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# **ZiLOG V.22bis Modem**

**Z02201 Data Pump/AFE**  
**Z02205 Controller**

- ◆ **ZiLOG Commitment to the Embedded Modem**
- ◆ **What Is ZiLOG's V.22bis Modem Solution?**
- ◆ **Z02201 Data Pump/AFE Description**
- ◆ **Z02205 Modem Controller Description**
- ◆ **Features Comparison With Competition**
- ◆ **Modem Schematic**
- ◆ **Modem BOM With Component Costs**
- ◆ **Availability**
- ◆ **Summary**



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## **Commitment**

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- ◆ **ZiLOG Is Committed to Support Your Embedded Modem Needs**
- ◆ **Today**
  - **2400bps and 9600bps**
- ◆ **Tomorrow**
  - **Higher Integration -- Single Chip**
  - **3.3volt**
  - **14.4kbps and Faster**



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## ZiLOG's V.22bis Modem

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- ◆ **Two-Chip Set    Z02201 Data Pump/AFE  
                         Z02205 Modem Controller**
- ◆ **Supports Popular Modulation Standards**
  - V.22bis, V.23, V.22, V.21, Bell212a, Bell103
- ◆ **2400bps Transmit Rate**
- ◆ **Competitive BOM Cost**
- ◆ **Small Size -- No External Memory Required**
- ◆ **Quick Time to Market**
- ◆ **ZiLOG Can Arrange Assistance With Your Design**
  - Both Hardware and Software

◆ **ZiLOG's V.22bis Modem's Primary Applications:**

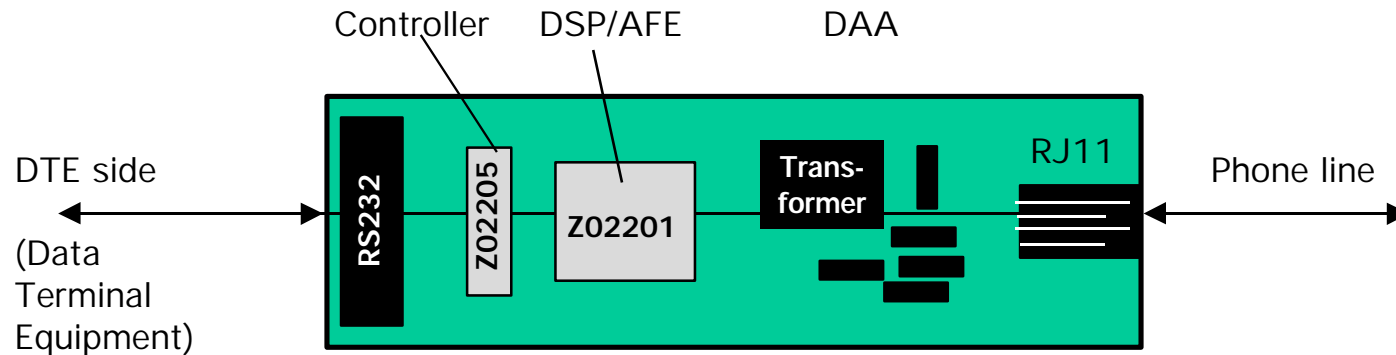
- **TV Set Top Box Modem**
- **Satellite Receiver Modem**
- **Security System Modem**
- **Remote Diagnostics**
- **Utility Meter Modem**
- **Remote Telemetry**
- **Smart Card Terminal**
- **and many more!**



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## V.22bis Modem Overview



- ◆ **No External Memory**
- ◆ **Minimum External Logic Required**
- ◆ **Hybrid Included On-chip Reduces BOM Cost.**  
**“Direct Connect” to the DAA**



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## Z02201 V.22bis DSP/AFE

Parallel I/F	DSP	ADC
		DAC
V.24 Serial I/F	8KW ROM	Osc
	512W RAM	Eye Pattern

- ◆ Low power consumption
  - 50mA Active Mode
  - 25uA Sleep Mode
- ◆ Small Package
  - 44-pin PLCC
- ◆ Single Chip Data Pump and AFE Solution
- ◆ V.22bis, V.22, V.23, V.21, Bell212a/103
- ◆ 2 Types of Handshake Timings
  - Automatic ITU Standard Handshakes
  - Manual Control Over Handshakes
- ◆ Tone Generators and Tone Detectors Fully Programmable to Simplify Country Qualifications
- ◆ Auto-dial and Answer Support
  - DTMF & Calling Tone Generation/detection
  - Call Progress Tone Detection
- ◆ Excellent Line Compensation
  - Multiple Compromise and Cable Equalizers
- ◆ HDLC Framing in Software
- ◆ No External Memory Required, Minimal External Logic



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## Z02205 Modem Controller

24bit Par.I/O	Z8 uC	C/T
		Ints
WDT/ POR	16KB ROM	Osc
	237W RAM	Analog Compar

- ◆ Low power consumption
  - 25mA Active Mode @ 5V
  - 10uA Sleep Mode
- ◆ Small Package
  - 28-pin SOIC

- ◆ 8-bit Modem Controller With Embedded ROM
- ◆ 16K ROM Onchip Contains All AT Commands
- ◆ Basic AT Command Set
  - AT +++, A, A/, B, D, E, &F, &G, H, I, N, O, P, &P, Q, Sn, ?, =X, T, V, X
  - Dial Modifiers
  - S37 -- Register to Control Connect Rate
- ◆ Basic Data Pump Driver Source Code Available
- ◆ Homologation Code



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## Additional Features

<b>Feature</b>	<b>Benefit</b>
<b>Control Handshake Manually</b>	<b>Customization</b>
<b>Programmable Transmit Level</b>	<b>-6db to -43db More Country Qualifications</b>
<b>Programmable DTMF Tone Transmit</b>	<b>Programmable</b>
<b>Programmable Bandpass and Tone Detectors</b>	<b>Replace Old Analog Tone Detection Logic. Save Cost.</b>
<b>Simple, Flexible Homologation</b>	<b>Less Engineering</b>
<b>V.23 for Europe and South America</b>	<b>Same Solution Serves Worldwide</b>
<b>2- to 4- Wire Hybrid Integrated Onchip</b>	<b>Fewer Components, Lower Cost</b>
<b>Small Packages</b>	<b>Small P.C. Board</b>



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# Data Pump Comparison

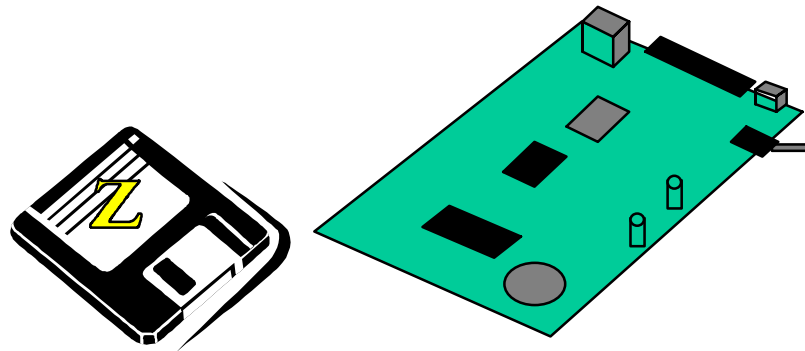
	Z02201	TSC73K324L	RC2324
Package	44 PLCC	28 PLCC	68 PLCC
Power supply	+5V +/-10%	+5V +/-10%	+5V +/-10%
Active Supply Current	50 mA max	25 mA max	48 mA max
Sleep Current	25 uA	3 mA	3 mA
Operating Temp	-40 to +85C	-40 to +85C	0 to +60C
Storage Temp	-65 to +150C	-65 to +150C	-55 to +85C
Crystal Frequency	24.576 MHz	11.0592 MHz	24 MHz
V.22bis	Yes	Yes	Yes
V.22	Yes	Yes	Yes
V.21	Yes	Yes	Yes
V.23	Yes	Yes	Yes
Bell 212A	Yes	Yes	Yes
Bell 103	Yes	No	Yes
MCU bus	Standard 8-bit	Standard 8-bit	Standard 8-bit
Serial I/F	Not Used	Yes	Yes
Parallel I/F	Yes	Yes	Yes
HDLC	Yes	No	Yes
Integrated Hybrid	Yes	No. Yes on "324BL"	Yes
Tx Level	Fully programmable -6 dBm max.	-6 to -21 dBm	0 to -15 dBm
Dynamic Range	-6 to -35 dBm	-3 to -43 dBm	-9 to -43 dBm
Reception Timing	+/-0.01% freq. error	+/-0.02% freq. error	+/-0.017% freq. error
Tone Generators	Fully Programmable	Fixed	Programmable
Tone Detectors	Fully Programmable 16 single freq. plus biquads (2048 steps)	Fixed and limited	Biquads and "zero crossing" only
Adaptive Equalizers	Yes	Yes	Yes
Compromise Equalizers	Programmable	Fixed	Fixed, Tx only
EYE Monitoring	Yes	No	Yes
Analog I/F	Analog out	Analog out	Analog Out
Handshake types	Automatic and manual	Manual only	Automatic only
Single chip solution available?	Coming Soon	No	Yes



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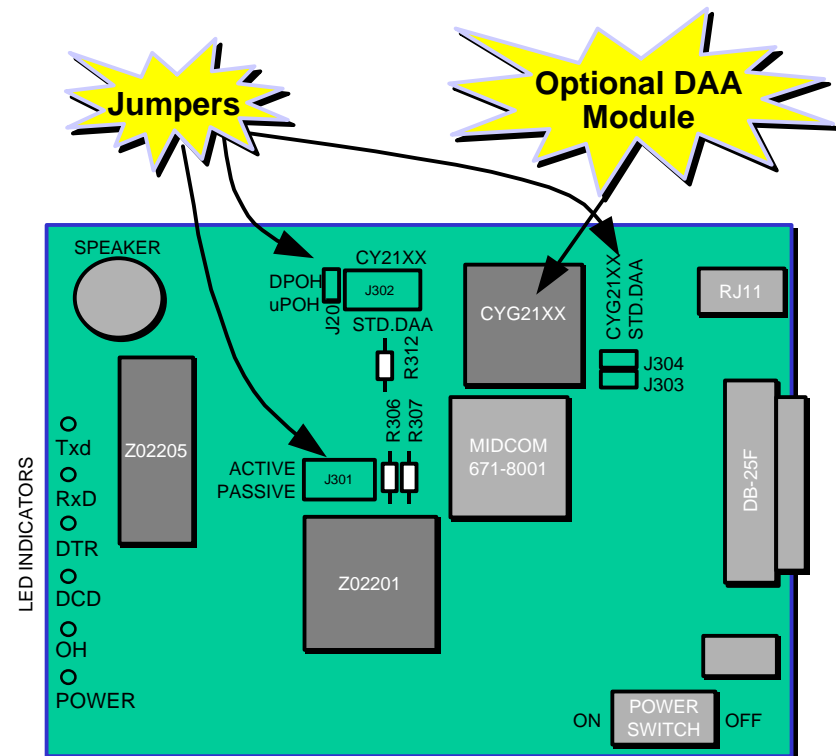
# Get to Market Fast

- ◆ **Evaluation Kit Available  
Z0220100ZCO**
  - Evaluation Board
  - Schematic and BOM
  - Data Pump Driver Code
  - Orcad Files
  - Product Specifications
  - User Manual
- ◆ **ZiLOG Can Arrange Assistance in System Level Design  
and in Controller Code Customization**



# Z0220100ZCO Eval Kit

- ◆ **Demonstrate Basic Functionality of Z02201 and Z02205**
- ◆ **Customer Can Plug in CP Clare DAA Module to Support Other Country's Phone Networks**
- ◆ **Contains Speaker and Eye Pattern Support**





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## Application Notes Available

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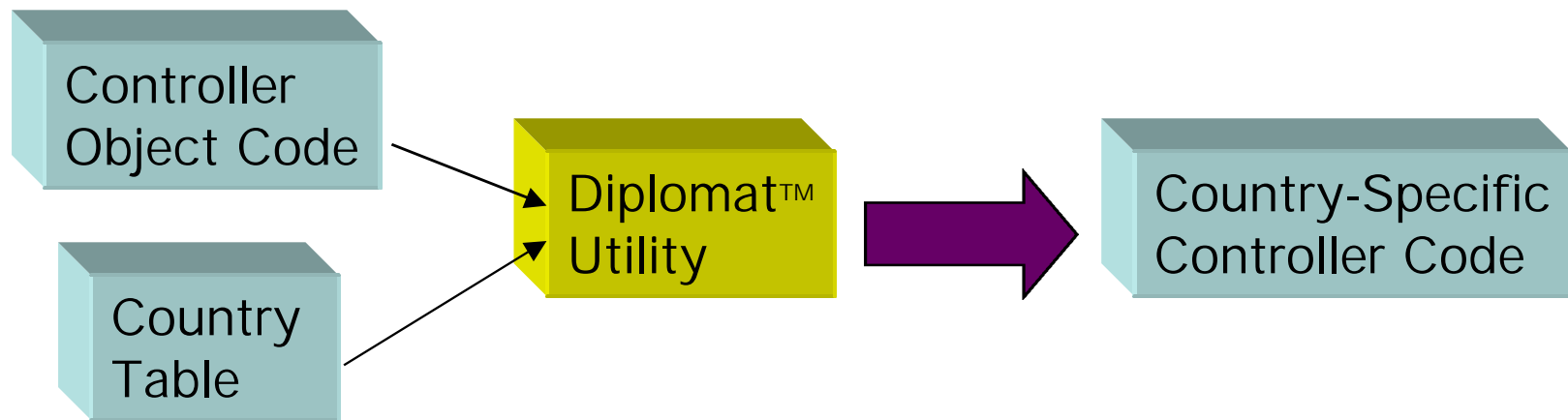
- ◆ **Choosing a Crystal Oscillator**
- ◆ **Bell202**
- ◆ **Muting the V.23 Backchannel**
- ◆ **Receive Caller ID**



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## Diplomat™ Code Utility

- ◆ **Simplify Country Qualifications**
- ◆ **Modify Controller Object Code**
  - No Need for Source Code
- ◆ **Text-based**





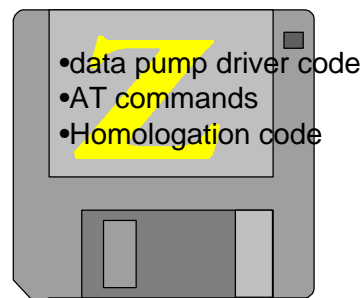
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# Design Alternatives

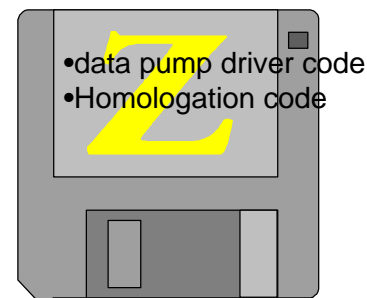
## ◆ Design Alternatives To Meet Your Needs

- **Two-chip Solution: Z02201 + Z02205**
- **One-chip Solution: Z02201 Plus Controller Code Ported to Your Host Microprocessor**
  - **Data Pump Driver Code in 'C' Available at No Charge**
  - **Complete Controller Source Code in 'C' Available for One-time Fee**

\$10K License Fee



No License Fee





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## V.22bis Modem BOM

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<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>	
<b>Z0220112VSC</b>	<b>Data Pump/AFE 44PLCC</b>	<b>1</b>
<b>Z0220512SSC</b>	<b>Controller 28pin SOIC</b>	<b>1</b>
<b>24.576mhz</b>	<b>Crystal</b>	<b>1</b>
<b>14.7456mhz</b>	<b>Crystal</b>	<b>1</b>
<b>Various</b>	<b>Caps</b>	<b>11</b>
<b>Various</b>	<b>Resistors</b>	<b>10</b>
<b>671-8005</b>	<b>Transformer</b>	<b>1</b>
<b>Zener</b>	<b>Diodes</b>	<b>4</b>
<b>Various</b>	<b>Diodes</b>	<b>3</b>
<b>4N35</b>	<b>Opto Isolator</b>	<b>1</b>
<b>0.25 Amp</b>	<b>Fuse</b>	<b>1</b>
<b>SPST</b>	<b>Relay</b>	<b>2</b>
<b>RJ11</b>	<b>Phone Jack</b>	<b>1</b>
<b>PC Board</b>	<b>PCB</b>	<b>1</b>
<b>VR101 250V/4.5A</b>	<b>Varistor</b>	<b>1</b>



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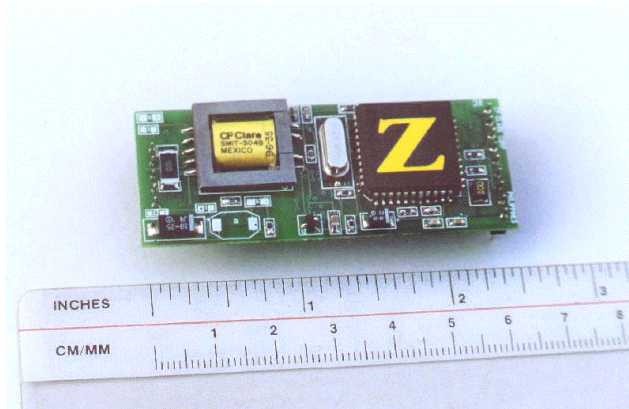
## Z02201/Z02205 Availability

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◆ <b>Samples</b>	<b>Now</b>
◆ <b>Production</b>	<b>Now</b>
◆ <b>Evaluation Kit</b>	<b>Now</b>
◆ <b>Product Spec</b>	<b>Now</b>
◆ <b>Customer Procurement Spec</b>	<b>Now</b>

**Customers Are Designing With This Solution Now!**  
**Start Your Design Today With the ZiLOG**  
**Evaluation Kit...**

## V.22bis Modem Module



- ◆ **Standalone Modem**
  - **Pre-Certified**
- ◆ **Modules Available Q4'98 from various sources**
- ◆ **Basic AT Command Set**
  - **AT +++, A, A/, B, D, E, &F, &G, H, &HT, I, N, O, P, &P, Q, Sn, ?, =X, T, V, Z**
- ◆ **CP Clare DAA Module (North America Q4'98, Europe Q1'99)**
  - **[www.cpclare.com](http://www.cpclare.com)**
- ◆ **Comtech -- UK Version**
  - **[www.ctl-bolton.com](http://www.ctl-bolton.com)**



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## ZiLOG V.22bis Modem

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- ◆ **Z0220100ZCO Evaluation Kit**
- ◆ **Competitive BOM Cost**
- ◆ **Low Component Count Solution**
- ◆ **Controller Code Is Available**
- ◆ **Customization Is Available**
- ◆ **Demonstration Is Available Today!**
  
- ◆ **Visit ZiLOG's Web Site at [www.zilog.com](http://www.zilog.com)**