C2-7000 Series
Dual Channel Video Processor
Operation Manual

Version 1.3

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1.0 DISCLAIMER

This product is intended for professional and/or home use. This product is not intended for use in a medical environment and does not have the required certifications for such use. Similarly, use aboard any aircraft or spacecraft while in flight or as an adjunct to any surface, airborne or marine navigation system or any offshore marine activity, including control of any watercraft, or any use similar to those specifically herein mentioned is prohibited. Use in the aforementioned circumstances would require additional testing and certification.

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No warranty is made either expressed or implied including but not limited to any implied warranties of merchantability or fitness for a particular purpose. In no event shall the supplier or manufacturer of this product be liable for errors found within, or be liable for any direct, indirect or consequential damages or loss in connection with the purchase or use of this hardware software or manual. The sole and exclusive liability to the supplier and manufacturer regardless of the form of action shall not exceed the replacement cost of the materials described herein.

By using this equipment you have indicated that you have agreed to the terms listed above. If you do not wish to agree or the above terms are contrary to your conditions of purchase you may return the equipment, unused, to your supplier. All trademarks and copyrights are acknowledged. E&OE.

1.1 Regulatory Agency Acceptance
European 'CE' Mark Statement

Emissions: BS EN 50081-1 (Generic Immunity Standard for Residential, Commercial and Light Industrial)
Immunity: BS EN 50082-1 (Generic Immunity Standard for Residential, Commercial and Light Industrial)
Safety Directive: BS EN 60065:2002 (Audio/Visual Equipment Safety)

1.2 FCC Statement

Class A Device: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction Manual, may cause harmful interference to radio communications. Operation of this equipment in

a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution: This equipment is intended for use in the manner prescribed in the Instruction Manual. Any user changes or modifications not expressly approved by TV One Multimedia Solutions could void the user's authority to operate the equipment. Connecting this equipment to external devices requires no specially shielded cabling for FCC compliance. The Instruction Manual shows or describes the proper connection of this equipment for operation that insures FCC compliance.

Direct all inquiries regarding FCC compliance to:

TV One Multimedia Solutions
1350 Jamike Drive
Erlanger, KY 41018
859.282.7303
859.282.8225 (Fax)

Manual Version Information

Version: 1.3
Release Date: January, 2006

Manual Copyright Notice

2.0 IMPORTANT SAFETY INSTRUCTIONS

To insure the best from this product, please read this manual carefully. Keep it in a safe place for future reference.

To reduce the risk of electric shock, do not remove the cover from the unit. No user serviceable parts inside. Refer servicing to qualified personnel.

2.1 Power and connections

This unit is not disconnected from the AC power source as long as it is connected to the wall outlet. The off state for this unit is called standby mode. In standby mode the unit is designed to consume a reduced quantity of power compared to normal operating modes.

When not using the unit for a long period of time, insure that the AC power cord is disconnected from the wall outlet.

The AC wall outlet should be installed near to the unit and be easily accessible.

Do not plug in or attempt to operate an obviously damaged unit.

2.2 Water and moisture

To reduce the risk of fire and personal injury, operation of this device outdoors and/or exposure to rain, water or excessive moisture is expressly prohibited.

The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

2.3 General care

Do not force switches or external connections.

When moving the unit, disconnect the serial port connections first then the power cable and finally the interconnecting cables to other devices.

Do not attempt to clean the unit with chemical solvents or aerosol cleaners, as this may damage the unit. Use a clean dry cloth.

2.4 Location

Installation of this unit should be in a cool dry place, away from sources of excessive heat, vibration, dust, moisture and cold.

2.5 Ventilation

Slots and openings in the sides of the unit are provided for ventilation. To ensure reliable operation, avoid obstruction of these openings and ensure the unit is installed in a well-ventilated area.

2.6 INTELLECTUAL PROPERTY

Some IC chips in this product include confidential and/or trade secret property. Therefore you may not copy, modify, adapt, translate, distribute, reverse engineer, reverse assemble or decompile the contents thereof.

2.0 IMPORTANT: CONSIGNES DE SECURITE

Afin de tirer le meilleur de ce produit, merci de lire attentivement ce manuel. Gardez-le dans un endroit sûr pour pouvoir le consulter à nouveau.

Afin de réduire le risque de choc électrique, ne retirez pas l'unité de sa protection.

Aucune pièce réparable par l'utilisateur à l'intérieur. Référez-vous à des personnes qualifiées.

2.1 Alimentation électrique et connexions

Cette unité n'est pas déconnectée de la source de courant électrique tant qu'elle est connectée à la prise murale. Le mode éteint de cette unité est appelé mode de veille. En mode de veille, cette unité est conçue pour consommer une quantité réduite de courant par rapport aux modes normaux d'utilisation.

Lorsque vous n'utilisez pas l'unité pendant une longue période, assurez-vous que le câble d'alimentation électrique est déconnecté de la prise murale.

La prise murale de courant doit être installée près de l'unité et aisément accessible.

Ne branchez pas et n'essayez pas d'utiliser une unité visiblement endommagée.

2.2 Eau et humidité

Pour réduire les risques d'incendie et de dommages corporels, l'utilisation de cet appareil à l'extérieur et/ou son exposition à la pluie, l'eau ou une humidité excessive est expressément interdite.

L'appareil ne doit pas être exposé aux gouttes ou aux éclaboussures et aucun objet contenant de l'eau, comme par exemple un vase, ne doit être posé sur l'appareil.

2.3 Entretien général

Ne forcez pas les boutons ou connexions externes.

Lorsque vous déplacez l'unité, déconnectez d'abord les connexions de ports en série puis le câble d'alimentation et enfin les câbles de connexion avec d'autres appareils.

N’essayez pas de nettoyer l’unité avec des dissolvants chimiques ou des produits nettoyants en aérosol, car cela peut endommager l’unité. Utilisez un chiffon propre et sec.

2.4 Emplacement

L’installation de cette unité doit se faire dans un endroit frais et sec, éloigné de sources excessives de chaleur, de vibrations, de poussière, d’humidité et de froid.

2.5 Aération

Les rainures et les ouvertures sur les cotés de l’unité servent à l’aérer. Pour permettre une utilisation sûre, évitez d’obstruer ces ouvertures et assurez-vous que l’unité est installée dans un endroit bien aéré.

2.6 PROPRIÉTÉ INTELLECTUELLE

Certaines puces IC dans ce produit contiennent des éléments propriétaires confidentiels et/ou des secrets commerciaux. Vous ne devez donc pas copier, modifier, adapter, traduire, distribuer, démonter, désassembler, ou décomposer leur contenu.

2.0 INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Para sacar el mejor provecho de este producto, léase este manual con detenimiento. Guárdelo en un lugar seguro para poder hacerle referencia en el futuro.

Para reducir el riesgo de calambre, no quite la cubierta del aparato.

No hay piezas utilizables dentro. Remítase todo mantenimiento a personal cualificado.

2.1 Corriente y conexiones

Mientras esté conectada a una toma de electricidad, el aparato seguirá conectado a la fuente de corriente CA. A la posición de «off» de este aparato se le denomina posición de espera. En la posición de espera, el aparato está diseñado a consumir una cantidad reducida de electricidad en comparación con los modos de operación normales.

Asegúrese de desconectar el cable de corriente CA de la toma de la pared cuando no va a utilizar el aparato por un periodo largo de tiempo.

La toma CA de la pared ha de estar instalada cerca del aparato y debe ser fácilmente accesible.

No enchufe ni intente operar un aparato que esté evidentemente dañado.

2.2 Agua y humedad

Para reducir el riesgo de fuego o de daños personales, se prohíbe la utilización de este aparato en el exterior y/o su exposición a la lluvia, al agua o a atmósferas de excesiva humedad.

El aparato no debe situarse cerca de zonas en las que haya riesgo de goteo o salpicaduras. Tampoco deben colocarse objetos que contengan agua (jarrones, por ejemplo) en el mismo.

2.3 Cuidado general

No forzar interruptores o conexiones externas.

Al mover el aparato, desconecte las conexiones del puerto en serie primero, luego el cable de electricidad y finalmente los cables interconectados a otros aparatos.

No intente limpiar el aparato con disolventes químicos o productos de limpieza aerosol, ya que podrían dañar el aparato. Utiliza un paño limpio y seco.

2.4 Ubicación

Este aparato se debe instalar en un lugar seco y fresco, lejos de fuentes de calor excesivas, la vibración, el polvo, la humedad y el frío.

2.5 Ventilación

El aparato viene provisto de ranuras y agujeros en los lados para la ventilación.

Para asegurar una operación eficaz, se debe evitar la obstrucción de estos agujeros y también asegurar que el aparato se instale en una zona con adecuada ventilación.

2.6 PROPIEDAD INTELECTUAL

Algunos chips con circuito integrado de este producto incluyen propiedad confidencial y/o propiedad de secreto comercial. Por lo tanto queda prohibido copiar, modificar, adaptar, traducir, distribuir, usar técnicas retroactivas, desmontar, o recopilar los contenidos del mismo.

2.0 WICHTIGE SICHERHEITSVORSCHRIFTEN

Lesen Sie diese Bedienungsanleitung bitte sorgfältig, um Ihr Produkt optimal nützen zu können, und bewahren Sie sie zum späteren Nachschlagen an einem sicheren Ort auf.

Entfernen Sie bitte keinesfalls die Abdeckung, um der Gefahr eines Stromschlags vorzubeugen.

Im Inneren des Geräts befinden sich keine Teile, die vom Benutzer gewartet werden können. Lassen Sie Wartungsarbeiten nur von Fachpersonal durchführen.

2.1 Stromversorgung und anschlüsse

Solange das Gerät mit einer Steckdose verbunden ist, bleibt die Stromversorgung aufrecht. Der Ausschaltzustand des Geräts wird als Standbymodus bezeichnet. Im Standbymodus verbraucht das Gerät weniger Strom als in den üblichen Betriebsarten.

Wird das Gerät über einen längeren Zeitraum hinweg nicht verwendet, ziehen Sie bitte das Stromkabel aus der Steckdose.

Die Steckdose sollte sich in der Nähe des Geräts befinden und leicht zugänglich sein.

Verbinden Sie ein offensichtlich beschädigtes Gerät keinesfalls mit einer Steckdose und versuchen Sie auch nicht, es zu bedienen.

2.2 Wasser und feuchtigkeit

Um die Gefahr eines Brandes oder einer Körperverletzung zu verringern, ist es ausdrücklich verboten, dieses Gerät im Freien in Betrieb zu nehmen und/ oder es Regen, Wasser oder hoher Feuchtigkeit auszusetzen.

Das Gerät darf keinen Tropfen oder Spritzern ausgesetzt werden und es dürfen keine mit Flüssigkeiten gefüllte Behälter, wie Vasen, auf das Gerät gestellt werden.

2.3 Allgemeine pflege

Wenden Sie bei der Handhabung von Schaltern und Anschlüssen keine Gewalt an.

Beim Umstellen des Geräts entfernen Sie zuerst die seriellen Anschlüsse, dann das Stromkabel und zum Schluss die Verbindungskabel zu anderen Geräten.

Versuchen Sie keinesfalls, das Gerät mit chemischen Lösungsmitteln oder Sprayreinigern zu reinigen, da dies das Gerät beschädigen könnte. Verwenden Sie ein sauberes, trockenes Tuch.

2.3 Aufstellung

Das Gerät sollte an einem kühlen, trockenen Ort aufgestellt werden, fern von übermäßiger Wärme, Vibrationen, Staub, Feuchtigkeit und Kälte.

2.5 Belüftung

Seitliche Schlitze und Öffnungen sorgen für die Belüftung des Geräts. Um die ordnungsgemäße Belüftung zu gewährleisten, dürfen diese Öffnungen nicht verdeckt werden. Sorgen Sie außerdem dafür, dass das Gerät an einem gut belüfteten Ort aufgestellt wird.

2.6 GEWERBLICHES EIGENTUM

Einige integrierte Schaltkreise in diesem Produkt enthalten vertrauliche

Informationen und/oder Betriebsgeheimnisse. Sie dürfen daher diese Inhalte nicht kopieren, modifizieren, adaptieren, übersetzen, verteilen, rückentwickeln, rückassemblieren oder dekompilieren.

2.0 BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Lees deze handleiding zorgvuldig door om het beste uit uw product te halen. Bewaar het op een veilige plek voor raadpleging in de toekomst.

Haal nooit het omhulsel van de eenheid af, dit om de kans op een elektrische schok te verminderen. Maak het apparaat nooit open: er bevinden zich geen door de gebruiker in te stellen onderdelen in het apparaat. Laat service en onderhoud over aan een gekwalificeerde technicus.

2.1 Elektriciteit en aansluiting

Deze eenheid is niet van de wisselstroom voedingsbron gescheiden wanneer de stekker nog in het stopcontact zit. Wanneer de eenheid uitstaat, staat deze nog in de stand-by modus. In de stand-by modus vergt de eenheid minder stroom dan in de normale “aan” modus.

Wanneer u de eenheid voor langere tijd niet gebruikt, zorg er dan voor dat de stekker van het wisselstroomsnoer uit het stopcontact is getrokken.

Het wisselstroom stopcontact moet dichtbij de eenheid geïnstalleerd worden en makkelijk toegankelijk zijn.

Als de eenheid duidelijk beschadigd is moet u deze nooit op het lichtnet aansluiten of bedienen.

2.2 Water en vocht

Om het risiko op brand en persoonlijk letsel te beperken is het gebruik van dit apparaat buiten en/of blootstelling aan regen, water of overdadige hoeveelheden vocht uitdrukkelijk verboden.

Het apparaat mag niet worden blootgesteld aan druppels of bespatting en er mogen geen objecten die gevuld zijn met vloeistoffen, zoals vazen, op het apparaat geplaatst worden.

2.3 Algemeen onderhoud

Forceer schakelaars of externe aansluitingen nooit.

Bij verplaatsing van de eenheid, de seriële poortaansluitingen eerst loskoppelen, dan de voedingskabel en als laatste de snoeren naar andere apparaten.

Probeer de eenheid nooit met chemische oplosmiddelen of schoonmaakmiddelen in een spuitbus schoon te maken, omdat dit de eenheid kan beschadigen. Gebruik een schone droge doek.

2.4 Plaatsing

Deze eenheid moet geïnstalleerd worden op een koele droge plaats, uit de buurt van bronnen van extreme hitte, vibraties, stof, vocht en kou.

2.5 Ventilatie

De sleuven en openingen aan de zijkant van de eenheid zijn voor ventilatie. Zorg er voor dat de eenheid op een goed geventileerde plek geïnstalleerd wordt zodat deze betrouwbaar werkt.

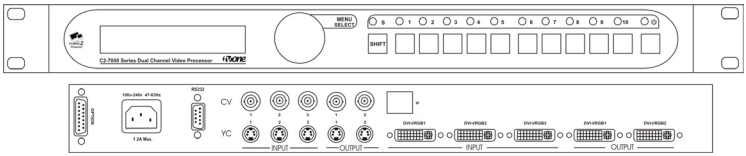
2.6 INTELLECTUEEL EIGENDOM

Sommige IC chips in dit product bevatten vertrouwelijke informatie en/of fabrieksgeheimen. U mag daarom de inhoud hiervan niet kopiëren, wijzigen, aanpassen, vertalen, verspreiden, nabouwen, of decompileren.

3.0 CAPABILITY, TERMS OF REFERENCE AND OVERVIEW SUMMARY

3.1 Device Capabilities

The C2-7100 & C2-7200 Dual Video Processors uses the proprietary CORIO2 Engine to control its capabilities. The CORIO2 series units are the second generation of the successful CORIO products. The CORIO2 features are powerful tools for any application requiring high quality video signal conversion or image manipulation.



The C2-7100 & C2-7200 feature two independent video processing and scaling engines (CORIO2) and two video mixers for maximum flexibility in handling DVI, RGBHV, RGBS, RGsB, YCbCr, YPbPr, CV and Y/C signals. In addition, the C2-7200 also supports SDI and HD-SDI.

Throughout this manual, any feature or function relating to both the C2-7100 and the C2-7200 will be referred to by 'C2-7000 series'. Any unit-specific functions or features will be mentioned by name.

At home in both broadcast and display environments, the C2-7000 series is multiple products in one unit. The unit has three basic operating modes to simplify control.

Switcher Mode - Equally powerful Program and Preview channels allow any function (Next Image, PIP, Keying, Logo, etc) to be set up and previewed, totally independent of the Program output. Transition from Preview to Program is by Cut, Dissolve or Special Effect.

Independent Mode - Provides all the power of two completely independent video processors in one box, each with a full range of features including PIP, Keying, etc. Each output can deliver different formats and resolutions simultaneously. For example, a presentation being fed to a high-resolution display on Output 1 via DVI can be fed to a VCR for recording on Output 2 via Composite Video.

Dual PIP Mode - Any video input can be squeezed and placed into either of two windows of any size and positioned anywhere on the screen, even overlapping each other with user defined layer priority control. The windows can be placed over any other video input or a static logo from memory as the background. The image in the window can then be seamlessly switched or zoomed. Keying can be applied to each window independently.

General Topography - 4:4:4 RGB sampling provides full bandwidth color, which allows precise keying, including Transparent (Soft) Keys. The unit's 9 Video Inputs accommodate multiple analog and digital video and computer signal formats and resolutions. It handles all known HDTV formats and any RGB resolution up to 2048x2048 - not just some predefined ones, but ANY resolution. Each of the two independent outputs delivers DVI-I, RGBHV (or RGBS or RGsB), YCbCr, YPbPr, Composite and Y/C (S-Video).

Ultimate flexibility - The C2-7000 series' output signal format flexibility assures that the Native Resolution of virtually any Digital Display can be matched. Because of the resolution calculator (included in the Windows® Control Panel), even new resolutions can be added to the unit. Signal parameter adjustments can be made for each video input and are stored in individual non-volatile memories. Dedicated memory is included for multiple Integral Test Cards and Logo's, so the unit can easily be used as a Logo Inserter. The C2-7000 series employs pixel adaptive motion compensation to de-interlace fast moving images and its automatic 3:2 Pull-down efficiently de-interlaces video from 24 fps NTSC film.

Simple Control - The unit can be controlled from the front panel, via RS-232 or Ethernet. The previously mentioned Windows Control Panel (available for download from our Internet site) affords complete control of the unit and adds Scripting to facilitate long, complex sequence of commands. Finally, hardware based, switcher-like CORIO Console allows a user to control the unit from hardware, mimicking a classic video switcher device.

3.2 Terms of Reference

In order to operate the C2-7000 series, agreement on terminology is required. To avoid confusion as you read through this manual, here are the terms of reference used throughout.

- **Input Sources:** Up to nine (9) signal inputs are available and each of these are buffered and made available to the unit's video processors. The user can modify numerous input signal parameters. In addition, the device can determine the signal format of each input automatically so long as the signal formats are commonly accepted worldwide standards. Alternatively, the user can manually select the format type to associate with a given input connector.

- **Layers:** Imagery is arranged in six layers and made available to the device's outputs. The degree of transparency can be set to make individual layers opaque, semi-transparent or fully transparent. In addition, with the exception of the 6th layer (background color), the layers can be positioned as desired in the 'stack' so that the user can create any relationship he or she desires.

- **Modes:** There are three modes of operation: Switcher, Independent and Dual Picture in Picture (Dual PIP). In Switcher mode, inputs and manipulations are shown on one output immediately and transferred to the second output when a 'Take' button is pressed. In the Independent mode, input selections and manipulations are made to appear on the two outputs independently yielding two separate signal paths. In the Dual PIP mode, the functionality of both processors is combined to provide two Picture in Picture windows. The outputs are comprised of the same signals but different key and fade values can be set for each of the units outputs.

- **Processor:** Refers to the CORIO2 processing engine within the unit of which there are two. Each is able to scale, shrink, zoom and adjust the selected input source.

- **Outputs:** There are two output channels provided, each channel comprising of a DVI-D, RGBHV, Composite, and YC output. The function of each output channel depends on the mode of operation selected. The user can select the output signal format as desired and can set the signal resolution (except for PAL/NTSC signals).

- **Windows:** Windows are containers for the input signals. They can be sized and positioned as required within the output window.

3.3 Device Overview

The C2-7000 series provides a means for the user to select sources from the nine inputs and present them to the two outputs in various ways. The imagery on the outputs is comprised of the video layers of live (moving) video plus static video sources such as internally stored logos and test cards.

The outputs are then further defined by the operational mode selected: Switcher, Independent and Dual PIP (Picture in Picture).

3.4 Input Sources

The C2-7000 series accepts a very wide range of input types. Adaptors are provided to allow configuration of the device to accept and process virtually any image source. The device will automatically identify the signal type or image resolution for virtually any input and manual intervention is possible for many non-standard inputs.

The Factory Default Input Source assignments are shown in the following chart.

Note that there are several buttons dedicated to specific functions when in the Factory Default condition. The functions of these buttons will be explained in section 6 .

3.5 Factory Default Inputs

Button Number	C2-7100 default	C2-7200 default
3	RGB1	RGB1
4	RGB2	RGB2
5	RGB3	CV1
6	CV1	CV2
7	CV2	YC1
8	YC1	SDI1
9	YC2	SDI2
10	TC1	TC1

Valid processor inputs also include sources not associated with the input connectors. Firstly there are multiple test cards which are stored within the device's non-volatile memory for later recall. Secondly it is even possible to internally cascade one output using it as the Input Source for the second processor.

3.6 Outputs

Two Outputs are provided on the C2-7000 series. The user can select the type of output signal desired for each Output and each Output can be adjusted independently of the other. The exact function of the Output depends on the mode as explained above.

3.7 Windows

Windows can be thought of as containers for imagery. Input selections from the various connectors as well as integration of internal sources such as Logos are all part of the Windowing capabilities of the C2-7000 series.

There are two scalable windows available for use, 'A' and 'B'—one for each processor in the C2-7000 series— and each is part of the layering hierarchy used in the C2-7000 series. Images can be zoomed, shrunk, keyed, positioned and scaled within the Window or as a part of the Window. There is also a Lock Source Window 'Z', plus Logo 'a' and Logo 'b' none of which are re-sizeable.

The Window itself can be thought of as a hole cut into the overall output image. The edges of the cut out can be hard or soft and the nature of the Window itself can be opaque, semi-transparent or invisible depending on how the various Layers, Fade levels and Keyers are set up.

Within the nomenclature that follows, the Windows will be associated with one or both of the two Outputs as explained in the section detailing Modes of Operation.

Windows are an integral part of the C2-7000 series and play a central part in understanding how to operate the device.

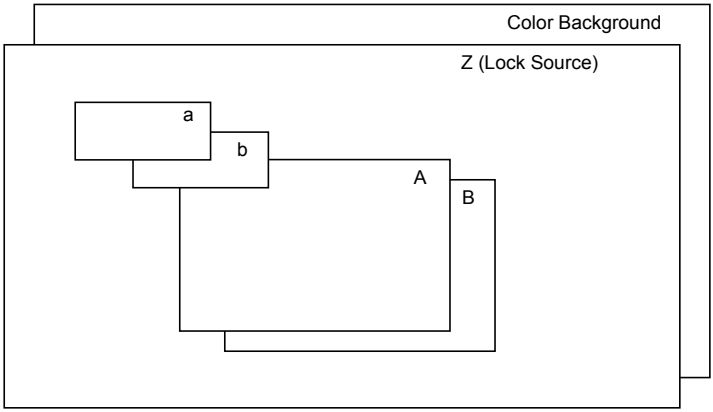
3.8 Layers

There are six image layers comprising of two static logo sources (stored internally in the device), two scalable windows that contain video, a lock source and, finally, a color background which is always the 6th layer.

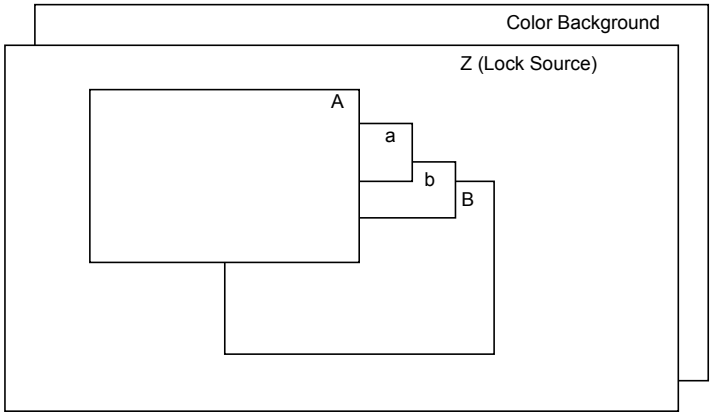
The image layers are given designators for the purposes of identification when operating the C2-7000 series. The designators are case sensitive. The letters and their meanings are as follows:

Window	Description
a	Logo “a” (Static - not scaled)
b	Logo “b” (Static – not scaled)
A	Window “A” (Live – scalable)
B	Window “B” (Live – scalable)
Z	Window Z Lock Source (Live – not scaled)

Since the color background layer is always layer number six, it can’t be moved and is given no designator. In the factory default condition, the layers are arrayed as shown:



With the exception of the color background layer, the layers can be re-ordered so that different orientations are displayed. For example, the combination shown below could be created which would mean that the Window “A” layer would have primacy over all the others:



The degree of transparency of any of the layers can be changed so that the layer(s) beneath are visible, semi-visible or invisible. As an example, if layer “A” above were expanded to cover all of the available image area and made fully opaque, none of the layers beneath it would be visible. By the same token, if Layer “A” were made semi-transparent, the layers beneath would be dimly visible. Should layer “A” be made fully transparent, it would seem to disappear altogether.

The powerful Keyer function of the C2-7000 series takes advantage of this feature to superimpose portions of one window over another. Portions of a layer are made semi-transparent or invisible. Certain colors are made invisible the result is one image appears to float above another on the layer stack.

3.9 Modes

The three modes available in the C2-7000 series are Switcher Mode, Independent Mode and Dual Picture in Picture (Dual PIP) mode.

3.9.1 Switcher Mode

The switcher mode configures the two outputs to function in a familiar preview and program arrangement. The output in this mode is actually a display of a single Window (A), optional Lock Source (Z) and optional Logo (a). The Window (B) and Logo (b) are used internally for program / preview processing and as such are unavailable to the user.

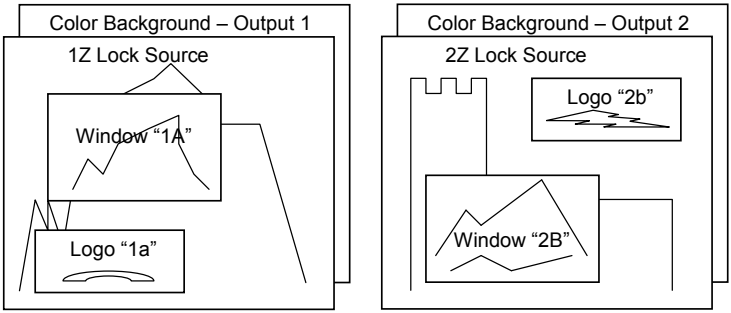
When an input selection is made, it instantly appears on Output 2—a Preview Output—but no action is taken on Output 1. The “Program” Output (Output

1) retains the last image selected when in the Switcher mode until the user presses button number 2 on the front panel. Button number 2 is the 'Take" button when in the Switcher mode and pressing it causes the image present on Output 2 to also appear on Output 1. Special control logic within the C2-7000 series allows the movement of the image from Output 2 to Output 1 to be either instantaneous or the new Output 1 image can gradually replace the previous image on Output 1 via a cross fade or a wipe. The time available for the cross-fade or wipe can be up to 5 seconds, controlled in .1-second increments.

3.9.2 Independent Mode

In the Independent mode, the dual processor circuitry is divided into two separate but equal signal processors. Window "A" and Logo "a" is dedicated to Output 1 and Window "B" and Logo "b" is dedicated to Output 2. Each of the Outputs can have a separate Lock Source (Layer Component Z), separate Color Background and separate Input Sources.

Graphically, the two Outputs layers will appear as shown:



From the drawings above, it can be seen that a limited layering scheme is in place while in the independent mode. You can utilize the transparency feature and the Keyer capability on each Output to make any portion of the window visible.

You can use the input buttons to select the images held within the windows and the selection process would be for only one output without having an effect on the other.

Similarly, you can make the Color Background layer different colors or cover it with a Lock Source or Window.

Finally, the logo generator can be employed to superimpose a logo over each Output independently.

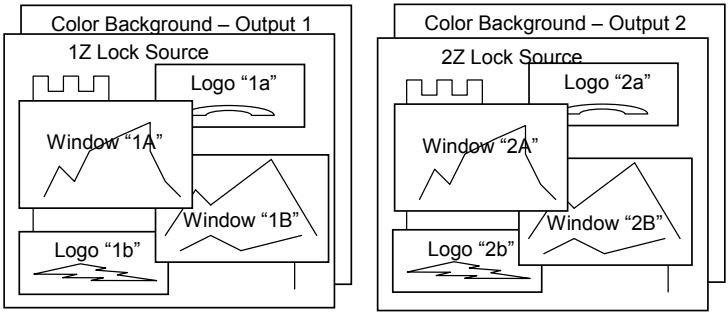
3.9.3 Dual PIP Mode

In the dual Picture In Picture mode, the same Lock Source (Layer Component Z) is applied to both Outputs 1 and 2. The Imagery present on those Outputs therefore will be locked to the single Lock Source even though there are two Outputs available.

From a practical standpoint, this means that there is only one lock source available and both outputs will contain the same lock source imagery.

The Keyers can adjust the components of each Window independently so as to make a portion of the underlying Window pierce the overlaying Window and the logos can be used as desired in the Output imagery.

Two Windows are available, “A” and “B”, on each of the two Outputs. Each Output displays the Windows at the same position and sizing. By changing the order of the layers, either PIP can be placed in front of the other and the balance of the layers can be utilized as well.



Inputs switched into Windows “A”, “B” and “Z” appear on both outputs (in other words, the imagery present in Window 1A is the same as 2A and the imagery present in Window 1B is the same as that present in Window 2B).

Positions and sizing is also the same for both Outputs however you can utilize independent Keying, fading and layering on each output.

4.0 UNPACKING AND INSTALLATION

4.1 Shipping Carton

The C2-7000 series arrives double boxed for maximum protection during shipping. You are encouraged to retain both boxes and all packing material so the unit can be returned in the unlikely event that repairs should ever become necessary.

4.2 Furnished Accessories

Carefully unpack the carton and perform an inventory of the contents. In addition to the C2-7000 series Dual Channel Video Processor, the standard accessories include:

1 RS-232 null modem 9D to 9D
1 C-Video I/O Cable, 6' (2m) BNC to BNC
1 S-Video I/O Cable, 6' (2m) 4-Pin YC to 4 Pin YC
1 DVI I/O Cable, 6' (2m) DVI-D
5 RGBHV I/O Adaptors, DVI-A to HD15
1 HD15 to HD15 Cable, 6' (2m)
1 AC Power Cable
1 Operations Manual
1 Rackmount Kit, 2 Ears and 8 Screws
1 DVI-A to 5 BNC

If any items are missing or defective, contact your supplier. If you are unable to resolve the problem with your supplier, contact TV One via the web at **http://www.tvone.com/support** for prompt replacement.

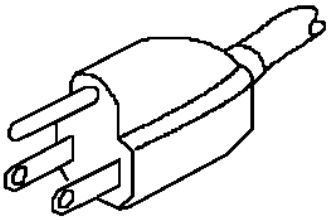
5.0 FUNCTIONAL CHECK

5.1 Important Safety Instructions

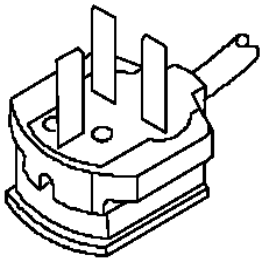
The AC power cable (Mains Lead) furnished with the unit will conform to the type in use at your geographic locale. Please compare the plug on your cable with the three types of power cable plugs currently being shipped to make certain you have received the correct power cable.

If you did not receive the correct cable**, DO NOT** attempt to modify the incorrect cable. Instead, immediately contact your dealer or contact TV One at the sales office nearest to your geographic location and request the proper cable.

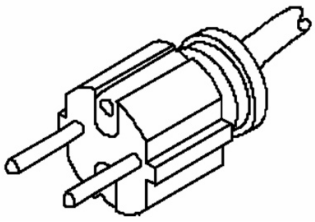
US AC Cable Plug Example:



UK AC Mains Lead Plug Example:



EU AC Mains Lead Plug Example:



AGAIN**, DO NOT** ATTEMPT TO MODIFY AN INCORRECT AC CABLE (MAINS LEAD). REPLACE IT WITH A CORRECT PART PRIOR TO USING THE C2-7000 series.

Power is never totally removed from the unit when it's plugged into an active AC outlet. Pressing the button at the extreme right on the front panel only places the unit in a powered down mode. This button is a standby switch, not a true off and on switch. Never remove the unit from a cabinet unless the unit has been completely disconnected from AC power.

5.2 Factory Reset

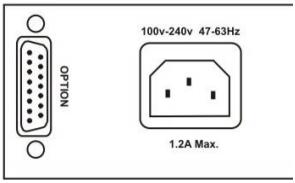
To restore all operational parameters to their original condition, first ensure the unit's in the operational mode, green power led illuminated (not in Standby red power led illuminated). If it is in the operational mode, hold the standby switch and then hold Buttons "1" and "2" until the unit beeps.

All stored settings except resolutions are lost when the unit is reset. A Firmware update is the only was to perform a complete factory reset

5.3 Initial Operation Check Using Factory Default Settings

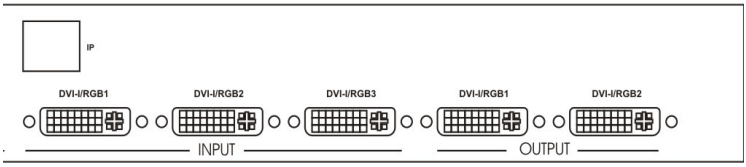
The C2-7000 series can be operated via the Front Panel Buttons, an LCD display and a Rotary Encoder, via a Windows based utility or via a dedicated CORIO Console hat mimics the operation of a classic video switcher. For the purposes of initially acquainting you with the operation of the unit, this manual will address the operation using the Front Panel controls.

Connect the AC power cable to the unit. (Refer to the diagram below. The AC power cable connects to the socket labeled "Power 100v – 240v 47-63Hz" located on the left side of the rear panel as shown.)



We'll be using a Personal Computer for a signal source. Make certain that the monitor resolution can display 1024 x 768 @ 60Hz as this is the default output resolution for the C2-7000 series.

Disconnect the cable going from a Personal Computer's Monitor to the Personal Computer. Connect the output from the PC video card (the PC connector formerly used by the monitor cable) to the input labeled "DVI-I/ RGB1" on the rear panel of the Processor. Use one of the five DVI to HD15 adapters and the HD15 to HD15 cable supplied in the accessory pack to make this connection as necessary.



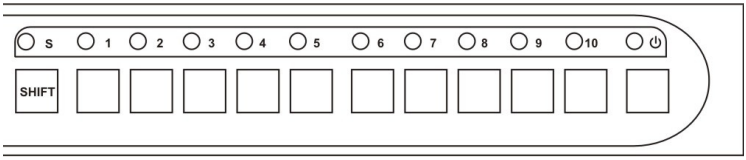
Next, take the cable from the PC monitor (using another of the supplied DVI to HD15 adapter) and connect it to the C2-7000 series' DVI-I/RGB1 output. Then connect the AC Power Cable to a working AC outlet, turn on the PC, monitor and then the C2-7000 series.

Provided you have not changed anything from the Factory Defaults and the monitor will display output 1024x768@60Hz and the CORIO testcard, by pressing button 3 the monitor will the show the PC's. If this is the result, the C2-7000 series is passing and processing signals.

6.0 CONTROLS AND CONNECTIONS

Front panel buttons 1 through 10, plus the Shift button, govern what inputs are applied to the C2-7000 series' two Video Processors. They also store user created, signal manipulation Macros and access some frequently used control functions.

The user can assign any of the input sources and some frequently used control functions to any of the input buttons (with the exception of the Shift button and Power Button).

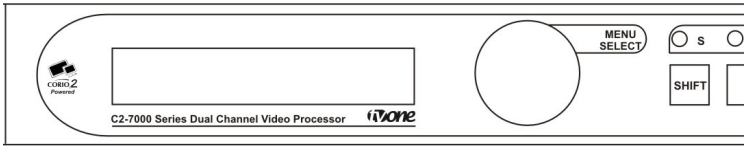


When the unit is powered up for the first time, (or whenever a Factory Reset is performed), the button assignments and input signal types are set to an initialized state. A listing of the initial condition is shown for reference in the following table:

Button Number	Button Function
1	Toggles Windows A, B & Z
2	'Take' button in Switcher Mode
3, 4, 5, 6, 7, 8, 9, 10	Selects an input – see section 3.5
Shift + 1	Toggles between Channel 1 & 2
Shift + 2	Highlights Active Window
Shift + 3	Freeze
Shift + 4	Key on/off
Shift + 5	Macro1
Shift + 6	Zoom -
Shift + 7	Zoom +
Shift + 8	Shrink -
Shift + 9	Shrink +
Shift + 10	Restore

All buttons except the Shift button and Power Button can be reassigned; however, buttons "1" and "2" should not be changed since such a change will make operation of the unit via the Rotary Encoder Control more difficult.

The unit is controlled from the front panel by using the rotary knob and the LCD screen. The Rotary encoder knob has two functions, rotate to navigate through the menu structure and push to enter a sub menu or change a parameter.



Parameters that can be altered are indicated on the LCD screen by "[ ]" brackets, simply press the rotary knob and these brackets will flash indicating the parameter can be adjusted, then rotate the knob to adjust and when the require setting is shown press the rotary knob again to end the adjustment.

The settings for the unit can be saved at anytime by pressing and holding the rotary knob until the screen shows the screen:

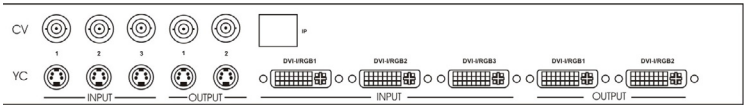
```
Info :
        Settings stored
```

In order to facilitate ease of use, the first two characters of every menu indicate the current Output and Window that is being adjusted; i.e. 1A = Output 1, Window A. In order to quickly change between the Window and Output under adjustment, the first programmable button (1) is programmed to cycle through the windows: A->B->Z>A … and this same key (when the shift key is also pressed) cycles through the Outputs 1->2->1… If you ever get lost as to which window is 1A, etc., simply pressing shift and button (2) will highlight the window on its associated output by placing a border around it.

6.1 Inputs and Outputs

The C2-7000 series has three DVI-I inputs (which can be used for DVI-D, RGBHV, RGsB, RGBs, YUV, YPrPb or YCbCr sources) three Composite video inputs and three YC (S-Video inputs). Provision has been made for two Output channels. Each output channel comprises of a DVI-I output (which can be used to output DVI-D and simultaneous RGBHV, RGsB, RGBs, YUV, YPrPb or YCbCr) a Composite output and a YC(S-Video) output.

In addition, the C2-7200 has two SD-SDI or HD-SDI inputs – with each Output also being mirrored on SD-SDI and HD-SDI output connectors (for when the selected output resolution is a valid standard- or high-definition TV signal).



Connecting an Analog Signal (RGB/YCbCr) to any of the DVI-I connectors is accomplished via DVI to HD-15 Adapters, five of which are furnished in the accessory pack that comes with the C2-7000 series.

The two DVI-I output connectors also support DVI-I and Analog RGB / Component simultaneously.

7.0 CHANGING THE OPERATING MODE

As previously explained, the C2-7000 series has two independent video processors and three operating modes: Switcher Mode, Independent Mode and Dual Picture in Picture (Dual PIP) Mode.

Within these three modes there are over 20 additional functions that can be accessed either within a single channel or layered across both channels. These individual functions will be explained later in the manual but for now, it would be well to learn the basics of the three modes. The discussions that follow are all referenced to the C2-7000 series' default condition upon initial application of power or after a Factory Reset has been performed.

7.1 Operating the Unit as a Video Switcher

When the C2-7000 series is initially turned on the first time (and after any Factory Reset), it will be in the Switcher mode. If a mode change is made to either Independent mode or Dual pip mode, and the power is not totally removed from the unit by unplugging it from the AC supply, the last selected mode will be retained even if the unit is switched off using the power switch.

In the following discussion, the assumption is made that the unit is being turned on for the first time and is therefore in the Factory Default condition.

Connect the DVI-I #1 Output to either a DVI-I compliant monitor or to a RGB Analog Component monitor using appropriate adapters if necessary. Connect a second monitor to the DVI-I #2 Output. These will become your Program and Preview monitors respectively.

By changing the Output Resolution to NTSC/PAL and type to CV/YC, you can also connect monitors to the Composite Video or YC Video Outputs (instead of RGB) however, the quality of the signal will not be as good as the signal present at the respective DVI-I / RGB outputs.)

CORIO2 C2-7100 TV One

The LCD screen will display the model number when you initially apply power to the unit or perform a reset, you should make note of this number in case you require technical assistance.

Device Mode Mode [Switcher]

If not in the Switcher mode, press the Rotary Encoder and the brackets portion of the display will begin to flash. Rotate the knob until the word Switcher appears then press the knob. The brackets will cease flashing and the C2-7000 series will be in the Switcher mode.

When in switcher mode C2-7000 series' Output 1 will be the program feed and Output 2 will be the preview feed. Most users will position the monitor connected to Output 2 on the left and the monitor connected to Output 1 on the right. Since most people naturally work from left to right, it would be logical to display the image you are previewing (the image on the monitor connected to output 2) on the left.

7.1.1 Switching an Input

Using the appropriate input button or the Adjust Windows menu (see section 8.3.3), select the Input Source you wish to place on the program monitor. If the input is assigned to a button then the LED above the respective button will begin to flash and the image will appear on the Preview Monitor.

In the Factory Default mode, the image will be a single image occupying the entire screen. If you wish to have a smaller screen image, simply use the Shift button in conjunction with button number 8 to adjust the image to the size you desire. (Later you'll learn how to set your own defaults, sizing images and saving your preferences.)

It's now time to 'Take" the Input Source, placing it on the Program output. Pressing button number 2 on the unit's front panel, (referred to as the 'Take"

button) allows you to replace the Input Source currently in place on the Program monitor with the Input Source on the Preview monitor.

7.2 Operating the Unit as two Independent processors

The second mode of operation is the Independent Mode. In this mode, each of the unit's processor engines are controlled separately and two independent Outputs are possible.

To help explain how to enter this mode, the frame of reference will be the Factory Default condition. At this time, perform the Factory Reset as explained in section 5.2 above.

After the system resets, the initial screen will be as follows:

```
CORIO2 C2-7100
TV One
```

Grasp the Rotary Encoder knob and turn it clockwise until the following display is shown on the LCD screen:

```
Device Mode
Mode            [        Switcher]
```

Press the Rotary Encoder and the brackets portion of the display will begin to flash. While the brackets are flashing, rotate the knob until the following display is shown:

```
Device Mode
Mode            [    Independent]
```

Press the knob. The brackets will cease flashing and the unit will be in the Independent mode.

There is no Preview available in the Independent mode. Changes made to the inputs for either Output are immediately visible. Transition capabilities are also reduced to a simple cross fade.

7.2.1 Selecting Inputs to the Windows

As we previously discussed, in this mode Window A and Logo a are dedicated to Output 1 and Window B and Logo b are dedicated to output 2. Selections of the Inputs to each Window and there respective Output are made in conjunction with the Shift Button and Button Number 1. (Press and hold the Shift button and then press button number 1 to toggle between Output 1 and 2.)

The function of the A->B->Z button (button1) in this mode allows you to toggle between the active window for the Output and Window Z only e.g. Output 1 selected button 1 will toggle window A->Z. Output 2 selected button 1 will toggle B->Z

Select the desired input by pressing the appropriate button. When the button is pressed, the image will immediately appear on the output. Press and hold the Shift button and then press button number 1 again to change to the other output. Repeat the activity to make your selection for the second video path and note the LCD display is changing from 1A to 2B during the process.

As a part of this familiarization exercise, you may wish to resize the images by using button number 9 and the shift key.

7.3 Operating the Unit in Picture In Picture Mode (Dual PIP)

The Picture In Picture mode is a very powerful function available on the C2-7000 series because unlike many products on the market, you have two P-I-P functions available and each is independent of the other with respect to signal type and content.

As before, the frame of reference will be the Factory Default condition. At this time, perform the Factory Reset as explained in section 5.2 above.

After the system resets, the initial screen will once again be as follows:

```
CORIO2 C2-7100
TV One
```

Grasp the Rotary Encoder knob and turn it clockwise until the following display is shown on the LCD screen:

```
1A Device mode
Mode            [       Dual PIP]
```

If the above display is not present, press the Rotary Encoder and the brackets portion of the display will begin to flash. While the brackets are flashing, rotate the knob until the following display is shown:

```
1A Device mode
Mode            [       Dual PIP]
```

7.3.1 Selecting Inputs for the Individual Windows

Button 1 toggles between the Window “Z” (The Lock Source), Window “A” and Window “B”.

Since there is no Lock Source automatically selected in the Factory Default and Lock mode is set to off , nothing will happen on the screens when you have the Z Input Source selected via Button 1. Select Window A for adjustment by pressing button 1 so that the top line of the LCD display shows 1A. When you have Window A available for change, press the input button for the signal source you desire to place in Window A.

This selected window can now be adjusted simply use the Shift Key along with buttons 6 to 9 to Zoom or Shrink the image in Window A. The Zoom Button will zoom the image within the confines of the Window area whereas the Shrink button will change the size of the window itself and thereby increase or decrease the coverage area of the image with respect to the monitor screen.

Press button 1 to select window B and make similar adjustments to the image.

In the default condition, Window “A” will always appear full screen in front of Window “B”. You can adjust the size but not the position of the Windows using the controls described to this point. Later we’ll be exploring the menu structure used in the C2-7000 series. It’s within the various yet-to-be explained menus elements that we’ll gain access to all the powerful operational and technical capabilities.

8.0 MENU TOPOGRAPHY AND ADJUSTMENT METHODOLOGY

From here on, we’ll be looking at the high-level menu structure employed in the C2-7000 series and, more importantly, the individual menu items that allow you to take advantage of the power of the unit.

You’ll be using the Front Panel Rotary Encoder and the Integrated LCD Display to control the C2-7000 series. You’ll turn the Rotary Encoder using the attached knob and the LCD display will show you where you are in the

menu. Once you are where you want to be, you'll press the knob and this will enable an adjustment to be made. You'll note that the brackets surrounding a particular parameter's value will begin to flash. You'll then make the adjustment by turning the Rotary Encoder knob and then pressing the knob to finish the process.

A few menu items have multiple parameters within an individual menu selection. In those cases, you'll press the knob to accept the change, move the Rotary Encoder knob one detent and press it again. This will cause the next set of brackets to the right to begin flashing. You'll make the required adjustment and press the knob to accept the change. This process continues until all parameter changes within the individual menu item have been made.

Holding the knob in for a few seconds stores all changes in memory. Unless you intentionally change it again later, the adjustment will remain even after power is removed from the unit.

Before we start going through the menus, it's vitally important that you understand the functions of Front Panel buttons 1 and 2. You will be using these buttons along with the Shift button to help move through the menu structure.

Lets review the functions of buttons 1 & 2 plus the Shift button again:

Button Number	Button Function
1	Toggles Windows A, B & Z
Shift +1	Toggles between Channel 1 & 2
2	'Take" button in Switcher Mode
Shift + 2	Highlights Active Window

As you make adjustments, the front panel LCD display will normally show which Channel or Window you're working with. Even so, you'll be toggling between Windows and Outputs using the Shift Key and Button 1. If you become lost, you can use the Shift Key and button 2 to highlight the Window you are working with on the Video monitor.

The LCD display will show what Parameter, Output plus the Window you are working with. (2A for instance means you are working with Output 2, Window A). Before you make a change, note the indication on the LCD display and make certain you are about to make an adjustment in the area you actually want to change or adjust. Before you actually try to make any adjustments, it is strongly recommended that you become familiar with the control methodology using the Buttons, Rotary and LCD display.

With these explanations and cautions in mind, let's look at the C2-7000 series menu.

8.1 The High Level Menu Structure

Menus controlling the C2-7000 series are arranged so that a particular general function has a group name and then, beneath that group name, a collection of related individual functions are arrayed.

In some cases the functionality is global — meaning it has an effect on the unit as a whole. In the majority of cases, the function is related to a specific operational area of the unit and these areas frequently have the Output and/or Window label indicated on the front panel LCD display.

There are two screens that appear before the Group Menus are accessed. The first is the Banner display indicating the model of the unit:

```
CORIO2 C2-7100
TV One
```

Rotating the Rotary encoder clockwise one increment displays the following screen:

```
www.tvone.com
SW: 15. PT: 12, BT: 13
```

The SW number refers to the version of firmware loaded into C2-7000 series, this software can by upgraded from the support website, **http://www.tvone.com/support**. The PT and BT numbers refer to Hardware version information and are of interest to the Technical Support Group should you ever need assistance.

It is unfortunately not possible for hardware to be upgraded.

Rotate the knob clockwise from the banner screen and note the name and description of the various Group Menu Names.

8.2 Group Names and Descriptions

Menu Group Name	Group Description
Device mode	Allows selection of switcher, independent and pip mode
Adjust outputs	Controls output parameters
Adjust windows	Controls characteristics of the pip windows
Adjust keyers	Controls the luminance keyer and chroma keyer
Adjust sources	Controls signal input parameters
Adjust logos	Controls characteristics of logo files and outputs
Adjust borders	Controls the window border functions
Adjust transitions	Controls input transitions
Adjust buttons	Controls button assignments and preview/program action
Adjust ethernet	Controls ip addresses and network parameters
Adjust resolutions	Controls unit's input / output resolution table
System	Controls global system parameters

8.3 Individual Menu Items

8.3.1 Items Associated with the 'Device mode group'

```
1A Device mode
Mode                [     Switcher]
```

Accessing this group allows you to select one of three high-level operating modes: Switcher, Independent or Picture-In-Picture. For a discussion of each of these modes, see section 3.9 Modes

8.3.2 Items Associated with the 'Adjust outputs group'

This menu group allows adjustments to be made that specifically affect the two outputs of the unit, including output resolution and Locking.

```
1A Adjust outputs
Output to adjust              [1]
```

This function duplicates the action of button 1 wherein you can switch between Output 1 and Output 2. Pressing the Rotary Encoder Knob will cause the Brackets to flash. Rotating the knob will select either Output 1 or Output 2. Pressing the knob again completes the transaction.

```
1A 800 x 600 60Hz
Lock mode          [Off] [RGB1]
```

This menu item allows the lock mode to be selected and the lock source to be defined. The top line of the display shows the current detected resolution of the selected lock source. The lock mode can be either Off, Genlock or Lock & Mix the operation of these are shown in the following table:

Lock	Description
Off	The output resolution of the Output is defined by the setting for Output Resolution and there will be no Z window.
Genlock	The output video will be "Genlocked" to the selected lock source, the output sync will be synchronous to the input sync and adjustable–but there will still be no lock source shown
Lock & Mix	The output video will be locked to the selected source, the syncs will be locked (but with an additional internal video processing delay) and the Z window for the output will be that of the Lock source

In both Genlock and Lock & Mix modes the source selected for the Lock Input (Window Z) determines the overall resolution of the Output image. The output resolution for the entire image can be no different than the image chosen as the source for locking. (When lock is off or Genlocked, you will only have the color background with a default color of black).

In Independent mode you can lock one or both of the Outputs to a different Lock Sources. Pressing shift and button 1 determines the Output you are locking to the Lock Source–either Output 1 or 2.

Before turning the Lock feature on, you first must select a Lock Source: Use the Rotary Encoder knob to move to the item in the right hand set of brackets and then press the knob to start the brackets flashing. Make your selection using the Rotary Encoder for the Lock Source, press and hold the knob for a few seconds and then move back to the Lock On/Off selection explained above to complete the Locking Process.

```
1A 800 x 600  60Hz
Output res.                [16]
```

The C2-7000 can handle a very wide array of inputs and convert them all to a single output signal with defined characteristics. This output resolution will remain in place until changed or it can be overridden by the lock mode and source. The top line of the display will show the current output resolution selected.

```
Adjust outputs
Output type              [RGBHV]
```

Selects the type of output the C2-7000 series will provide. Types of outputs vary depending on the resolution selected and include various types of component signals YCrCb, Y/R-Y/B-Y or YPbPr, the full range of RGB type signals RGBHV, RGBs and RGsB(Sync on green), plus DVI-D and finally Composite and super video when using PAL or NTSC signal formats.

```
Adjust outputs
Out std              [NTSC / PAL]
```

This menu item is only available when the Output resolution is set to PAL or NTSC, and allows the PAL / NTSC standard to be further defined allowing the unit to output PAL-M or PAL-N.

```
1A Adjust outputs
Back Y/U/V      [016]  [128] [128]
```

Sets the value of the fixed background color, layer 6.

8.3.3 Items Associated with the ‘Adjust windows group’

This menu group allows adjustment to be made to window specific parameters such as the Window source, its position, size, and zoom level.

```
1A Adjust windows
Window to adjust              [A]
```

Mimics button number 1. Allows selection of Window A, B or Lock Source Z.

```
1A NTSC / 60Hz
Source                        [ YC1]
```

The source display screen allows the input source for the currently selected window to be changed. The top line of the display shows the detected characteristics of the signal. Valid Input sources are:

Source	Description
RGB1	Selects digital or analogue video from DVI-I / RGB1 connector
RGB2	Selects digital or analogue video from DVI-I / RGB2 connector
RGB3	Selects digital or analogue video from DVI-I / RGB3 connector
CV1	Selects analogue video from CV1 connector
CV2	Selects analogue video from CV2 connector
CV3	Selects analogue video from CV3 connector
YC1	Selects analogue video from YC1 connector
YC2	Selects analogue video from YC2 connector
YC3	Selects analogue video from YC3 connector
SDI1	Selects SD-SDI or HD-SDI video from SDI1 connector
SDI2	Selects SD-SDI or HD-SDI video from SDI2 connector
TC1	Selects the testcard set as Testcard 1 from internal testcard memory
TC2	Selects the testcard set as Testcard 2 from internal testcard memory
OUT1	Selects the output from Output1 as the source
OUT2	Selects the output from Output2 as the source

```
1A Adjust windows
Window enable                 [ On]
```

Window enable provides a way to completely remove a window from the output.

```
1A Adjust windows
Zoom level %                  [ 100]
```

Sets the amount of picture magnification for the image in each window. Adjustments are provided to zoom the image from 100% to 1000%

```
1A Adjust windows
H/V zoom %       [100] [100]1.777
```

When parameter ‘Aspect Adjust’ in the System Menu structure is set to ‘Advanced’, this display is made accessible on the LCD. It allows the setting of Horizontal and Vertical size independently when in the ‘Zoom’ Mode. The third number (1.777 in the example) is the Aspect Ratio resulting from the adjustments.

```
1A Adjust windows
H/V zoom pan %     [  50] [ 50]
```

Once an image has been ‘zoomed’, this control allows the image to be positioned within the window so that any portion can be seen, not just the middle.

```
1A Adjust windows
Image freeze                [Off]
```

This menu item allows the selected image to be frozen. The window is selected and then the On/Off selection is made to freeze and unfreeze the image. Since there is only one option: On / Off, pressing the Rotary knob will toggle the setting.

```
1A Adjust windows
H/V out shift           [   0] [   0]
```

H/V Out Shift positions the selected Window horizontally and vertically on the monitor. (This is used for ‘fine tuning’ and should not normally require adjustment).

```
1A Adjust windows
Shrink level  %             [  50]
```

Shrink Level determines the percentage of the monitor’s total available screen space that the selected Window image occupies. Adjustment is provided for a reduction down to 10% of the overall output imagery.

```
1A Adjust windows
Shrink  H/V %    [100] [100] 1.333
```

When parameter 'Aspect Adjust' in the System Menu structure is set to 'Advanced', this display is made accessible on the LCD. It allows the setting of Horizontal and Vertical size independently when in the 'Shrink' Mode. The third number (1.333 in the example) is the Aspect Ratio resulting from the adjustments.

```
1A Adjust Windows
H/V shr. pos. %          [100] [ 50]
```

Determines the position on the monitor screen of the selected shrunken Window image. (Will move an image that is less than full screen left/right, up/down within the monitor's available screen space).

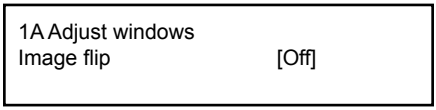
```
1A Adjust windows
Flicker Reduction            [Low]
```

The Flicker Reduction menu item will only appear if you have selected a low resolution interlaced output. If you are using CV or YC outputs, this adjustment may be of interest, particularly when you have line drawings or similar fine detail. Pressing the Menu Select knob will allow you to choose from four possible Flicker Reduction settings. You should use as little Flicker Reduction as possible because the Vertical detail will be considerably softened at the highest setting.

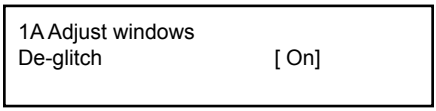
Flicker mode	Function
Off	Disables flicker reduction
Low	Suitable for most program sources
Med.	Enough for most situations such as thin line drawings
High	Highest amount of flicker reduction. Can cause loss of vertical detail in some images

```
1A Adjust windows
Image smoothing              [Auto]
```

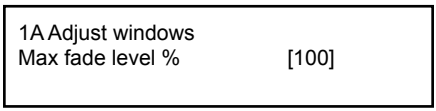
Image smoothing reduces the jagged-edges sometimes seen within an output image by softening them. It typically greatly improves the quality of a scaled image. There are four possible settings for this adjustment: “Off”, “Med.”, “High”, and “Auto”. The “Auto” setting is generally thought to be most desirable and will vary the smoothing according to the amount of zoom set.



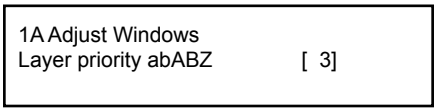
Occasionally, it’s necessary to cause the output image to be flipped Vertically, Horizontally or both. This adjustment allows you to make that change to the selected window’s output appearance.



De-glitch is used to provide clean, seamless switching between video sources. With the C2-7000 series, it is unusual for the inputs to be synchronized with one another and the De-glitch function ensures that the switches between these inputs do not cause the picture to breakup at the point of the switch. This feature is normally left On however, if you have a very unstable input, such as a video tape machine in need of mechanical adjustment, you may wish to turn the feature off since the unit will not allow an unstable image to appear on the screen if De-glitch is left On.



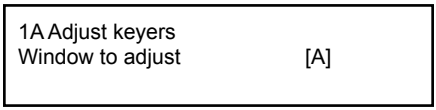
This Menu item fades the selected layer. Adjustment range is from solid to fully transparent.



This adjustment selects the order of the window layers. Layers are shown for ‘a’ and ‘b’ logo screens, Window ‘A’, Window ‘B’ and ‘Z’ is the Lock Source. The default condition is shown. The number shown is the current layer of the active window, when you adjust the layer number the layer stack indicator ‘abABZ’ will change to allow visualization of the layer stack. Note that layer 6 the Background Color is not shown as its layer position can not be altered – it will always be the background.

8.3.4 Items Associated with the 'Adjust keyers group'

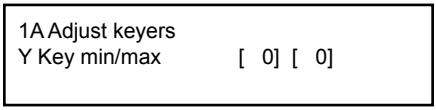
This menu allows the adjustment of the luminance and chroma keyer for each of the windows A, B and lock source Z.



Mimics button number 1. Allows selection of Window A, B or Lock Source (Z).

Each Window or Lock source of the C2-7000 series has a Keyer function wherein one image can be keyed or superimposed over another. This menu item turns that functionality On or Off for the selected channel.

The Keyer adjustment discussions that follow advise how to set up the luminance and chroma components of the keyed image. A Keyed image is in essence one image superimposed over another with portions of the top image made transparent so that the image on lower layers can show through.



The Min / max parameters are used to select what range of Y (luminance) values are made transparent within the selected window / lock source. In order to key out part of an image start with the max value and increase it until the required light luminance level parts within the window / lock source disappear. Then adjust the min level to bring back any darker parts of the image.

Removes noise from the edges of a keyed image. Adjust as required to make the edges of the key as sharp as desired.

Changes the keying characteristics with respect to what portion of the foreground image is being 'keyed out'. On= Colors to remove, Off=Colors to keep.

The three parameters above are functionally the same as the "Y" luminance component versions however they are directed at the "U" color component. Adjustment and effects are the same as explained above for the "Y.

The three parameters above Y min/max, Y softness and Y Key invert are also available for the U and V color components allowing chroma keys to be created. In depth details on chroma and luma keying are detailed in section 9.1

8.3.5 Items Associated with the 'Adjust logos group'

The C2-7000 series supports logo insertion on each of its two outputs. Logos are loaded into the unit via the Windows based control utility and once in the device they can be called up for insertion as required. Horizontal and Vertical Position plus Fade Level are all controlled using the Adjust Logos Menu Group items as explained below.

Accessing the Adjust Logos sub menu and pressing the Rotary Encoder knob will allow you to begin the Logo adjustments.

1a Adjust logos Logo to adjust [a]

Select the Logo window you wish to use.

1a Adjust logos Logo enable [On]

Allows a logo to be turned off, and not displayed on the output screen.

1a Adjust logos Logo number [1]

A fixed number of Logos can be stored in non-volatile memory for later recall. Use this functionality to select the Logo to be displayed and adjusted. This parameter controls the position of the logo within the window.

1a Adjust logos H/V out shift [300] [300]

This allows the logo to be positioned to pixel accuracy anywhere on the output imagery.

1a Adjust logos Max fade level % [100]

This parameter controls how visible the Logo is to the viewer. A setting of 0 renders the Logo invisible whereas a setting of 100 makes the Logo fully visible. (In-between settings can give the Logo a transparent appearance.)

1a Adjust logos Layer priority abABZ [1]

This adjustment selects the order of the window layers ‘a’ and ‘b’ are logos, ‘A’ is window A, ‘B’ is Window B and ‘Z’ is the Lock Source. The default condition is shown.

8.3.6 Items Associated with the ‘Adjust borders group’

The adjust borders menu allows the border function of the C2-7000 series to be enabled for Windows “A”, “B”, Logos “a”, “b, and the lock source “Z”

1A Adjust borders Border to adjust [a]

Select the window / logo / lock source you wish to use.

1a Adjust borders Border enable [On]

Allows a border to be turned off and not displayed on the output screen.

```
1A Adjust borders
Brdr size H/V          [8]    x    [8]
```

This adjustment allows the height and width of the border to be changed it can be up to 255 pixels thick.

```
1A Adjust borders
Brdr offset H/V     [0] x  [0]
```

This allows the border to be offset from the window. A typical application is the creation of a drop shadow effect. For example this can be achieved by setting the border size to 0 and then adjusting the H and V offset to 10 pixels.

```
1A Adjust borders
Brdr Y/U/V      [16]   [128]   [128]
```

The color of the border can be changed to any color by adjusting the Y, U and V parameters

```
1A Adjust borders
Brdr opacity %                  [100]
```

This parameter controls how visible the border is to the viewer. A setting of 0 renders the border invisible whereas a setting of 100 makes the Logo fully visible. (In-between settings can give the Logo a transparent appearance.)

8.3.7 Items Associated with the 'Adjust sources group'

The 'Adjust Sources' menu group accesses the parameters associated with the processing amplifiers used for each input(RGB,CV,YC), the internally testcards (TC1 and TC2), and the Outputs for cascading(OUT1 and OUT2) . As explained in previous sections, any changes made can be stored in non-volatile memory by pressing and holding the Rotary Encoder knob for a few seconds. After storing changes, they will remain during power down.

```
1A source : RGB1
Source to adjust              [RGB1]
```

This menu item selects the input for which adjustments will be made. Once the selection has been made, all changes in operating parameters will be made only to the selected input.

Selection of a CV/YC or testcard source will reveal different menu items that allow adjustments beyond those used for RGB sources. The menu discussions that follow relate first to RGB sources, then to CV / YC type sources and finally to testcards

8.3.7.1 RGB Source Menu Items

```
1A Source : RGB1
Autoset status          [Inactive]
```

Once the Autoset sense setting has been made, this menu item is accessed and activated. The utility will correct the pixel phase and then position the Top Left portion of the image and the Bottom Right portion of the image and then resume inactive status.

```
1A Source : RGB1
TL pos. adj.            [  0] [  0]
```

This menu item allows manual positioning of the Top and Left portion of the image. Used to ensure that the input signal is captured correctly, eliminating any black borders. These settings are often used to correct the position of a PC signal on an RGB/DVI input, or to eliminate any undesired noise at the top of a PAL or NTSC video source.

```
1A Source : RGB1
BR size adj.            [  0] [  0]
```

This menu item allows manual positioning of the Bottom and Right portion of the image. Just like the TL adjustment but with respect to the bottom and left hand edge of the image.

```
1A Source : RGB1
Audio Input                [  1]
```

This menu item selects Audio Input for adjustment of level and balance parameters. (Only functional when C2-7000 series is used with A2 Audio Switcher.)

```
1A Source : RGB1
Audio              Vol [   1] Bal [   0]
```

This menu item adjusts the audio volume and balance for the channel selected above. (Only functional when C2-7000 series is used with A2 Audio Switcher.)

```
1A Source : RGB1
Input pixel phase              [   16]
```

Although a pixel is a very small element of the total image, it's possible for the C2-7000 series' A to D converters to randomly sample the picture on the edge of the pixel thereby losing image resolution. The Input Pixel Phase screen allows you to sample the image precisely in the middle of the pixels.

To make this adjustment, select an RGB source and then provide an image from that source with fine detail, preferably with very sharp vertical lines such as a multi-burst signal. In the absence of a multi-burst signal, use something with as fine a vertical detail as possible.

```
1A Source : RGB1
RGB input type           [RGBHV]
```

There are several types of signals that are called RGB signals as a generic term. Each has slightly different characteristics that set it apart from similar RGB signals. Move the Menu Select knob from the Input Pixel Phase screen and bring up the screen shown above.

The abbreviation RGBHV means Red, Green, Blue imagery plus Horizontal and Vertical Sync. If you rotate the knob one detent to the right, you'll see *RGBS. This* means Red, Green and Blue plus a single Sync signal. A further rotation to the right and you will see *RGsB* displayed between the flashing brackets. This means that you have a Red, a Green and a Blue image plus a sync signal superimposed on the Green channel. Finally you have the choice of the *YUV* family of signals. YUV and tIYUV are used to input YUV with tri-level syncs commonly used for HDTV signals (720p, 1080i).

```
1A Source : RGB1
RGB contr.       [100] [100] [100]
```

A desirable feature of an RGB signal is the ability to adjust the individual signal components with minimal effect on the other components. With a CV

(Composite Video) or YC (Component Video) signal it's not easy to make an adjustment to one color without causing a knock on effect on another portion of the image. With RGB images you can (for instance) have an image of green grass and blue sky and make the grass bright green without having any effect on the blue sky. The RGB Contrast LCD screen affords you the opportunity to make such adjustments for each of your RGB Input Buttons.

```
1A Source : RGB1
De-int              [M.comp med]
```

An interlaced input consists of two fields separated in time. Both fields are required in order to make up the full resolution input image, but since they are sent one after the other, a moving image will have "motion artifacts" if the two fields are simply combined together. The most common artifact is a blurring at the point of maximum acceleration of movement within an image. The C2-7000 series provides some tools to minimize the effects of de-interlacing of an image.

Select this screen by rotating the Menu Select knob until the above screen is present on the LCD display. Press the Menu Select knob and the brackets will begin to flash. Make your selection (the choices are listed in the table below) by rotating the Menu Select knob and then pressing the knob to select your choice.

Mode	Function
Normal	The two interlaced fields are simply combined together. This will often show artifacts on moving images
Auto	Automatically selects Film 3:2 or Medium Range Motion Compensation (M. Comp Med.) depending on whether Film Mode is detected or not.
Film 3:2	Enables 3:2 pull down conversion of the incoming NTSC video. (This option is ignored if the source is not NTSC video).
M.Comp Low M.Comp Med. M. Comp High	Enables Pixel Adaptive Motion Compensation. Three levels are available with 'Low' providing the least compensation for Motion and 'High' providing the most compensation.

8.3.7.2 CV & YC Source Menu Items

Of the above Source Menu items, the Autoset Sense and Autoset Status function, RGB type and Pixel phase are specific to RGB signals. The rest of the Source Menu items function with RGB, CV or YC type signals. In addition,

there are four additional Menu items that are only used with CV or YC type signals and these are explained below:

```
1A Source : YC1
Bright[100]          Contrast[100]
```

Adjust the Brightness of the image to your requirement.

```
1A Source : YC1
Satur[100]                Hue[0]
```

Saturation is the amount of color present in the image.
fHue is the color “tint” parameter and the adjustment range is +90 degrees through -90 degrees with 0 being the default.

```
1A Source : YC1
Sharpness                 [0]
```

Within limits, you can enhance or soften the appearance of detail within an image. The Sharpness values are restricted to a range of –4 to +3 with 0 being the default. Over-enhancing an image has the side effect of making it appear to be noisy and under-enhancing an image gives the appearance of poor video quality. The adjustment range is restricted for this reason.

```
1A Source : YC1
Luma delay                [ 0]
```

On occasion, a video source will have the color portion of the signal offset from the luminance portion. If you’ve ever seen a poor quality comic book that has the outline of the cartoon character’s head in one place on the page but the flesh tones for the head offset a bit, you are seeing the print equivalent of Luminance to Chrominance Phase Delay.

Fortunately, the C2-7000 series provides a way for you to make the two signals occur at the same time on the selected image.

The adjustment range of the knob is limited to values of –4 through +3 with 0 being the default. This may seem to be an insufficient range but it is enough to cancel out any delay you are likely to encounter.

8.3.7.3 Testcard Source Menu Items

1A Source : TC1 Testcard [0]

Used to select the testcard from memory to use as source for TC1 or TC2

8.3.8 Items Associated with the 'Adjust transitions group'

Transitions control how the C2-7000 series responds when in the Switcher mode. Fades between Windows as well as wipes are possible. The amount of time taken by a transition is controllable from instant transition to a total of 5 seconds.

1A Adjust transitions Transition [Fade]

This first adjustment controls the type of transition desired, Cut, Fade or Wipe.

1A Adjust transitions Switching fade time [.5]

If you select Cut or 'Fade', the only remaining menu items will be 'Switching Fade Time' and 'Exit'. Selecting 'Wipe' exposes additional parameters. (Note that the 'Wipe' function is only functional when in Switcher mode.)

1A Adjust transitions Wipe type [Left -> Right]

This parameter controls how long a transition from one input to another takes. The value can be 0 (cut) or take as long as 5 seconds in 1/10th second increments.

If you selected "Wipe" instead of "Fade" for the transition type, you will be able to specify the type of "Wipe" transition. The possibilities are: Left to Right, Right to Left, Up/Down (Top to Bottom), Down/Up (Bottom to Top), Diagonal and finally a Diamond effect.

1A Adjust transitions Wipe size [100]

Wipe Size sets the 'granularity' of the effect. The smaller the number, the more elements there are to the wipe. To clarify by example, if you select the Diamond wipe effect and set a small number into the Wipe Size parameter, you will have a large number of Diamonds present in the transition. On the other hand, a large number loaded into the parameter will result in only one or two diamonds being present during the transition.

8.3.9 Items Associated with the 'Adjust buttons group'

The Adjust Buttons sub menu allows the reassignment of the factory default button associations. For instance, if you do not want button 3 to be associated with RGB input number 1, you can redirect the button to another input.

*You are strongly cautioned **NOT** to change the default assignments to buttons 1, 2 or the Shifted variant of these buttons. To do so makes control of the C2-7000 series via the front panel controls extremely difficult.*

```
1A Adjust buttons
Button [ 1] = Toggle ABZ
```

To change a button assignment, press the Rotary Encoder knob and then rotate the knob until the desired button number appears within the flashing brackets. Press the knob again (which will cause the brackets surrounding the choice list to begin flashing) and choose the new button assignment. Press and hold the knob for a few seconds to place the new button assignment in non-volatile memory.

```
1A Adjust buttons
Shift [ 1]     =     Toggle 12
```

Again, it is strongly suggested that you do not change the assignment for Button number 1.
This controls the action taken by a button when the shift button is also pressed. Leave the Shifted variant of buttons 1 and 2 as they are or else you will have difficulty navigating the menu structure as explained in the Info caution above.

```
1A Adjust buttons
Instant Program Select          [Off]
```

When turned on, the preview function of the Switcher mode no longer applies. Any selection made appears on the Preview and Program output simultaneously.

8.3.10 Items Associated with the 'Adjust ethernet group'

The C2-7000 series can be remotely controlled via its RS-232 serial port and also via a Local Area Network using the Ethernet protocol. The Adjust Ethernet Menu Group allows the setup of the Ethernet addressing parameters. Access the Adjust Ethernet sub menu and the following adjustments will be possible:

```
1A Adjust ethernet
IP enabled                [Auto]
```

This parameter has three possible states: On, Off and Auto. On and off manually control the Ethernet capability of the C2-7000 series. When in the Auto mode, if a valid Ethernet connection is present the remote control of the unit automatically defaults to Ethernet and RS-232 control is disabled.

```
1A Adjust ethernet
IP add.        [ 10]  1    2   123
```

Using the Rotary Encoder knob, enter a valid IP address into the appropriate areas of the LCD display.

```
1A Adjust Ethernet
IP sub.        255.255. [255.000]
```

Using the same procedure, enter the sub net mask values.

```
1A Adjust Ethernet
IP gtwy.       [ 10]  1    2   123
```

Enter the Gateway Address into the appropriate areas of the LCD display.

```
1A Adjust Ethernet
IP port                   [10001]
```

Enter the IP Port Number.

```
1A Adjust Ethernet
Set new IP data & reboot
```

Once you have all the data entered, press the Rotary Encoder knob and the new values will be stored in non-volatile memory and the unit will restart.

8.3.11 Items Associated with the 'Adjust resolutions group'

The Adjust Resolutions Menu Group only appears when the Advanced Menus function is turned on within the System Menu Group. To turn it on, go to the System Menu Group and then proceed to the LCD display that says "Advanced Menus". Turn the function 'On", exit the Systems menu and return to this menu structure.

The Resolution Database is used by the C2-7000 series to identify any incoming video signal and is also used to create an Output image. It is therefore a very important part of the unit's infrastructure.

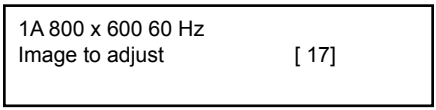
Important Cautionary Information

DO NOT ADJUST THESE ITEMS UNLESS YOU'RE CERTAIN YOU KNOW WHAT YOU'RE DOING!

TRY USING THE SHRINK, SHRINK POS, TL & BR ADJUSTMENTS FIRST.

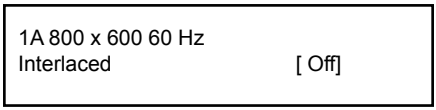
Making adjustments here risks creating a non-standard resolution that is not displayable on a monitor. The resolutions and values within the database are industry standards and should not normally be altered by the user. That said, there might be times when it is necessary to create a custom resolution with specific parameters. If circumstances require you to make such a change, please read the following specific notes:

1. *Any changes made to this database take effect instantly and are also stored immediately in non-volatile memory.*
2. *A white border will appear when adjusting most of these settings.*
3. *Since this database is used for both input and output image processing, altering a resolution that is used for both (e.g. 1024x768 input and 1024x768 output) may give undesired effects.*

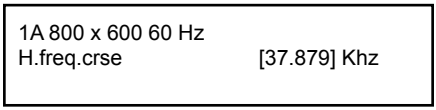


Rotate the knob to select one of the many database resolutions you want to change.

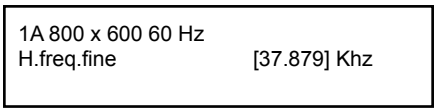
Typically, the image number currently being used for input or output would be selected otherwise immediate feedback to your changes will not be available via your monitor. Press the Menu Select knob to confirm your selection and then rotate the knob one detent to the right to make the next LCD screen appear.



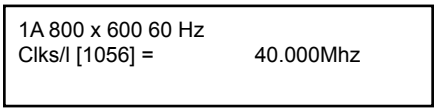
This adjustment specifies whether the image is interlaced or progressive scan. It's a toggle so there are no flashing brackets. Simply press the Menu Select knob to make the change from one standard to the other.



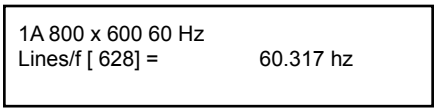
The H freq. crse. adjustment provides for changing the Horizontal Sync timing Frequency in 100 Hz steps. Make the desired adjustment and press the knob to record your change in memory.



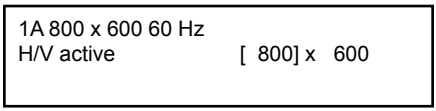
H.freq.fine adjusts the Horizontal Sync Frequency in steps of 1 Hz. The adjustment procedure is the same as for the Course Frequency Adjust:



This is the total number of image pixels on one line of monitor video (including the Horizontal sync pulse and blanking time) and is normally a multiple of 8. It controls how well a digital display device (such as a TFT monitor) will display an image. An incorrect value will often cause soft vertical bands to appear in the image on such a device.



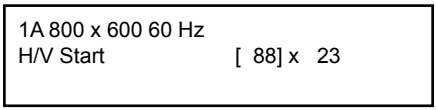
This screen controls the total number of lines of video present in the image and includes the vertical Sync pulse, the blanking period and the active video.



Video frame includes both the active area (the portion of the image normally

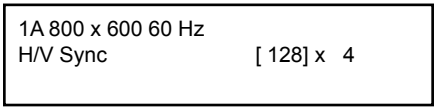
containing useful visual information). A resolution value for a given display standard only expresses the number of pixels visible in an image. The well-known 800 x 600 computer resolution standard simply means that there are 800 pixels/line visible horizontally and there are 600 pixels/line visible vertically.

The H/V active LCD screen provides a way to change the number of pixels and lines.



There is a period of time between the end of the Horizontal Sync pulse and the start of Active Video. This portion of the waveform signal is called the “Back Porch”, a term originating with the television broadcasting industry and its RS-170A specification. In practice, this will control where the video image starts on the left side of the monitor without changing the width of the sync pulse itself (another way to control where the image area starts). The two parameters control where the back porch is positioned and they interact to a degree.

By adjusting these parameters, you control the start of the back porch (with respect to the trailing edge of Horizontal Sync) and also its width. The place where the Back Porch begins with respect to the Horizontal Sync pulse and the width of the Back Porch have a direct bearing on where the active (visible) portion of the image begins. Do not attempt this adjustment without monitoring the results with an oscilloscope.



There are standards for all current computer and broadcast resolutions that specify the correct width of both Vertical and Horizontal synchronizing pulses. If you are creating a special, non-standard resolution, you may wish to adjust the pulse width to fit your new requirements. The H/V Sync screen is where that is accomplished.

Set the value for the Horizontal Pulse then rotate the knob one detent to the right and repeat the process for the Vertical Sync pulse width.

Like the H/V Start adjustment, you must use an oscilloscope when making these adjustments so that you know exactly how many milliseconds or microseconds of pulse width you have created. The numbers shown on the LCD screen are relative numbers and not an actual time measurement.

1A 800 x 600 60 Hz Sync polarity [+H+V]

Sync can be either negative polarity or positive polarity. To further complicate things, it is possible that you may want to make the Horizontal Sync polarity different from the Vertical Polarity. This control allows you to make that change. You have four possible selections: “+H+V”, “-H+V”, “+H-V” and “-H-V”. Rotate the Menu Select knob until your desired selection appears and then press the knob to record the choice.

8.3.12 Items Associated with the ‘System group’

The final Sub Menu is for adjustments of System parameters. The “System” in this case means the C2-7000 series’ functions unrelated to individual inputs, outputs or any of the various production features.

1A System SW: 16, PT: 12, BT: 13

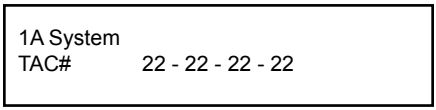
This screen is an informational screen. Should you require technical assistance with your C2-7000 series, the technical support personnel may request that you read the contents of this screen to them during the support call.

The first section, “SW”, is the version of the software that is installed on your C2-7000 series. You can update software via the User Support web site (procedure to be described later in this manual) and the updates are currently free of charge. “PT” refers to Product Type and “BT” means Board Type. Both of these are hardware designators and cannot be changed by the user however both designators are important to support personnel.

1A System SW date: 2005-7-11

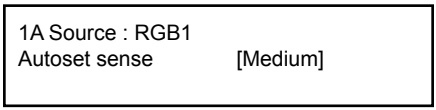
This is an information page showing when the currently installed software was released. The information is useful to the user as he or she compares the date to the support website information describing the current software release.

Normally, the user will examine the added features of each new software release and determine if an update is worth doing in their particular operation. The greater period of time between the current date, and the date shown for the currently installed software, the greater the likelihood that there are useful changes and improvements present in the new release.



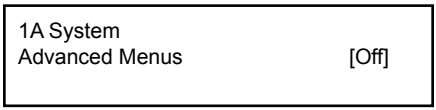
The TAC number is a unique identifier for the unit and is for future use.

This screen provides a quick and easy way to store all current operating parameters. The unit will remember the set up you are using at the time of data storage when you next apply power. To store the current C2-7000 series settings, press and release the Menu Select knob.



In order for Autoset to work properly, it needs a sufficiently bright full-screen image to examine. The sense level lets you change the brightness threshold for detection of the screen edge between Low, Medium, High and V.high. Medium is the default level, which is recommended for normal use (Windows-type images, etc.)

This parameter is used in conjunction with the Zoom and Shrink H/V controls in the Adjust Windows Menu structure. When set to Advanced, it allows the H/V components of the Zoom and Shrink functions to be adjusted independently thus allowing custom aspect ratios to be created as explained in the Adjust Windows section. When left in “Simple, the H/V components of Zoom and Shrink are adjusted equally i.e. H=V.



When turned on, the previously explained Adjust Resolutions menu structure is exposed. The default condition is ‘Off’, to prevent accidental changes.

```
1A System
LED brightness  %                [ 90]
```

This parameter controls how bright the LEDs on the front panel appear.

```
1A System
RS232 baud rate                  [57600]
```

This menu item allows the adjustment of the serial baud rate used for RS-232 communications. Pressing the Menu Select knob will cause the brackets to flash and the rate can be adjusted to 9600, 19200, 28800, 33600, 38800, 57600 and 115200. (This adjustment is provided for those instances where you wish to use the RS-232 control system.)

```
1A System
Buzzer                           [ On]
```

The screen labeled ‘Buzzer’ is actually the control for turning the “Beep” “On” or “Off”. Normally this is left in the “On” position to provide positive feedback that your data entries and parameter changes have been accepted.

To turn the Buzzer “On” or “Off”, go to the above screen and press the Menu Select knob. This function is a simple Toggle and there are no flashing brackets.

```
1A System
Resolutions                      88
```

This screen is an informational screen showing the total number of the defined resolutions that the C2-7000 series will recognize. Future software releases may increase the total number of resolutions defined in the C2-7000 series’ database any time a new standard is developed.

```
1A System
Logos / T-cards                  1    /    4
```

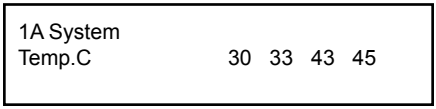
Test cards are permanently installed, instantly available video images normally used to test the C2-7000 series or provide some sort of information. The standard configuration has 4 permanently stored items under the Test Card nomenclature. In addition to the CORIO2 logo, you also have a linearity/

resolution display and two color bar displays. The images stored here can be treated just like any input image. If you wish to zoom shrink or use these images in PIP, you may do so.

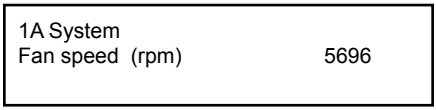
Power Cycles refers to how many times the unit has been powered since it left the factory. This is an informational screen. No action is taken regardless of the value shown here, however some users have an equipment cleaning or specification audit procedure and this information may be useful to those users.

Indicates the total number of times the firmware has been flashed over the life of the C2-7000 series.

This is another informational display for usage audit purposes as well as for specification auditing or determining the need for software version upgrades.



If the ambient temperature of the internal components becomes excessively high or low, the unit will shut down to prevent harm. This display shows the current value of the ambient temperature at four locations within the case and can be an early predictor of a shutdown before the shutdown actually occurs. In a comfortable room, at sea level, the temperatures should be approximately as shown in the image above (however, the temperatures will rise when using higher resolutions).



The fan speed is monitored and if it deviates from standard very much, this will be taken as an indication of insufficient airflow over critical components and shutdown action will be taken.

9.0 COMMON OPERATIONS

This section provides step by step instructions for some common operations for the C2-7000 series.

9.1 Operation of the Keyer

The C2-7000 series has a very powerful Luminance and Chroma keyer and can key on Window “A”, Window “B” and Window “Z” independently.

The listing that follows breaks the Keyer operation down to a series of steps that are defined by Operational Mode.

Switcher Mode Method (Preview > Take)

Change mode:

- Change Mode to Switcher

Setup Key Source:

- Enter Adjust Windows menu
- Select Source for the window
- Exit Adjust Windows menu
- Enter Adjust Keyers menu
- Turn Keyer On.
- Increase Y Key Max until target color disappears.
- Increase Y Key Min until reappears, then decrease until it disappears again.
- If the edges appear rough, increase the Y Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Y Key Invert will cause the portion that is currently keyed out to become solid and the rest transparent.
- Increase U Key Min until reappears, then decrease until it disappears again.
- Decrease U Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the U Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Increase V Key Min until reappears, then decrease until it disappears again.
- Decrease V Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the V Key softness.

- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Touch up any of the previous settings to get a clean key.
- At this point, only the key color should be transparent.
- Adjust Max Fade Level to change the transparency of the overlay.
- Exit.

Make the preview active:

- If a button is designated for Take (default button 2) press the button to send the preview to the program monitor.
- If the Take button has been unassigned, go to the Adjust transitions submenu and select Take.

Independent Mode Method

Change mode:

- Change Mode to Independent.

Setup Output 1 Key Source:

- Enter Adjust Windows menu
- Select Window A.
- Select Source for the window.
- Exit Adjust Windows menu
- Enter Adjust Keyers menu
- Turn Keyer On.
- Increase Y Key Max until target color disappears.
- Increase Y Key Min until reappears, then decrease until it disappears again.
- If the edges appear rough, increase the Y Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Y Key Invert will cause the portion that is currently keyed out to become solid and the rest transparent.
- Increase U Key Min until reappears, then decrease until it disappears again.
- Decrease U Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the U Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Increase V Key Min until reappears, then decrease until it disappears again.
- Decrease V Key Min until reappears, then increase until it disappears again.

- If the edges appear rough, increase the V Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Touch up any of the previous settings to get a clean key.
- At this point, only the key color should transparent.
- Adjust Max Fade Level to change the transparency of the overlay.
- Exit.

Setup Output 2 key source:

- Enter Adjust Windows menu.
- Select Window B.
- Select Source for the window.
- Exit Adjust Windows menu
- Enter Adjust Keyers menu
- Turn Keyer On.
- Increase Y Key Max until target color disappears.
- Increase Y Key Min until reappears, then decrease until it disappears again.
- If the edges appear rough, increase the Y Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Y Key Invert will cause the portion that is currently keyed out to become solid and the rest transparent.
- Increase U Key Min until reappears, then decrease until it disappears again.
- Decrease U Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the U Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Increase V Key Min until reappears, then decrease until it disappears again.
- Decrease V Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the V Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Touch up any of the previous settings to get a clean key.
- At this point, only the key color should be transparent.
- Adjust Max Fade Level to change the transparency of the overlay.
- Exit.

Dual PiP Mode Method (One or Two Key Channels, Locked)

Change mode:

- Change Mode to Switcher

Setup the lock source

- Enter Adjust Outputs menu.
- Select Output 1.
- Set Lock to Lock & Mix.
- Set the lock source to be a vaild Input source

Set Output Type to desired setting

Setup first key source:

- Enter Adjust Windows menu.
- Select Window A.
- Select Source for the window.
- Adjust Shrink Level to 50%. Allows window B to be shown behind window A (Window B will default to RGB1 as a source, we will change this later)
- Adjust H/V Shr Pos % to be 0,50. Positioning the Window to the far left middle of the output
- Exit Adjust Windows menu
- Enter Adjust Keyers menu
- Turn Keyer On.
- Increase Y Key Max until target color disappears.
- Increase Y Key Min until reappears, then decrease until it disappears again.
- If the edges appear rough, increase the Y Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Y Key Invert will cause the portion that is currently keyed out to become solid and the rest transparent.
- Increase U Key Min until reappears, then decrease until it disappears again.
- Decrease U Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the U Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Increase V Key Min until reappears, then decrease until it disappears again.
- Decrease V Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the V Key softness.
- The Key Min/Max may need to be readjusted after making the

softness adjustment.
- Touch up any of the previous settings to get a clean key.
- At this point, only the key color should be transparent.
- Adjust Max Fade Level to change the transparency of the overlay.
- Exit.

Setup second key source:

- Enter Adjust Windows menu.
- Select Window B.
- Select Source for the window.
- Adjust Shrink Level to 50%, Allows window B to be shown behind window A
- Adjust H/V Shr Pos to be 100,50. Positioning the Window to the far right middle of the output.
- Enter Adjust Keyers menu
- Turn Keyer On.
- Increase Y Key Max until target color disappears.
- Increase Y Key Min until reappears, then decrease until it disappears again.
- If the edges appear rough, increase the Y Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Y Key Invert will cause the portion that is currently keyed out to become solid and the rest transparent.
- Increase U Key Min until reappears, then decrease until it disappears again.
- Decrease U Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the U Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Increase V Key Min until reappears, then decrease until it disappears again.
- Decrease V Key Min until reappears, then increase until it disappears again.
- If the edges appear rough, increase the V Key softness.
- The Key Min/Max may need to be readjusted after making the softness adjustment.
- Touch up any of the previous settings to get a clean key.
- At this point, only the key color should transparent.
- Adjust Max Fade Level to change the transparency of the overlay.

9.2 Creating a Macro

You can store up to 5 macros and associate them with 5 different buttons. It is also a good idea to assign another button to the Restore function. This

restore function allows the unit to be returned to it previously saved state, thus allowing you to toggle between a preset condition and this saved state.

Setup the buttons

- Enter the Adjust buttons menu
- Select the button menu and change the button number to number 8
- Select the button function (currently YC1) and change this to Macro1
- Select the button menu again and change the button number to number 9
- Select the button function (currently YC2) and change this to Restore
- Press and hold the Rotary encoder until the unit gives a short beep and the display says Info : Settings stored. This has saved the current state of the C2-7000 series into memory.
- Exit the buttons menu

Change mode:

- Change Mode to Switcher
- Move to the top of the menu structure and change the device mode to Dual PIP
- Press and hold button 8 until the unit gives a short beep and the display says Info: Added to Macro. This has now added the operational mode for Dual PIP to the macro.

Adjust the windows

- Enter the Adjust windows menu
- Rotate the Rotary encoder so the Source screen is selected.
- Note that the top line of the display reads 1A
- Change the source to RGB1
- Press and hold button 8 until the unit gives a short beep and the display says Info: Added to Macro. This has now added the Source selection for 1A to the macro
- Press button 1 to change the window to window B
- Change the source for window B to be RGB2
- Press and hold button 8 until the unit gives a short beep and the display says Info: Added to Macro. This has now added the Source selection for 1B to the macro
- Press button 1 to change the window back to window A
- Rotate the Rotary encoder to the menu item for Shrink
- Adjust the shrink value so that window A is at 50 % and window B is revealed
- Press and hold button 8 until the unit gives a short beep and the display says Info: Added to Macro. This has now added the Shrink

value for window 1A to the macro
- Rotate the rotary encoder to the next item, H/V Shr. Pos
- Adjust the H component to move window A to the far left of the screen (100%)
- Press and hold button 8 until the unit gives a short beep and the display says Info: Added to Macro. This has now added the Shrink position for window 1A to the macro
- The macro is now complete. Pressing button 9 will return the unit to the last saved state. Pressing button 8 will return the unit to Dual PIP mode with window A shrunk to 50% and moved to the left hand side of the screen and positioned over Window B

9.3 Standards Conversion – NTSC to PAL

For this example you will need a video monitor connected to Composite video output 1, and an NTSC playback source connected to Composite video input 1.

Change mode:

- Move to the top of the menu structure and change the device mode to Independent.

Change the output:

- Enter the Adjust outputs menu
- Rotate the rotary encoder so that the Resolution screen is selected
- Change the resolution to be Resolution number 2 (PAL)
- Rotate the Rotary encoder to set the output type to be CV/YC
- Exit the Adjust outputs menu

Select the input source

- Enter the adjust windows menu
- Rotate the Rotary encoder so the Source screen is selected.
- Change the source for 1A to be CV1 (our NTSC source)

You should now see the Playback source on the monitor at PAL resolution and encoding.

10.0 RETURN PROCEDURE

Before returning the Processor for repair, there are several checks you can make yourself to make sure the problem is actually caused by a failure.

Are you sure there's a fault?

Many 'faults' are due to incorrect set-up or use so a simple checklist is provided below to help you identify potential problems.

Set the unit up with your equipment as described in this manual and run through the checklist. This will hopefully determine whether or not the unit is actually faulty and prevent units from being returned unnecessarily.

Check the Troubleshooting tips in Section 21.0 of this manual and check out the various FAQ (Frequently Asked Questions) listings on the support website, ***tvone.crmdesk.com***, which shows the latest Hints, Tips and Solutions.

Don't presume it is the Processor that is causing the problem. Check that the equipment being used with it is fully working and setup correctly.

First, check the AC power. Is it present and is the unit turned on? Check that all cables are properly plugged in and are not damaged and then make certain that all equipment connected to the Processor is working properly.

Perhaps you have a "frozen" Processor and you cannot change an input nor exit from the current task. In that case, a simple 'Factory Reset' of the product may sort the problem out. To do this hold down programmable buttons 1 and 2 along with the suspend switch until the unit beeps. Engineering reset should only be used if the unit's settings give an invalid output that the user cannot exit from. All user-settings will be lost following an engineering reset.

It is also worth ensuring that the latest firmware is installed in the unit – although, again, user settings are lost during a firmware update.

10.1 To return a unit for repair

First contact TV One using the **http://www.*tvone. com/support*** website. Support personnel will determine whether a return to the factory is the appropriate solution. If that's the case, a Return Authorization Number will be issued. You should provide the following information for each unit:

Product type
Serial number of the faulty unit (this is on the underside of the unit)
Full details of fault
Invoice number (if available)

Units should be returned via insured carrier or registered mail (thus allowing a trace to be made if the Processor is lost in transit), with shipping costs and insurance arranged at your own risk and expense. Goods in transit are the responsibility of the sender and the supplier will not be responsible for transit losses.

Please clearly state the return number on the outside packaging and on any accompanying documentation. This will greatly speed up processing.

IMPORTANT: DO NOT return a unit for warranty repair without first obtaining a Return Authorization Number. No action will be taken on a unit returned in warranty for repair without a Return Authorization Number.

10.2 Troubleshooting and technical support

If problems are experienced, please read through the symptom topics below in order to resolve the problem. After doing so, if you still need to contact Technical Support at ***http://tvone.crmdesk.com***, please have the following handy:

Details of the problem:

Whether the problem happens only at specific times or has only just started occurring (and what other things have changed at the same time).

Firmware revision numbers - found in the first item of the System menu:

If the problem is image related, use the ‘Input parameters’ menu to find out the number of lines, refresh rate and sync type being used.

10.3 Symptoms

There is no picture on the Output.

If the power LED on the unit is off or red and there is nothing displayed on the LCD, then ensure that the AC power cord is connected properly and the power switch is on at the AC outlet. Press the standby button on the unit to turn it on.

If the power on the unit is green and the LCD is displaying the correct text then check that the monitor output from the computer is connected at both the computer and the unit. Check that the output connector you are using from the unit is also connected at the unit and the display equipment. Check that the display video equipment is set to the correct line input and format/ standard as appropriate.

Check that the device connected to the output is on and can support the resolution set in the Output image menu, ensuring that the Output image type (eg. RGBHV) is also set correctly.

The image is shifted and not fully viewable

There are several ways to correct this, depending on the actual problem.

First adjust the output H/V shift value in the Output parameters menu until the white border that is displayed is centered on the Processor output. Next adjust the TL pos. adj. values in the Setup Program source menu until the incoming video signal is displayed correctly in the white-bordered box. You may also need to adjust the BR size adj. setting to ensure the incoming video signal is properly displayed.

The output resolutions no longer appear as expected.

Because any changes made in the Image parameters menu are automatically stored, it may be that the resolution data has become altered beyond the parameters of a new piece of equipment. Either manually correct the resolution data, or restore the data to factory conditions by doing a Firmware Update. The user should avoid altering the Image parameter data unless absolutely necessary.

There is excessive flicker on the Output.

Try using a different Flicker reduction mode. Turning the contrast down and the brightness up on the output device can have a large effect on flicker. Or try adjusting the brightness and contrast of the source input by selecting the Input adjust menu.

The Output image is distorted.

This may occur where some of the areas of the image are very dark and others are very bright. The solution is to adjust the contrast and brightness settings on your Output device to rectify the problem.

Some colors appear to be incorrect on the CV/YC output

First try altering the color, contrast and brightness settings on your TV or video display. These are usually set up for a very different reason than viewing computer graphics and may need changing to suit. If you cannot achieve exactly what you desire then alter the inputs levels (Sub menu...Setup Program source) until the correct colors are restored.

How can I reduce color smearing on CV connections?

Smearing usually occurs on Composite Video connections and is generally unavoidable - unless you can switch to using S-Video or RGB connections. It occurs because the brightness and color information is transmitted as one signal and the two parts have to be ‘bandwidth-limited’ to avoid them interfering with each other.

I can no longer adjust the Output image resolution.

When the unit is in Lock mode, the output resolution is fixed to be the same as the Lock source input resolution. During this time the Output image menu item is not adjustable.

There is no picture on the preview output.

Because the preview output is an unscaled output, ensure that the connected output device is capable of showing the resolution on the currently selected preview input. Also note that if previewing a CV or YC source, you will need to connect to the CV Preview and not the RGB Preview.

The picture on the video display is black and white.

Ensure that all the cables are correctly connected. If you are using a PAL TV to display the output then the unit may be providing resolution set to NTSC mode, or vice versa.

The picture on the video display is green.

The Output image type is probably set to YUV mode, whereas you are connecting to an RGB monitor.

The RGB input is selected but the image is rolling or pink.

Check the input setup and confirm that the input type and sync method is set correctly. (Having YUV input selected, instead of RGBHV often causes this problem).

11.0 WARRANTY POLICY

LIMITED WARRANTY – With the exceptions noted in the next paragraph, TV One warrants the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a period of two years from the date of purchase. Should this product, in TV One's opinion, prove defective within this warranty period, TV One, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of TV One. This warranty does not apply to those products which have been damaged due to accident, unauthorized alterations, improper repair, modifications, inadequate maintenance and care, or use in any manner for which the product was not originally intended.

Items integrated into TV One products that are made by other manufacturers, notably computer hard drives and liquid crystal display panels, are limited to the term of the warranty offered by the respective manufacturers. Such specific warranties are available upon request to TV One.

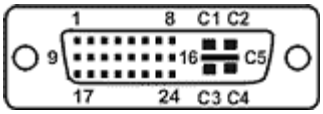
If repairs are necessary under this warranty policy, the original purchaser must obtain a Return Authorization Number from TV One and return the product to a location designated by TV One, freight prepaid. After repairs are complete, the product will be returned, freight prepaid.

LIMITATIONS - All products sold are "as is" and the above Limited Warranty is in lieu of all other warranties for this product, expressed or implied, and is strictly limited to two years from the date of purchase. TV One assumes no liability to distributors, resellers or end-users or any third parties for any loss of use, revenue or profit.

TV One makes no other representation of warranty as to fitness for the purpose or merchantability or otherwise in respect of any of the products sold. The liability of TV One with respect to any defective products will be limited to the repair or replacement of such products. In no event shall TV One be responsible or liable for any damage arising from the use of such defective products whether such damages be direct, indirect, consequential or otherwise, and whether such damages are incurred by the reseller, end-user or any third party.

12.0 CONNECTOR PINOUTS

12.1 DVI-I connector



PIN#	SIGNAL	PIN#	SIGNAL
1	T.M.D.S DATA 2-	16	HOT PLUG DETECT
2	T.M.D.S DATA 2+	17	T.M.D.S DATA 0-
3	T.M.D.S DATA 2/4 SHIELD	18	T.M.D.S DATA 0+
4	Not used	19	T.M.D.S DATA 0/5 SHIELD
5	Not used	20	Not used
6	DDC CLOCK	21	Not used
7	DDC DATA	22	T.M.D.S CLOCK SHIELD
8	ANALOG VERT. SYNC	23	T.M.D.S CLOCK+
9	T.M.D.S DATA 1-	24	T.M.D.S CLOCK-
10	T.M.D.S DATA 1+		
11	T.M.D.S DATA 1/3 SHIELD	C1	ANALOG RED
12	Not used	C2	ANALOG GREEN
13	Not used	C3	ANALOG BLUE
14	+5V POWER	C4	ANALOG HORZ SYNC
15	GND	C5	ANALOG GROUND

12.2 RS232 / DB9 connector

1. 1 N/C
2. 2 RX (Receive data)
3. 3 TX (Transmit data)
4. N/C
5. GND (Signal return)
6. N/C
7. RTS (Request to send)
8. CTS (Clear to send)
9. N/C

12.3 4 Pin mini-DIN S-video connector (YC) input

1. Y (Luminance)
2. GND
3. GND
4. C (Chrominance)

13.0 SPECIFICATION

13.1 Video Inputs

Composite Video 3 x via BNC Connector
S-Video (Y/C) 3 x via 4-PIN Mini-DIN Connector
DVI-I 3 x via DVI-I Connector (DVI-I = DVI-D / RGB / YUV)
C2-7200 only: SDI or HD-SDI 2 x via BNC Connector

13.2 Genlock Input

Reference Signal Any of the Video Inputs

13.3 Independent Output 1

Composite Video 1x via BNC Connector
S-Video (Y/C) 1x via 4-PIN Mini-DIN Connector
DVI-I 1x via DVI Connector (DVI-I & RGB/YUV)
C2-7200 only: SDI or HD-SDI 1 x via BNC Connector

13.4 Independent Output 2

Composite Video 1x via BNC Connector
S-Video (Y/C) 1x via 4-PIN Mini-DIN Connector
DVI-I 1x via DVI Connector (DVI-I & RGB/YUV)
C2-7200 only: SDI or HD-SDI 1 x via BNC Connector

13.5 Input/Output Range

RGBHV (DVI-A) Connection:
Computer Resolutions Any from 640x480 to 2048x2048 including HDTV Resolutions 480p, 576p, 720p, 1080i, 1080p
Max Vertical Refresh Rate 250Hz. Max Horizontal Frequency 150kHz

DVI-D Connection:
Computer Resolutions any from 640x480 to 1280x1024@60 including HDTV Resolutions 480p, 576p, 720p, 1080i. Maximum pixel rate: 108MHz

CV/YC Connection:
Television Standards NTSC 3.58, 4.43, PAL-B, G, I , D, H, PAL-M, PAL-N & SECAM (In Only)

SDI / HD-SDI serial digital video Connection:

SMPTE 259M-C:	525/625-line 270Mbps
(270Mbps)	SD-SDI jitter (100kHz) approx. 0.070 +/-0.01 UI
SMPTE 292M:	720p 23.98/24/25/29.97/30/50/59.94/60Hz
(1.485/1.4835Gbps)	1035i 29.97/30Hz
	1080i 25/29.97/30Hz
	1080p 23.98/24/25/29.97/30Hz
	HD-SDI jitter (100kHz) approx. 0.176 +/- 0.02 UI

13.6 Input RGB Sync

Type RGBHV, RGBS, RGsB
Level / Termination TTL, 10K.
Polarity Positive or Negative
Maximum Level 5Vp-p

13.7 Output RGB Sync

Type RGBHV, RBGS
Level / Termination 5Vp-p, 56.
Polarity Positive or Negative

13.8 SDI/HD-SDI Embedded Audio & Ancillary Data (C2-7200 only)

Embedded audio & other ancillary data is passed through for the ‘Z’ window only in ‘Genlock’ and ‘Lock&Mix’ modes. Embedded audio is lost for all other windows (e.g. A or B).

13.9 Audio Switching (Optional A2-2000)

Stereo Inputs 10x Balanced and Unbalanced
Program Output 1x Balanced and Unbalanced
Preview Output 1x Balanced and Unbalanced
Connectors per I/O 2x RCA for Unbalanced
1x Terminal Block for Bal & Unbalanced

13.10 Control Methods

Local Front Panel 10 Programmable Buttons & Shift key + LEDs, Rotary Encoder knob, and LCD
RS-232 Interface DB-9 Male Connector
Ethernet Interface RJ45 Connector
Audio Switcher Control Via D-15 Options Connector from the Main Unit

13.11 Mechanical

Desktop Case (HWD) 1.75x17x7.9” (44x420x200mm)
With Rack Ears (HWD) 1.75x19x7.9” (44x482x200mm)
Weight (Net) TBD

13.12 Environmental

Operating Temperature +40° to +113° F (4° to +45° C)
Operating Humidity 10% to 85%, Non-condensing
Storage Temperature 32° to +140° F (0° to +60° C)
Operating Humidity 10% to 85%, Non-condensing

14.0 CONTACT INFORMATION

Should you have and questions or require assistance with this product in areas not covered by this manual, please contact TV One at the appropriate location shown below:

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