

FUSION Series

SYSTEM PROTOCOL

Version 4.2

08/25/2003

The "FUSION" Autoloading System for CD-R and DVD-R media accepts commands from a host computer through two RS232 port, **COM0** (default) and **COM1**.

The default settings for the COM ports are:

- **Baud rate = 9600; N-8-1; Flow Control = Xon/Xoff; Terminal Emulation = ANSI; Local echo = off.**

There are 2 modes in which commands will be accepted and executed:

- 1) **DIRECT Mode** (factory default), only single-character commands are accepted. The commands are executed as soon as the characters are sent. The system boots up in this mode and will return to this mode every time the power is cycled.
- 2) **MACRO Mode**, single-character as well as multi-character macro commands are accepted. The <Enter> key must be sent for the command to be executed. Please see the "FUSION Servo Controller Board User Manual" for a complete description of the format and use of the macro commands.
- 3) The <Esc> key toggles between the two modes.

The default "signup string" for the units is "**Mediatechnics**", "**FUSION-xx**", "**V6.0a**". This string is sent back to the host computer in response to the "V" command.

SYSTEM COMMANDS

A	User Prog.	ACCEPT	- Accept good CD after successful copying
a	User Prog.	RAMPING	- Defines ramping for each motor individually (ax... x=motor number)
B	System	Display Flags	- Display the status of the flags: IB1=0000, IB2=0001, IB3=0002.
b	User Prog.	Not Used	-
C	User Prog.	CALIBRATE	- Calibrate the robot (moves all motors to their home position)
c	User Prog.	Not Used	-
D	System	Dump Macros	- Dump all Macros for text capture
d	User Prog.	Not Used	-
E	System	ERASE	- Erase all Macros from the systems memory
e	User Prog.	Not Used	-
F	System	Rest Fags	- Reset all flags to their default value
f	User Prog.	Not Used	-
G	User Prog.	GET	- Used for picking up a CD from a drive and put it in the printer
g	User Prog.	Not Used	-
H	System	Show Macros	- Display the list of the Macro Commands stored in the systems memory
h	User Prog.	Not Used	-
I	User Prog.	INSERT	- Place one CD from the Input bin onto the open drive tray
i	User Prog.	Not Used	-
J	User Prog.	ALIGN	- Same as I but will not drop the CD for drive tray alignment
j	User Prog.	Not Used	-
K	System	ECHO Toggle	- Toggle the local Echo of the system off and on
k	User Prog.	Not Used	-
L	System	LOAD	- Upload a Macro Command Set file (txt) through the COM port
l	User Prog.	Not Used	-
M	System	FIRMWARE	- Display the Firmware version number
m	User Prog.	Not Used	-
N	System	Read Signature	- Display the internal serial number of the board
n	User Prog.	Not Used	-
O	User Prog.	Not Used	- Put CD from Drive into IB
o	User Prog.	Not Used	-
P	System	POSITION	- Display the step positions for all motors
p	System	POSITION	- Display the step positions for all motors
Q	System	Print ERROR	- Display the last Macro and will point out the place where the error occurred
q	User Prog.	Not Used	-
R	User Prog.	REJECT	- Reject one CD after unsuccessful copying
r	User Prog.	Not Used	-

S	System	STATUS	– Display the system status (see status codes for detail)
s	User Prog.	Not Used	–
T	System	Update Counter	–
t	User Prog.	Not Used	–
U	System	Com1 Baud Rate	– To change the Baud rate send ‘u’ for COM0 or ‘U’ for COM1 followed by
u	User Prog.	Com1 Baud Rate	– ‘0’ = 9600 bps, ‘1’ = 19200bps, ‘2’ = 38400 bps, ‘3’ = 57600 bps or ‘4’ = 115200 bps.
V	System	Macro Version	– Display the Macro Command Set version number and the “signup string”.
v	User Prog.	Not Used	–
W	User Prog.	Not Used	–
w	User Prog.	Not Used	–
X	System	Display Photos	– Display the present status of the Photo sensors
x	User Prog.	Not Used	–
Y	User Prog.	Not Used	–
y	User Prog.	Not Used	–
Z	User Prog.	Not Used	–
z	User Prog.	Not Used	–
Esc	System	Mode toggle	– Toggle between the DIRECT Mode and the MACRO Mode
0	System	Printer Buffer	– Printer – Print Buffer
1	System	Tray In	– Printer – Close the Printer Tray
2	System	Tray Out	– Open the Printer Tray
3	System	PT Status	– Display the Printer Tray status (C0, C2, C3 or C4)
4	System	IB Status	– Display the Input Bins status C5=IB1, C6=IB2, C7=IB3.
5	System	Not Used	–
6	System	Not Used	–
7	System	Mode Status	– Display the command mode status (01 = MACRO Mode, 02 = DIRECT Mode)
8	System	Internal use	–
9	System	Internal use	–
!	System Reserved	Internal use	
"	System Reserved	Internal use	
#	System Reserved	Internal use	
\$	System Reserved	Internal use	
%	System Reserved	Internal use	
&	System Reserved	Internal use	– Toggles the torque from LOW to HIGH
*	System Reserved	Internal use	
+	System Reserved	Internal use	– Displays the threshold for the motors
,	System Reserved	Internal use	
-	System Reserved	Internal use	
.	System Reserved	Internal use	
/	System Reserved	Internal use	
[System	System Define Macro	(See “CD-FUSION 8600 Controller Board User Manual” for details)
\	System Reserved	Internal use	
]	System Reserved	Internal use	
^	System Reserved	Internal use	
_	System Reserved	Internal use	
`	System Reserved	Internal use	
:	System Reserved	Internal use	
;	System	Comment	(See “CD-FUSION 8600 Controller Board User Manual” for details)
<	System Reserved	Internal use	
=	System Reserved	Internal use	
>	System Reserved	Internal use	
?	System Reserved	Internal use	
@	System Reserved	Internal use	
CTRL_A	System Reserved	Not Used	
CTRL_B	System Reserved	Not Used	
CTRL_C	System	Running, Abort	– STOP all actions unconditionally
CTRL_D	System Reserved	Not Used	
CTRL_E	System Reserved	Not Used	
CTRL_F	System Reserved	Not Used	
CTRL_G	System Reserved	Not Used	
CTRL_H	System	Back-Space	– Used when editing Macros in Hyper Terminal
CTRL_I	System Reserved	(Tab) key	
CTRL_J	System Reserved	Not Used	

CTRL_K	System Reserved	Not Used	
CTRL_L	System Reserved	Not Used	
CTRL_M	System Reserved	(Enter) key	
CTRL_N	System Reserved	Not Used	
CTRL_O	System Reserved	Not Used	
CTRL_P	System Reserved	Not Used	
CTRL_Q	System Reserved	Not Used	
CTRL_R	System	Line Refresh	– Used when editing Macros in Hyper Terminal
CTRL_S	System Reserved	Internal use	
CTRL_T	System Reserved	Not Used	
CTRL_U	System	Upgrade	– Used for upgrading the systems firmware (NOT the Macros)
CTRL_V	System Reserved	Not Used	
CTRL_W	System Reserved	Not Used	
CTRL_X	System Reserved	Not Used	
CTRL_Y	System Reserved	Not Used	
CTRL_Z	System Reserved	Not Used	

ERROR CODES

To all “User Programmable” commands and some system commands, the system will respond with an “X” after successfully completing the command and the status will be set to “00”. If an error occurred the response will be an “E” and the status will be set accordingly. A status code is stored in the systems memory and it can be retrieved with the ‘S’ command. “3”, “4” and “7” are also status retrieving commands (see list). All error codes are Hex numbers.

00 h – (S) – Status OK.

01 h – (7) – Status OK (DIRECT mode; the RCB will accept single character commands ONLY).

02 h – (7) – Status OK (COMMAND mode; the RCB will accept single or Macro type commands followed by the Enter key).

10 h – (S) – Stepper motor command time out.

20 h – (P) – Input Bin empty.

21 h – (P) – Input Bin jam. Can’t pickup CD from stack. CD stack or Picker arm misalignment.

30 h – (P) – Accept error. Can’t accept CD, no open tray was detected.

40 h – (S) – Syntax error. A command was sent without clearing the user error.

50 h – (P) – Reject error. Can’t reject CD, a tray is open or the Reject Bin is full.

60 h – (P) – Insert error. Can’t insert CD, no open tray was detected.

70 h – (P) – Insert error. Can’t pickup CD from the stack, or it was dropped from the Picker.

80 h – (S) – Calibration error.

90 h – (P) – CD pickup error. The CD was dropped from the picker.

A0 h – (P) – Output Bin full.

B0 h – (P) – CD pickup error CD was not detected in the tray. Drive or printer tray is empty.

C0 h – (3) – Printer ERROR – printer tray Jam.

C1 h – (3) – Printer ERROR – NO Ribbon

C2 h – (3) – Printer tray OPEN. Status OK.

C3 h – (3) – Printer tray CLOSE, no CD in the tray. Status OK

C4 h – (3) – Printer tray CLOSE, CD in the tray. Status OK.

C5 h – (4) – Input Bin 1 is active.

C6 h – (4) – Input Bin 2 is active.

C7 h – (4) – Input Bin 3 is active.

C8 h – (S) – NOT in use.

C9 h – (S) – NOT in use.

D0 h – (S) – NOT in use.

E0 h – (S) – Off line. NOT in use.

F0 h – (S) – Syntax / semantic error in macro definition (INTERNAL USE).

END