

TCR-200E

SMPTE/EBU (25 FPS) TIME CODE READER



W Clark & Associates, Ltd.
4 Rye Ct
Macomb, IL 61455
(309) 837-2244

TABLE OF CONTENTS

INSTRUCTION BOOK WARRANTY	A
SOFTWARE LICENSE AGREEMENT	A
License Title/Ownership.....	A
Grant of License.....	A
Copyright.....	A
Other Restrictions.....	A
U.S. Government Restricted Rights	B
General.....	B
INTRODUCTION	1
OPERATIONAL MODES	1
Time Code Reader.....	1
Time Code Synchronizer	1
INTERRUPTS	1
Available Interrupts.....	1
PORT ADDRESS	1
Default Port Address	1
Alternate Port Address	1
TIME CODE SYNCHRONIZER	1
PC Time - When Updated	1
Free-wheeling Mode.....	2
Software Selectable Options	2
TCR-200E Interrupts	2
Port Address	2
Setting of CMOS Clock	2
Hourly Offset	3
GPS-100 Status:.....	3
Quiet Startup Option:.....	3
Date Decoding:	3
Daylight Savings Time Adjustment:.....	3
EBUSET.COM.....	4
Example:	4
Show Command-Line Software Switches/Options.....	5
EBUSET Memory Requirements.....	5
Automatic Starting of EBUSET.COM.....	5
Runs Under DOS & Windows.....	5
HARDWARE DETAILS	5
Input/Out Connections	5
Setting the Input Level.....	5
Port Select.....	5
Pin Jumper Connections	6
Problems - Troubleshooting.....	6
OTHER SOFTWARE ACCESSIBLE FEATURES	7
TCR-200E Commands:.....	7
LIMITED SOFTWARE WARRANTY	9
30 Day Satisfaction Guarantee.....	9
Limited Warranty For Next 60 Days.....	9
LIMITATION OF REMEDIES	9
Exclusive Remedies.....	10
Obtaining Hardware Service.....	10

INSTRUCTION BOOK WARRANTY

The information contained in this document is subject to change without notice.

W Clark & Associates, Ltd. (herein after C&A) makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

C&A shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

SOFTWARE LICENSE AGREEMENT

Please read this License carefully before using the Software. This is a legal agreement between you (the Customer as an individual or an entity), the end user, and W Clark & Associates, Ltd. (herein after C&A) The right to use this Software is granted only if the Customer agrees to the terms of this License. If you do not agree to the terms of this License, promptly return the disk package and accompanying items (including written materials and binders or other containers) to the place you obtained them for a full refund.

USE OF THIS SOFTWARE INDICATES YOUR ACCEPTANCE OF THESE TERMS AND CONDITIONS.

License Title/Ownership

No title or ownership of the Software is conferred with this License.

Grant of License

This C&A Software License Agreement ("License") permits you to use one copy of the C&A software product ("Software") on any single computer, provided the Software is in use on only one computer at any time. If you have multiple Licenses for the Software, then at any time you may have as many copies of the Software in use as you have Licenses. The Software is "in use" in a computer when it is loaded into the temporary memory (i.e., RAM) or is installed into the permanent memory (e.g., hard disk, CD-ROM, or other storage device) of that computer. However, a copy installed on a network server for the sole purpose of distribution to other computers is not "in use." If the anticipated number of users of the Software will exceed the number of applicable Licenses, you must have a reasonable mechanism or process in place to assure that the number of persons using the Software concurrently does not exceed the number of Licenses. If the Software is permanently installed on the hard disk or other storage device of a computer (other than a network server), then the person authorized to use such computer also may use the Software on a portable computer, laptop, and home computer. If such person's authorization to use such computer ceases for any reason (e.g. termination of employment), then such person's authority to use the software on a portable computer, laptop, and home computer shall cease.

Copyright.

The Software is owned by C&A and is protected by United States copyright laws and international treaty provisions. Therefore, you must treat the Software like any other copyrighted material (e.g., a book or musical recording), *except* that you may either (a) make one copy of the Software solely for backup or archival purposes, or (b) transfer the Software to a single hard disk provided you keep the original solely for backup or archival purposes. You may not copy written materials accompanying the Software. All authorized copies must bear the copyright notice on or in the original.

Other Restrictions.

This License is your proof of license to exercise the rights granted herein and must be retained by you. You may not rent or lease the Software, but you may transfer your rights under this License on a permanent basis provided that you transfer this License, the Software and all accompanying written materials, you retain no copies, and the recipient agrees to the terms of this License. You may not decompile, or disassemble the Software. If the Software is an update, any transfer must include the update and all prior versions.

C&A reserves the right to terminate this License upon breach. In the event of termination at C&A's election, all copies of the Software must be returned to C&A or destroyed.

U.S. Government Restricted Rights

The Software and documentation are provided with Restricted Rights. Use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in subparagraph (c) (1) (ii) of the Rights in Technical Data and Computer Software clause as DFARS 252.227-7013 or subparagraphs (c) (1), (2) and (3) of the Commercial Computer Software - Restricted Rights at 48 CFR 52.227-19, as applicable, and any amendments thereto. Contractor/manufacturer is W Clark & Associates, Ltd., 4 Rye Court, Macomb, IL 61455

General

This Agreement is governed the laws of the State of Illinois (except federal law governs copyrights and registered trademarks). If any provision of this Agreement is deemed invalid by any court having jurisdiction, that particular provision will be deemed deleted and will not affect the validity of any other Agreement.

INTRODUCTION

The model TCR-200E time code reader card provides a simple-to-use EBU time code reader for ISA bus IBM-PC's, ATs and compatibles.

There are two modes of operation for the TCR-200E. The card can read time code, displaying the code on the screen as hours, minutes, seconds, and frames or read time code and lock the PC clock to the external time code. The reader is compatible with all formats of the SMPTE/EBU linear time code.

OPERATIONAL MODES

Time Code Reader

The TCR-200E can be used as a direct Time Code reader. On the support software distribution disk the program ebu.exe allows the card to be used as a time code reader. Running this program brings up a menu. At the bottom of the menu the current time code as read is displayed. If there is no time code being fed to (or read by) the card, the words NO EBU are displayed instead. The program can be exited by using the F10 key.

Time Code Synchronizer

The TCR can be used to synchronize the PC internal software clock (and optionally the CMOS clock) to external time source distributed via EBU time code.

INTERRUPTS

Interrupt setting and usage in PCs is somewhat complicated by the fact that different plug-in cards and other functions within the PC can be set to use the same interrupts. Generally this will result in erratic operation or failure of the card or system to operate.

Available Interrupts

5	Free in ATs
7	LPT 1, first parallel or printer port
10 - 11 - 12 -15	available to all plug-in cards

PORT ADDRESS

As with interrupt, port addressing in PCs is complicated by the fact that other plug-in cards within the PC can be set to use the same port address. Generally this will result in erratic operation or failure of the card or system to operate.

Default Port Address

The TCR-200E is tested and shipped from the factory set to port address 310h. Should it be necessary to use another address, the jumper pins located on the card can be set to other addresses.

Alternate Port Address

If an address other than 310h is used, it is necessary to enter the new address in the command line when invoking ebuset.com. See section below for details.

TIME CODE SYNCHRONIZER

PC Time - When Updated

The internal PC time (both the software and CMOS clock) will to be set upon first receipt of time code, when time code is regained after being lost and thereafter once per minute at the 30 second point.

Free-wheeling Mode

When the source of master time code is a C&A GPS-100, an option is available to indicate the status of the GPS-100 time code signal.

Because of atmospheric and other conditions it is possible for the GPS-100 to become temporarily un-locked (un-synchronized) with the GPS satellites. When this occurs the GPS-100 will go into a “free-wheeling” mode whereby it continues to generate time code that is not locked to the GPS satellites. In this “freewheel” mode the time code will remain (under normal conditions) within < 100 ms of true time over a 24 hour period.

Upon re-acquisition of satellite signal (re synchronization with the GPS satellites) the GPS-100 will automatically revert to the “Normal”, i.e. locked mode.

The /G option should not be enabled unless the source of time code is a C&A GPS-100 . Use of this feature requires GPS-100 firmware version 2.2 or later.

Software Selectable Options

TCR-200E Interrupts

Description

TCR-200E interrupts 5 - 7 - 10 - 11 - 12 and 15 may be selected by jumper J4 on the card. Jumper the card correctly prior to insertion in the machine.

Default Mode

Default mode is interrupt 5

Command Line Parameter

I (or i)

Port Address

Description

Set the port address. Valid port addresses are 300, 310, 320 & 330. For setup of port address switch see Hardware Details.

Default Mode

Default port address is 310h.

Command Line Parameter

P (or p)

Setting of CMOS Clock

Description

When the TCR-200E is used to synchronize the PC clock , synchronization of the CMOS clock can be turned on or off. This entry has no effect on the setting of the software clock which will continue to be set, once per minute, at the 30 second point.

Default Mode

Default mode is normally ON (CMOS clock is set)

Command Line Parameter

D (or d) CMOS clock set disabled

Hourly Offset

Description

When receiving UTC (universal coordinated time) or time code from a different time zone, a plus or minus hourly offset can be specified. The hourly offset can be set from -11 to +12 hours.

Default Mode

Default mode is normally off

Command Line Parameter

O (or o) enable hourly offset

GPS-100 Status:

Description

When the /G option is enabled, the time is not set if the GPS-100 is in the *Freewheeling* mode.

The /G option should not be enabled unless the source of time code is a C&A GPS-100 .

Default Mode

Default mode - display is normally off and PC Time is set when in locked & freewheeling mode

Command Line Parameter

/G (or g) enables GPS status display and disables setting of time when GPS-100 is in freewheeling mode

Quiet Startup Option:

Description

Disable display of TSR software settings during startup

Default Mode

Default mode is normally off

Command Line Parameter

Q (or q) used to enable quiet startup feature

Date Decoding:

Description

Decode date from the time code user bits if available. This function has been validated for C&A & (some) Leitch time code generators only. It may not work with other time code sources.

Do not invoke this parameter unless you are sure that correct date information is encoded in the user bits. The TCR card could read and interpret invalid data bits as date information and cause the date of the PC clock to be set incorrectly.

Default Mode

Default mode is normally off

Command Line Parameter

L (or l) used to enable date decoding

Daylight Savings Time Adjustment:

Description

Automatically adjusts PC clock ahead one hour at 2AM on the first Sunday in April and then back one hour at 2AM on the last Sunday in October. (per [USA] Uniform Time Act - Public Law 99-359). **Use of this option *REQUIRES* the use of the date decoding option.**

Default Mode

Default mode is normally off

Command Line Parameter

T (or t) used to enable automatic daylight saving

EBUSET.COM

The program ebuset.com sets the PCs clocks in accord with the above described software switches. It is invoked by the following command line:

```
ebuset /Ix/D/Pxxx/O-x/V/Q/L/T
```

where:

/Ix	= interrupt x
/D	= CMOS clock set disabled
/Pxxx	= Port Address xxx (in hex)
/Ox	= hour offset
/Q	= quiet startup
/L	= decode date - if available
/T	= enable automatic daylight saving adjustment
/G	= enable GPS-100 status display

Example:

```
ebuset /I5/D/P300/O-4/Q/L/T
```

where:

/I5	= interrupt 5
/D	= CMOS clock set disabled
/P300	= Port Address set to 300 (hex)
/O-4	= hour offset set to minus (-) 4 hours
/Q	= no display of ebuset parameters
/L	= decode date
/T	= enable daylight saving auto adjust

All of these software switches are optional. If none are entered after ebuset, the software will:

- - default to interrupt #5
- - CMOS clock set to on
- - default to port address = 310
- - no hourly offset
- - GPS-100 status mode is off
- - ebuset software parameters will be displayed at startup
- - date will not be decoded
- - daylight saving adjustment will not be made

Show Command-Line Software Switches/Options

For operator convenience while setting up the ebuset program the command ebuset/? will display all of the command line options that are available.

EBUSET Memory Requirements

Once started, the EBUSET program remains in memory, occupying approximately 2.5K of memory. It keeps the PC clock time equal to the received time with an accuracy of \pm several milli-seconds.

Automatic Starting of EBUSET.COM

The ebuset program can be started automatically each time the computer is booted by using the AUTOEXEC.BAT file of the computer. If ebuset.com is invoked by the AUTOEXEC.BAT file the computer clock will be automatically locked to the external time code signal (if available) each time the system is turned on or rebooted.

Runs Under DOS & Windows

EBUSET will load as a TSR and run under all current versions of DOS and Windows including Windows for Workgroups. It can be relocated (under DOS) to run in high memory.

HARDWARE DETAILS

Input/Out Connections

The time code input is balanced. Pins 2 and 3 of the DB-15 connector are for input, with pin 1 used for ground. Polarity is not important on the input or output. If an unbalanced input or output is used, ground the other pin.

(An optional DB-15 male plug to unbalanced BNC female adapter is available from C&A.)

Setting the Input Level

The input level control, R6, is adjusted at the factory for a nominal input level of approximately 0dB (as measured with an audio voltmeter) or 1.6 VPP. This setting gives an input range of approximately -15 to +15 dB. Should field adjustment be necessary use the following procedure.

- Run the program ebu.exe and place the card in the reader mode.
- Supply the card with a ebu time code signal with an input level within the range of -15 and +20dB.
- The incoming ebu time code frames should be read and displayed on the screen without any hesitations or jumps.
- If the incoming time is not displayed, adjust the input level control R6 until a stable, smooth flowing time display is achieved. No further adjustments should be required unless there is a major change in input level.

Port Select

The TCR time code card is set at the factory to an address of 310h and the software defaults to that address. If another address is used the pin jumpers must be set correctly and a new port address must be entered on the ebuset.com command line.

Pin Jumper Connections

The correct jumper installation, should the pin jumpers be accidentally changed on J5 & J6 or for using other port addresses are:

<u>Pin Jumper Location</u>	<u>P5</u>	<u>P6</u>
<u>Port 300h</u>	jumper	jumper
<u>Port 310h</u>	no jumper	jumper
<u>Port 320h</u>	jumper	no jumper
<u>Port 330h</u>	no jumper	no jumper

The software supplied with the card supports only the above port addresses. ***The address selected by the jumpers and the address entered on the ebuset.com line must agree and be one of the above listed ports. If the addresses are set incorrectly the TCR-200E card will not work and the computer could lock up or operate erratically.***

Problems - Troubleshooting

All TCR-200E cards are checked for proper operation before shipment and unless physical damage to the card is found, the TCR-200E is probably functional. The most common problems found during installation are interrupts, port conflicts and input signal levels in that order.

If a problem with operation is found or suspected, perform the following procedures: ***(Note that some of these operations require technical knowledge of PC's)***

- Make sure that the interrupt that is selected on the TCR-200E card agrees with the interrupt that is specified in the command line and, most importantly, that no other card in the PC is set to the same interrupt as the card.
- Check that the port address, set with the switches on the card, agrees with the port address that is specified in the command line and, most importantly, that no other card in the PC is using the same port address as the card.
- If it is certain that there is no conflict with the interrupt or port address, then as described in step 4, verify that the input level is within capture range of the card.
- Feed EBU time code into the TCR-200E and run the program ebu.exe from the DOS prompt. With this program running the TCR menu will come up.
- Select F1 to start the TCR-200E in a reader mode
- The menu will either say No EBU or display the incoming time code. The time code, frame count display, should be continuous and smooth, without any hesitations or jumps.
- If the time is not displayed properly, adjust the input level control, first clockwise then and counter clockwise to see if a stable time display can be found. (Note that the level control is a 12 or 15 turn pot.)
- If no EBU time display can be found, either the card is not functioning, something is wrong with the PC or the incoming time code is invalid.
- If, after adjustment, the EBU time display is OK, the EBU.exe program is executing properly and the ebuset.com program will also execute properly.
- After step #9, and after running spmteset.com, the PC still does not lock to the incoming time code, then it is very-very likely that there is a conflict with interrupts or ports.

If these steps do not resolve the problem, contact the factory.

OTHER SOFTWARE ACCESSIBLE FEATURES

NOTE: THIS INFORMATION IS FURNISHED AS A MATTER OF COURTESY TO USERS OF THE TCR-200E EBU TIME CODE READER CARD WHO MAY WISH TO MAKE USE OF ADDITIONAL FEATURES OF THE CARD THAT ARE NOT AVAILABLE WITH THE STANDARD SOFTWARE THAT IS PROVIDED. UTILIZATION OF THE INFORMATION SUPPLIED HEREIN REQUIRES SOME PROFICIENCY IN COMPUTER PROGRAMMING.

C&A LTD. DOES NOT PROVIDE ANY WARRANTY ON THE INFORMATION OR FEATURES DESCRIBED HEREIN NOR WILL ANY FURTHER SUPPORT OF ANY KIND BE GIVEN EXCEPT ON A CUSTOM BASIS AT ADDITIONAL COST. C&A RESERVES THE RIGHT TO MAKE CHANGES IN THE TCR-200E WITHOUT NOTIFICATION AND THERE ARE NO GUARANTEES THAT THE SOFTWARE FEATURES DESCRIBED HEREIN WILL BE SUPPLIED OR SUPPORTED IN THE FUTURE.

Using the TCR-200E in a customized programming environment.

Interrupt:

- The interrupt is jumper setable on the card and is usually set to 5.
- I/O Address: 310h (Switch selected) one address only.
- The interrupt is generated immediately following time code receptions where the seconds field is 30 and frames field is 0.
- Additional interrupt options are available at beginning and loss of time code.
- Time is set once per minute.

TCR-200E Commands:

The process for sending a command to the TCR-200E is:

- Output command to 310h
- Read 310h and wait the commands response. This step is required if you are using a fast PC. The response time for messages is several milliseconds.
- To avoid busy waiting for command response, the card can be set to generate an interrupt upon response, allowing for a fully interrupt driven support routine.

Commands:

```
;  
;Name:  commandPC  
;  
;Description:  Receives commands from the PC and executes them.  
;  
;  Commands :  
;                                     response  
;                                     ;  
; 28h - Clear enhanced (29-2f) features      28h  
; 29h - Set host interrupt on each response    29h  
; 2ah - Set host interrupt at end of time code 2ah  
; 2bh - Set host interrupt at start of time code 2bh  
; 2fh -  
;
```

```

; e8h - Rec Time read request          e8h
; eah - Set stopped mode              eah
; ebh - Set receive mode              ebh
; edh - Get current mode              eah, ebh, ech
; 2 dummy commands are for synchronization
; eeh - Dummy command                eeh
; efh - Dummy command                efh
;
; 68h - read rfru  frame units        0000xxxx
; 69h - read rug1  user group 1, 4 bits 0001xxxx
; 6ah - read rfrt  frame tens         001000xx
; 6bh - read rug2  user group 2, 4 bits 0011xxxx
; 6ch - read rsecu seconds units      0100xxxx
; 6dh - read rug3  user group 3, 4 bits 0101xxxx
; 6eh - read rsect seconds tens      01100xxx
; 6fh - read rug4  user group 4, 4 bits 0111xxxx
;
; a8h - read rminu minutes units      1000xxxx
; a9h - read rug5  user group 5, 4 bits 1001xxxx
; aah - read rmint minutes tens       10100xxx
; abh - read rug6  user group 6, 4 bits 1011xxxx
; ach - read rhru  hours  units       1100xxxx
; adh - read rug7  user group 7, 4 bits 1101xxxx
; aeh - read rhrt  hours  tens        111000xx
; afh - read rug8  user group 8, 4 bits 1111xxxx
; Interrupt status values:
;
;                                     68h - Time set interrupt (seconds=30, frames=0)
;                                     69h - Gained time code
;                                     6ah - Lost time code
;                                     6bh - End of time code interrupt (After user group 8)
;                                     6ch - Start of time code interrupt (After last sync bit)
;
; no ebu is indicated by a frame unit of h'f (normally impossible)

```

The processes for initializing the card is:

- Send Set Receive Mode (ebh).
- Set interrupt vector in PC.
- Activate interrupt vector in PC. (unmask)

Interrupt handler does this:

- Read timecode from card
- Set PC clock from timecode.

Read timecode is:

- Rec Time read request (e8h). This causes the current time to be copied into a reading area. This is done to allow accurate asynchronous reads.
- Read each 4 bit EBU group using commands 68h-afh. Obviously, if you don't need the user bits, don't read them. These can be read in any order.

LIMITED SOFTWARE WARRANTY

To the original customer only, W Clark & Associates, Ltd. (hereinafter C&A) provides the following Limited Warranty.

30 Day Satisfaction Guarantee

For thirty (30) days after date of delivery of the SOFTWARE to you, if you are dissatisfied with the SOFTWARE for any reason you may return the complete product, with your receipt, to C&A, postage prepaid, during the thirty (30) day period for a full refund.

Limited Warranty For Next 60 Days

C&A warrants that for the sixty (60) days following the initial thirty day period, as evidenced by a copy of your receipt, that:

- (1) The SOFTWARE will perform substantially the functions described in the documentation provided by C&A
- (2) The media on which the SOFTWARE is furnished will be free from defects in materials and workmanship under normal use.

Your sole remedy under the warranty during this sixty (60) day period is that C&A will undertake to correct within a reasonable period of time any reported "SOFTWARE Error" (failure of the SOFTWARE to perform substantially the functions described in the documentation), correct errors in the documentation, and replace any magnetic media which proves defective in materials or workmanship on an exchange basis without charge. In order to make a claim under this warranty you must return the defective item with your receipt to C&A, postage prepaid, within ten (10) days after the warranty period. If C&A is unable to replace defective media or if C&A is unable to provide corrected SOFTWARE or corrected documentation within a reasonable time, C&A will, at its sole and exclusive option, either replace the SOFTWARE with a functionally equivalent program at no charge to you or refund the license fee of the SOFTWARE. These are your sole and exclusive remedies for any breach of warranty during this sixty (60) day period.

C&A does not warrant that the SOFTWARE will meet your requirements, that operation of the SOFTWARE will be uninterrupted or error-free, or that all SOFTWARE errors will be corrected. C&A is not responsible for problems caused by changes in the operating characteristics of computer hardware or computer operating systems which are made after the release of the SOFTWARE nor for problems in the interaction of the SOFTWARE with non-C&A software. C&A will have no responsibility to replace or refund the license fee of media damaged by accident, abuse or misapplication.

THE ABOVE WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON INFRINGEMENT. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY C&A, ITS EMPLOYEES, DISTRIBUTORS, DEALERS OR AGENTS SHALL INCREASE THE SCOPE OF THE ABOVE WARRANTIES OR CREATE ANY NEW WARRANTIES.

SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, ANY IMPLIED WARRANTIES ARE LIMITED IN DURATION TO NINETY (90) DAYS FROM THE DATE OF DELIVERY OF THE SOFTWARE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE.

LIMITATION OF REMEDIES

REGARDLESS OF WHETHER ANY REMEDY SET FORTH HEREIN FAILS OF ITS ESSENTIAL PURPOSE, IN NO EVENT WILL C&A BE LIABLE TO YOU FOR ANY SPECIAL, CONSEQUENTIAL, INDIRECT OR SIMILAR DAMAGES, INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF DATA OR BUSINESS INFORMATION (OR OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR INABILITY TO USE THE SOFTWARE OR ANY DATA SUPPLIED THEREWITH EVEN IF C&A OR ANYONE ELSE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

In any state or province which does not allow the foregoing disclaimer, any implied warranty of merchantability or fitness for a particular purpose imposed by law in those states or provinces is limited to the one-year duration of the written warranty.

Exclusive Remedies

THE REMEDIES PROVIDED HEREIN ARE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL C&A BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

In any state or province which does not allow the foregoing exclusion or limitation of incidental or consequential damages, the customer may have other remedies.

Obtaining Hardware Service

When returning any C&A hardware product for warranty repair please contact the factory for return authorization before returning the item. When you return your hardware product to C&A for service, you must prepay all shipping charges, duty, and taxes. Except for products returned by the customer from another country, C&A shall pay for return shipment of products to the customer.