

Date: Jan 31, 1989

Subject: Discovery Control Panel ERS

Document Version Number: 00.10

Revision History

<u>Ver</u>	<u>Date</u>	<u>Changes or Additions</u>
Draft !!!	April 5, 88	
00.01	June 20, 1988	Make changes for Discovery ROM. Change default to 'No' for 'Reset RAM Disk during next reset' option line. Delete Disk1/Disk2 Ejection options but still reserved these two byte in battery RAM for future version. Add 'AppleTalk' booting to startup options. Also add a byte for 'Reset RAM Disk during next reset' option line. Re-arrange battery RAM locations 'Clock Selection' option.
00.02	Sept 9, 1988	Add in Password option
00.03	Sept 21, 1988	Change REV_D ERS to Discovery ERS. Update BRAM buffer with id number instead of index.
00.04	Oct 18, 1988	Change slot1/slot2 configurations. Add a new byte in batteryram buffer for slot 1 configuration, but having same id. Update 'Device Connected' as inaccessible. Change some message strings of control panel.
00.05	Oct 31, 1988	Delete the Password option from the control panel main menu. But still require the password to get into the control panel if the password is set up by a special program. Explain in the last section of this document.
00.06	Nov 16, 1988	Delete the 'Maximum RAM Disk Size' option in RAM Disk menu and change the 'Minimum RAM Disk Size' to 'Select RAM Disk Size'. Also the batteryram location for maximum ram disk size is always set to the same value as in the 'Select ram disk size' value. The batteryram index to 'Maximum ram disk size' and 'Re-size during next reset' is interchanged but the id to the index remains the same.
00.07	Dec 02, 1988	Delete all what has been known as PASSWORD !!
00.08	Dec 21, 1988	Correct the defaults value settings printer/modem ports due to the mistakes of using copy and paste commands.
00.09	Jan 18, 1989	Add in a BatteryRAM byte to install/not install 'Visit Monitor/ Memory Peeker' to CDA during Startup or Reset.

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Define a new ID for CDEV usage.
Correct some of the default values of BatteryRAM settings
descriptions, there is no actual changes to the code
implementations.

Introduction

Control Panel is a hardware configuration program resident in one of Discovery ROMs. It is invoked whenever the user does a power up with the closed apple key pressed and whenever the user does a coldstart with the CONTROL, closed apple key and RESET. The program must also be callable from an application program as a desk accessory. Control Panel will also be automatically displayable in 40 or 80 columns. Desk Accessory Manager, in firmware, will call the Control Panel program.

Basic Functions

Control Panel's main functions are to allow the user to experiment with different system configurations and at the same time permanently store any changes in the battery backed up RAM (hence forth called BATTERYRAM) and to change the system time. The BATTERYRAM has 256 bytes of battery backed up RAM for system parameters storage.

Control Panel is to be written as simple (intuitive) to use as possible, bearing in mind that the code must be as short as possible for two reasons. Reason one is that Control Panel must be translated into many languages. Reason two is that this code will be in ROM and ROM space is very precious.

A vector called MSGPOINTER (located in bank E1) is available as hook to all the ASCII which appears in the Control Panel. MSGPOINTER is a 3 byte value consisting of a 24 bit pointer to an address listing table. This listing table may be in any bank in Discovery. For the U.S.A. control panel ASCII the pointer points into the ROM. The address listing table consists of pointers to text strings in the same bank as the table. The address listing table and the format of the text strings is defined in the ROM listings of the Control Panel. MSGPOINTER is accessed by calls to the miscellaneous tool locator. If MSGPOINTER points to RAM tables and strings the Control Panel will perform as it does now except that it will use these for all messages and text instead of the ones built-in.

Differences between IIGs and Discovery

The parts that have been changed:

1. Keyboard (Original Options in //gs)
2. Slots
3. Mouse (New to Discovery)
4. Printer Port
5. Modem Port
6. RAM Disk

Since addition or deletion has been done to each individual panel and thus the BATTERYRAM allocation has changed. The applications have to use the Miscellaneous tool, ReadBParam & WriteBParam, to access the battery buffer. To maintain compatibility with //gs, Discovery accesses the BATTERYRAM buffer as id number instead of index. See Misc Tools for details.

Functions that can be changed via Control Panel

<u>Selection</u>			<u>Function</u>
Printer Port	Set up all related functions for Printer Port		
	Available options are:		
	<u>Line option</u>	<u>Choices for option</u>	<u>Default</u>
	Device Connected:	Printer, 0 Modem, 1 AppleTalk, 2	√
	Line Length:	Unlimited 40 72 80 132	√
	Delete First LF after CR:	No Yes	√
	Add LF after CR:	No Yes	√
	Echo:	No Yes	√
	Buffering:	No Yes	√
	Baud:	50 75 110 134.5 150 300 600 1200 1800 2400 3600 4800 7200 9600 192000	√
	Data/Stop Bits:	5/1 5/2 6/1 6/2 7/1 7/2 8/1 8/2	√
	Parity:	Odd Even None	√

DCD Handshake:	No	
	Yes	√
DSR/DTR Handshake:	No	
	Yes	√
XON/XOFF Handshake:	No	
	Yes	√

Modem Port

Set up all related functions for Modem Port.
Available options are:

<u>Line option</u>	<u>Choices for option</u>	<u>Default</u>
Device Connected:	Printer, 0 Modem, 1 AppleTalk, 2	√
Line Length:	Unlimited 40 72 80 132	√
Delete First LF after CR:	No Yes	√
Add LF after CR:	No Yes	√
Echo:	No Yes	√
Buffering:	No Yes	√
Baud:	50 75 110 134.5 150 300 600 1200 1800 2400 3600 4800 7200 9600 192000	√
Data/Stop Bits:	5/1 5/2 6/1 6/2 7/1 7/2 8/1	√

	8/2	
Parity:	Odd	
	Even	
	None	√
DCD Handshake:	No	
	Yes	√
DSR/DTR Handshake:	No	
	Yes	√
XON/XOFF Handshake:	No	
	Yes	√

Display

Select all video specific options. Choosing type automatically causes color or monochrome selections to appear on the rest of the screen.

Available options are:

<u>Line option</u>	<u>Choices for option</u>	<u>Default</u>
Type:	Color	√
	Monochrome	
Columns:	40	√
	80	
Hertz:	60	√
	50	

Screen Colors Selection

Text:	Black	
	Deep Red	
	Dark Blue	
	Purple	
	Dark Green	
	Dark Gray	
	Medium Blue	
	Light Blue	
	Brown	
	Orange	
	Light Gray	
	Pink	
	Light Green	
	Yellow	
	Aquamarine	
	White	√

Background:	Black	
	Deep Red	
	Dark Blue	
	Purple	
	Dark Green	
	Dark Gray	
	Medium Blue	√
	Light Blue	
	Brown	
	Orange	
	Light Gray	
	Pink	

Light Green
Yellow
Aquamarine
White

Border:

Black
Deep Red
Dark Blue
Purple
Dark Green
Dark Gray
Medium Blue
Light Blue
Brown
Orange
Light Gray
Pink
Light Green
Yellow
Aquamarine
White

√

Standard Colors:

No
Yes

√

Standard Colors indicates whether the user's chosen colors match the Apple standard values. In addition, if the user selects 'Yes' the current colors are switched to Apple Standards.

Sound

Allows default system bell sound (pitch) and volume to be selected via an indicator bar. Default is midrange.

System Speed

Allows default system speed of either normal speed, 1MHz, or fast speed, 2.6/2.8 (RAM/ROM) MHz.

Available options are:

<u>Line option</u>	<u>Choices for Option</u>	<u>Default</u>
System:	Normal	
	Fast	√

RAM Disk

Allows default amount of free RAM to be used for a RAM Disk. Available options are:

<u>Line option</u>	<u>Choices for Option</u>
Select RAM Disk Size: (minimum) K	

The 'Maximum RAM Disk Size' is current //gs is no longer displayed and therefore always set to the same size of the selected RAM Disk Size (Minimum RAM Disk Size).

Current RAM Disk Size: kkkkkk will be displayed on the screen. Current RAM Disk Size is determined by a call to the RAM disk driver.

Free RAM for RAM Disk: kkkkkk will be displayed on the screen. Free RAM = Total system RAM - 256K

Total RAM in Use: kkkkkk will be displayed on the screen.

Total RAM in Use = Total system RAM - Total Free RAM

Total Free RAM Disk: kkkkkk will be displayed on the screen.
Total Free RAM is determined by a call to the memory manager.

Re-size during next reset: No (Default)
Yes

If 'Yes' is selected, then during next Cntl-Apple-Reset, it will reset the new size of the RAM Disk.

Slots

Allows user to select either built-in device or peripheral card for slots 1,2,3,4,5 and 6. Slot 7 is always set to external. Also allows user to select startup slot or scan slots at startup time.

Available options are:

<u>Line option</u>	<u>Choices for Option</u>	<u>Default</u>
Slot 1:	Printer, 0 Your Card, 1 AppleTalk, 2 Modem, 3	√
Slot 2:	Modem, 0 Your Card, 1 AppleTalk, 2 Printer, 3	√
Slot 3:	Built-in Text Display Your CARD	√
Slot 4:	Mouse Port Your Card	√
Slot 5:	Smart Port Your Card	√
Slot 6:	Disk Port Your Card	√
Slot 7:	Your Card, 1 AppleTalk, 0	√
Startup:	Scan 1 2 4 5 6 7 RAM Disk ROM Disk AppleTalk	√

Language

Allow user to select which keyboard layout, text display language, key repeat speed, delay to key repeat to use and advanced features. Layouts and languages are displayed which correspond to the hardware only. Layouts/languages not available with the user's hardware (keyboard micro and Mega//) are not displayed. The information on which layouts and languages are available come

from the keyboard micro at power-up time.

Available options are:

<u>Line option</u>	<u>Choices for option</u>	<u>Default</u>
Text Display:	(Chosen from table below)	U.S.A.
Keyboard:	(Chosen from table below)	U.S.A.
Number	ASCII	
0	U.S.A.	
1	U.K.	
2	French	
3	Danish	
4	Spanish	
5	Italian	
6	German	
7	Swedish	
8	Dvorak	
9	French Canadian	
A	Flemish	
B	Hebrew	
C	Japanese	
D	Arabic	
E	Greek	
F	Turkish	
10	Finnish	
11	Portuguese	
12	Tamil	
13	Hindi	
14	T1	
15	T2	
16	T3	
17	T4	
18	T5	
19	T6	
1A	L1	
1B	L2	
1C	L3	
1D	L4	
1E	L5	
1F	L6	

The keyboard micro provides the pointer to the appropriate ASCII as listed in the above table.

<u>Line option</u>	<u>Choices for option</u>	<u>Default</u>
Keyboard Buffering:	No	√
	Yes	

Repeat Speed	(indicator does these options)	
	1 char/sec	
	2 char/sec	
	4 char/sec	
	8 char/sec	
	11 char/sec	
	15 char/sec	
	20 char/sec	√
	24 char/sec	
	30 char/sec	
	40 char/sec	

Repeat Delay	(indicator does these options)	
	.25 sec	
	.50 sec	
	.75 sec	√
	1.0 sec	
	No repeat	

Cursor Flash	(indicator does these options)	
	(1 tick = 1/60th of a second)	
	xx ticks (slow)	
	xx ticks	
	xx ticks	√
	xx ticks	
	xx ticks (fast)	

-Advanced Features-

Shift Caps/Lower Case:	No	√
	Yes	
Fast Space/Delete Keys:	No	√
	Yes	
Dual Key Speed:	Normal	√
	Fast	

Mouse

Allows user to select scaling for ADB mouse or trackball. Also select double click time for any mouse type device (include keyboard mouse). The user can also select delay-to-start time, acceleration and maximum speed for keyboard mouse. The add on value for mouse tracking can only take effect if the original x-y count is equal or greater than 3. See Keyboard Micro ERS for details.

Available options are:

<u>Line option</u>	<u>Choices for option</u>	<u>Default</u>
Mouse Tracking:	(indicator does these options)	
	No manipulation	√
	2	
	4	
	6	
	8	

Double Click:	(indicator does these options)	
	(1 tick = 1/60th of a second)	
	xx ticks (slow)	
	xx ticks	
	xx ticks	√
	xx ticks	
	xx ticks	

**-Keyboard Mouse-
Delay-to-Start**

(indicator does these options)	
.25 sec	
.50 sec	
.75 sec	√
1.0 sec	
1.25 sec	

Acceleration: (indicator does these options)
 6.0 sec (time to get to max speed)
 4.5 sec
 3.0 sec ✓
 1.5 sec
 0.0 sec

Maximum Speed: 180 pixels/sec
 120 pixels/sec
 60 pixels/sec
 40 pixels/sec ✓
 30 pixels/sec
 24 pixels/sec
 20 pixels/sec
 15 pixels/sec
 11 pixels/sec
 8 pixels/sec

Note: The keyboard mouse option will only show up with the new keyboard micro (Ver # >= 6) installed. For current //gs keymicro, it needs to set the Mouse Tracking at maximum in order to have high speed mouse.

Clock

Allows the user to set the time and date and time data formats.
 Available options are:

<u>Line option</u>	<u>Choices for option</u>	<u>Default</u>
Month:	1-12	
Day:	1-31	
Year:	1904-2044	
Format:	MM/DDYY DD/MM/YY YY/MM/DD	✓
Hour:	1-12 or 0-23 (depends on format below)	
Minute:	0-59	
Second:	0-59	
Format:	AM-PM 24 Hour	✓

Quit

Returns user to calling application or if called from keyboard does a startup function.

BATTERYRAM Allocation

Important Note: No application program will be allowed to use the BATTERYRAM for its personal use. This must be stressed to all application writers.

BATTERYRAM must include encoded bytes for all options selected for Apple default values (Defaults get check marks beside them in the dialog boxes as the user flips through the options)

Addition information stored in BATTERYRAM:

<u>Information</u>	<u>Set by Who</u>
1. AppleTalk node #	AppleTalk firmware
2. PRODOS/16 parameters	PRODOS/16

Manufacturing will place the standard Apple setup values into BATTERYRAM during the manufacturing cycle, except for keyboard layout and display language which will be determined by the keyboard attached. All items changeable by manufacturing and the Control Panel program may be changed by the users application program if desired, however only an Apple approved utility program should make changes to BATTERYRAM. Failure to enforce this will result in BATTERYRAM data being trashed. Once the data is trashed the system will NOT work. If BATTERYRAM is totally trashed or the battery dies the firmware will automatically use the Apple standard values to bring up the system. The dealer at this point can replace the dead battery and then the user can enter the Control Panel program to restore his system to his prior configuration.

To maintain compatibility with //gs and future machines, one needs to use id number to indirect access the BATTERYRAM parameters.

The id number and current default BATTERYRAM layout starting at address \$00 is as follows:

<u>ID</u>	<u>Address</u>	<u>Values</u>	<u>Comments</u>
Serial Port 1			
\$00	\$00	DFB \$00	0: Printer, 1: Modem, 2: AppleTalk
\$01	\$01	DFB \$00	Line Length: Unlimited
\$02	\$02	DFB \$00	Delete First LF after CR: No
\$03	\$03	DFB \$01	Add LF after CR: Yes
\$04	\$04	DFB \$00	Echo: No
\$05	\$05	DFB \$00	Buffering: No
\$06	\$06	DFB \$0D	Baud: 9600
\$07	\$07	DFB \$06	Data/Stop Bits: 8/1
\$08	\$08	DFB \$02	Parity: None
\$09	\$09	DFB \$01	DCD Handshake: Yes
\$0A	\$0A	DFB \$01	DSR/DTR Handshake: Yes
\$0B	\$0B	DFB \$00	XON/XOFF Handshake: No
Serial Port 2			
\$0C	\$0C	DFB \$01	0: Printer, 1: Modem, 2: AppleTalk
\$0D	\$0D	DFB \$00	Line Length: Unlimited
\$0E	\$0E	DFB \$00	Delete First LF after CR: No
\$0F	\$0F	DFB \$00	Add LF after CR: No
\$10	\$10	DFB \$00	Echo: No
\$11	\$11	DFB \$00	Buffering: No
\$12	\$12	DFB \$07	Baud: 1200
\$13	\$13	DFB \$06	Data/Stop Bits: 8/1
\$14	\$14	DFB \$02	Parity: None
\$15	\$15	DFB \$01	DCD Handshake: Yes
\$16	\$16	DFB \$01	DSR/DTR Handshake: Yes

\$17	\$17	DFB \$00	XON/XOFF Handshake: No
Displays elections			
\$18	\$18	DFB \$00	Type: Color
\$19	\$19	DFB \$00	Columns: 40
\$1A	\$1A	DFB \$0F	Text: (White)
\$1B	\$1B	DFB \$06	Background: (medium blue)
\$1C	\$1C	DFB \$06	Border: (medium blue)
\$1D	\$1D	DFB \$05	Hertz: 60
Sound selections			
\$1E	\$1E	DFB \$05	Volume: ----*-----
\$1F	\$1F	DFB \$06	Pitch: ----*-----
Speed selections			
\$20	\$20	DFB \$01	Speed: Fast
Slots selections			
\$21	\$58	DFB \$00	Slot 1: Printer
\$22	\$22	DFB \$00	Slot 2: Modem
\$23	\$23	DFB \$00	Slot 3: Built-in Text Display
\$24	\$24	DFB \$00	Slot 4: Mouse
\$25	\$25	DFB \$00	Slot 5: Smart Port
\$26	\$26	DFB \$00	Slot 6: Disk Port
\$27	\$27	DFB \$01	Slot 7: Your Card
\$28	\$28	DFB \$00	Startup slot: Scan
Language selections			
\$29	\$29	DFB \$00	Display Languages: U.S.A.
\$2A	\$2A	DFB \$00	Keyboard: U.S.A.
\$2B	\$2B	DFB \$00	Keyboard Buffering: No
\$2C	\$2C	DFB \$05	Repeat Speed: -----*-----
\$2D	\$2D	DFB \$02	Repeat Delay: ----*-----
\$2E	\$3A	DFB \$02	Double Click: ----*-----
\$2F	\$2E	DFB \$02	Cursor Flash: ----*-----
\$30	\$2F	DFB \$00	Shift Caps/Lower Case: No
\$31	\$30	DFB \$00	Fast Space/Delete Keys: No
\$32	\$31	DFB \$00	Dual Speed Keys: Normal
\$33	\$39	DFB \$00	Mouse Tracking: *-----
Clock selections			
\$34	\$34	DFB \$00	Format: MM/DD/YY
\$35	\$35	DFB \$00	Format: AM-PM
RAM Disk selections			
\$36	\$36	DFB \$00	Minimum RAM Disk Size: 0
\$37	\$38	DFB \$00	Maximum RAM Disk Size: 0
Count/Numbers of languages			
\$38	\$3E	DFB \$08	Numbers of languages
\$39	\$3F	DFB \$00	First language, U.S.A.
\$3A	\$40	DFB \$01	Second language, U.K.
\$3B	\$41	DFB \$02	Third language, French
\$3C	\$42	DFB \$03	Fourth language, Danish
\$3D	\$43	DFB \$04	Fifth language, Spanish
\$3E	\$44	DFB \$05	Sixth language, Italian
\$3F	\$45	DFB \$06	Seventh language, German

\$40	\$46	DFB \$07	Eighth language, Swedish
Count/Numbers of layouts			
\$41	\$47	DFB \$10	Number of layouts
\$42	\$48	DFB \$00	First layout, U.S.A.
\$43	\$49	DFB \$01	Second layout, U.K.
\$44	\$4A	DFB \$02	Third layout, French
\$45	\$4B	DFB \$03	Fourth layout, Danish
\$46	\$4C	DFB \$04	Fifth layout, Spanish
\$47	\$4D	DFB \$05	Sixth layout, Italian
\$48	\$4E	DFB \$06	seventh layout, German
\$49	\$4F	DFB \$07	Eighth layout, Swedish
\$4A	\$50	DFB \$08	Ninth layout, Dvorak
\$4B	\$51	DFB \$09	Tenth layout, French Canadian
\$4C	\$52	DFB \$0A	Eleventh layout, Flemish
\$4D	\$53	DFB \$0B	Twelfth layout, Hebrew
\$4E	\$54	DFB \$0C	Thirteenth layout, Japanese
\$4F	\$55	DFB \$0D	Fourteenth layout, Arabic
\$50	\$56	DFB \$0E	Fifteenth layout, Greek
\$51	\$57	DFB \$0F	Sixteenth layout, Turkish
\$52	\$32	DFB \$2D	Reversed for Disk 1 Eject
\$53	\$33	DFB \$2D	Reversed for Disk 2 Eject
\$54	\$37	DFB \$00	Reset RAM Disk size during next reset
Mouse selections			
\$55	\$3B	DFB \$02	Delay-to-Start: -----*-----
\$56	\$3C	DFB \$02	Acceleration: -----*-----
\$57	\$3D	DFB \$06	Maximum Speed: -----*-----
\$58	\$21	DFB \$00	Fake slot 1 configuration
\$59	\$59	DFB \$00	Bit7, 1/0=install/not install 'Visit Monitor/Memory Pecker' to CDA
\$5A	\$5A	DFB \$FF	CDEV usage
\$5B -\$77	\$5B-\$7F	DFB \$FF	RESERVED but not modify
AppleTalk Node Number			
\$80	\$80	DFB \$00	AppleTalk Node #
PRODOS/16 OS Operating system variables			
\$81-\$BF	\$81-\$BF	DS \$20, \$00	PRODOS/16 OS variables
\$A1-\$FB	\$A1-\$FB	DS \$56, \$00	Pad to check sums
Check sums			
\$FC-\$FD	\$FC-\$FD	DW \$0000	Main BATTERYRAM checksum
\$FE-\$FF	\$FE-\$FF	DW \$0000	Secondary checksum

Special Notes

1. What happens when Control Panel is activated and at power up ?

When the Control Panel is selected and the BATTERYRAM is corrupt the system will assume a U.S. layout and English language. The information is saved in the BATTERYRAM storage buffer in bank \$E1. Also occurring if the BATTERYRAM is corrupt is the moving of U.S. standard parameters to the BATTERYRAM storage buffer in bank \$E1. The information is checksummed and written to the BATTERYRAM. A read of the BATTERYRAM is now done. If the checksum fails the system continues running using U.S. standard parameters.

Anytime the Control Panel program is selected the keyboard micro is instructed to give the firmware the identification numbers of all the keyboard layout it supports. This information will be used later to determine which options should be displayed as user keyboard options. The keyboard micro will also pass identification numbers for the display languages which should be used for each keyboard layout. These numbers will also be used later to determine which options should be displayed as user language options.

2. Special Entry/Set System Defaults

The Control Panel can be entered by holding down the Option Key during power up or by pressing Control-Option-Reset. This entry will cause a preliminary screen to appear. This screen allows the user to do the following.

- 1 = Enter Control Panel.
- 2 = Set system standards for 60 hertz.
- 3 = Set system standards for 50 hertz.
- 4 = Continue restarting the system.

By pressing the appropriate key the described function will occur.