

A Complete Send and Receive Fax & Data Modem**Description**

Xecom's XE9624F and XE9624FS include a 2400bps data modem, a Group III Send and Receive fax modem and the telephone interface in one compact component. Both models include user transferable FCC Part 68 registration.

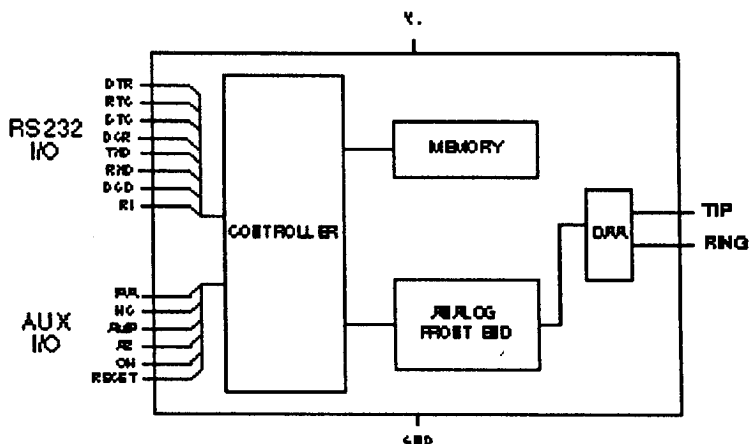
Xecom puts the XE9624F in our dual inline package. The XE9624F is pin compatible with other Xecom modems including the XE2401, and XE9601.

The XE9624FS comes in a Single Inline Package. The XE9624FS can be ordered for either vertical (XE9624FS1) or horizontal (XE9624FS2) mounting to optimize space utilization.

The XE9624F and XE9624FS provide computer and industrial systems manufacturers with a complete, highly integrated, compact solution for adding data and fax communications.

Features

- Data Rates: 2400, 1200 and 300 bps
- Send fax to 9600 bps
- Receive fax to 4800 bps
- Enhanced "AT" commands for modem control and configuration.
- Class 1 commands for facsimile control.
- Single +5V supply
- Low power CMOS:
Operating: 200 mW (Typ.)
Sleep mode: 50 mW (Typ.)
- Dimensions;
XE9624F: 2.28" by 1.08" by 0.42"
XE9624FS: 1.53" by 0.46" by 0.92"

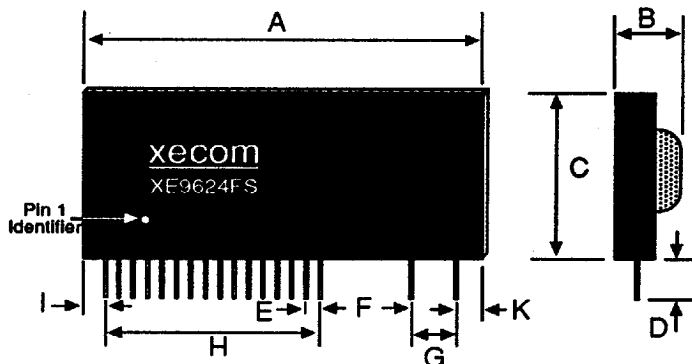
BLOCK DIAGRAM

XE9624FS Mechanical Specifications

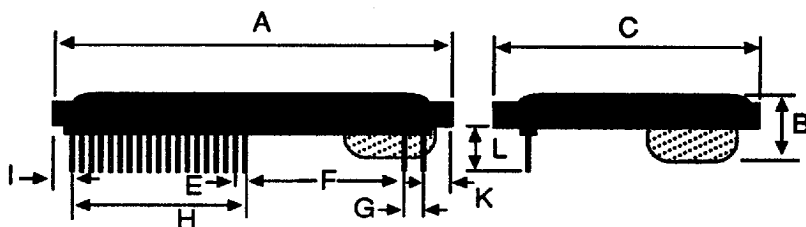
PIN	INCHES		METRIC(MM)	
	MIN	MAX	MIN	MAX
A	1.500	1.560	38.10	39.62
B	0.430	0.490	10.92	12.45
C	0.890	0.950	22.61	24.13
D	0.090	0.140	2.23	3.56
E	0.045	0.055	1.14	1.40
F	0.340	0.360	8.64	9.14
G	0.140	0.160	3.56	4.06
H	0.790	0.810	20.07	20.57
I	0.050	0.110	1.27	2.79
K	0.200	0.260	5.08	6.60
L	0.420	0.480	10.67	12.19

Pins = 0.018 inch diameter pin
All pins tin-plated

XE9624FS1



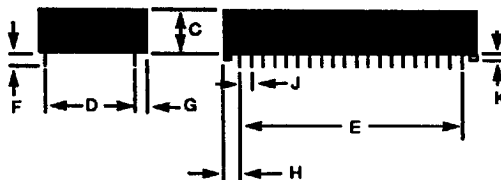
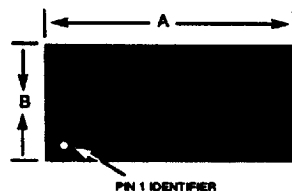
XE9624FS2



XE9624F Mechanical Specifications

PIN	INCHES		METRIC(MM)	
	MIN	MAX	MIN	MAX
A	2.270	2.290	57.66	58.17
B	1.070	1.090	27.18	27.69
C	0.420	0.430	10.67	10.92
D	0.890	0.910	22.61	23.11
E	1.890	1.910	48.01	48.51
F	0.125	0.200	3.18	5.08
G	0.080	0.100	2.03	2.54
H	0.180	0.200	4.57	5.08
J	0.090	0.110	2.29	2.79
K	0.020	0.025	0.51	0.64

Pins = 0.025 inch square pin
All pins tin-plated



XE9624F & XE9624FS Pin Configurations

XE9624F			
RESET	1	40	+5V
AR	2	39	/DSR
RXD	3	38	/DCD
	4	37	
	5	36	
	6	35	
	7	34	
	8	33	
/DTR	9	32	
/AA	10	31	
/CTS	11	30	
OH	12	29	
TXD	13	28	
/RTS	14	27	
/HS	15	26	
/RI	16	25	
	17	24	
TIP	18	23	AMP
	19	22	GND
RING	20	21	

XE9624FS			
VCC	1		
Reset	2		
TXD	3		
RXD	4		
VAA	5		
/RTS	6		
/DTR	7		
/RI	8		
VHS	9		
/DCD	10		
/CTS	11		
/DSR	12		
OH	13		
AR	14		
AMP	15		
Gnd	16		
	17		
Tip	17		
	18		
Ring	18		

9941365 0000966 832

XECOM, Inc.

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Pin Descriptions

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NAME	I/O	DESCRIPTION
RESET	I	Hardware reset pin, active HI, TTL. Use of an external reset is not required. The minimum duration of a reset pulse is 100 milliseconds.
AR	O	Auxiliary Data/Voice Relay output, active HI, TTL/CMOS. When high, AR drives an external auxiliary telephone set relay closed to allow the same telephone line to be used for voice communications.
RXD	O	Serial data output to the DTE (i.e. external UART). A logic "high" represents a "mark" and a logic "low" represents a "space", TTL.
\DTR	I	Data Terminal Ready, input, active LO, TTL. The function of this pin is set by AT&D and the value in register S21. Normally the modem ignores DTR.
\AA	O	Auto Answer enable indicator, output, active LO, TTL/CMOS. A low indicates the modem is set to automatically answer an incoming call.
\CTS	O	Clear to Send, output, active LO, TTL/CMOS.
OH	O	DAA hookswitch relay is closed in the "off-hook" position connecting the DAA to the telephone line.
TXD	I	Serial data input from the DTE (i.e. external UART). A logic "high" represents a "mark" and a low represents a "space", TTL.
\RTS	I	Request to Send, input, active LO, TTL. Not used.
\HS	O	High Speed indicator, output, active LO, TTL/CMOS. Low when operating at 2400bps rate, high otherwise.
\RI	O	Ring Indicator, output, active LO, TTL. When low indicates the modem is receiving a ring signal.
TIP	—	Tip connection to the phone line(RJ11 pin3) from the internal DAA.
RING	—	Ring connection to the phone line(RJ11 pin4) from the internal DAA. Caution: Observe design rules for Tip & Ring trace layout
GND	—	Ground (0 volts).
AMP	O	Audio output to speaker. Function is determined by L & M commands and the value in register S22. This output can drive a 50Kohm load.
\DCD	O	Data Carrier Detect, output, active LO, TTL/CMOS. Function is set by the &C command and the value in register S21.
\DSR	O	Data Set Ready, output, active LO, TTL/CMOS. Function is set by the &S command and the value in register S21.
Vcc	—	+5 Volts

AT Command List

Command	Description	Command	Description
A	Answer Command -	On	On Line
Bn	Select Communications Std	Qn	Responses
D	Dial Command -	Sr?	Interrogate Register
P	Pulse dial	Sr=n	Set Register Value
T	Tone dial	Vn	Result Codes
R	Connect as an answering modem	Xn	Result Code Set
W	Wait for dial tone	Yn	Long Space Disconnect
,	Pause for the duration of S8	Z	Reset
@	Wait for silence	&Cn	DCD Operation
!	Switch hook flash	&Dn	DTR
;	Return to command state	&F	Revert to Factory Defaults
En	Command Echo	&Gn	Guard Timer
Hn	Switch Hook Control	&Tn	Test Modes
In	Modem Identification	&V	View Active Profile
Ln	Speaker Volume		
Mn	Speaker Activity		

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Class 1 Fax Command List

Command	Description	Command	Description
+FCLASS?	Service Class Indication	+FTH<mod>	Transmit HDLC Data
+FCLASS=?	Service Class Capability	+FRH<mod>	Receive HDLC Data
+FCLASS=n	Set Service Class	+FAA=n	Data/Fax Auto Answer
+FTS<time>	Transmit Silence	+FF	Enhanced Flow Control
+FRS<time>	Receive Silence	+FRTn	Receive Test Data
+FTM<mod>	Transmit Fax	+FTTn=m	Transmit Test Data
+FRM<mod>	Receive Fax		

Result Code Summary

DIGIT	CODE	WORD CODE MEANING
0	OK	Successfully executed command line
1	CONNECT	300 bps connection established
2	RING	Ring signal detected
3	NO CARRIER	Carrier not detected within Register S7 detect time
4	ERROR	Error found in command line; returns to command line
5	CONNECT 1200	1200 bps connection established
6	NO DIAL TONE	No dial tone detected within 5 Sec. after going off-hook
7	BUSY	Busy signal detected after automatically dialing a call
8	NO ANSWER	Five seconds of silence was not detected when using the @ command in the Dial command line
10	CONNECT 2400	Connection established at 2400 bps
13	DATA	Connected in data mode after automatically answering the call.
15	FAX	Connected in fax mode after automatically answering the call.
+F4	+FCERROR	Fax carrier error detected.

Electrical Specifications

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
DTMF Level		-2.2	0	dBm	
DTMF Twist (Balance)			3	dB	
Pulse Dialing Make/Break	39/61		%	USA	
		33/67		%	CCITT
Pulse Interdigit Interval		785		ms	
Billing Delay Interval	2.0			sec.	
Tone Detection Bandpass Frequency	290		665	Hz	3 dB point
Tone Detection OFF to ON Threshold	-33			dBm	into 600 ohms
Tone Detection ON to OFF Threshold	-35			dBm	into 600 ohms
Dial Tone Detect Duration	3.0			sec.	
Ringback Tone Detect					
Duration	0.75			sec.	
Cadence	1.5			sec.	OFF/ON Ratio
Busy Tone Detect					
Duration	0.2			sec.	
Cadence	0.67		1.5	sec.	OFF/ON Ratio

XE9624F & XE9624FS Register Summary

REG.	RANGE/UNITS	DESCRIPTION	DEFAULT
S0	0-255/rings	Number of rings to answer on	000
S1	0-255/rings	Count number of incoming rings	000
S2	0-127/ASCII	Escape character	043
S3	0-127/ASCII	Carriage return character	013
S4	0-127/ASCII	Line feed character	010
S5	0-32,127/ASCII	Backspace character	008
S6	2-255/sec	Dial tone wait time	002
S7	1-60/sec	Wait time for remote carrier	030
S8	0-255/sec	Comma pause time	002
S9	1-255/0.1 sec	Carrier detect response time	006
S10	1-255/0.1 sec	Delay from loss of carrier to hang up	014
S11	50-255/msec	DTMF dialing speed	095
S12	0-255/0.02 sec	Escape guard time	050
S14	Bit Mapped	E,Q,V,T,P,D,A,R accept/ignore	171
S16	Bit Mapped	Modem loopback tests	000
S18	0-255/sec	Modem test timer	000
S21	Bit Mapped	J, &R, &D, &C, &S, Y	000
S22	Bit Mapped	L, M, X, &P, &T4, &T5,	118
S23	Bit Mapped	&T4,&T5, DTE speed, parity	103
S27	Bit Mapped	&Q, &L, &X, B commands	073
S28	Bit mapped	&Pn	000

XE9624F Telephone Line Interface Specifications

PARAMETER	MIN	TYP	MAX	UNIT
Telephone Line Impedance Match		600		ohms
Ring Detect Sensitivity (on hook, Type B ringer)	38			Vrms
Telephone Line Holding Current	20		100	mA

Power Supply Characteristics ($T_A = 0 - 70^\circ C$, $V_{CC} = 5V \pm 5\%$)

Symbol	Parameter	Min	Typ	Max	Units	Comments
V _{CC}	Supply Voltage	4.75	5.0	5.25	V	
I _{CC}	V _{CC} Supply Current		40		mA	All outputs Disconnected
I _{CCPD}	Sleep Mode Current		10		mA	

Power Management: The XE9624F and XE9624FS have an integrated power management capability. If RXD, DTR, and RI lines remain inactive for 5 seconds, the modem automatically enters sleep mode. In the sleep mode power consumption drops to less than 50 milliwatts.