

Project of Open Electronic Experimental System Programming Software

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Abstract. This chapter provides the development solution of open electronic experimental system, and introduces the function of practical FX-pro programming software, and describes the normal operation area. The research aims at innovative design of Image Electronics teaching experimental facility, while we are facing teachers and students in higher vocational college, technical secondary school and vocational school. We make the outcome intuitional and practicable instead of teaching facilities on hand, that could be utilized at will such as self-directed experiment after class.

Introduction

FX-A Full Analysis of the Development Board.

It constitutes of software experimental zone and hardware experimental zone, cooperating sorts of functional modules and components in developing various applied project rapidly [1]. Figure 1 shows as below.



Figure 1. FX-A Full Analysis of the Development Board

Function and Performance Metrics of FX-pro Programming Software

We devised FX-pro Generator Software especially in order for burning in essential program into chips. The software can satisfy baking AT89S51/52 while reading message out, and the message that baked in could be encrypted [2]. Videos related experiments were put into FX-pro Generator Software for students' proficient skills. Besides, typical modules were added in, such as timer calculator, Baud-rate calculator, SUDT AccessPort, digital encoder, Color-ring resistance value test, Stepper motor calculation table, screen scraper, etc. to enhance the comprehension of concepts and theory in study [3].

FX-pro Generator Software includes Normal Operation Area, Date Buffer Cache, Operation Status Area and Functional Area. Normal Operation Area contains Open File, Hex to Binary, Save File, Erasing Device, Write Device, Read Device, Check Data, AutoComplete and Lock location nine parts in all. Data Buffer Cache has 2 blocks for user checking intermediate data, testing system error area and confirming the location of error [4]. Operation Status Area shows customer's actions and results that being operated, meanwhile locates the zone of error for targeting to check for errors. Functional Area has been baked supporting experimental programs, and then user only need to



select relevant experiment afterwards the program will be transferred to software and bake into chips [5].

Normal Operation Area

(1) Reading device: Customer can read information from chips those unencrypted or self-encrypting, by then could check programs and locate the report errors.



Messages read from Date Buffer Cache show below:

▲ 太河見20008倍震度											
▶ 小相生2000编性合											
AT89S51 🔽 检测(L)	0000	FF	FF	FF	FF	FF	FF	FF	FF		^
	0010	FF	FF	FF	FF	FF	FF	FF	FF		≡
———-操作-———	0018	FF	FF	FF	FF	FF	FF	FF	FF		
	0020	FF	FF	FF	FF	FF	FF	FF	FF		
打开文件(11)	0028			rr vv	rr vv	77	rr vv	77	77		
	0038	FF	FF	FF	FF	FF	FF	FF	TT		
	0040	FF	FF	FF	FF	FF	FF	FF	FF		
十八制转二进制 (6)	0048	FF	FF	FF	FF	FF	FF	FF	FF		
	0050	FF	FF	FF	FF	FF	FF	FF	FF		
保存文件 (S)	0058	FF	FF	FF	FF	FF	FF	FF	FF		
	0000	11	L L L	11	11	11	LL LL	11	11		
(加) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	0070	FF	FF	FF	FF	FF	FF	FF	44		
ISHTERIT (C)	0078	FF	FF	FF	FF	FF	FF	FF	FF		
	0080	FF	FF	FF	FF	FF	FF	FF	FF		
写器件(W)	0088	FF	FF	FF	FF	FF	FF	FF	FF		
	0090	FF	FF	FF	FF	FF	FF	FF	FF		
法 男件 (2)	0098	77	rr vv	rr vv	rr vv		rr vv	77	77		
Kan @	0048	FF	FF	FF	FF	FF	FF	FF	11		
	OOBO	FF	FF	FF	FF	FF	FF	FF	FF		
校验数据(E)	0088	FF	FF	FF	FF	FF	FF	FF	FF		
	0000	FF	FF	FF	FF	FF	FF	FF	FF		
自动完成(4)	0008	FF	FF	FF	FF	FF	FF	FF	FF		
EHO/DAX (2)	0000	FF	FF	FF	FF	FF	FF	FF	FF		
tust:	0008	FF	FF	FF	FF	FF FF	FF	FF	FF		
Julia:	0010	11	11	11	11	11	11	TT FF	11		
无锁定 🔍 写锁定位	OOFO	FF	FF	FF	FF	FF	FF	FF	FF		
	00F8	FF	FF	FF	FF	FF	FF	FF	FF		
			_								~
	緩	中1			影神2	2		状;	态	功能	

(2) Erasing Device: Customer can delete messages in chips by using Generator Software.

✓ 小福星2008编程器				
AT89S51 💟 检测(L)	已经打开并初她 正在等待用户搜	治化端口:COM2 作		
操作	检测到器件,器 读器件已完成, 已经保存到二波	件类型为AT89S5: 数据已经读入缓 制文件	l 中区2	
打开文件 (0)	品进制又件已剩	2读到缓冲区1		
十六制转二进制 (8)				
保存文件(5)				
擦除器件 C)				
写器件 ())				
读器件 (<u>R</u>)				
校验数据 (2)				
自动完成(A)				
加密:				
无锁定 🔽 写锁定位				
	缓冲1	缓冲2	状态	功能



- (3) Write Device: Customer can copy messages into chips by using Generator Software.
- (4) Check Data: Customer can check data in case of error for the sake of finishing experiment rapidly and efficiently.

✓ 小福星2008编程器				
AT89S51 💟 检测(L)	已经打开并初帧 正在等待用户提	i化端口:COM2 作		
————操作———	检測到器件,器 读器件已完成。 已終保存到二は	件类型为AT89S51 数据已经读入缓; 排制文件	l 中区2	
打开文件 (0)	二进制文件已经	读到缓冲区1		
	住牙数诺口经则 读器件已完成, 器件校验数据F	幼鸟入箭片 数据已经读入缓 校验数据已 2完成 未发现错	中区2 开始	
保存文件 (2)		校验数据已:	结束	
擦除器件 ©)				
写器件 🕷				
读器件 (L)				
校验数据(E)				
自动完成 (点)				
加密:				
- 无锁定 □ 「写锁定位」				
	緩冲1	緩冲2	状态	功能

(5) AutoComplete: User can delete, write, check and encipher messages in chips by using Generator Software. Lot of time should be saved.



Embezzling.

(6) Lock location:

Encryption preserves user's program from



Installation Procedure and Utilization of Software Installation Procedure.

Select the FX-pro Setup and double click.





And then click Next.



Select "I Agree" ,then Next.

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	控制技术教研室 2007年12月	~
 ● 既同意以上条款 ○ 我不同意以上条款 XFX — 		
	上一步 下一步 🗙	取消

Click "Browse" and select installation path, then Next.



Click Next, Installation begins.

安装程序已经准备好在您的计算机上安装 小福星2008 。	
XFX	



Installing



Click "Finish" to accomplish the installation.

Utilization of Software.

First click the "Function" at the bottom-right of the software, and make choice in ports e.g. COM1, COM2, COM3, COM4.

AT89S51 🛛 🔽 检测 (L)	系统设置				
操作	编程器串口选:	释: 20112 COM1	~		
打开文件 (0)	- 实验项目	COM2 COM3			間入到し
十六制转二进制 (b)	12757,2234. 19	COM4		i i	扁程器
保存文件 (S)	常用工具	-			
擦除器件 (C)	定时器计算备	き (波特半 (波特半	计算器	串口调	试器
写器件 (11)			且值速测	步进电机	は調表
读器件 (B)	透明窗体调试	###	載取器		*
校验数据 (E)	谷 用		·用	· · · · ·	*
自动完成(A)	备用		用	备户	₹
加密:	备用	[[] 汇编视	频教程	易芯工	作室
无锁定 💽 写锁定位	河	南工业职	业技术	学院	
	缓冲1	緩冲2	状态		功能

Click the Check button, the port that selected will be open and "AT89S51" should be detected.



If errors happened, there will be Auto-reminder.

AT89552 🔽 🍋 🕅 🗋	已经打开并初始 正在等待用户提	à化端口:COM1 ♦作		
————操作———	检测器件超时(天败)		
打开文件 (0)				
十六制转二进制 (8)				
保存文件(5)				
擦除器件 C)				
写器件 (世)				
读器件 (8)				
校验数据 (2)				
自动完成(A)				
加密:				
无锁定 🔽 写锁定位				
	緩冲1	緩冲2	状态	功能



Thus, customer should modify the port and rewrite according to their needs.

Conclusion

Depending on the test by equipments, the Generator Software of open electronic experimental system satisfied the need of preliminary design. System upgrade is practicable by Interface Module and room. The system accomplished the intelligent programming control of experimental circuit, which ran stably. Parameters were reached, safety and reliability of system were drastically increased.

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References

[1] Guoyan Duan. Electronic Technology Research and Development of Virtual Experiment System [D]. [Master Thesis]. Southwest Jiaotong University, Chongqing. 2013

[2] Chunyu Cheng, Zhenyu Wu, Yanan Wu, Chi Ma, Xueman Guo, Lin Wang. Development for Hierarchical Teaching of Analogue Electronic Technique Experiment Platform [J]. Laboratory Science, 2014-05.

[3] Lei Su. Development and Application of Discrete Electrical Apparatus [J]. Electronic Design Engineering. 2011-09

[4] Xinyu Zhu. Development and Application of Electronic Design Automation Experimental System [D]. [Master Thesis]. Beijing University of Posts and Telecommunications, Beijing. 2012

[5] Shisheng Yan, Chengrao Zhong, Liefeng Wang. Development of new type experimental device for Analog Electronic Technology [J]. Journal of Hainan Normal University: Natural Science. 2012-03