sub>a</sub>=0 to 70 deg C)*

Parameter	Conditions	Min	Typ	Max	Units
Power Supply Current	Off-Hook		10	15	mA
Transmit Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Receive Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Line Impedance	At 1000 Hz	540	600	660	ohms
Coupler Match input impedance	Input impedance to T1 & T2 for 600 ohm line impedance		340		Ohms
Ring Detect Sensitivity	Minimum Ring voltage detected as a valid ring signal		20	38	Vrms
RI Output Voltage	Ring present at Tip & Ring		4.2		Volts
Loop Current Switch Control Voltage	OFF: (on-hook) ON: (off-hook)	2.0	3.0 0.2	0.5	Volts Volts
OH Control Current	Off-Hook		5		mA
Telephone Loop Current	Off-Hook	10		100	mA

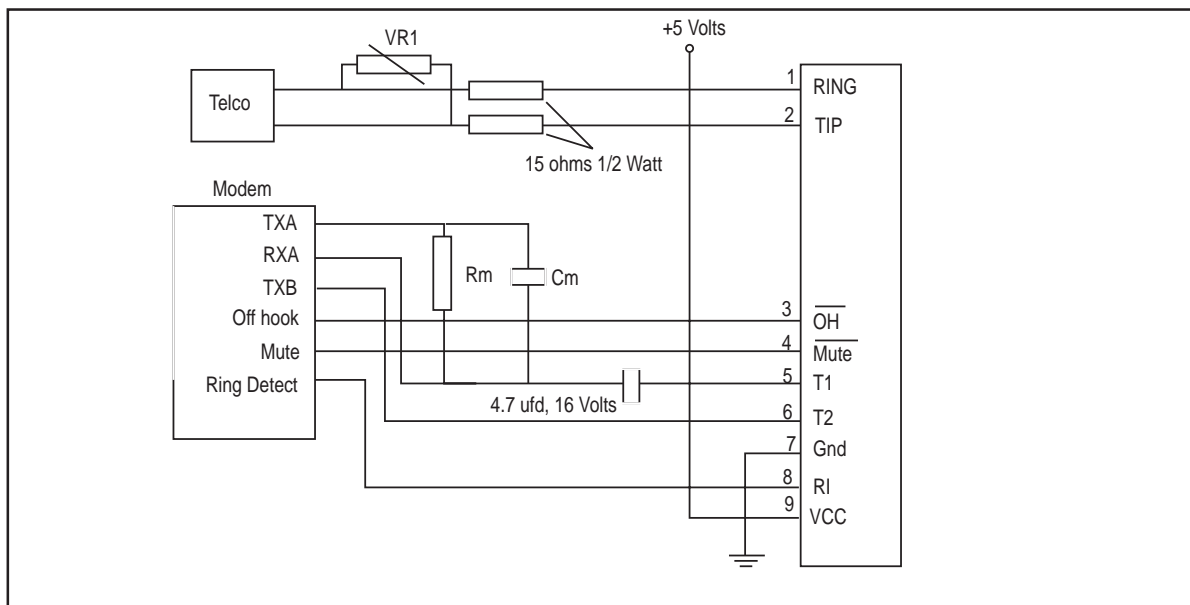
## XE1070 Electrical Specifications ( $V_{CC}=+5V \pm 10\%$ , $T_a=0$ to $70$ deg C)

Parameter	Conditions	Min	Typ	Max	Units
Power Supply Current	Off-Hook		10	15	mA
Transmit Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Receive Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Line Impedance	At 1000 Hz	540	600	660	ohms
Coupler Match input impedance	Input impedance to T1 & T2 for 600 ohm line impedance		430 6.8		Ohms nFd
Ring Detect Sensitivity	Minimum Ring voltage detected as a valid ring signal	15			Vrms
RI Output Voltage	Ring present at Tip & Ring		4.2		Volts
Loop Current Switch Control Voltage	OFF: (on-hook) ON: (off-hook)	2.0	3.0 0.2	0.5	Volts Volts
OH Control Current	Off-Hook		5		mA
Telephone Loop Current	Off-Hook	10		120	mA

## XE1080 Electrical Specifications ( $V_{CC}=+5V \pm 10\%$ , $T_a=0$ to $70$ deg C)

Parameter	Conditions	Min	Typ	Max	Units
Power Supply Current	Off-Hook		10	15	mA
Transmit Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Receive Insertion loss	600 Ohm Impedance, 1000 Hz		2	4	dB
Line Impedance	At 1000 Hz	540	600	660	ohms
Coupler Match input impedance	Input impedance to T1 & T2 for 600 ohm line impedance		430 6.8		Ohms nFd
Ring Detect Sensitivity	Minimum Ring voltage detected as a valid ring signal		20		Vrms
RI Output Voltage	Ring present at Tip & Ring		4.2		Volts
Loop Current Switch Control Voltage	OFF: (on-hook) ON: (off-hook)	2.0	3.0 0.2	0.5	Volts Volts
OH Control Current	Off-Hook		5		mA
Telephone Loop Current	Off-Hook	10		120	mA

## Typical Connection Diagram



Rm and CM provide the impedance match with the telephone line. These values are country dependent. The chart below show the correct Rm and Cm values and correct XE10X0 model for various countries. VR1 provides protection from voltage surges on the telephone line. The table below show the recommended breakdown voltage for VR1.

Country	Model	Rm Value	Cm Value	VR1	Comments
Canada	XE1060	340 ohms	-	250 V	600 Ohm Line impedance
France	XE1050	430 ohms	6.8 nFd	250 V	600 Ohm Line impedance
Germany	XE1040	820 ohms	-	250 V	Complex Line Impedance
Italy	XE1070	430 ohms	6.8 nFd	250 V	600 Ohm Line impedance
Japan	XE1060	340 ohms	-	250 V	600 Ohm Line impedance
Spain	XE1080	430 ohms	6.8 nFd	250 V	600 Ohm Line impedance
United Kingdom (B)	XE1030	430 ohms	6.8 nFd	250 V	600 Ohm Line impedance
USA	XE1060	340 ohms	-	250 V	600 Ohm Line impedance

## ABSOLUTE MAXIMUM RATINGS

Maximum Storage Temperature	-25°C to +85°C
Maximum Operating Temperature Range	0°C to +70°C
Maximum Lead Temperature (soldering 2 seconds per wave)	260°C

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**Xecom Incorporated**  
**374 Turquoise Street, Milpitas, CA 95035**  
**Ph:408-945-6640 Fax:408-942-1346**