

Interface Technology Group, Inc.



Model CS5X4R-1

Dual CS-5 Reader Display Unit

Operation and Maintenance Manual

Manual Rev-C

Interface Technology Group, Inc.
2107 South Hwy US-1
Rockledge, FL 32955
V 321-433-1165 F 321-433-0924

Specifications:

Power Input:..... 90 – 265 VAC 47-470 Hz.
.....IEC Input connector 10W Nominal

Fuse:.....1 Amp

Dimensions:..... 19” Wide X 1.75” High (1 RU) X 10.25 Deep

Weight:.....4.5 Pounds

Operating Environment:..... 32° F to 100° F, 0 – 95% RH Non condensing

Storage Environment.....0° F to 120° F, 0 – 99% RH Non condensing

Signal Inputs:

IRIG-B Modulated code 10 mV to 10 V P-P. 10K ohm Input Impedance. Isolated BNC Connector with transformer isolation.

CS-524X or CS-5X4 at 4800, 9600, or 19.2K baud. Automatic baud rate detection. DE-9 Female connector.

CS-5 Modes Defined:

**CS5246 =4800 Baud, CS5247 = 9600 Baud, CS5248=19.2KB All per IRIG 215-96
CS5X4= Four CS-5246 streams added together one after the other, sent at 19.2 KB,
with different ID characters to differentiate the individual counts. Used on the ER.**

Signal Outputs:

CS-5XXX individual buffered output RS-422 on DE-9 Female connector.

Left and Right side display CS-5 Outputs on Twinax connectors.

**DE-9 Female connector – First motion contacts for each of the two channels. N.O.
and N.C. contacts are available.**

Remote Control ports:

Ethernet port:

A 10-100 Base T port for control and status.

RS-232 Port:

An RS-232 port is provided for control and status. Set up as: 9600-N-8-1

QUICK START INSTRUCTIONS

In order to get started quickly without reading the entire manual, a quick start lesson is provided here.

With the CS5X4R-1 turned on, and using the controls for the desired channel, pressing the “Select” button will allow the user to scroll through the available modes or functions. When the desired mode is displayed, pressing “Enter” will select the mode desired and present a drill down menu of options within that mode. Generally, the options can be modified by the “Up” and “Down” buttons until the desired option is displayed. Pressing the “Enter” button will select that option. At the end of the drill down menus, the final “Enter” button press will cause the CS5X4R-1 to store all parameters and begin to display the mode selected.

Overview:

The model CS5X4R-1 reads CS-524X, CS-5X4, and IRIG-B and displays these signals on two independent 14 digit display screens. Each of the two display screens are completely independent sharing only the IRIG-B input signal. The CS5X4R-1 may be thought of as two separate units with all the capabilities of one also available independently on the other.

The CS5X4R-1 will read CS-524X and display either the EC (Event Count) field or the LT (Launch Time) field. Note that because of the 14 digit display the display will display all data available in the LT field. The CS5X4R-1 can select from two independent CS-5 input signals (A or B). Both sides may use the same signals or different CS-5 signals for each display.

When CS-5X4 is selected, a specified identifier may be entered for use in selecting the desired count. A scan function is also available. When in the scan mode, all available identifiers are displayed in sequence. Pressing the enter button will instantly select the displayed identifier and begin to display the desired count.

Both CS524X or CS-5X4 may be displayed with decimal seconds or without. Both signals will be read with automatic baud rate detection.

When the “P” character changes to an “A” character in the CS-5 stream, a relay will close. Both normally open and normally closed contacts for each channel are available on the rear panel.

The model CS5X4R-1 will also read IRIG-B. In addition, an identifier may be selected and displayed on the LED screen. An offset of up to plus or minus 12 hours in ½ hour increments may be selected. The offset will always be displayed on the CS5X4R-1 screen however, the offset may or may not be sent out the CS-5 output stream.

Leading zero blanking may be selected. There are two modes available. First is straight left to right leading zero suppression. Second is left to right per group leading zero suppression. Per group is defined as days, hours, minutes, and seconds. In the first case, the colons are extinguished as necessary. In the second case, colons will remain on. No leading zero suppression may also be selected.

The brightness of each display may be independently adjusted.

The current leap year identification may be entered so as to properly calculate offset times.

All mode changes and brightness changes will be stored in non-volatile memory. The unit will enter into the last selected mode when it is powered up and begin displaying the selected count.

Operation:

Connect a suitable AC mains power source to the rear IEC connector. Connect a CS-524X signal or a CS-5X4 signal to the desired input connector. Connect an IRIG-B modulated signal to the isolated BNC connector. Turn on the AC power switch on the rear panel.

The CS5X4R-1 will power up and read the last set-up that was entered. If a signal is available, the unit will display that count (or time) on the front display

Display Details:

The display(s) are set-up by means of an on screen menu system. The select button steps through each of the menu screens. When the desired screen (or mode) is seen, pressing the enter button will either execute that option or drill down to the next level menu. For each menu level if there are options available, the up or down arrow will change the option. When the desired option is seen, pressing enter will execute that option. Note that the each display is completely independent from the other display.

Whatever options or selections are made, they will be stored in memory and re-called on power up. Thus, once set-up, the unit may be turned off and on again without having to re-select the desired mode.

Pressing the Select button will Cause the following:

? Irig-b

Pressing the up button will jump to the next menu item. (CS-5)

Pressing the down button will jump to the previous menu item. (VERSION)

Pressing enter will display the available ID characters that may be assigned. (NONE, A-Z).

The up and down arrows will scroll through the available ID characters.

Pressing enter will select the display ID character and display:
X OFFSET XX.X H

Pressing the up or down buttons will scroll through the available offsets. (Plus or minus 12 hours in ½ hr increments)

Pressing enter will select the desired offset and display:

? OFFSET OUT YES (or NO)

Pressing the up or down buttons will display YES or NO

Pressing enter will select the desired output and display:

? ACC SEC YES (or NO)

Pressing the up or down buttons will alternate between YES and NO
YES= Displays the count in accumulated seconds mode.
NO=Displays the count in standard mode.

If YES was selected, Pressing enter will select and store the accumulated seconds mode and begin the display mode.

If NO was selected, the following will appear:

? COLONS YES (or NO)

Pressing the up or down buttons will alternate between YES and NO

YES= Displays the colons.

NO= Turns the colons off.

After pressing Enter, the mode will be stored and the display will begin.

? CS-5

Pressing the up button will jump to the next menu item. (CS-5b4)

Pressing the down button will jump to the previous menu item. (IRIG-B)

Pressing enter will select CS-5 mode the menu will display:

? INPUT A (or B)

Pressing up or down will alternate between A or B

Pressing enter will select CS-5 mode and selected input. The menu will jump to the EC or LT Mode selection.

Pressing enter will select and store the currently displayed mode.

IF EC is selected, the menu will jump to the **? Accum seconds** menu.

IF LT is selected, the menu will jump to the **? Decimal Seconds** Menu.

? CS-5b4

Pressing the up button will jump to the next menu item. (? SCAN)

Pressing the down button will jump to the previous menu item. (CS-5)

Pressing enter will select CS-5X4 mode and display:

X ID CHAR (where X= the current ID char)

Pressing up or down will scroll through the list of available ID characters
From which to select a CS-5 signal.

Pressing enter will select and store the currently displayed identifier and
go to the EC / LT Menu.

? CS-5 EC (or LT)

Pressing the up or down button will alternate between EC or LT display mode.
This affects both CS-524X and CS-5X4 modes

Pressing enter will select and store the currently displayed mode.

IF EC is selected, the menu will jump to the ? **Accum seconds** menu.

IF LT is selected, the menu will jump to the ? **Decimal Seconds** Menu.

? ACC SEC YES (or NO)

Pressing the up or down buttons will alternate between YES and NO

YES= Displays the count in accumulated seconds mode.

NO=Displays the count in standard mode.

If YES was selected, Pressing enter will select and store the accumulated seconds mode.

If NO was selected, the following will appear:

? dEC. SEC YES (or NO)

Yes will cause tenths of seconds to be displayed. No will not allow tenths to be displayed.

Pressing up or down buttons will alternate between yes and no.

Pressing enter will select and store the displayed mode. The following menu will appear:

? COLONS YES (or NO)

YES= Displays the Colons.

NO=Turns off the Colons.

Pressing up or down buttons will alternate the yes and no.

Pressing enter will select and store the displayed mode. The RDU-.56-3 will then begin displaying the selected mode.

X SCAN (where X= the currently found ID char)

Pressing the up button will jump to the next menu item.

Pressing the down button will jump to the previous menu item.

The available CS-5 identifiers will be displayed in sequence.

Pressing enter will select and store the currently displayed identifier.

? briGHTNESS

Pressing the up or down buttons selects brightness level

Pressing enter will select and store the current level.

bAUd OUT 4800 (or current baud output rate)

Pressing up or down buttons will step through the available output baud rates.

Rates are: 4800, 9600, and 19.2 K Baud.

Pressing enter will select and store the displayed rate.

? LEAP YEAr 1 (or current leap year number 0-4)

Pressing the up or down buttons will scroll through 1, 2, 3 and 4.

- 1= The first year after a leap year
- 2= The second year after a leap year
- 3= The third year after a leap year
- 4= The current year is the leap year

Pressing enter will select and store the displayed leap year.

ZErO SUrP 1 (or current suppression level 0-2)

Pressing up or down buttons will scroll through NONE, 1, and 2.

NONE= No leading zero suppression.

- 1= Straight left to right leading zero suppression.
- 2= Left to right by group leading zero suppression.

Pressing enter will select and store the level of leading zero suppression.

QUIT NO CHANGE

Pressing the up button will jump to the next menu item. (VERSION)

Pressing the down button will jump to the previous menu item. (ZERO SURP)

Pressing enter will exit the menu system without saving changes.

Pressing Select will cause a jump to the ? IRIG_B Menu.

VErSION 1.00 (or the current version)

Pressing the up button will jump to the next menu item. (? IRIG-B)
Pressing the down button will jump to the previous menu item. (QUIT NO CHANGE)

Pressing enter will exit the menu system and save any changes.

Remote Control:

RS-232 Port:

Remote control of the CS5X4R-1 is accomplished through the Ethernet port or via the RS-232 port on the rear of the unit.

Connecting a computer running a terminal program such as Hyperterminal set up as 9600-N-8-1 allows control and status information to be passed from or to the reader display unit. A standard straight through cable is required. Only pins 2,3, and 5 are utilized.

Hitting Enter (C/R) will cause the CS5X4R-1 to respond with: CS5X4R-1 #XXXX>
Where XXXX is the serial number of the unit.

Entering a keyword (see below for keyword definitions) followed by the enter key will return either the status of the unit or begin an interactive dialog to make changes to one of the two displays.

Ethernet Port:

The Ethernet port may be used in exactly the same way as the RS-232 port by using a Telnet program to connect to the IP address of the CS5X4R-1. The IP address of the port may be set to a fixed address or be dynamically set through DHCP. The factory default is DHCP mode. The default telnet port is 10001. The default XPORT control port is 9999.

The Ethernet port module is a Lantronix XPort module. It is recommended that the Lantronix web site WWW.lantronix.com be consulted to understand how to use the interface. A utility program from Lantronix called Device Installer (current version 4.1.0.9) should be downloaded and used to set up the IP address. This utility program makes it easy to set up the parameters of the XPort device to customize it for the particular network application.

Note that the XPort must be configured to provide a Modem Ctrl Out (DCD) signal on configurable pin (CP) #1 (input, active low). This is necessary for the RDU-.56-3 to switch control ports from the RS-232 to the ethernet port when a telnet session is established.

KEYWORDS:

The following are keywords or words that are used by the CS5X4R-1 to control the unit via remote commands. The keywords may be upper or lower case. The words must be typed correctly. Incorrect typing or misunderstood words are returned as typed followed by a question mark.

STATUS (C/R) Returns the status of all three displays.

STATUSL(C/R) Returns the status of the Left display only.

STATUSR (C/R) Returns the status of the Right display only.

MODEL (C/R) Enters into a dialog to control the function of the Left display.

MODER (C/R) Enters into a dialog to control the function of the Right display.

Entering any of the mode commands results in a dialog starting with the mode of operation desired. The currently programmed variable is displayed and alternate selections are then displayed. If the current variable is desired to stay the same, a (C/R) or Enter may be used and the next variable will be displayed.

If a mistake is made, hitting the escape key will cause the dialog to move up (or back) one level. Repeated escape keys can cause the dialog to exit out of command mode.

At the end of the dialog, a question will appear: "Store Program? (Y/N)" Either Y or N (or ESC) must be entered. If a Y is entered, the operational data will be stored and begin operation as programmed. If an "N" is entered, the dialog will cease and no changes to the operational programming will be made.

Rear Panel Connections:

IRIG-B Input: Isolated BNC. Transformer coupling. 10K input impedance.
10 mV to 10 V.

Input CS-5XXX: DE-9 Female. RS-422.
A-Input: Pin 3=D+, Pin 8=D-, Pin 5=Signal Gnd.
B-Input: Pin 4=D+, Pin 7=D-, Pin 6=Signal Gnd.

Output CS-5XXX: DE-9 Female. RS-422.
A-Out: Pin 7=D+, Pin 2=D-, Pin 5=Signal Gnd.
B-Out: Pin 1=D+, Pin 3=D-, Pin 6=Signal Gnd

Output CS-524X: (2) TWINAX connector. Center pin= D+ Left and Right Side.

Control: DE-9 Female. RS-232 Pin 5=GND, Pin 2=T, Pin 3=R.

First Motion Contacts: DE-9 Female:

Left Side: Common = pin 3, N.C. = pin 1, N.O. = pin 5
Right Side: Common = pin 7, N.C. = pin 9, N.O. = pin 6

AC INPUT: AC mains voltage is applied through the IEC connector.
90– 265 VAC 47-470 Hz.

NETWORK: RJ-45 Ethernet connector.

Power Supply:

The CS5X4R-1 uses a “Universal Input” switching power supply for cool and reliable operation. The power supply accepts any common voltage between 90 and 265 VAC or 100 to 370 Volts DC without any adjustment. A separate line filter is built into the CS5X4R-1 for an additional measure of EMI suppression. The Power supply used is UL listed and approved by several other agencies.

Routine Maintenance:

Remove dust from the cabinet when it accumulates. The front panel may cleaned with a soft cotton cloth. Use only a small amount of mild soap and water solution to dampen the cloth if necessary.

No routine checks or adjustments are required.

Firmware Revision List

December 11, 2005

Initial Release

June 3, 2006

Version 1.10

Changes made:

- 1) Fixed decoding of "A" in CS-5 Stream
- 2) Fixed improper rollover of hours in IRIG-B offset mode where unit hours were >9.
- 3) Added ability to send offset IRIG-B as a CS-5 output
- 4) Changed displayed version number to 1.10
- 5) Added ability to display or not display tenths of seconds in CS-5 or CS-5X4 mode.

September 9, 2006

Version 1.12

Changes Made:

- 1) Changed port RC3 to RC1 because we needed RC3 for I2C bus comm. between processors.
- 2) Added code to support remote control via I2C bus to 3rd processor.
- 3) Changed displayed version to 1.12

September 17, 2006

Version 2.00

Changes Made:

- 1) Made changes to accommodate I2C bus communications
- 2) Created left side and right side firmware versions to accommodate the I2C bus address requirements.
- 3) Corrected arithmetic error in IRIG-B subtraction routine.
- 4) Changed displayed version to 2.00

June 25, 2007

Version 3.00

Changes Made:

- 1) Added Ethernet port
-

- 2) Added display of colons on/ off
 - 3) Added accumulated seconds option
 - 4) Added A or B CS-5 input selection capability
-

July 23, 2007

Version 3.01

Changes Made:

- 1) Added back output baud rate into menus and status reports. (Left out of initial network version release).
-