CORE Seria
(CS - 232

revision 3.0 By R. Karr, D

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Introduction

This manual describes the procedures for usin
interface cable to communicate between a com
CORE universal remote controller.

The CORE itself contains a set of routines (call
Interface or CSUI) which enables it to communi
terminal at a rate of 9600 or 19200 baud. This
control all of the CORE's functions from a
program as if they were physically pressin
keyboard. Also, there are additional functio
which transmit data between CORE and the hos

This manual is intended to be used by someon
with the CORE. (See the CORE Reference M
regarding programming the CORE.) It also ass
computer (or system) communicating with the
you are able to initialize the serial port on you
rate to 9600 or 19200, and send characters as
to use the special commands, you must als
receive blocks of binary data and store th
memory and/or on disk.

Baud Rate

The CORE is shipped with the baud rate set to 1
To use 9600 baud, hold the '9' key down while
To reset to 19200 baud, hold the '1' key down
A 'c'/reset (complete Clear) will reset the baud

Hardware Protocol

The CORE is configured to transmit (and recei
bit and no parity. As shipped, transmit is on pin
Pins 2 and 3 are reversible using an internal
on p. 15.) Pin 20 (DTR) is connected to +5. Gro

Note: in the descriptions which follow, numbe
sign (i.e. $20) are hexadecimal values.

Getting Started

To begin serial communication, CORE must be in its normal display state, with the time on the top line and the location displayed on the bottom line. For example, if you are in the middle of setting an event timer, learning a program or editing a definition manually, CORE will not respond to characters sent over the serial port. You must manually exit these modes first. (**Note:** If the display is timed out, CORE will always be able to accept serial input).

To enter serial mode, send any character over the serial port. CORE Serial User Interface then outputs a "~" (ASCII $7E = 126) to the serial port. CSUI then waits for a character from the serial port. If a character is not received in an allotted period of time (default timeout = 3 seconds), the CORE_ will sound a reject tone and resume its normal operation. The CORE display returns to the PAGE and KEY that was in effect prior to activation of the serial interface.
The next character sent to CORE over the serial port will again echo a "~" and so on.

1. If you send one of the characters listed in Table 1, CORE will respond as it would when the corresponding key is pressed on the CORE itself. The CORE will echo the character sent **at the completion of the command**. You **must** wait for the echo before sending the next character. (If the CORE is sending an infrared signal, the interrupts are disabled and no characters can be received.)

2. If you send one of the special control characters in Table 2, you will initiate one of the special sequences described in the section on Special CSUI Commands.

3. A Carriage Return or ^M (ASCII $0D = 13) will echo as a Carriage Return, followed by a LineFeed (ASCII $0A = 10)

4. Any other character will be echoed as a BELL or ^G (ASCII 07).

TABLE 1:

ASCII character	CORE
A	a– AM
B	b– PM
C	c– 2nd
P	P PAGE RPT
a	a
b	b
c	c
d	d
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
0	0
E	E
F	F
=	☰ SET
@	A AT
e	EDIT
X	■ CANCEL
<	←
+	+ WAIT
-	□ DELETE
>	→
S	En ENABLE
K	□ (KEY)
[	L DO
]	OK

Table 1 shows the ASCII characters which should be sent to CORE to simulate the CORE keys. CORE ethos the same character that is sent. The third column shows the key value as it appears in key definitions.

Using the commands in Table 1 only, you can simulate the operation of the CORE keys from a computer or terminal. (Refer to the CORE Reference Manual for information on the syntax of CORE commands.)

There are a few differences between operating CORE using CSUI and in the normal manner using the CORE keyboard:

1. You must be aware that CSUI "times out" after a certain amount of time, normally 3 seconds. When CSUI times out, the next character sent will NOT be seen as a command but will echo as a "~" or wakeup character. If you are writing a software program to use CSUI, you must be careful to insure that CSUI is awake whenever you want to send a command. If desired, the length of the timeout can be increased (even made infinite) using the ^T command, described in the section on Special Commands.

2. You can go into learn mode with the L DO key (ASCII "[") in order to create new key definitions for CORE. However, you cannot capture infrared commands while in CSUI. Capturing can only be done when you are operating CORE directly from the CORE keyboard.

3. The cursor and other symbols will not flash or blink when in CSUI mode. For example, the bell symbol which normally flashes after a timed event has executed will simply appear solid.

4. CORE will also respond to physical keypresses while in CSUI. However, you should generally wait for CSUI to time out before pressing any keys on CORE (the results could be unpredictable in certain cases).

Special CSUI commands

These are additional commands usable only with C
keyboard commands. The functions are:

Table 2:

ASCII character	Function
^ C	Quit CSUI.
^D	Read the LCD display st
^K	Replace a single key de
^L	Replace user memory.
^M	Carriage Return/Line Fe
^R	Send a program to COR
^T	Set timeout.
^U	Read CORE user memor
^W	Read a single key defin

Most of the special commands involve transmission o
from CORE. Therefore, they are intended to be used w
with a terminal.

The protocol for error-free data transfer is as follows:
Data is transferred in blocks of 256 characters (or less
block is sent or received, CORE sends an 8-bit checks
The checksum is calculated by summing all bytes rece
overflow (result greater than 256) occurs when adding
(i.e. sum wraps at zero).

The host should compare the checksum received fro
calculated checksum. If the checksum matches, the ho
$20 = 32) to tell the CORE that the block is OK (CA
not match, the host sends the CORE a "U" (ASCII $55
block is incorrect (C-NAK), in which case that bloc
checksum re-calculated. This continues until all blocks
initialized to zero for each new or re-tried block. ($55
code because it is an alternating bit pattern [0,1,0,1,0,
serial receivers.)

Note: the documentation of the Special Command
and higher of the CORE software. If you have versi
the commands may not apply, or there may be d
You can call CL9 Customer Service for information

upgrade. To find out what version you have, press t
You should see a 4-digit hexadecimal number,
hexadecimal number. If the 2-digit number is 40
correct CSUI software.

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