CORIOmatrix

C3-340 Operation Manual

CONTENTS

1 Disclaimer

This product is intended for professional 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: EN 55103-1:2009 Environment E1, E2, E3, E4 (50Hz to 50KHz)
EN 55103-1:2009 Environment E4 (Radiated Disturbance)
EN 55103-1:1996 Environment E4 (Conducted Disturbance)
Immunity: EN 55103-2:2009 Environment E1, E2, E3, E4
(Generic Immunity Standard for Residential, Commercial and Light Industrial)

Low Voltage Safety (AC inlet units): EN 60065:2002 A1:2006 + A11:2008

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 appropriate 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
2791 Circleport Drive
Erlanger, KY 41018
USA
Tel 859-282-7303
Fax 859-282-8225

1.3 Manual Version Information

Version: 0.70
Release Date: August, 2012

1.4 Manual Copyright Notice

2 IMPORTANT SAFETY INSTRUCTIONS

To insure the best from this product, please read this manual carefully.

- ⓘ Read these instructions
- ⓘ Keep these Instructions
- ⓘ Heed all warnings
- ⓘ Follow all instructions
- ⓘ Do not use this apparatus near water
- ⓘ Clean only with a dry cloth
- ⓘ Do not block any ventilation openings. Install in accordance with the manufacturer's instructions
- ⓘ Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- ⓘ Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- ⓘ Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- ⓘ This unit must be connected to a mains socket outlet with a protective earth connection.
- ⓘ The AC wall outlet should be installed near to the unit and be easily accessible.
- ⓘ Only use attachments / accessories specified by the manufacturer
- ⓘ Unplug this apparatus during lighting storms or when unused for long periods of time
- ⓘ Refer all servicing to qualified servicing personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid had been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

! WARNING To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

ⓘ The AC power cord or adaptor furnished with the unit should conform to the type in use in your country. Please compare the plug on your cord or adaptor with the power socket where the unit will be installed.

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

2. 1 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 CONSIGNE IMPORTANTE DE SECURITE

Pour obtenir les meilleures performances avec ce produit, nous vous demandons de lire soigneusement ce manuel.

- ⓘ Lisez ces consignes
- ⓘ Conservez ces consignes
- ⓘ Respectez tous les avertissements
- ⓘ Respectez toutes les consignes
- ⓘ N'utilisez pas cet appareil à proximité d'eau
- ⓘ Nettoyez-le en utilisant uniquement un chiffon sec
- ⓘ Ne bloquez pas les ouvertures de ventilation. Installez cet appareil en respectant les consignes du constructeur
- ⓘ Ne procédez pas à une installation à proximité de sources de chaleur, quelles qu'elles soient, (radiateurs, registres calorifiques, fours, etc.) ou d'autres appareils (dont des amplificateurs) qui produisent de la chaleur
- ⓘ Ne cherchez pas à détourner l'objectif de la prise électrique à polarisation ou à mise à la masse. Une prise électrique polarisée comporte deux lames de largeurs différentes. Une prise à mise à la masse a deux lames et une broche de mise à la masse. La lame la plus large ou la troisième broche ont pour but de vous protéger. Si la prise fournie ne correspond pas à la prise murale, consultez un électricien pour remplacer l'élément obsolète
- ⓘ Protégez le cordon électrique pour éviter que l'on ne marche dessus ou qu'on ne le coince, en particulier au niveau des prises mâles ou des prises murales et au niveau de l'appareil
- ⓘ Il faut brancher l'appareil sur une prise du secteur disposant d'une mise à la terre.
- ⓘ La prise murale de courant doit être installée près de l'unité et aisément accessible.
- ⓘ Utilisez uniquement les fixations et accessoires spécifiés par le fabricant
- ⓘ Débranchez cet appareil durant les orages électriques ou pendant les périodes prolongées d'inactivité
- ⓘ Confiez toutes les interventions d'entretien à un personnel qualifié spécialisé dans l'entretien. Une intervention d'entretien s'avère nécessaire lorsque cet appareil a été endommagé, d'une façon ou d'une autre, par exemple lorsque le cordon d'alimentation électrique ou sa prise est endommagé, lorsqu'il y a eu un épanchement de liquide ou lorsque des objets sont tombés sur cet appareil, voire même lorsque cet appareil a été exposé à de la pluie ou une humidité, ne fonctionne pas normalement ou est tombé.

! AVERTISSEMENT Pour réduire tout risque d'incendie ou de choc électrique, n'exposez pas cet appareil à la pluie ou à une humidité.

ⓘ Le câble d'alimentation secteur ou l'adaptateur remis avec cet appareil doit être conforme au type employé dans votre pays. Veuillez comparer la prise de votre cordon électrique ou de votre adaptateur à la prise murale de l'emplacement où doit être installé votre appareil.

Si vous n'avez pas reçu la bonne prise**, N'ESSAYEZ PAS** de la modifier. Vous devez au contraire immédiatement contacter votre revendeur ou le bureau de vente TV One le plus proche de chez vous pour demander la bonne prise.

2. 1 Propriété intellectuelle

Certaines puces à circuits imprimés de ce produit contiennent des données confidentielles et (ou) des secrets professionnels. Par conséquent, vous ne pouvez pas recopier, modifier, adapter, traduire ou distribuer son contenu ou procéder à une ingénierie inverse ou à une décompilation de ce contenu.

2 WICHTIGE SICHERHEITSANWEISUNGEN

Lesen Sie diese Bedienungsanleitung sorgfältig, um zu gewährleisten, dass Sie den optimalen Nutzen aus diesem Produkt ziehen.

- ⓘ Lesen Sie diese Anweisungen.
- ⓘ Bewahren Sie diese Anweisungen auf.
- ⓘ Beachten Sie alle Warnhinweise.
- ⓘ Befolgen Sie alle Anweisungen.
- ⓘ Verwenden Sie dieses Gerät nicht in der Nähe von Wasser.
- ⓘ Verwenden Sie zur Reinigung nur ein trockenes Tuch.
- ⓘ Blockieren Sie keine Lüftungsöffnungen. Installieren Sie das Gerät nach den Anweisungen des Herstellers.
- ⓘ Stellen Sie das Gerät nicht in der Nähe von Wärmequellen wie etwa Heizkörpern, Heizklappen, Öfen oder anderen Wärme erzeugenden Geräten (einschließlich Verstärkern) auf.
- ⓘ Setzen Sie den Sicherheitszweck von unvertauschbaren Steckern oder Erdungssteckern nicht außer Kraft. Ein unvertauschbarer Stecker besitzt zwei Messerkontakte, von denen einer breiter als der andere ist. Ein Erdungsstecker besitzt zwei Messerkontakte und einen dritten Erdungskontakt. Der breitere Messerkontakt oder der Erdungskontakt dient Ihrer Sicherheit. Falls der mitgelieferte Stecker nicht an eine Steckdose angeschlossen werden kann, beauftragen Sie einen Elektriker, die veraltete Steckdose auszutauschen.
- ⓘ Schützen Sie das Netzkabel, so dass niemand auf das Netzkabel treten kann oder es insbesondere an Steckern, Steckdosen und an der Stelle, an der das Netzkabel aus dem Gerät geführt wird, nicht eingeklemmt werden kann.
- ⓘ Verwenden Sie nur Zusatzgeräte/Zubehör, die/das der Hersteller angibt.
- ⓘ Ziehen Sie den Netzstecker dieses Geräts bei Gewittern und auch dann ab, wenn es über einen längeren Zeitraum nicht betrieben wird.
- ⓘ Lassen Sie Reparaturen nur von qualifiziertem Wartungspersonal durchführen. Reparaturen sind erforderlich, wenn das Gerät in irgendeiner Form beschädigt wurde, beispielsweise das Netzkabel oder der Stecker beschädigt wurde, Flüssigkeit auf dem Gerät verschüttet wurde oder Objekte in das Gerät gefallen sind, das Gerät Regen oder Feuchtigkeit ausgesetzt wurde, nicht normal arbeitet oder fallen gelassen wurde.

! WARNUNG: Setzen Sie das Gerät weder Regen noch Feuchtigkeit aus, um die Gefahr eines Brandes oder elektrischen Schlags zu minimieren.

ⓘ Das mitgelieferte Netzkabel oder der mitgelieferte Adapter müssen dem in Ihrem Land verwendeten Typ entsprechen. Vergleichen Sie den Netzstecker oder Adapter mit der Netzsteckdose, an die das Gerät angeschlossen wird.

Falls Sie nicht den richtigen Stecker erhalten haben, versuchen Sie **NICHT**, ihn zu ändern. Setzen Sie sich stattdessen mit Ihrem Fachhändler oder der Verkaufsniederlassung von TV One in Verbindung, die sich am nächsten an Ihrem Wohnort befindet, und fordern Sie den richtigen Stecker an.

2.1 Geistiges Eigentum

Einige IC-Chips in diesem Produkt enthalten vertrauliche Informationen und/oder Geschäftsgeheimnisse. Aus diesem Grund dürfen Sie deren Inhalt nicht kopieren, ändern, anpassen, übersetzen, verteilen zurückentwickeln oder dekompilieren.

2 INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Para garantizar el máximo rendimiento de este producto, lea cuidadosamente este manual.

- ⓘ Lea estas instrucciones
- ⓘ Guarde estas instrucciones
- ⓘ Respete todas las advertencias
- ⓘ Siga todas las instrucciones
- ⓘ No use este aparato cerca del agua
- ⓘ Límpielo sólo con un paño seco
- ⓘ No bloquee ninguna abertura de ventilación. Instálelo de acuerdo con las instrucciones del fabricante
- ⓘ No lo instale cerca de fuentes de calor como radiadores, salidas de aire caliente, estufas u otros aparatos (incluyendo amplificadores) que produzcan calor.
- ⓘ Respete la finalidad de seguridad de las clavijas polarizadas o con toma de tierra. Una clavija polarizada tiene dos cuchillas, una más ancha que la otra. Una clavija del tipo de puesta a tierra tiene dos cuchillas y un tercer borne para puesta a tierra. La cuchilla más ancha o el tercer borne son para su seguridad. Si la clavija suministrada no se adapta a su toma de corriente, consulte a un electricista para que cambie la toma obsoleta.
- ⓘ Proteja el cable de alimentación para que no se pueda pisar ni pellizcar, especialmente junto a las clavijas, tomas de corriente, y en el punto de salida de las mismas en el aparato.
- ⓘ Use sólo accesorios / elementos especificados por el fabricante
- ⓘ Desenchufe el aparato durante las tormentas eléctricas o si no va a usarlo durante un largo período de tiempo.
- ⓘ Consulte con personal cualificado cualquier tipo de servicio. Se necesitará servicio cuando el aparato haya sufrido daños de cualquier tipo, como daños en el cable de alimentación o en las clavijas, haya entrado líquido o se hayan caído objetos dentro del aparato, haya estado expuesto a la lluvia o humedad, no funcione normalmente o se haya caído.

! ADVERTENCIA: Para reducir el riesgo de incendio o electrocución, no exponga el aparato a la lluvia ni la humedad.

ⓘ El cable de alimentación de C.A o el adaptador suministrado con la unidad debe ser conforme al tipo usado en su país. Compare la clavija en su cable o adaptador con la toma de corriente donde vaya a instalar la unidad.

Si no ha recibido la clavija correcta**, <u>NO</u>** intente modificarla. Póngase inmediatamente en contacto con su distribuidor o con TV One en la oficina de ventas más cercana a su localización geográfica y solicite la clavija adecuada.

2.1 Propiedad intelectual

Algunos chips con circuitos integrados presentes en este producto incluyen propiedad confidencial y/o secreta del sector. Por lo tanto, usted no puede copiar, modificar, adaptar, traducir, distribuir, diseñar a la inversa, montar a la inversa o descompilar el contenido de los mismos.

2 BELANGRIJKE VEILIGHEIDSINSTRUCTIE

Om dit product optimaal te kunnen gebruiken, dient u deze handleiding aandacht te lezen.

- ⓘ Lees deze instructies
- ⓘ Bewaar deze instructies
- ⓘ Let op alle waarschuwingen
- ⓘ Volg alle instructies
- ⓘ Gebruik dit apparaat niet in de nabijheid van water
- ⓘ Reinig het apparaat alleen met een droge doek
- ⓘ Blokkeer geen ventilatieopeningen. Installeer het apparaat volgens de instructies van de fabrikant
- ⓘ Plaats het apparaat niet in de nabijheid van warmtebronnen zoals radiatoren, kachels, warmtesensoren zoals thermometers, of andere apparaten (waaronder versterkers) die warmte afgeven.
- ⓘ Omzeil het beveiligingsoogmerk van de gepolariseerde of geaarde stekker niet. Een gepolariseerde stekker heeft twee pinnen, waarvan de een breder is dan de ander. Een geaarde stekker heeft twee pinnen, en een derde pin; een zogeheten aardlekpin. De bredere pin of aardlekpin is er voor uw veiligheid. Als de geleverde stekker niet in het stopcontact past, vraag dan een elektricien om het verouderde stopcontact te vervangen.
- ⓘ Bescherm de netspanningkabel zodanig dat er niet op kan worden gelopen en dat er geen kink in kan komen, vooral bij de stekker, pinnen, en bij de aansluiting op het apparaat
- ⓘ Gebruik alleen de accessoires en onderdelen die door de fabrikant worden aanbevolen
- ⓘ Haal de stekker van dit apparaat bij onweer uit het stopcontact. Doe dit ook wanneer het apparaat lange tijd niet wordt gebruikt.
- ⓘ Laat alle onderhoud over aan gekwalificeerd personeel. Onderhoud is vereist wanneer het apparaat op enigerlei wijze is beschadigd, bijvoorbeeld in het geval van een beschadigd netsnoer of een beschadigde stekker, wanneer er vloeistof op het apparaat is gemorst, of wanneer er een voorwerp in het apparaat is gevallen, wanneer het apparaat is blootgesteld aan regen of vocht, niet normaal functioneert, of is gevallen.

! WAARSCHUWING Om het risico op brand of een elektrische schok te verkleinen, dient u dit apparaat niet bloot te stellen aan regen of vocht.

ⓘ Het type wisselspanningkabel of adapter dat met deze eenheid is geleverd, dient overeen te komen met wat in uw land wordt gebruikt. Vergelijk de stekker van de kabel of adapter met het stopcontact waarop de eenheid wordt aangesloten.

Als u niet de juiste stekker hebt ontvangen, breng dan zelf **GEEN** wijzigingen aan. Neem in plaats daarvan direct contact op met uw dealer of met de afdeling verkoop van TV One die zich het dichtst bij u in de buurt bevindt en vraag om de juiste stekker.

2.1 Intellectueel eigendom

In bepaalde IC-chips in dit product zijn vertrouwelijke informatie en/of geheime handelseigendommen opgenomen. Het is u daarom niet toegestaan om de inhoud ervan te kopiëren, wijzigen, aanpassen, vertalen, verspreiden, te onderwerpen aan reverse engineering, reverse assembling, of te decompileren.

2 VIKTIGA SÄKERHETSANVISNINGAR

För att få ut det bästa av din produkt bör du läsa denna bruksanvisning noggrant.

- ⓘ Läs dessa anvisningar
- ⓘ Spara dessa anvisningar
- ⓘ Rätta dig efter alla varningar
- ⓘ Följ alla instruktioner
- ⓘ Använd inte enheten nära vatten
- ⓘ Rengör enheten endast med torr trasa
- ⓘ Blockera inte ventilationsöppningarna. Installera enheten enligt tillverkarens anvisningar
- ⓘ Placera inte enheten nära värmekällor, som värmeelement, varmluftsintag, spisar eller annan utrustning (inklusive förstärkare) som producerar värme.
- ⓘ Försök inte använda en stickkontakt i ett uttag som den inte är utformad att användas i. En polariserad kontakt har två blad – det ena bredare än det andra. En jordad kontakt har två blad och ett tredje jordstift. Det breda bladet eller jordstiftet är till för din säkerhet. Om den medföljande stickkontakten inte passar i ditt eluttag måste du kontakta en elektriker för att få eluttaget utbytt.
- ⓘ Skydda nätsladden så att man inte kan trampa på den eller klämma den, särskilt intill stickkontakten, vid grenuttag och där den kommer ut från enheten.
- ⓘ Använd bara anslutningar och tillbehör som specificeras av tillverkaren.
- ⓘ Dra ur nätsladden före åskväder eller när enheten inte ska användas en längre tid.
- ⓘ Överlåt all service åt kvalificerad servicepersonal. Service krävs när enheten är skadad på något sätt, t.ex. om nätsladden eller stickkontakten har skadats, om vätska eller främmande föremål har kommit in i enheten, om enheten har utsatts för regn eller fukt, om den inte fungerar normalt eller om den har tappats i golvet.

! VARNING Med tanke på risken för brand och elchock får enheten inte utsättas för regn eller fukt.

ⓘ Den medföljande nätsladden eller adaptorn måste vara av den typ som används i ditt land. Jämför stickkontakten på nätsladden eller adaptorn med eluttaget där enheten ska installeras.

Om du inte fick rätt stickkontakt **FÅR DU INTE** försöka anpassa den. Kontakta i stället omedelbart butiken eller TV Ones närmaste försäljningsställe och be att få rätt stickkontakt.

2.1 Intellektuell egendom

Vissa IC-chip i denna produkt innehåller konfidentiellt material och/eller företagshemligheter. Du får därför inte kopiera, modifiera, anpassa, översätta eller distribuera innehållet eller använda reverse engineering, assemblering eller dekompilering på det.

2 VIKTIGE SIKKERHETSANVISNINGER

For at du skal få mest mulig ut av dette produktet, ber vi deg lese denne håndboken nøye.

- ⓘ Les disse anvisningene.
- ⓘ Ta vare på disse anvisningene.
- ⓘ Vær oppmerksom på alle anvisningene.
- ⓘ Følg alle anvisningene.
- ⓘ Ikke bruk dette apparatet i nærheteethernet192.168.0.2ffping 192n av vann.
- ⓘ Må bare rengjøres med en tørr klut.
- ⓘ Ikke blokker ventilasjonsåpningene. Må installeres i overensstemmelse med produsentens anvisninger.
- ⓘ Må ikke installeres i nærheten av varmekilder som radiatorer, varmeapparater, komfyrer eller andre apparater (også forsterkere) som produserer varme.
- ⓘ Ikke sett sikkerhetsinnretningen til det polariserte eller jordete støpselet ut av funksjon. Et polarisert støpsel har to pinner, hvor den ene er bredere enn den andre. Et jordet støpsel har to pinner pluss en tredje jordingspinne. Den brede pinnen eller tredje pinnen er der av hensyn til sikkerheten. Hvis støpselet som følger med ikke passer i kontakten, må du kontakte en elektriker for å få skiftet ut kontakten.
- ⓘ Beskytt ledningen mot å bli tråkket på eller klemt, spesielt ved støpselet, stikkontakten og punktet hvor den kommer ut av apparatet.
- ⓘ Ikke bruk andre typer tilbehør enn det som er angitt av produsenten.
- ⓘ Koble apparatet fra strømforsyningen i tordenvær eller når det ikke skal brukes over en lengre periode.
- ⓘ Overlat all service til kvalifisert servicepersonell. Apparatet trenger service hvis det på en eller annen måte har fått en skade, for eksempel at ledningen eller støpselet er ødelagt, det er blitt sølt væske på eller gjenstander har falt inn i apparatet, apparatet har vært utsatt for regn eller fuktighet, ikke fungerer som det skal eller har falt i gulvet.

! ADVARSEL For å redusere faren for brann eller elektrisk støt, må apparatet ikke utsettes for regn eller fuktighet.

ⓘ Strømledningen (vekselstrøm) eller adapteren som følger med enheten må tilsvare den typen som brukes i landet der du bor. Sammenlign støpselet på ledningen eller adapteren med stikkontakten der hvor enheten skal installeres.

Hvis du har fått feil støpsel, må du **IKKE** forsøke å modifisere det. I stedet må du straks kontakte forhandleren eller nærmeste salgskontor for TV One og be om riktig type støpsel.

2.1 Opphavsrett

Noen av IC-brikkene i dette produktet inneholder fortrolig informasjon og/eller fabrikkhemmeligheter. Du må derfor ikke kopiere, endre, tilpasse, oversette, distribuere, rekonstruere kildekodene til eller dekompilere noe av dette innholdet.

2 TÄRKEITÄ TURVALLISUUSOHJEITA

Lue tämä opaskirja huolellisesti, jotta saat parhaan hyödyn tästä tuotteesta.

ⓘ Lue nämä ohjeet

ⓘ Säilytä nämä ohjeet

ⓘ Ota kaikki varoitukset huomioon

ⓘ Noudata kaikkia ohjeita

ⓘ Älä käytä tätä laitetta veden lähellä

ⓘ Puhdista vain kuivalla kankaalla

ⓘ Älä tuki ilma-aukkoja. Asenna laite valmistajan ohjeiden mukaisesti.

ⓘ Älä asenna laitetta lähelle lämpölähteitä, kuten esim. lämpöpatteria, lämmitintä, uunia tai muita lämpöä tuottavia laitteita (vahvistimet mukaan lukien).

ⓘ Älä tee tyhjäksi polarisoidun tai maadoitetun pistokkeen turvallisuustarkoitusta. Polarisoidussa pistokkeessa on kaksi kosketuspiikkiä, joista toinen on leveämpi. Maadoitetussa pistokkeessa on kaksi kosketuspiikkiä ja kolmas maattokosketin. Leveä kosketuspiikki tai kolmas maattokosketin on turvallisuusominaisuus. Jos toimitettu pistoke ei sovi pistorasiaan, pyydä sähköasentajaa asentamaan uusi pistorasia.

ⓘ Varmista, että verkkojohdon yli ei kävellä eikä se jää puristuksiin etenkin pistoke- ja liitinkohdista sekä laitteesta ulostulevista kohdista.

ⓘ Käytä vain valmistajan määrittämiä lisälaitteita/lisävarusteita.

ⓘ Kytke laite irti verkkovirrasta ukkosmyrskyn aikana tai silloin, kun sitä ei käytetä pitkään aikaan.

ⓘ Jätä kaikki huoltotoimenpiteet pätevän huoltohenkilöstön suoritettavaksi. Laite on toimitettava huoltoon, jos se on vahingoittunut jotenkin, kuten esim. verkkojohto tai pistoke on vioittunut, laitteeseen on joutunut nestettä tai laitteen päälle on pudonnut esineitä, laite on altistunut sateelle tai kosteudelle, laite ei toimi normaalisti tai se on pudonnut.

! VAROITUS! Älä altista tätä laitetta sateelle tai kosteudelle tulipalon tai sähköiskun vaaran vähentämiseksi

ⓘ Laitteen mukana tulevan verkkojohdon tai sovittimen tulee olla yhdenmukainen maassa jo käytössä olevien kanssa. Tarkasta, että verkkojohdon pistoke tai sovitin sopii asennuspaikassa olevaan pistorasiaan.

Jos laitteen pistoke on väärä, **ÄLÄ** yritä muunnella sitä. Ota heti yhteys jälleenmyyjään tai lähimpään TV One -myyntikonttoriin ja pyydä oikeaa pistoketta.

2.1 Immateriaaliomaisuus

Jotkut tässä tuotteessa olevat IC-sirut sisältävät luottamuksellista ja/tai liikesalaisuusomaisuutta. Sen tähden sisältöä ei saa kopioida, muokata, kääntää, jakaa, takaisinmallintaa, mallintaa symbolisella konekielellä tai kääntää takaisin.

3 UNPACKING AND INSTALLATION

3.1 Shipping Carton

Your unit will arrive boxed with internal foam inserts for maximum protection during shipping. You are encouraged to retain the box and all packing material so the unit can be returned in the unlikely event that repairs should ever become necessary.

3.2 Important Safety Instructions

The AC power cable furnished with the unit should conform to the type in use in your country. Please compare the plug on your cable with the power socket where the unit will be installed.

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

Installation should be made such that the system fans are not blocked by other pieces of equipment, and such that they may not be accidentally touched by users.

3.3 Initial Operation Check Using Factory Default Settings

This product can be operated via multiple methods, but for the purposes of initially acquainting you with the operation of the unit, this manual will address the operation using the RS232 connector.

If you have problems using the unit as described below, see the ‘Firmware Update’ description.

4 Initial Operation

The unit is controlled via supporting software that should be loaded onto a Windows based PC. The latest software can be downloaded for free from the TVOne website.

The initial connection between the computer and the C3-340 is via the RS232 connector on the rear. If necessary the new user needs to obtain an appropriate cable or USB to RS232 converter and preload any driver onto the PC.

Connect the PC to the unit via the cable and power up the unit. At first the unit will set the fans at full speed. As the unit progresses through its power up sequence the individual red lights on the rear modules will in turn go green. Once all the rear modules are green the system performs final internal checks before turning the front light from Red to Green. The unit has now initialised and is ready to use.

Turning to the PC software the user can now click on the login button and if all is well the PC will log in to the unit and read back the current status and report to the user the number of available input and output connector.

Further details of using the Control software can be found in the relevant section later in this manual.

4.1 Connecting Via Ethernet

The Ethernet port can only be configured via the RS232 connection. Once the Ethernet address and port has been set the unit can be connected to a network and controlled remotely in the same way as with the RS232 port. Some other functions are also currently disabled via the Ethernet connection. These are disabled in the Control software to prevent errors occurring

5 Connecting Equipment to the CORIOmatrix

The CORIOmatrix has DVI-U input and Output connectors. DVI-I Signals can be connected directly using DVI-I cables. Due to the large number of connecters that may be connected the user is requested to use fully screened Cables with built in Ferrite chokes to meet the emission standards.

For HDMI, Composite video or analogue signals TVOne can supply appropriate adaptors that can be fitted to the DVI-U connector.

Below is a diagram of the rear of the unit. DVI-U cards can be placed in slots 1 to 16.

The input cards are identified as black painted with white writing. It is recommended that these are placed in unit from the top of the in slot 1, increasing in number.

It is recommended that the output cards are placed from slot 16, decreasing in number.

The output cards can be either scaling or non-scaling. The non-scaling are painted grey with white writing the scaling are painted white with black writing.

The non-scaling cards only permit format conversion of the connected input. There is no aspect ratio conversion or gen lock capability.

The scaling outputs are required if and resolution conversion is required. The scaling outputs also permit gen-locking to a separate input.

6 Direct Control on the unit

The CORIOmax range of products use a common set of commands. These commands are based on English words and are based on a tree structure with branches separated by the "." separator.

Not all commands are valid for all CORIOmax products but the software in all units will recognise and then reject commands it can not accept.

For each command an acknowledgement will be return.

6.1 Logging in

To access the units the user must first log in. The command is:

login(username,password)

Currently the system recognises

admin,adminpw
user1,user1pw
user2,user2pw
user3,user2pw
user4,user4pw

The level of access will be different between users and admin, however no restrictions are currently enabled.

To logout the command is

logout

6.2 The !Info and !Error : reply

The unit will reply to commands in various ways. A successful command may be replied by the

!Info : …….

Where the text after the colon provides information on how the unit has interpreted the command

The

!Error –nnn : …….

Gives information on an unsuccessful command execution. If an !Error message is received the unit has not carried out the command requested

7 Input and Output naming convention

The CORIOmax protocol uses a fixed naming convention to communicate internally with the various modules.

This naming is defined by the position of modules within the CORIOmax product. The figure below shows the unit as viewed from the rear. Each location a module can be placed is called a slot and each slot is numbered from the top left going across then down.

The first slot is numbered 1 the last is 20. Slot 17 is a special slot holding the CPU card and slots 18,19 and 20 only work on data, not video signals.

The fixed label for slot1 is:

Slots.slot1

The Video Modules have inputs and outputs. Some cards have only one type others have both and most have more than 1.

Inputs are addressed by **in1, in2**, etc and outputs are addressed by **out1,out2**, etc.

Like the slot numbering they are numbered from left to right looking from the rear.

The fixed label for the left-hand most input on slot 1 is

Slots.slot1.in1

The fixed label for the left-hand most output on Slot13 is

Slots.slot13.out1

The input numbering starts from 1 and continues to the number of inputs on the module.

Likewise, the output numbering starts at 1 and continues to the number of outputs on the module. If a module contains both inputs and outputs the numbering convention is not affected by the presence or not of the other connection type.

7.1 Card Type

To keep track of which cards are in which slot the user may use the command

Slots.slot1.CardType to **Slots.slot16.Cardtype**

This returns to the user a text string that describes the card found in the slot. From this the user can then identify what functionality is available.

Current Card Types are:

DVI_U 2-in
DVI_U 2-in (NS)
DVI_U 2-out
DVI_U 2-out (NS)
DVI_U 2-out Mon
Audio 8-in 8-out
SDI_3G 2-in
SDI_3G 2-out

8 Connecting an Input to Output

To connect in input to an output the simple “>” character is used.

In the example below we provide an input and output with an alias.

Slot 1 has an input card and Slot13 has an output card.

So we set an alias using the slots command

slots.slot1.in1.alias = camera1
slots.slot13.out1.alias = monitor1

(do not start with a number and do not use spaces)

Now to connect the camera to the monitor we type

camera1>monitor1

The will be made.

To break the link we use the special input of **null**

Null>monitor1

The use of the alias makes life easier for the user who will unlikely know where the signal is connected on the remote CORIOmatrix. However it is always possible to use the fixed name for the connection for those wanting to write third party control software.

Thus
slots.slot1.in1 > slots.slot13.out1
Null > Slots.slot13.out1 are also valid

9 Video Adjustments

9.1 Input Digital/Analogue selection

The DVI-U inputs are capable of receiving a number of different signals. The user must set the input to the expected signal type by the **typechoice** command.

Example:

Slots.slot1.in1.typechoice = DVI

The current options are:

DVI	selects the Digital input (use for HDMI)
RGBHV	Analogue RGB with separate HV
RGsB	Analogue RGB with sync on Green
YUV	YUV with sync on Y (use for YPbPr)
YC	Luminance and Chrominance
CV	Composite Video

The CV signal is applied to the analogue Green input and the separate YC is applied to the B and R inputs respectfully.

Note: The YUV setting is also used for YPbPr where the unit switches between the two colour spaces depending of the incoming resolution.

9.2 Input Brightness and Contrast.

The input brightness and contrast can be adjusted to permit correction for incoming signals.

This is performed by the **brightness** and **contrast** commands.

Example

Slots.slot1.in1.brightness = (-32 to 32)
Slots.slot1.in1.contrast = (30 -130)

The brightness value range of -32 to 32 lifts or lowers the signal level. The contrast value of 30 to 130 represents the gain adjustment and is the percentage of gain where 100 is unity gain.

9.3 DVI-U Digital Output Resolutions

When Scaling output cards are present the Output resolution can be set by the user. The CORIOmatrix reads the EDID table from any connected monitor and compares the list with the resolutions the unit is capable of producing.

The current resolutions available are

640x480p59.94
640x480p60
640x480p67
640x480p72
640x480p75
720x480p30
720x480p59.94
720x487p29.97
720x576p25
720x576p50
800x600p52
800x600p56.25
800x600p60
800x600p72
800x600p75
800x600p85
1024x768p60
1024x768p70
1024x768p75
1024x768p85
1152x864p70
1152x864p75
1152x864p80
1280x720p23.98
1280x720p24
1280x720p25
1280x720p29.97
1280x720p30
1280x720p50
1280x720p59.94
1280x720p60
1280x768p60
1280x800p59.94
1280x800p75
1280x800p85
1280x960p60
1280x960p72
1280x960p85
1280x1024p50
1280x1024p60
1366x768p29.97
1366x768p60
1400x900p59.94
1400x1050p59.54
1400x1050p75
1440x900p59.94
1440x480i60
1600x1200p60
1680x1050p60
1920x1080i47.96
1920x1080i48
1920x1080i50
1920x1080i59.94
1920x1080i60
1920x1080p23.98
1920x1080p24
1920x1080p25
1920x1080p29.97
1920x1080p30
1920x1080p50
1920x1080p59.94
1920x1080p60
1920x1200p49.97
1920x1200p50
1920x1200p59.95
2048x1080p60

To set the desired output resolution the user must send the resolution command, an example is given here.

```
slots.slot13.out1.Resolution = 1366x768p60
```

9.4 DVI-U Analogue Output Resolutions

For the digital resolutions in the above section that have an analogue equivalent then the DVI-U analogue pins can be configured to provide various versions through the following pair of instructions

Slots.slot13.out1.AnalogType = {RGBHV,RGBS,RGsB,YUV}
Slots.slot13.out1.ColourScale = {RGB,YUV}

If the ColourScale is not correctly set in relation to the AnalogType a mismatch of colour is seen.

9.5 DVI-U Composite Outputs

For setting the output to either NTSC or PAL the user must set the AnalogType and ColourScale as below

Slots.slot13.out1.AnalogType = CV+YC
Slots.slot13.out1.ColourScale = YUV_601

Then
Slots.slot13.out1.Resolution = 720x487i59.94ntsc
Or
Slots.slot12.out1.Resolution = 720x576i50pal

When either of these is selected the digital output is limited to YUV output at the same resolution.
A CV output appears on the Green output and the separate YC appears on the Blue and Red outputs respectfully.

9.6 3G SDI Output Resolutions

The 3G-SDI Output cards do not support Analogue signals. Each output can work on any of the three SDI standards.

For SMPTE259M-C (270MHz Carrier)

Slots.slot15.out1.resolution = { 720x576i50
720x483i60 }

For SMPTE292M (1.485/1.4835GHz)

Slots.slot15.out1.resolution = { 1920x1080i60
1920x1080i59.94
1920x1080i50
1920x1080p30
1920x1080p29.97

1920x1080p25
1920x1080p24
1920x1080p23.98
1280x720p60
1280x720p59.94
1280x720p50
1280x720p30
1280x720p29.97
1280x720p25
1280x720p24
1280x720p23.98 }

For SMPTE424M (2.97/2.967GHz)

Slots.slot15.out1.Resolution = { 1920x1080p60
1920x1080p59.94
1920x1080p50 }

The ColourScale on an SDI card should be set to AUTO. This will then correctly adjust the YUV colourspace depending on the output resolution.

Slots.slot15.out1.ColourScale = Auto

9.7 Aspect Ratio Control

The user needs control of the aspect ratio of the input source and that of the output display. This is set separately for both the input and output. The unit then performs the correct conversion depending on which input is connected to which output.

To set the input aspect ratio the command is **Aspectchoice**, currently five values are permitted 4:3, 5:3, 5:4, 16:9 and 16:10, with 4:3 the default.

An example command is:
slots.slot1.in1.Aspectchoice = 16:9

Similarly the output needs to be set for the display aspect ratio

An example command is:
slots.slot13.out1.Aspectchoice = 5:4

When the matrix connects an input to an output it looks at the Aspectchoice value and if they are not the same will either shrink vertically or horizontally to maintain the input aspect ratio on the output display.

9.8 Restrictions for Non-Scaler DVI-U Output Cards (not currently released)

When using non-scaler output cards there are a number of restrictions on how they can be used.

1. The output timing is a fixed delay form the input source. Selecting different types of input and output formats will result in different overall delays.
2. They are not able to have a resolution set, they will show the resolution of the input connected to it. If no connection is made the output is connected to "null" which has one, user definable, resolution for the whole unit.

3. The user can select the output types

    - DVI with either RGBHV, RGsB or YUV.
    - CV and Y/C (no digital) when either a PAL or NTSC resolutions are connected to the input.

9.9 Genlocking the Scaler Cards.

A scaler card can have the output timings synchronised to a number of sources. Currently the CORIOmatrix has a Genlock function which requires the source to which it genlocks to be of the same resolution as the output resolution of the scaling output card. In the future we plan to offer frame lock where the only requirement is that the source and output resolution need to have the same frame rate.
***Please note**:* Genlocking is not available in this version of firmware.

Normally the output will use the incoming source to lock its output. The user may enable genlock with

Slots.slot12.out1.Genlock = on (**off** returns to the input)

Before enabling genlock the user selects which input to use for locking the outputs with.

Slots.slot12.out1.GenlockSource = slots.slot1.in2

The source resolution on Slot1.in2 must be the same as the output resolution of Slot12.out1. If the user wished to lock four outputs together then he can set all four outputs to genlock to one common input. The user can assign other groups of outputs to a different genlock source.

10 HDCP Support (DVI-U Cards Only)

The CORIOmatrix supports HDCP. On detecting an input source that requires HDCP compliance the unit prevents the transfer of video to any output until all keys have been collected and authorised by the Source. The matrix can collect and send the maximum of 127 keys to the source.

If a source is sent to more than one output all keys on all selected outputs are passed to the Source for confirmation, only after this has been completed with the video be sent to the outputs. If a new output is connected to the source and keys are not accepted then the video is prevented from going to that particular output.

If a second source is connected to the CORIOmatrix and switched to separate outputs the keys from these selected outputs are sent to the second source for confirmation, on completion the video from the second source is sent to the selected outputs. This process has no effect on inputs and outputs not involved in this operation.

At reset HDCP encryption is disabled at the inputs. Turn on HDCP with the command

Slots.slot1.in1.HDCP_Enabled = on

This permits the CORIOmatrix to HDCP reply to the source. If left, or set, off the input does not respond to the Source key request. This will then limit the unit to receive only non HDCP encrypted video from the source.

The Output channel HDCP support can be selected with the command

Slots.slot12.out.HDCP_Downstream = Hold On/ KeepOff/ FollowSources

With **KeepOff** the unit does not attempt any HDCP Key handling with anything connected to the output. This is required for non-compliant monitors that may disrupt switching. The **HoldOn** and **FollowSource** sets up the HDCP channel with all the compliant devices connected to the output and stores the HDCP keys found.
In the case of **HoldOn** all keys from all outputs are passed to each source to enable the Source to open up HDCP protected video channel. If this is successful and key overload does not occur at the source then seamless switching is possible. However the number of keys sent may overload a source. In this case the **FollowSource** mode will need to be selected where the keys for the newly selected output is passed to the input for confirmation. The reduced number of keys should enable the source to send the video. However the video will be disrupted at the point of switching while the keys are exchanged and therefore seamless switching cannot occur.

On an output it is possible to monitor the output HDCP state by reading whether the HDCP channel has been successfully set up.

Slots.slot12.out1.HDCP_Active = On/Off

If on then the channel is being encrypted.

10.1 HDCP and SDI Output Cards.

The SDI standard is a single directional link and so makes it impossible to establish a link between sink and source as required by the HDCP specification. In configurations where the user does connect an HDCP protected source to an SDI output the resolution is forced to Standard Definition.

11 Audio Support

The CORIOmatrix supports audio routing. Audio can be received on the DVI-U inputs when connected to HDMI sources. The unit can also output audio on the DVI-U connectors when driving HDMI devices. The unit can do simple switching with just video cards but for more flexible control an Audio card is required. The Audio card enables embedding, de-embedding and switching of individual stereo channels

11.1 Basic Switching

Each output card has commands to set up the audio routing. For an output card in Slot12 we have a command

Slots.slot12.Out1.Audio = (Off,AFV,Breakaway).

When set to **Off** no audio is inserted into the Output.
When set to **AFV** (Audio follow Video) then audio is passed from the same input as the video on this output.
When set to **Breakaway**, the user can define the source of the audio and this is not affected by subsequent video switching.

In **Breakaway** mode four more commands are used per output channel.

Slots.slot12.Out1.AudOutA = (Null, Slots.Slotx.Iny.AudInA)
Slots.slot12.Out1.AudOutB = (Null, Slots.Slotx.Iny.AudInB)
Slots.slot12.Out1.AudOutC = (Null, Slots.Slotx.Iny.AudInC)
Slots.slot12.Out1.AudOutD = (Null, Slots.Slotx.Iny.AudInD)

Each DVI output has four stereo pairs labelled A,B,C,D. To each of these channels we assign in input audio source. This will come from an input card.

For the Matrix with no special audio cards the user must set up all four outputs to come from the same input source and should keep A to A , B to B , C to C, D to D.

11.2 Methods of Switching

When the switching option is set to **Off**, or **AFV** the user does not need to set individual audio outputs.

The user may wish to set up audio before switching. This can be achieved by setting Audio to **Off**. The user can then set up Audin to Audout links without outputs being affected. Once set up, the user should move to **Breakaway** where all four outputs then take the value set. To change audio sources, the user may wish to move back to **Off** while switching individual streams to prevent disruptive audio.

When AFV is used the four channels are updated only at the point AFV command is received or a video switch on that channel is made. The user can therefore manually alter

the audio sources after a video switch, but these will be overwritten at the next video change on that channel or the AFV command is resent.

11.3 Advanced Audio Switching

When the Audio card is present in the system the user has more selection for audio routing. In this example the Audio card is placed in Slot8. The card type will be presented as

Slots.Slot8.CardType = Audio 8-in 8-out

With this card there are eight Stereo pair inputs and eight Stereo pair outputs. The user can control the outputs similar to that of a DVI-U card but with a few extra functions.

The Outputs are controlled by the commands

Slots.slot8.out1 to **Slots.slot8.out8**

There is no longer any Audio command as the unit is always in a **breakaway** mode. There is also only one stereo pair and this is always named A.

To set up a switch therefore the user types

Slots.slot8.out5.audoutA = Slots.slot3.in2.audinC

This will de embed the audio coming in on the third channel of the second input of the input card in slot 3 and end it out on the AES output number 5.

11.4 Audio Input Commands

The input channels on the Video cards have read only commands

Slots.slot3.in1.audio = (Off, Found)

Reading this value tells the user whether audio has been detected on the input.

The user can also check to see where the audio is being sent with the commands

Slots.slot1.in1.audinA = (List of destinations) or **NULL**

The list of destinations may be quite long!

12 CORIOmatrix control software 1.1.50 and above

12.1 Software overview

The software has been developed to easily access all of the functions of the CORIOmatrix from a computer. Connection can be via either Ethernet or RS232 both being configurable within the software. The GUI has been designed so the user has full control and a visual representation of the whole system topography.
The software also gives the user the opportunity to access and monitor live control strings being sent to and from the unit via the Command line window. This is particularly useful when programming third party control systems, allowing system emulation rather than using individual control strings from the list of protocols covered earlier in this document.

12.2 Software installation

12.2.1 Download software

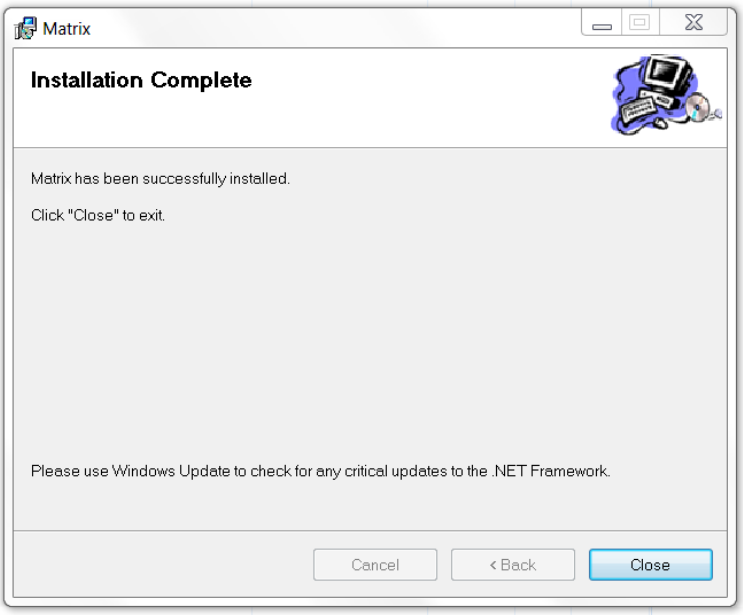
If the user hasn't already got a copy of the CORIOmatrix setup software it can download it from the following URL:

http://www.tvone.co.uk/tech_support_software.shtml

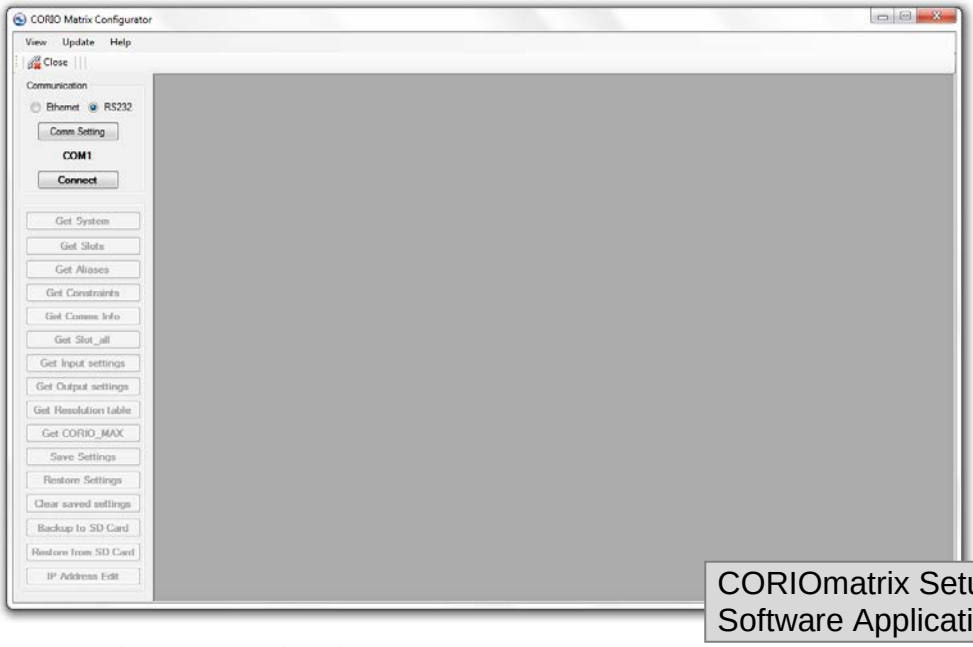
The software will be contained in compressed folder so it's advisable to first install a compression utility tool such as WinZip, WinRAR or 7-Zip. These are freely available to download from the internet. Before starting you will also need to make sure you have .NET 4.0 running on your computer.

12.2.2 Software Installation

Unzip the software and double click either the .exe or .msi files and the installation will start. Follow on screen prompts until the installation is complete. The installation will create a folder in your 'Program Files' named 'TVOne'.



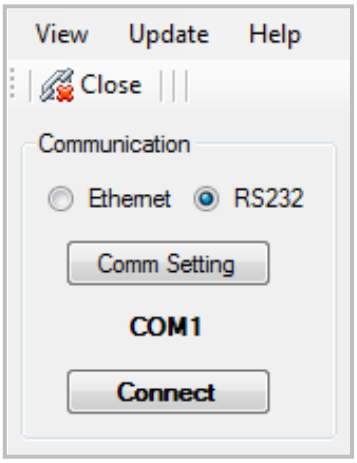
Locate the ‘TVOne’ folder in you ‘C/Program Files’, click on the Matrix icon  to start the application or create a shortcut to your Desktop or Taskbar.



CORIOmatrix Setup Software Application

12.4 Unit communications

Depending on whether you connect via Ethernet or RS232 you will need to configure the communication settings.



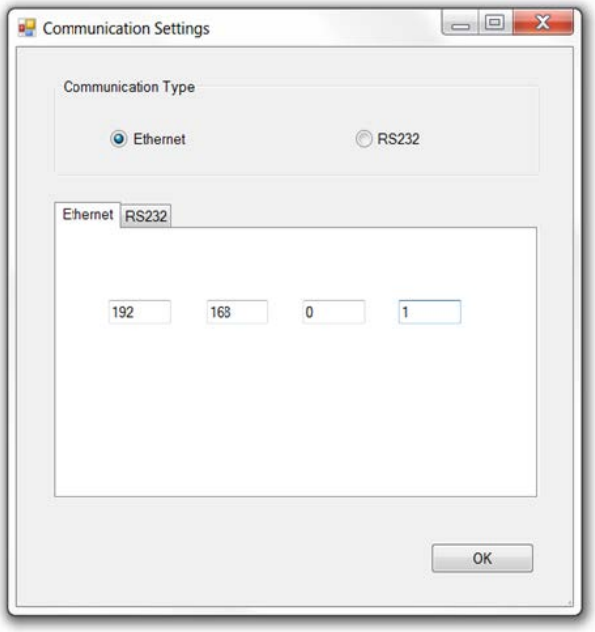
12.4.1 Communication selection

Select either **RS232** or **Ethernet** as your chosen method communication by highlighting one of the check boxes as shown above.

If you are connecting via Ethernet skip to section **11.4.3 Selecting an IP address**

12.4.2 RS232 serial port settings

12.4.3 Selecting an IP address

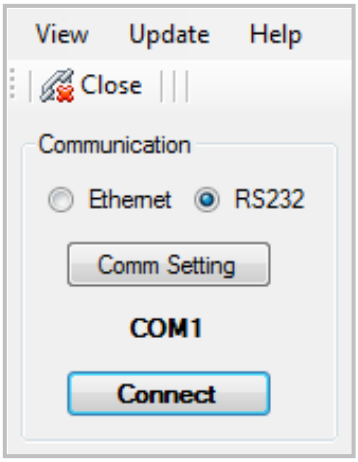


Ethernet IP Address selection window.

Insert the IP address of the unit in the four blank fields provided and click on ‘OK’. Make sure the host computer is set within the same Subnet and IP range. You will need to have Administrative privileges to change network settings on your computer so you may need to enlist the help of your network Administrator.

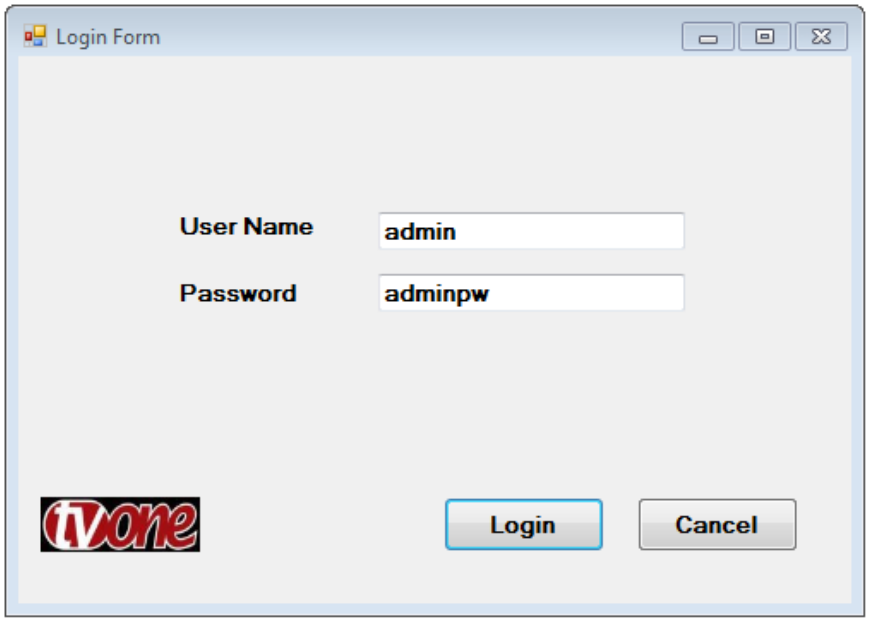
The IP address of the unit can be changed to suite your network once connected via RS232.

12.4.4 Connect to unit



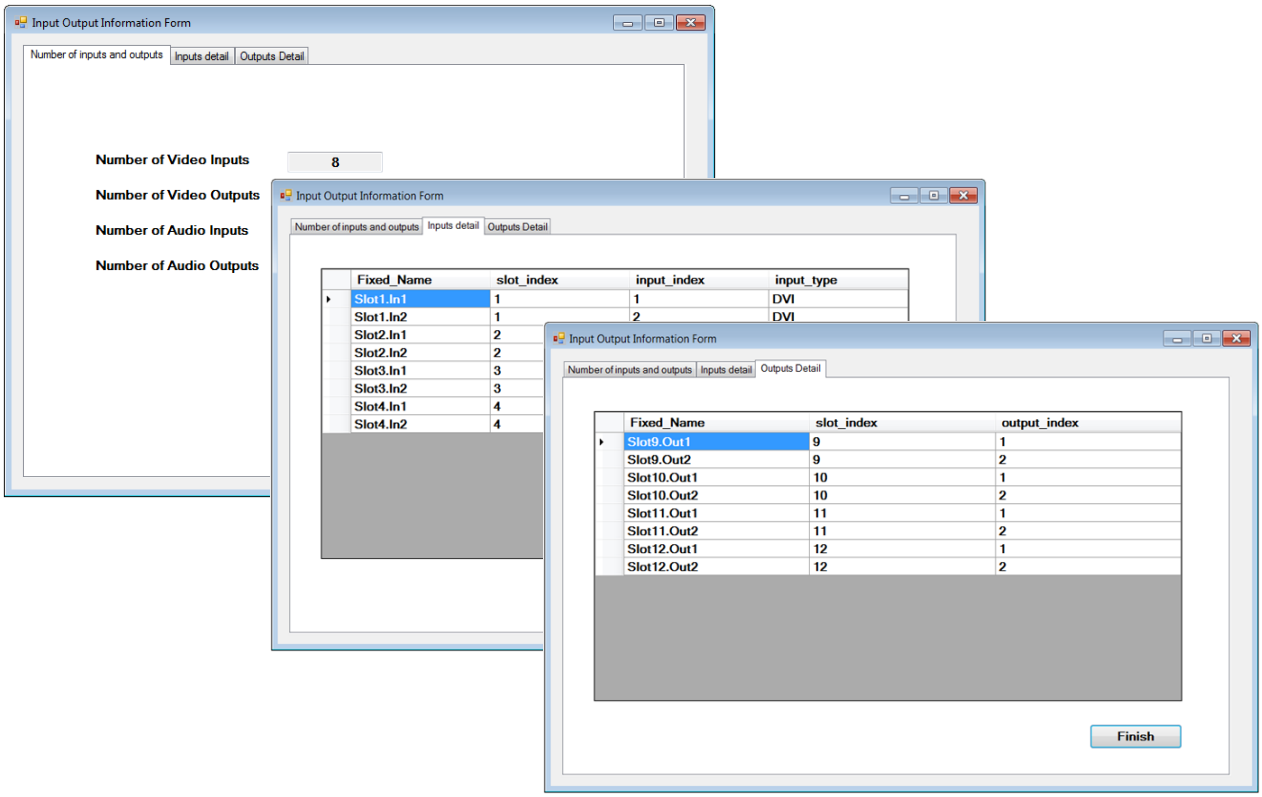
Once you have configured your communication click on **Connect** and the Login process will begin.

12.5 Logging In



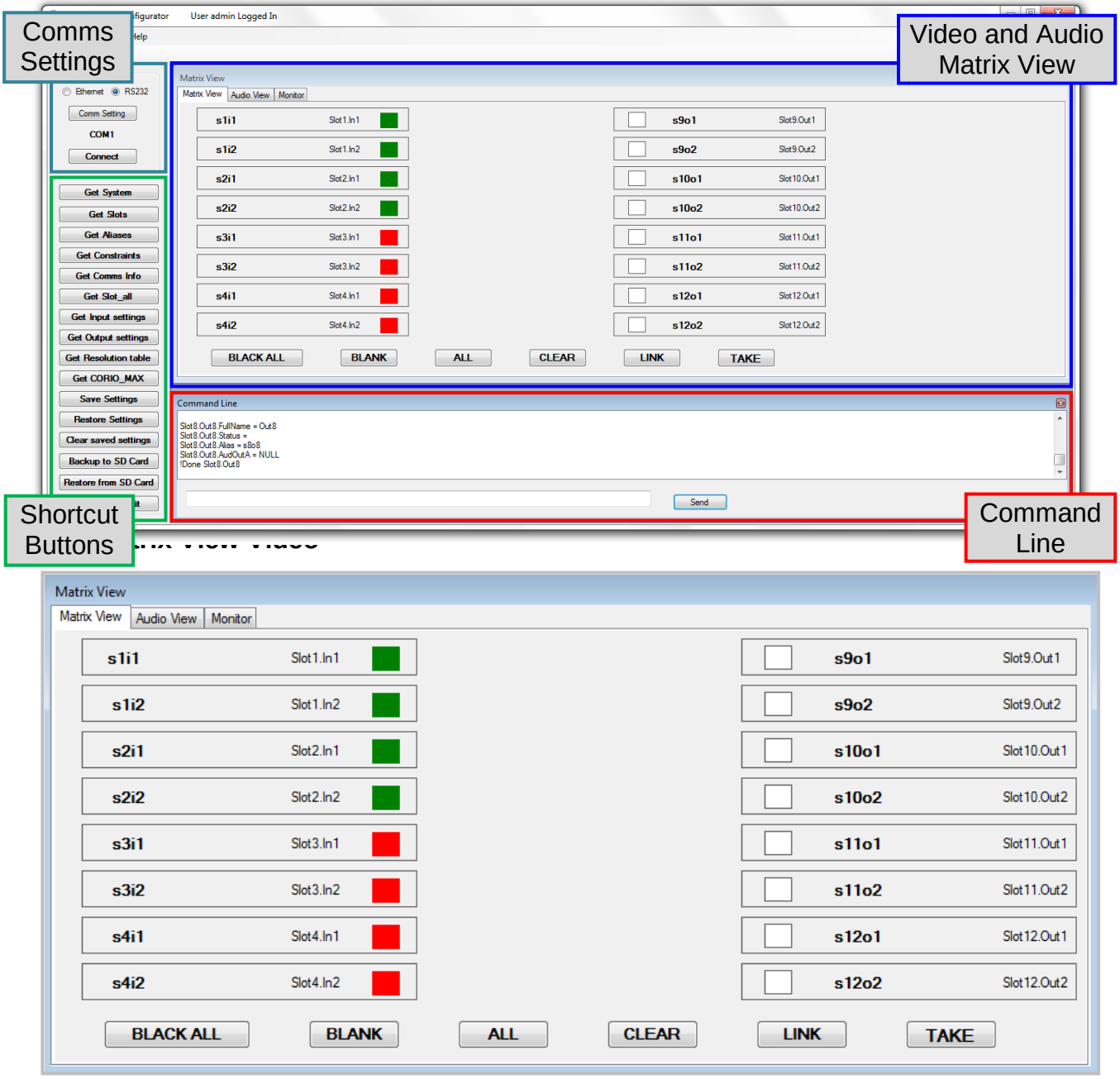
The Login window will appear where you can enter the User Name (default 'admin') and Password (default 'adminpw'). Click on **Login** and the system analysis process will begin. ***Please note****:* Changing the User Name and Password will be covered in a later section.

The Control Software will analyse the system hardware and calculate the number of Inputs and Outputs and in which Slot they are located.



Click **Next** twice and then **Finish** to complete the Login process and the CORIOmatrix main screen will appear.

12.6 CORIOmatrix Main Screen Layout



The 'Matrix View' is the main control area of the software, offering basic functionality of the units' key features. It allows the user to control the CORIOmatrix via the GUI, giving a graphical representation of the Matrix connectivity and visual feedback of Input and Output configurations for both Video and Audio.

The left hand side bank of buttons represent the Input slots and right hand side the Output slots. The signal name or alias and slot location are displayed on each button. Editing signal names or aliases will be covered in a later section.

On each button there is either a green, red or white square, when clicked on open a Properties window which allows the user to edit the Input or Output Settings. The green

and red squares on the input buttons also give status feedback; green indicating that the connection is **OK**, red when there is an **INVALID** signal or no connection present. The white square on the output buttons do not show status.
Below the Input and Output buttons there are five function buttons: **BLACK ALL**; **BLANK**; **ALL**; **CLEAR**; **LINK** and **TAKE**. These are the main command buttons that allow the user to execute individual or multiple functions.

BLACK ALL - Allows the user to mute all Outputs with one button press. This is a toggle function so will un-mute when repressed.

BLANK - Allows the user to remove the signal in anyone or all of the outputs, 'BLANK' breaks the connection from Input to Output. ***Please note****:* this is not a toggle function.

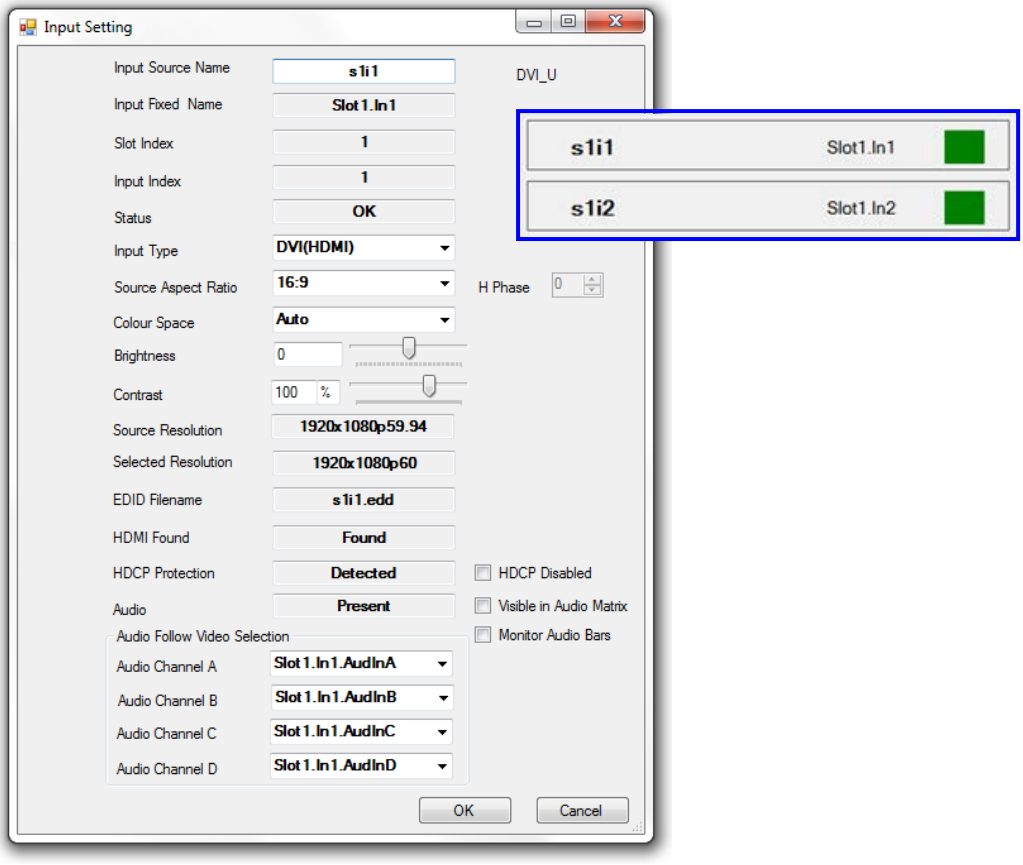
ALL - Allows the user to Link all of the Outputs to one Input with a single command.

CLEAR - Allows the user to remove a single or multiple Links between Inputs and Outputs prior to connection.

LINK - Allows the user to join an Input to a single or multiple Outputs prior to connection.

TAKE - Is the execute command which initiates functions, such as the connection of an Input to an Output that are associated via the 'LINK' function.

12.7.1 Input Settings Window

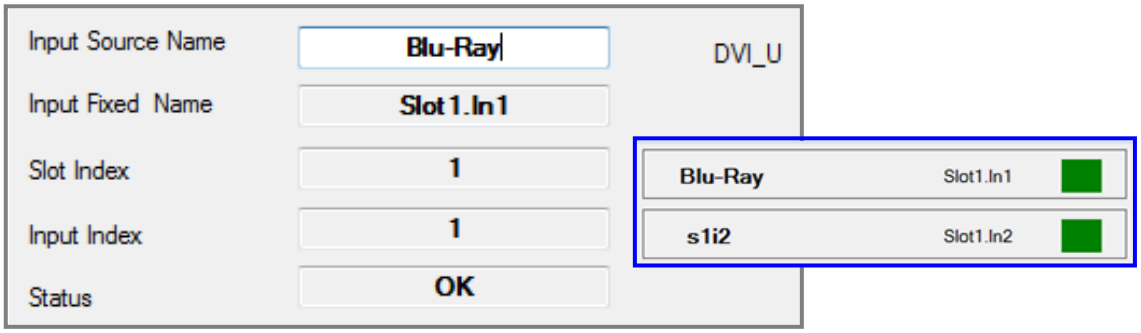


Click on the green or red square to open the Input Settings window. This allows the user to make basic changes to the Input properties and view information from the connected source equipment. The window comprises of four sections; **Input Allocation**; **Source Configuration**; **Signal Identification** and **Audio Configuration**. You will see a number of fields that are white or grey, white are editable and grey fields are fixed and read only.

Input Allocation Section

This section of the Input Settings page allows the user to name and identify the location of a particular input in relation to the other available card slots, it also identifies the card type being either a DVI-U or 3G-SDI module.

Input Source Name - As mentioned earlier it is possible to change the Input name to something that is easily recognisable or more logical, these are known as 'Aliases'. ***Please note****:* Aliases should not start with a number or contain characters, gaps between words should be filled with an underscore (_).



Enter the text in the 'Input Source Name' field then click 'OK' at the bottom of the window, the new name will appear on the Input Select button in the 'Matrix View' window.

Input Fixed Name - This is the name allocated by the unit that describes its Slot and Input position which appears next to its Alias on the Input Select button.

Slot Index - This is the Index number allocated to the Slot where that particular Input card is located. This could be numbered from 1 to 16.

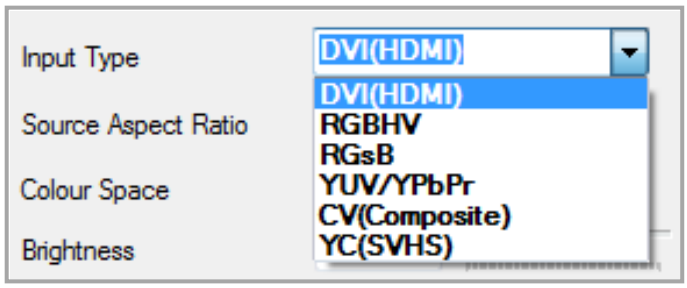
Input Index - This is the Index number allocated to the Input of that particular Input card. This could be 1 or 2 on a Dual DVI input card.

Status - This indicates the current Status of that particular Input. This could read either 'OK' if there is a valid source connected and is recognised or 'INVALID' if there is no source present or it is not recognised. The Status of a specific Input is refreshed when entering the Input Settings menu or when clicking the 'Get Input settings' shortcut button, this will be covered in more detail in a later section.

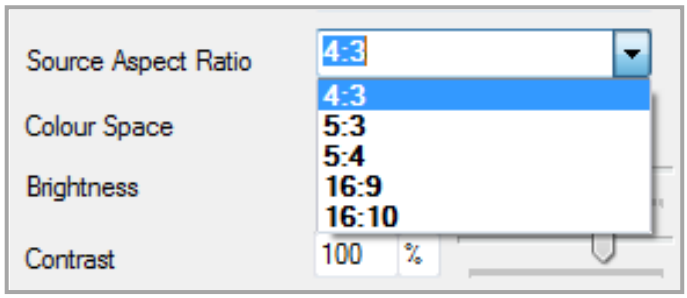
Source Configuration Section

The second section of the 'Input Settings' window allows the user to adjust the way the card interprets the signal type, i.e. change the format. It also has settings to manipulate key attributes of the source signal.

Input Type - This allows the user to change the format of the Input card to suite the source signal type. Settings include: **DVI(HDMI)**; **RGBHV**; **RGsB**; **YUV/YPbPr**; **CV** and **YC**.
***Please note**:* this feature is not available on 3G-SDI modules.

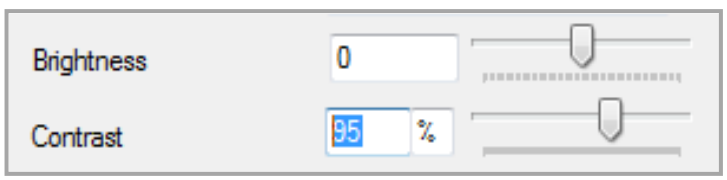


Source Aspect Ratio - This allows the user to change the Aspect Ratio of the incoming signal at the Input of the matrix. There is also a setting to change the Aspect Ratio at the Output of the matrix and when used in conjunction with the Input settings can create specific aspect ratios. The effect of these settings is covered in a later section.
***Please note**:* this feature is not available on the non-scaling version of the CORIOmatrix.



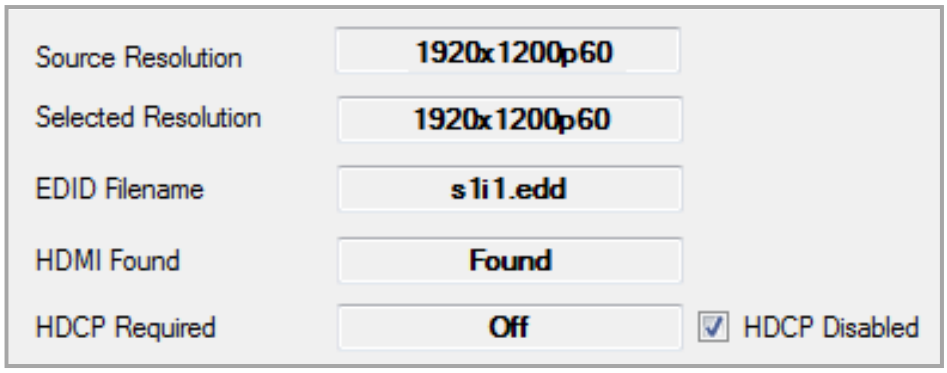
Horizontal Phase Shift – This function allows the user to adjust the horizontal position of an analogue RGBHV source on a specific Input. This may be useful for sources that appear to be offset on the output. The image can be adjusted between -/+100 pixels, the results may vary according to the Input resolution meaning the amount the image can be shifted will change at its limits.
***Please note**:* This feature is not available on CV, YC, YUV, DVI-D or SDI sources. Changing the horizontal position of a specific Input will affect the resultant image on all Outputs that are connected to it.

Brightness and Contrast - This allows the user to adjust the brightness and contrast of the incoming signal. This is useful when switching between and matching sources of varying brightness and contrast levels. The user can either enter specific values or use the sliders. Brightness level adjustments can be set between **-30** to **+30** and Contrast from **30%** to **130%**



Signal Identification Section

The third section of the 'Input Settings' window allows the user to identify key signal characteristics on a specific Input.



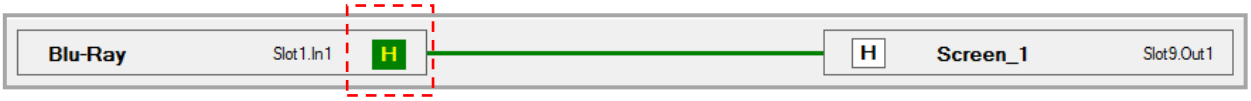
Source Resolution – This is the measurement that makes up the horizontal value of the incoming signal.

Selected Resolution - This is the name for the resolution that best matches the incoming signal as it appears in the CORIOmatrix's internal resolution table.

EDID Filename – The name of the default EDID file.

HDMI Found – This shows the user whether there is a 256 byte HDMI EDID present. DVI is commonly recognised at 128 byte. This will either display **Found** or **Not Found**.

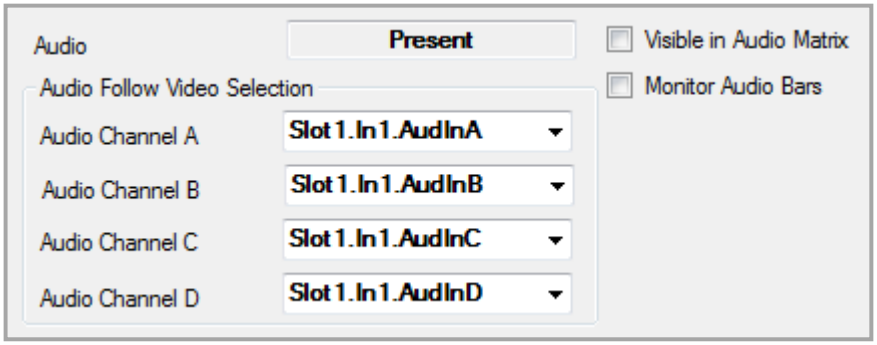
HDCP Protection – This indicates to the user that HDCP has been detected on the source and that an HDCP configuration is required. This will either display **Detected** or **Not Present**. If HDCP is detected an '**H**' will appear in the Input Settings Button.



HDCP Disabled – This allows the user to turn on or off the HDCP capabilities of a specific Input. All HDCP sources will be blocked. This is greyed out when a HDCP is '**Not Present**'.

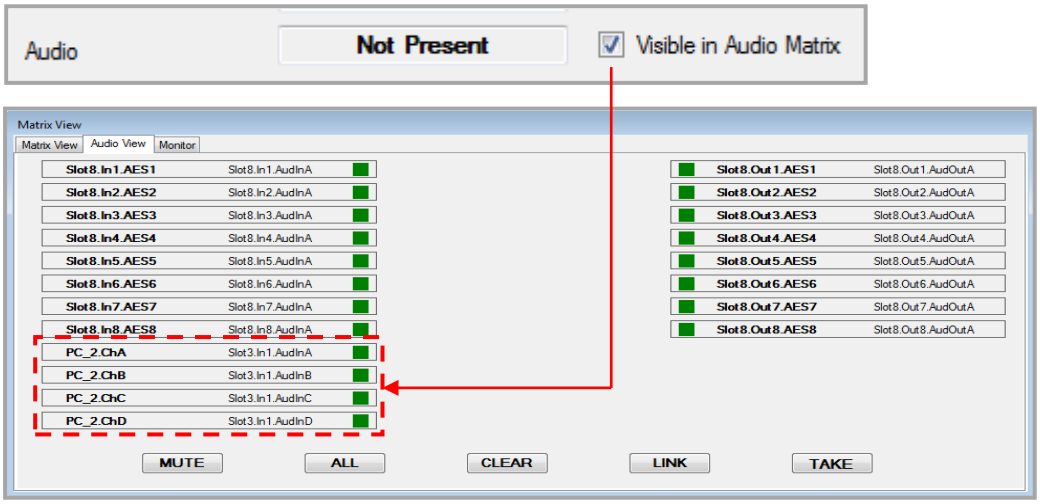
Audio Configuration Section

The fourth section of the 'Input Settings' window allows the user to configure and manage the audio associated with a specific Input.



Audio – This indicates whether there is an embedded audio signal detected. It shows '**Present**' if there is audio and '**Not Present**' if there isn't.

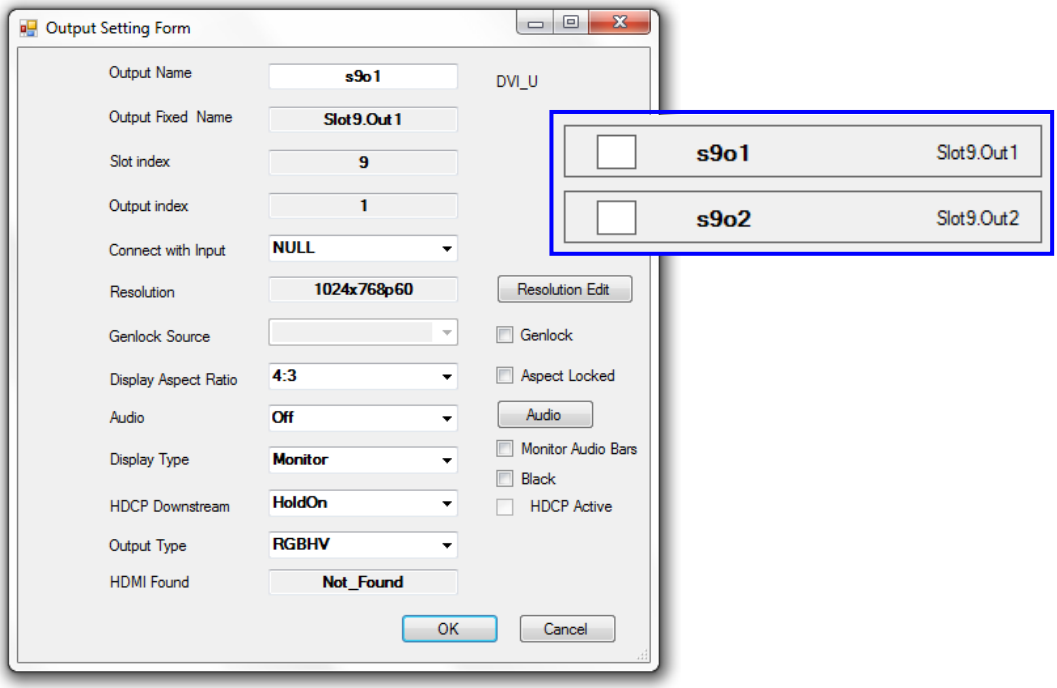
Visible in Audio Matrix – This feature allows the user to make non-audio embedded video sources viewable in the Audio Matrix. This may be useful when a connection between an Input and an Output is required prior to having audio channels embedded into the video stream. SDI sources are not automatically added to the Audio View matrix so should be added manually with this function if required.
***Please note**:* Aliases should be set prior to making Inputs visible in the Audio Matrix.



Monitor Audio Bars - When a Monitor Module is installed, this feature allows the user to turn on Audio Monitoring Bars on Inputs that have embedded audio. The system monitors the embedded audio and gives a visual representation of signal level on each channel. The Audio Bars can be activated on specific Input thumbnails viewable on the output of the Monitor Module.

Audio Follow Video Selection – This allows the user to assign any available audio signal to any video source including: existing audio embedded HDMI sources; analogue RGBHV, YUV, YC and CV; and non-embedded digital video sources. The assigned audio channels may be from an embedded HDMI source or separate analogue or digital signals via AES Inputs from one of TVOne's compatible A2-7300 range of audio Breakout units.
***Please note**:* For AFV assigned video sources that have been made '**Visible in Audio Matrix**' it is not possible to **LINK** to either AES or Breakaway Outputs in the Audio Matrix.

12.7.2 Output Settings Window

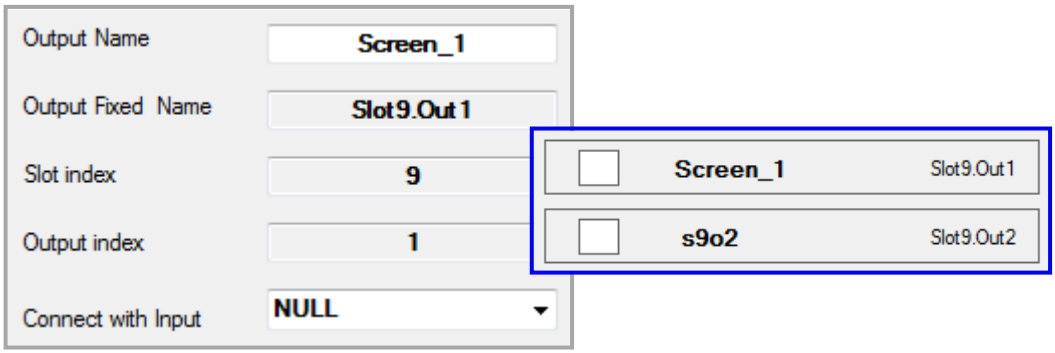


Click on the white square to open the Output Settings window. This allows the user to make basic changes to the Output properties and view information relating to resolution. The window comprises of two sections; **Output Allocation** and **Display Configuration**. You will see a number of fields that are white or grey, the white fields are editable and the grey fields are fixed and read only.

Output Allocation Section

This section of the Output Settings page allows the user to name and identify the location of a particular output in relation to the other available card slots within the Matrix and displays whether it's a DVI-U or 3G-SDI module. It also has a drop down menu for selecting Inputs which is one method of connecting Inputs to Outputs.

Output Name – As with the Inputs it is possible to change the name of the Output to something that is easily recognisable or more logical, these are known as 'Aliases'. ***Please note****:* Aliases should not start with a number or contain characters, gaps between words should be filled with an underscore (_).

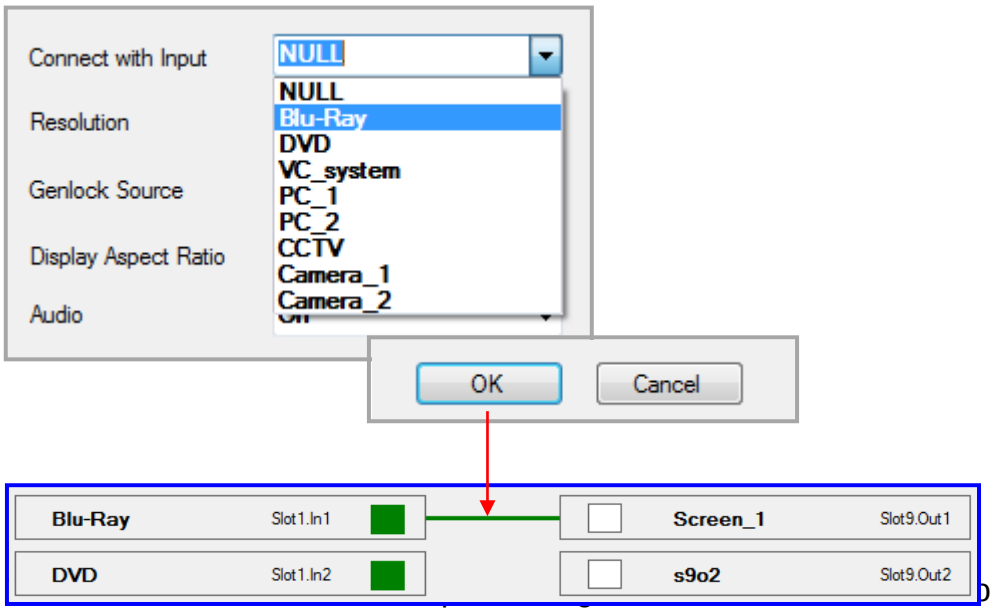


Output Fixed Name – This is the name allocated by the unit that describes its Slot and Output position which appears next to its Alias on the Output Select button.

Slot Index - This is the Index number allocated to the Slot where that particular Output card is located. At present this could be numbered from 5 to 16.

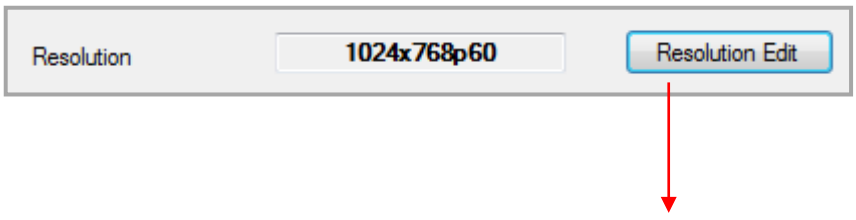
Output Index - This is the Index number allocated to the Output of that particular Output card. This could be 1 or 2 on a Dual DVI output card.

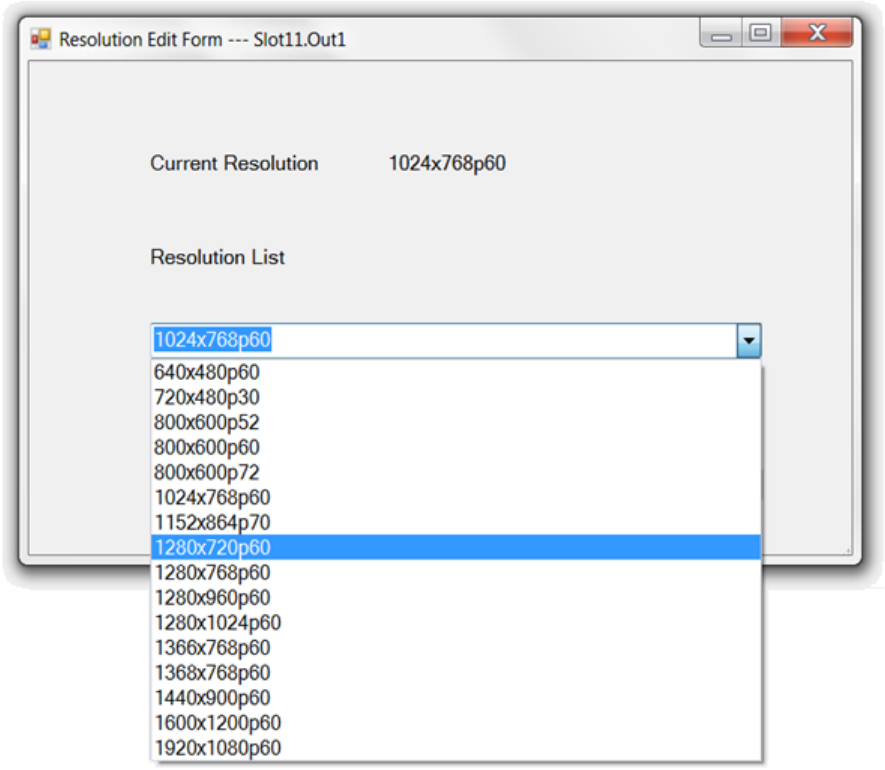
Connect with Input - This is one of the methods of connecting Inputs to Outputs within the CORIOmatrix software. Click on the drop down menu arrow and a list of all the available Inputs/sources will appear. The list will include the names of the sources that the user has edited or default slot allocation numbers. Click on the source that needs to be displayed then 'OK' at the bottom of the Output Settings window to confirm the action. The Settings window will disappear and you will notice a green line between the Input and Output Buttons in the Matrix View window. This means the Input and Output are now connected. In this function it is not necessary to use the **TAKE** button to execute the command as covered in an earlier section. Other methods of connecting to Inputs will be covered later in this document.



o adjust the Output configuration including: Resolution, Genlock, Aspect Ratio, Audio, HDCP status and Output Type.

Resolution Edit - This gives the user the ability to change the resolution on a specific Output to match the display device. Click on the 'Resolution Edit' button, the Resolution Edit window will appear, click the drop down menu arrow and select the required resolution. Press '**Apply**' then '**OK**'. Applying resolution changes may take several seconds.

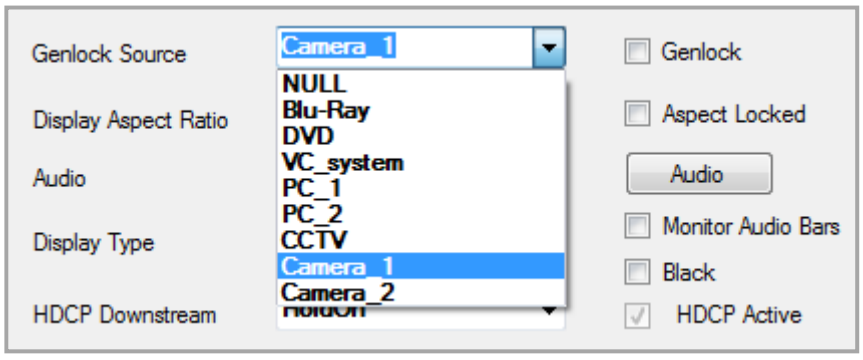




***Please note**:* Setting the Output Resolution to PAL or NTSC will automatically force the DVI-U output to Composite Video (CV) and S-Video (YC). Selecting another resolution other than PAL or NTSC after CV and YC have been activated will force the Output to RGBHV. If RGBS, RGsB or YUV are required this should be set in 'Output Type' which is covered in a later section of this document.

Genlock - This allows the user to synchronise any number Outputs to selected Inputs. This can be done in multiple instances across the Matrix, meaning different Outputs can be Genlocked to different Inputs at the same time. However it is not possible for one Output to be Genlocked to multiple Inputs. The Default setting for Genlock is off and the Genlock Source set to **NULL**.
***Please note**:* Output Resolution and framerate must exactly match the Input settings for Genlocking to work correctly, settings are automatically adjusted when Genlock is set.

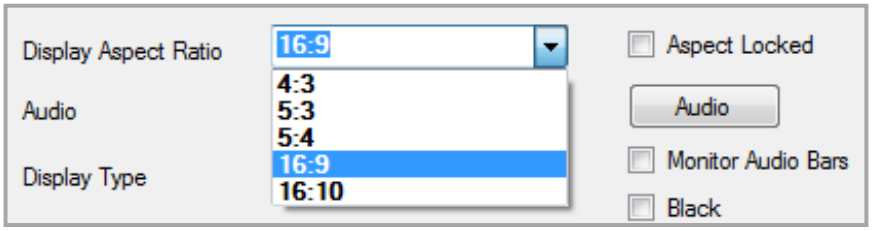
Genlock Source - This is a full list of Input modules represented by their slot allocation number. It is not dynamically populated so may not have active or valid sources plugged in to each displayed Input. The user should select an Input that is known to be valid, if an invalid source is selected a popup window will appear advising the user.



Click on the '**Genlock**' check box to lock the dropdown menu. The menu will grey out.

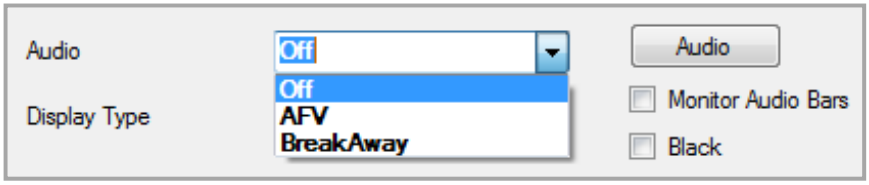
Click on '**OK**' at the bottom of the Output Settings window. A popup window will appear warning the user that the Output resolution will be automatically set to match the selected Input, the resolution will be displayed in the popup. Click on '**OK**' to confirm, the popup will disappear and 'Please wait…' will be displayed on the Output Settings window. The '**OK**' button is greyed out until the Genlock settings have been fully implemented.

Display Aspect Ratio - This allows the user to change the Aspect Ratio of the outgoing signal on the Output of the matrix. There is also a setting to change the Aspect Ratio on the Inputs of the matrix and can be used in conjunction with the Output settings. Click on the dropdown menu and select the required Aspect Ratio. Click on '**OK**' at the bottom of the Output Settings window and the new Aspect Ratio will be implemented.

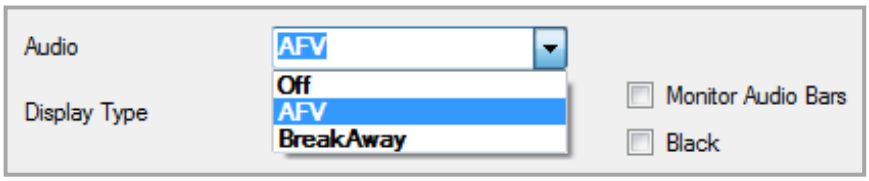


Aspect Locked – Because set resolutions change the way the Video signals are handled, this feature allows the user to lock the Aspect Ratio irrespective of the Output resolution that has been set.

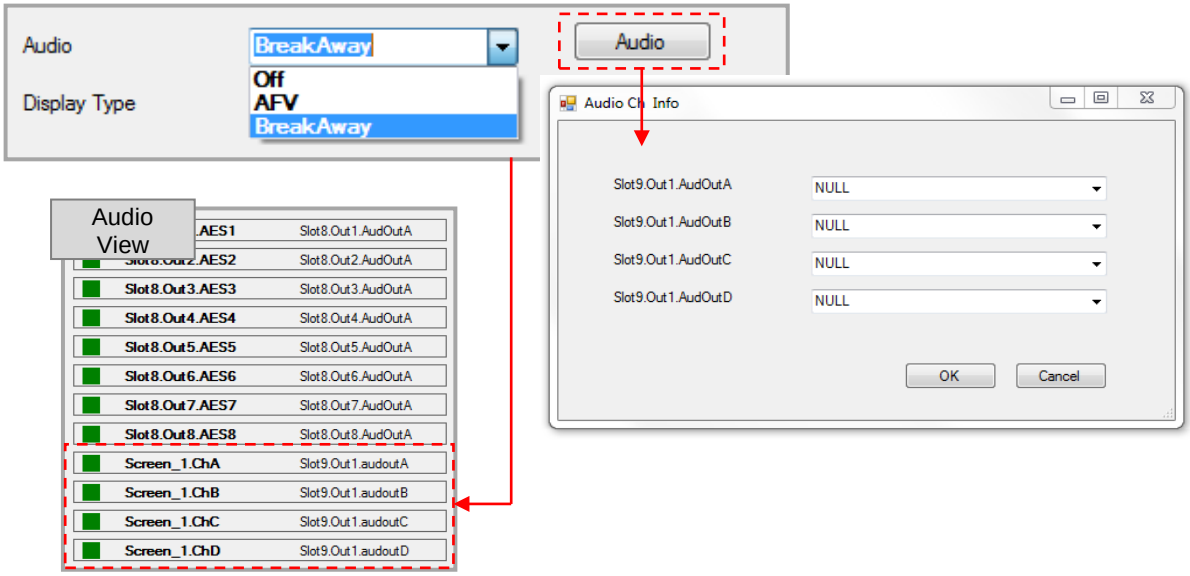
Audio – This section gives the user the ability to individually manage the Audio on each output. The options are: **Off** (default) no audio on the Output; **AFV** Audio Follow Video, the Output will embed the audio that has been assigned to or embedded on the Input source; **Breakaway** the user can assign four of the eight AES stereo Input channels or any embedded audio source to the four stereo Output channels and can be in any order but must be from the same source.



AFV – ‘Audio Follow Video’ mode means whatever video source is being viewed on a specific Output its associated audio will be selected. This can be the audio from any source, either an embedded audio stream from an HDMI Input or a separate AES3 channel. It is possible to assign and embed analogue audio onto any video input using one of TVOne’s compatible A2-7300 range of audio Breakout units.



Audio Breakaway – When selecting **Audio Breakaway** this allows the user to select and assign any of the Input audio streams to that specific output. When selected an additional ‘Audio’ button appears. Click on the ‘Audio’ button and the ‘Audio Channel Info’ window appears, select the required audio streams from the drop down menus to be assigned to each audio channel. Outputs set to Breakaway are automatically added to the ‘Audio View’ so routing can be achieved via the Matrix GUI.



Display Type – This currently defaults to ‘**Monitor**’ and other settings will be functional in upgraded versions of firmware. This will allow the user to select different Display devices which will in turn add new features within the software.

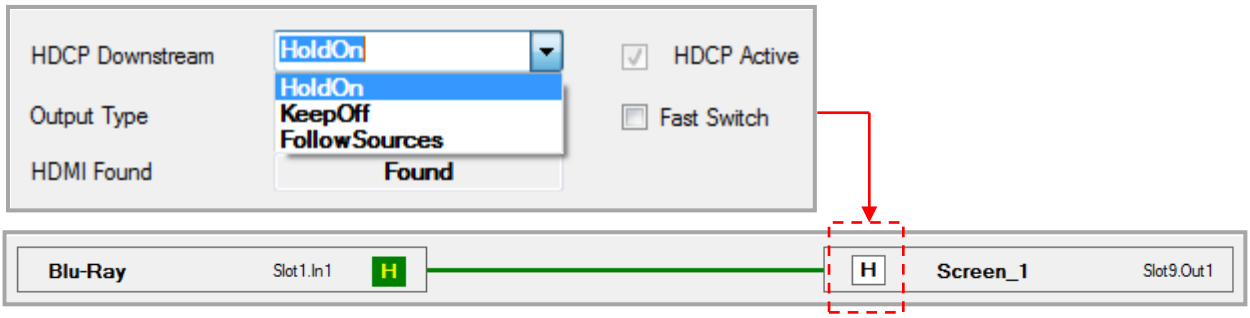
Monitor Audio Bars - When a Monitor Module is installed, this feature allows the user to turn on Audio Monitoring Bars on Outputs that have embedded audio. The system monitors the embedded audio and gives a visual representation of signal level on each channel. The Audio Bars can be activated on specific Input thumbnails viewable on the output of the Monitor Module.

Black – When ‘Black’ is selected this forces the Output to be muted, the image goes black in the same way as in the Matrix View window. This is a toggle function so will un-mute the Output when deselected.

HDCP Downstream – This feature gives the user the ability to change the way each output handles ‘HDCP Downstream’ communications. There are three settings available:

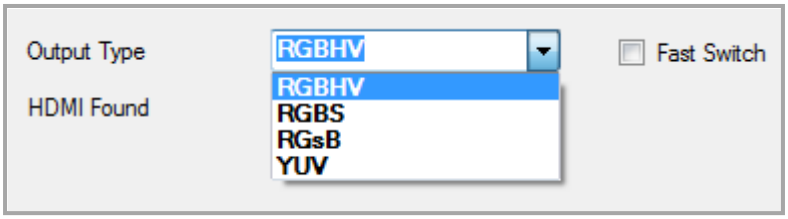
Hold On (default) the Output is permanently HDCP enabled and will work if the display device is HDCP compliant; **Keep Off** the HDCP on the Output is permanently disabled meaning only non-HDCP sources will work on that Output; **Follow Sources** the HDCP on the Output is turned on or off dependant on whether or not there is HDCP present in the source stream. If the HDCP on the Output has been enabled with **Hold On** or from an HDCP encrypted source (Followed) an '**H**' will appear on the Output Settings button. It is possible to route HDCP sources to non-HDCP analogue displays if the Output resolution is set to =< 800 x 600 up to 85Hz. If the resolution is not set correctly the Output video is automatically muted until switching to a non-HDCP source.

WARNING! If an HDCP encrypted source is routed to a 3G-SDI Output module, the resolution of that specific output will be automatically downscaled to Standard definition to maintain a signal at that display. This will remain Standard definition until the Output is switched to a non-HDCP source AND the resolution is manually set again. The Output resolution will not automatically revert back to its previous value.
Please note*:* HDCP management is disabled for 3G-SDI outputs and handled automatically.

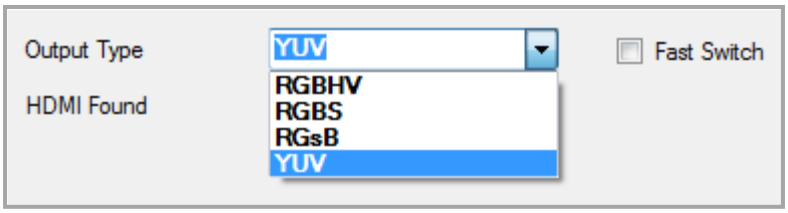


HDCP Active – This shows a '✓' when downstream HDCP signals are being handled correctly by the Matrix and the connected display device. The indicator will remain blank if there is a problem with the downstream connectivity or no HDCP stream present.

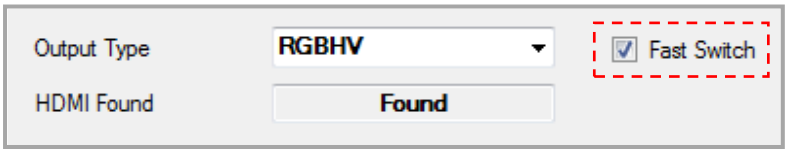
Output Type – This feature allows the user to change the connectivity configuration of the DVI-U Output. Because DVI-U has the capability of supporting different connection formats, the Output module utilises different pin configurations to match the display devices physical connectivity and sync. It is important to select the correct configuration to match the display device as improper connectivity may lead to loss of video. The options are RGBHV (analogue and digital), RGBS, RGsB and YUV. YC and CV are automatically activated when PAL or NTSC is selected in the Output Resolutions menu.
Please note*:* YC and CV output variants in the Output Type menu will be functional in future versions of software.
The default Output Type is RGBHV. In this mode it will work with DVI-D, DVI-A, HDMI and analogue RGB\VGA signals.



In some HDMI systems YUV Colour Space is required, the user should click on the drop down menu, select YUV then press OK on the Output Settings window. This will also set the activate analogue YUV for YPbPr applications.



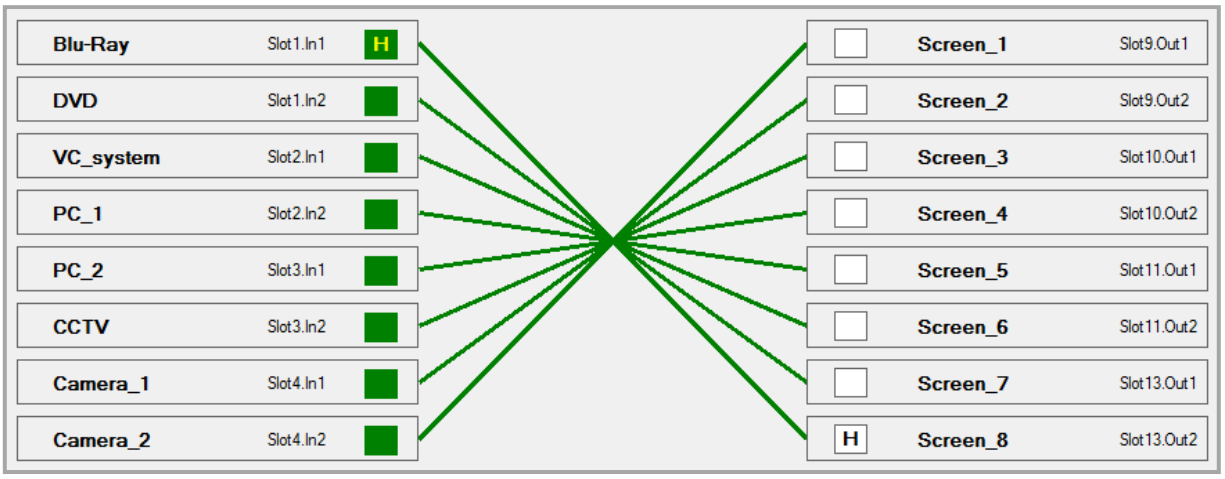
Fast Switching – On occasions it may be necessary to quickly switch between Inputs without a transition. This can be achieved by setting the Output to 'Fast Switching'. When activated the last frame of the current source is held momentarily for the duration of 'one frame', whilst the new source is processed by the scaler. The old source is then removed and the new one is then displayed, the resultant transition can be viewed as almost instantaneous. For 'Fast Switching' to work correctly, the sources must be of identical resolution and timings, if they are identical the scaler does not delay the switch with un-necessary processing. If they are not identical the transition will revert to the default setting.
The default setting for transitions is 'Fade Through Black', this means the current source will fade out to 'Black' and the incoming source will fade in from 'Black' giving a smooth transition. This is particularly useful when switching between sources of differing resolution and framerate, as without the 'fade' the resultant image may be frozen for a short period whilst the scaler adapts and processes the incoming source. To activate Fast Switching the user should click on the 'Fast Switch' check box in the Output Settings window.



HDMI Found – '**Found**' is shown when an HDMI display has been connected and acknowledged, '**Not_Found**' is shown when the display is disconnected or not compatible. This may be particularly useful when troubleshooting a system setup where the display device is remote to the C3-340 via signal transmission equipment

12.7.3 Matrix View Video Routing

The CORIOmatrix is capable of routing or switching any video Input to any number of Outputs. This can be one-to-one, one-to-many or one-to-all. Links from Inputs to Outputs can be set up, cleared, blanked or muted either in real time or setup to happen instantaneously in a batch of commands, then executing with a single command '**TAKE**' function.

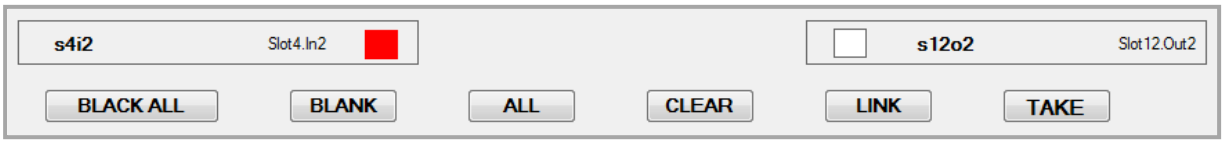


Video Signal Routing Methods

Signal routing can be controlled in four distinct ways and are all reflected in the Matrix View window as visual feedback. Methods include:

- **Output Settings window** – Individually select an Input to connect to an Output as covered earlier in this document.
- **Remotely** – Using functions from the list of serial commands via Ethernet or RS232 from a 3rd party control system.
- **Command Line Interface** – Entering command strings direct to the unit from the CORIOmatrix software. This will be covered later in this document.
- **Matrix View** – Using the CORIOmatrix software GUI via mouse, stylus or touchscreen.

This section will cover routing and switching Video signals using the CORIOmatrix Matrix View GUI. This will include the use of the six shortcut command buttons at the bottom of the Matrix View tab: **BLACK ALL** (set all the Outputs to Black/Mute); **BLANK** (remove signal); **ALL** (all outputs); **CLEAR** (clear last function); **LINK** (join) and **TAKE** (execute) located below the Input/Output buttons.
Please note*:* To select an Input or Output you must click on the main body of the button as clicking the coloured or white square will open the Settings page. Selected buttons are highlighted blue, clicking a button a second time will deselect it and will revert to grey. The use of the term **LINK** refers to a non-finalised or executed connection from an Input.



Video Routing Configurations

This section will outline the different ways of managing or routing Video signals through the Matrix, this will include:

1. **One-to-one** – Connect one Input to one Output

2. **One-to-many** - Connect one Input to many or several Outputs

3. **One-to-all (broadcast)** – Broadcast any Input to all available Outputs.

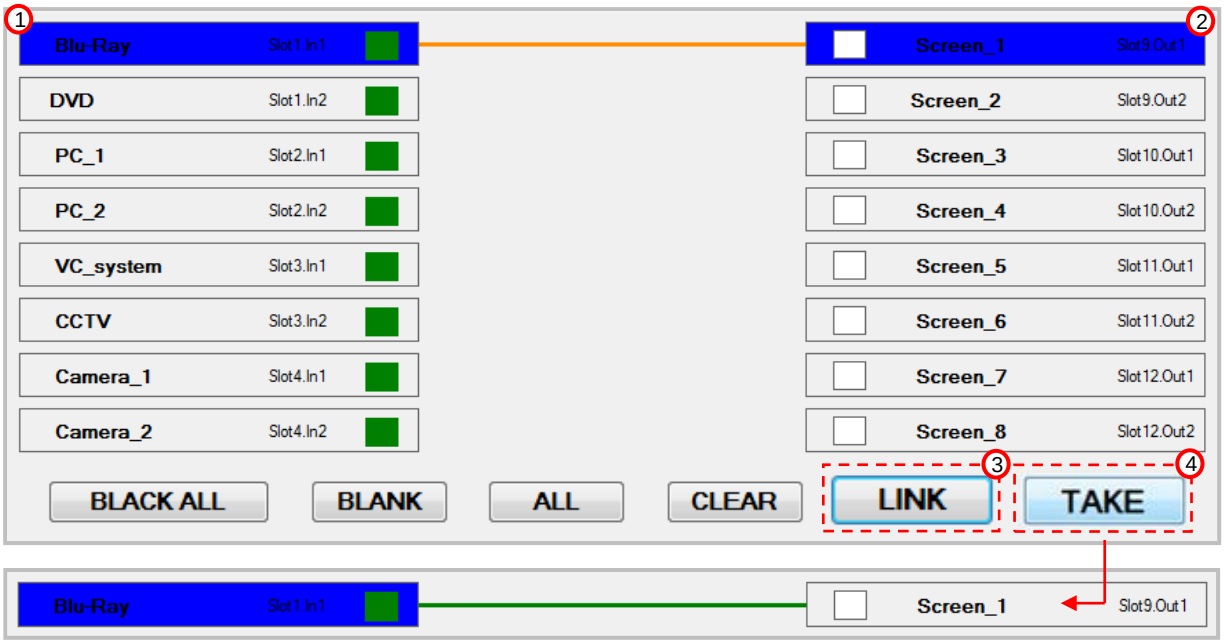
4. **Mute all video Outputs** – Temporarily turn off all active Outputs

5. **Clear a function** – Remove a non-finalised/executed function before doing a '**TAKE**'

6. **Blank and Output** – Remove a link between an Input and an Output

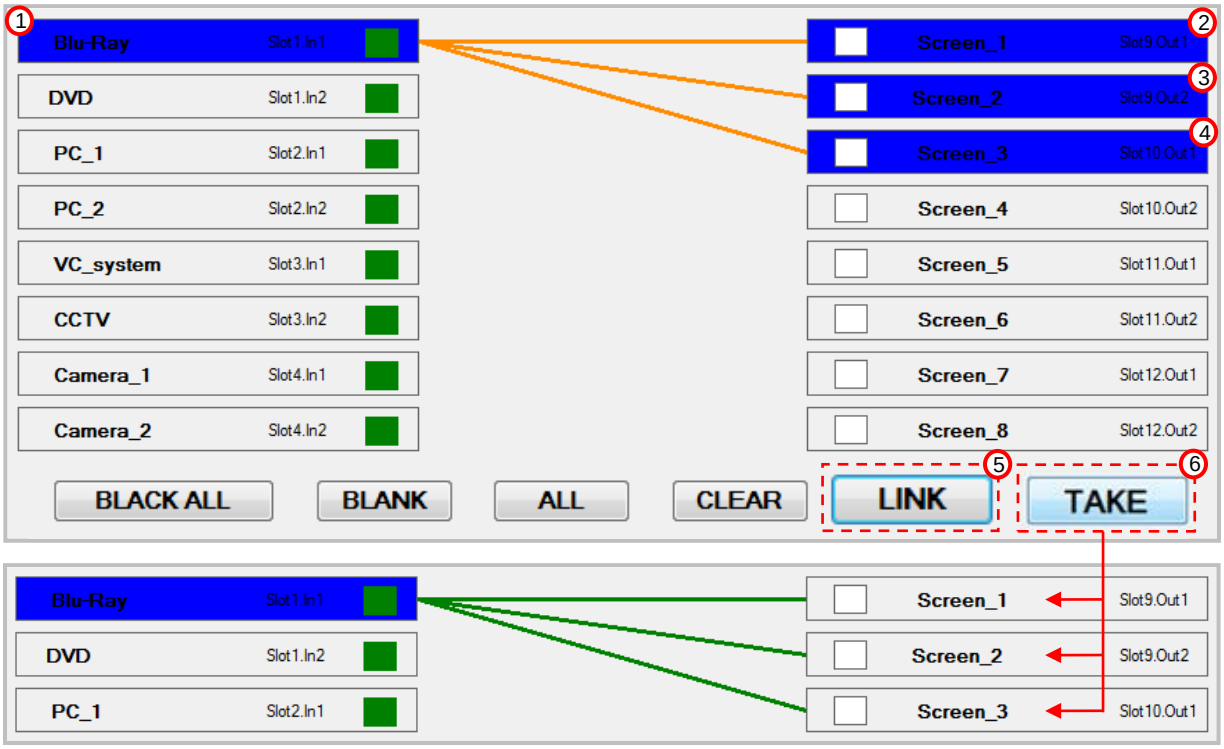
1. One-to-one

Highlight the Input and Output buttons by clicking on them. Click on the **LINK** button or right click on the Output and an orange line will link the two buttons. Click **TAKE** and a green line will replace the orange one signifying a positive connection



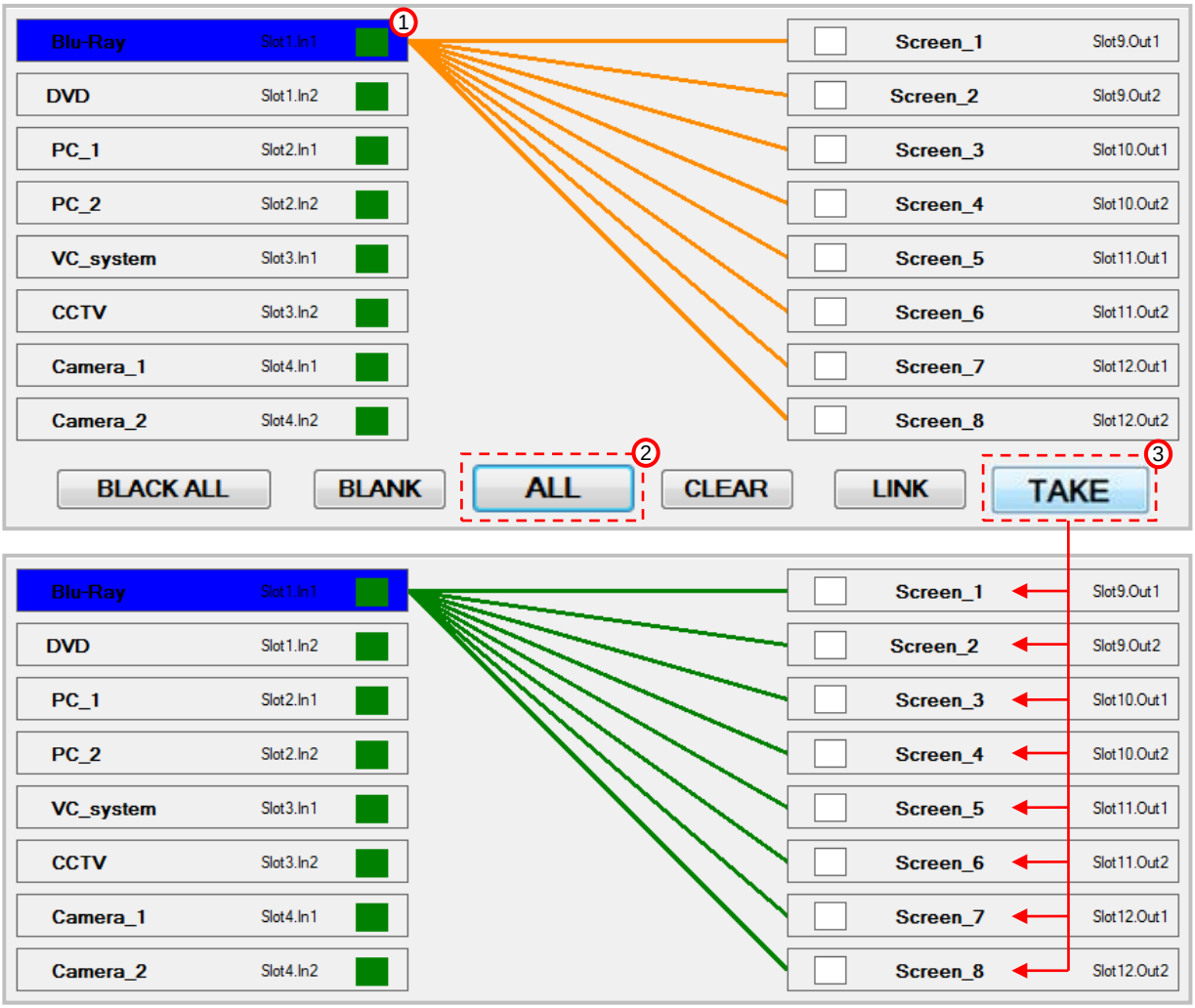
2. One-to-many

Highlight the Input and the required Output buttons by clicking on them. Click on the **LINK** button or right click on the Outputs individually and orange lines will link the Output buttons to the Input. Click **TAKE** once and green lines will replace the orange ones signifying positive connections.



3. One-to-all

Highlight the Input and click **ALL**. Orange lines will link the Output buttons to the Input. At this point the Output buttons do not highlight in blue. Click **TAKE** once and green lines will replace the orange ones signifying positive connections.



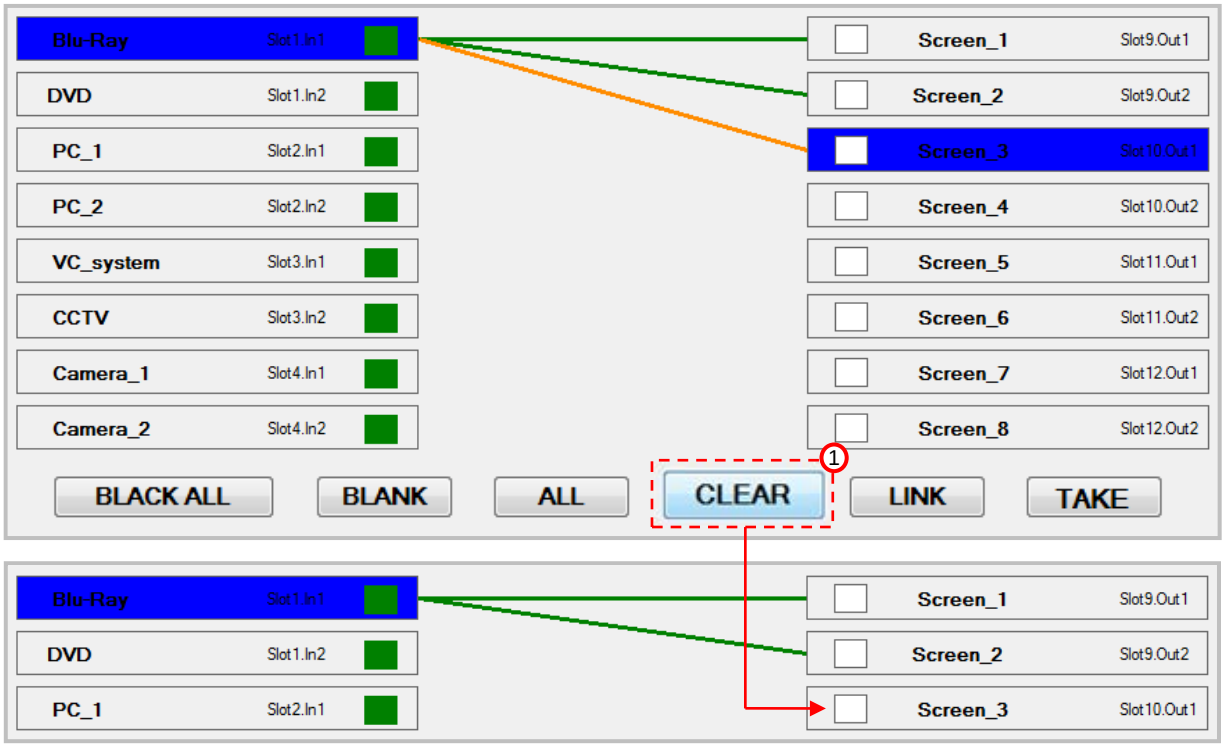
4. Mute all video outputs

Click the **BLACK ALL** button and all of the Outputs will be set to black. This can be used as simple Mute All function, the button will turn red indicating the Outputs are muted. Unlike the **BLANK** function, this does not remove the link between Input and Output, so the function can be reversed. Click the Button again, the button will turn grey and the Outputs will un-mute

***Please note**:* This feature will only work on Video signals, it does not mute the Audio.

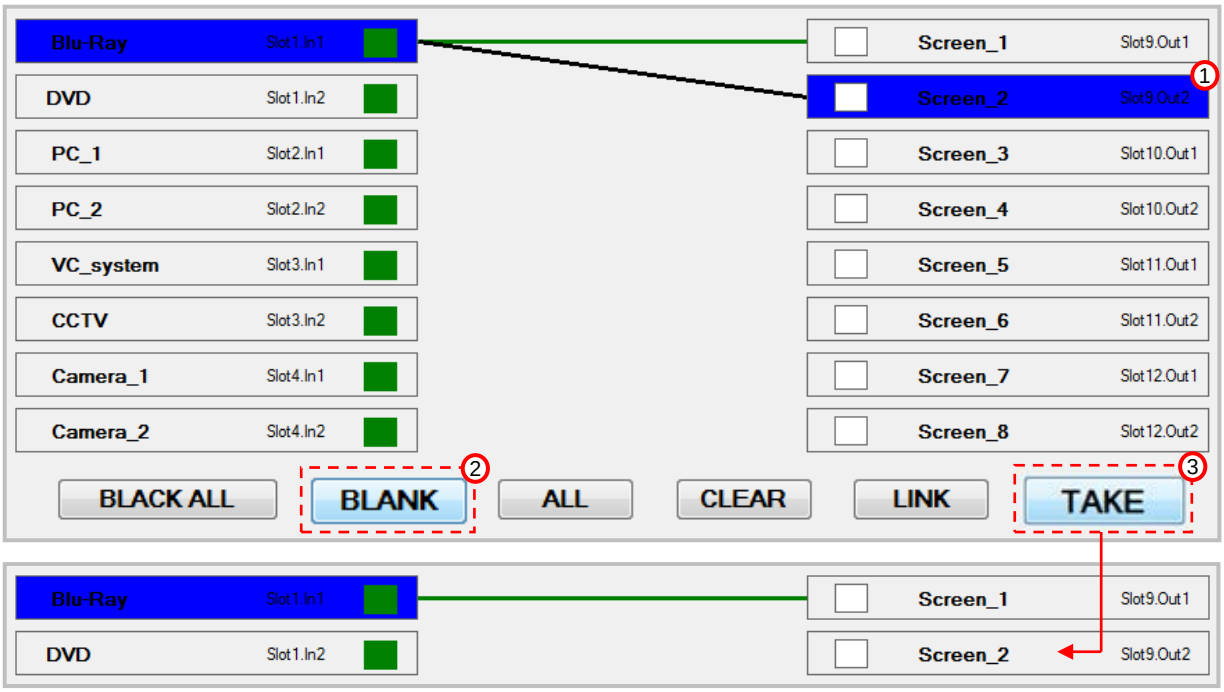
5. Clear a function

Whilst using the Matrix View to create setups it may be necessary to clear a function or remove a link before executing the command with the **TAKE** function. This can be achieved using the **CLEAR** button, this can also be viewed as a backup or undo feature. When the **CLEAR** button is clicked the last function or link is removed, **CLEAR** can also be used to remove multiple functions and links.



6. Blank an Output

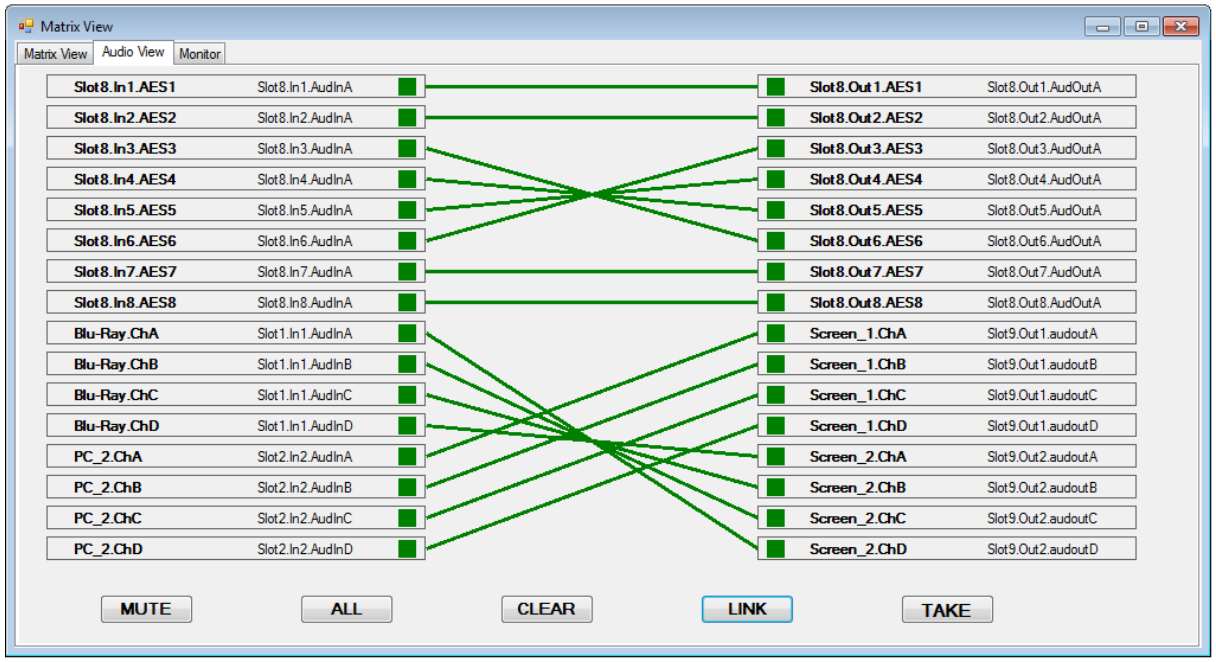
Highlight the Output to be muted, click on the **BLANK** button and the line that connects to the Input will turn black. Click the **TAKE** button and the black line will disappear, the Output button will go grey and the connection between Input and Output will be broken.



12.8 Matrix View Audio

As with the video switching the CORIOmatrix is capable of routing or switching any analogue or digital audio Inputs to any number of HDMI Outputs. It is also capable of separately routing analogue or digital Outputs via one of TVOne's compatible A2-7300 range of audio Breakout units. Like with the video routing the signals can be configured as one-to-one, one-to-many or one-to-all. Links from Inputs to Outputs can be set up, cleared or muted either in real time or setup to all happen instantaneously by first mapping the signals, then executing the command with the **TAKE** function. Audio signals can be routed and switched in several ways: as embedded streams from an HDMI input; de-embedded and routed separately and re-embedded onto any HDMI Output; separate analogue or digital signals can be embedded into an HDMI stream or routed via an A2-7300 audio Breakout unit in any order; analogue signals can be

***Please note**:* In order for audio routing to work, an Audio Module must be installed in the Matrix, it can be located in slots 5 to 16. Signals that get assigned separately to Output channels must originate from the same source and be synchronised to the same 48kHz clock.



12.8.1 Inputs and Outputs

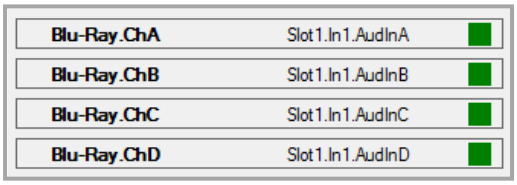
The Audio Matrix View is separated into five main elements: AES Inputs and Outputs, Inputs on the left and Outputs on the right, these represent the analogue or digital audio sources that can be routed through an A2-7300 audio Breakout unit; Embedded audio sources via HDMI or SDI; Inputs that do not have embedded audio but have had specific audio signals assigned to them; Breakaway Outputs that require separate audio channel routing to them in a specific configuration; and Monitor Module Outputs if the hardware is installed.

AES Input and Output channels

The audio module has the capability of switching 8 stereo channels. Signals can be analogue or digital and can be routed via the AES I/Os of the Audio Matrix and routed between Inputs and Outputs of an A2-7300 audio Breakout unit. Any number of Inputs can be routed or switched to any number of Outputs. Embedded signals can also be routed to AES Outputs and in turn converted into analogue stereo pairs or separated digital streams.

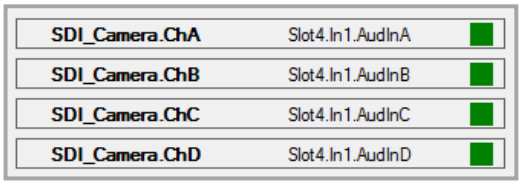
HDMI Embedded audio signals

When an HDMI source is connected to the Matrix the unit will detect this and automatically place it in the Input section of the Audio Matrix. When switching this source to an Output that has been configured as ‘Breakaway’ all four channels must be connected between Input and Output. These can be put in any order but the signals must originate from the same source. Embedded signals can also be routed to anyone or all of the AES Output channels.

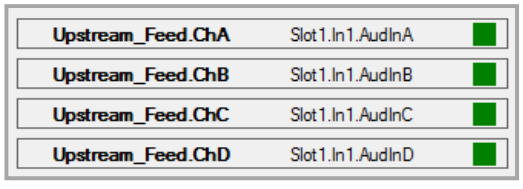


SDI Embedded audio signals

When an SDI source is connected the user should manually add this source to the Audio View via the ‘Visible in Audio Matrix’ feature which is located in the Input Settings window. When switching this source to an Output that has been configured as ‘Breakaway’ all four channels must be connected between Input and Output. These can be put in any order but the signals must originate from the same source. Embedded signals can also be routed to anyone or all of the AES Output channels.

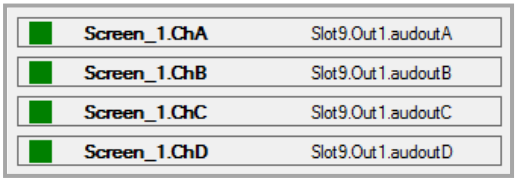


It may be necessary to view and separately pre-configure audio channel routing from a video source that does not have embedded audio i.e. (DVI connection). This may be useful for installations where there is additional switching or embedding equipment upstream from the Matrix and where the user needs to pre-link/route audio to Output channels before switching the upstream equipment.



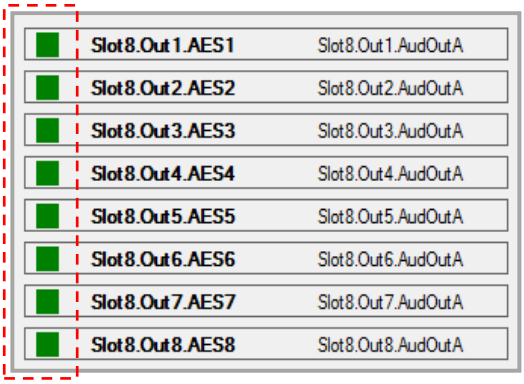
Audio Breakaway Outputs

It may be necessary to assign separate audio signals directly to an HDMI Output. This could be from an HDMI embedded audio source or from one of the AES Inputs. The four Output channels A,B,C and D must have valid signals assigned for the Output to work. These signals can be either individual channels routed one to one or a single Input channel copied across all four Output channels or a combination of both. These can be in any order but must originate from the same source.

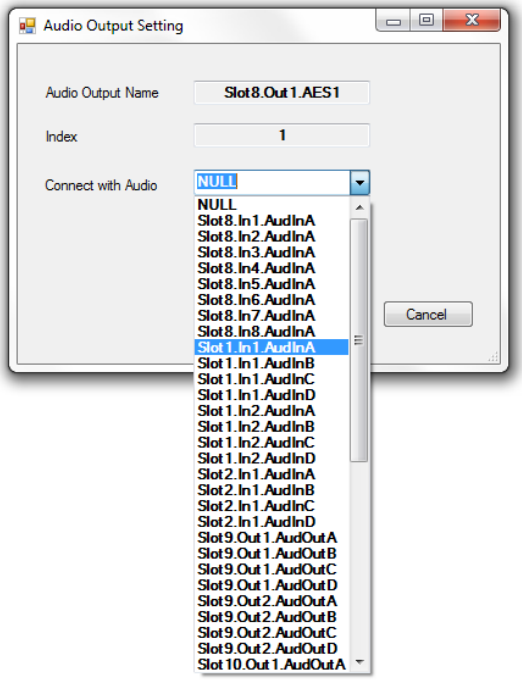


AES Output Direct Routing and Audio Slave.

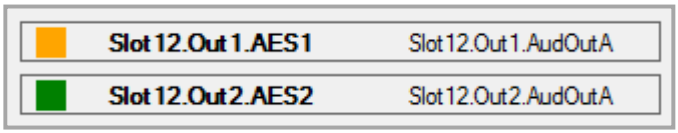
The user can directly assign separate Input channels or ‘Slave’ an Output on each AES Output channel. In the AES Output section of the Audio Matrix, click on the green square and the Audio Output Settings window will appear.



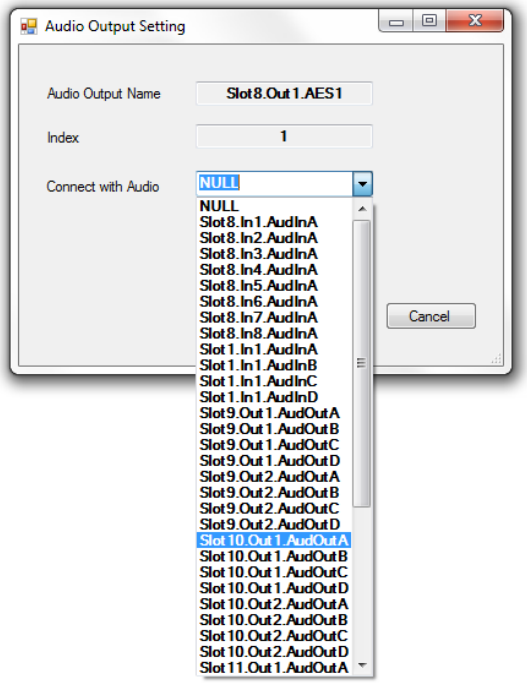
In the Audio Output Settings window the Output name and Index number will be displayed, along with a ‘Connect with Audio’ drop down menu. When selected this displays all valid audio Inputs and Output channels. By selecting an Input the user can make a direct connection to an Output rather than using the matrix, this connection is then assigned as semi-permanent and secure.



Select an Input and click on OK, the Output Settings button will turn Amber indicating that a direct connection has been made. The Output is then excluded from normal Matrix routing as it has been configured as a direct connection and secure.



By selecting an Output rather than an Input the user can create a 'Slave' of a specific channel. This may be useful for when an Output needs to be monitored or duplicated for amplification.



To return the Output to normal Matrix routing the user should select **NULL** from the drop down list then click on **OK**. This will change the button back to green and the Output will be selectable again in the Audio Matrix

12.8.2 Audio Signal Routing Methods

Signal routing can be controlled in four distinct ways and are all reflected in the Matrix View window as visual feedback. Methods include:

- **AES Output Settings window** – Individually select an Input to connect to an AES Output as covered earlier in this document.
- **Remotely** – Using functions from the list of serial commands via Ethernet or RS232 from a 3rd party control system.
- **Command Line Interface** – Entering command strings direct to the unit from the CORIOmatrix software. This will be covered later in this document.
- **Matrix Audio View** – Using the CORIOmatrix software GUI via mouse, stylus or touchscreen.

The following section will cover routing and switching Audio signals using the CORIOmatrix Audio View GUI. This will include the use of the five command buttons: **MUTE** (remove signal); **ALL** (all outputs); **CLEAR** (clear last function); **LINK** (join) and **TAKE** (execute) located below the Input/Output buttons.
***Please note**:* To select an Input or Output you must click on the main body of the button as clicking the coloured or white square will open the Settings page. Selected buttons are highlighted blue, clicking a button a second time will deselect it and will revert to grey.
The use of the term **Link** refers to a non-finalised or executed connection from an Input.
The use of the term **AES** refers to Analogue or Digital sources that are connected via an A2-7300 Audio Breakout unit.

Audio Routing Configurations

This section will outline the different ways of managing or routing Audio signals through the Matrix, this will include:

1. **One Input to All Outputs (broadcast)** – Broadcast any Input to all available Outputs in all formats.

2. **AES Inputs to AES Outputs** – Route Analogue or Digital Inputs to Outputs on an A2-7300 Breakout unit.

3. **HDMI Input to AES Output** – De-embed and route an HDMI Audio Input to an AES Output

4. **HDMI Input to HDMI Breakaway** – De-embed and Route an HDMI Audio Input to and embed it onto an HDMI Breakaway Output

5. **AES Input to HDMI Breakaway** - Route an AES Input and embed it onto an HDMI Breakaway Output.

6. **SDI Input to AES Output** - De-embed and route an SDI Audio Input to an AES Output

7. **SDI Input to HDMI Breakaway** – De-embed and Route an SDI Audio Input to and embed it onto an HDMI Breakaway Output

8. **Audio Follow Video (AFV)** - The Output will embed the audio that has been assigned to or embedded on the Input source.

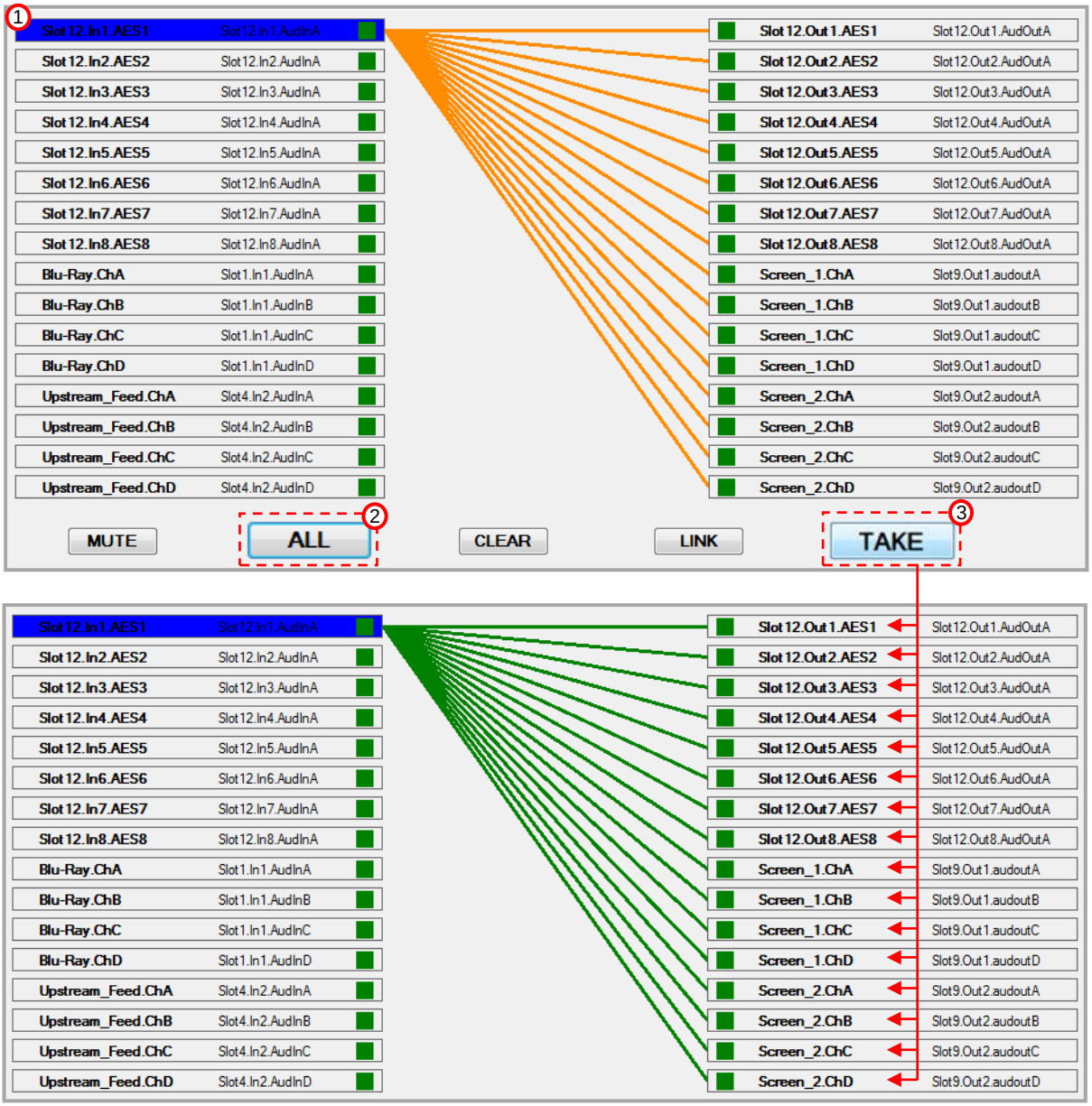
9. **AFV Output (Slave) via Audio Module** – Assign (Slave) an AES channel of the Audio Module to de-embed the audio of an Output set to AFV.

10. **Mute Outputs** – Clear the connections between Inputs and Outputs.

11. **Headphone Monitoring** – Selecting a specific Input or Output channel to monitor via headphones

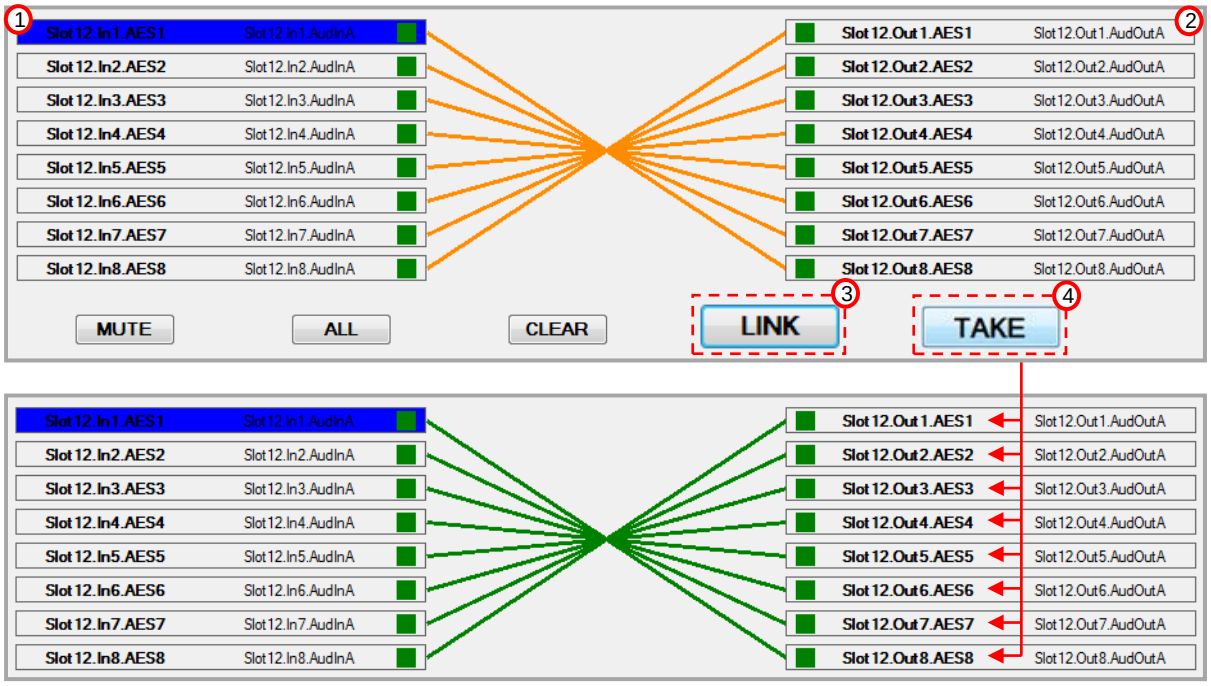
1. One Input to All Outputs (broadcast) -

In the Audio View tab click on the Input and the button will highlight blue. Click **ALL** and orange lines will link the Output buttons to that Input. At this point the Output buttons do not highlight in blue. Click **TAKE** once and green lines will replace the orange ones signifying positive connections.



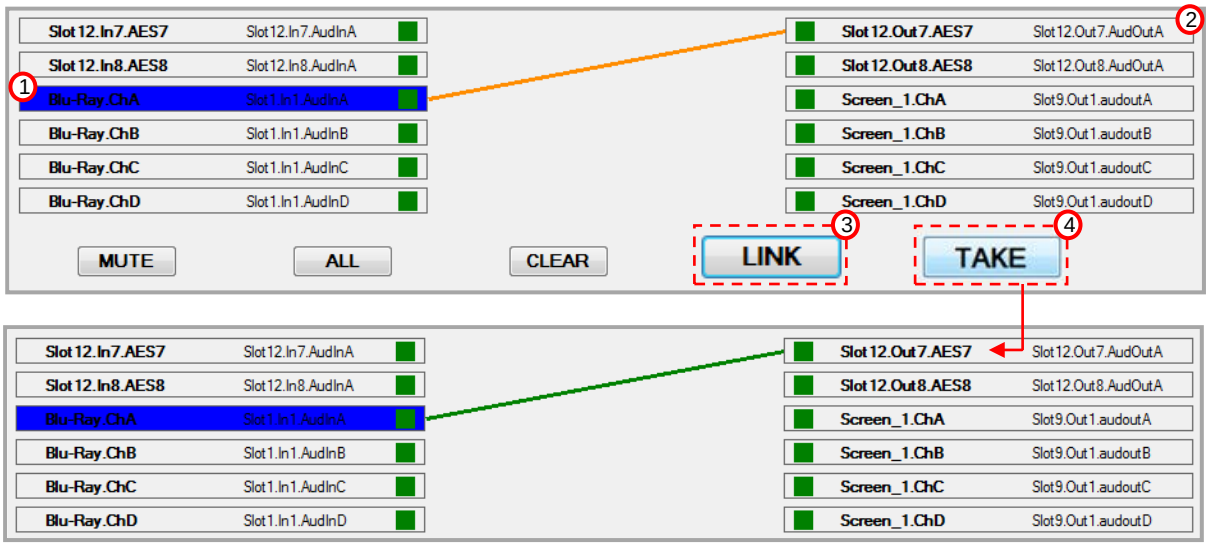
2. AES Inputs to AES Outputs -

In the Audio View tab click on the button of the AES Input to be routed. This button represents the source, either analogue or digital that is connected to the Input of the A2-7300 Audio Breakout unit. The button will then be highlighted blue. Click on any number of AES Outputs, these will also highlight blue marking them as selected. Click the **LINK** button and orange lines will link the Output buttons to that Input. Repeat this as many times as is required. Click **TAKE** once and green lines will replace the orange ones signifying positive connections. Now whatever source that is connected, analogue or digital will be routed to the Output/s of the A2-7300 Audio Breakout unit.



3. HDMI Input to AES Output -

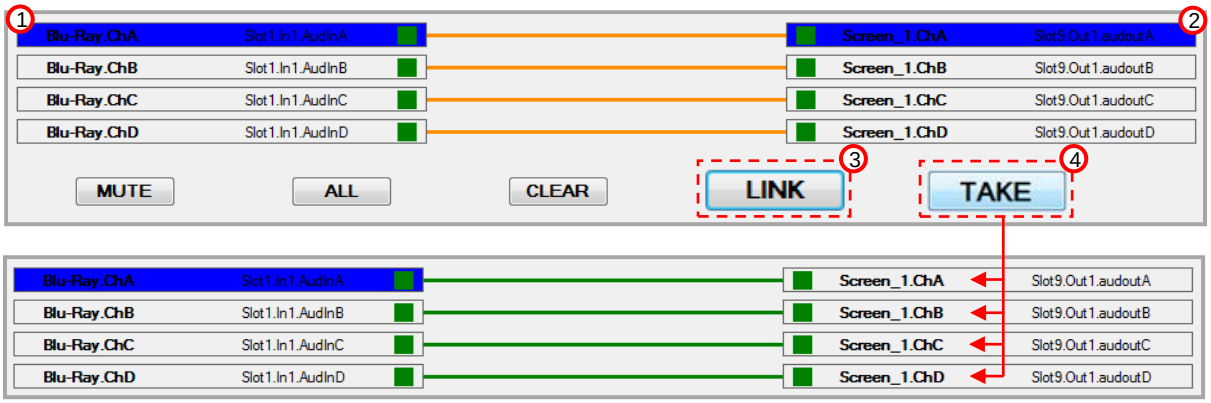
In the Audio View tab click on the button of the HDMI Input to be routed, the button will then be highlighted blue. Click on any number of AES Outputs, these will also highlight blue marking them as selected. Click the **LINK** button and an orange line will link the Output button to that Input. Repeat this as many times as is required. Click **TAKE** and a green line will replace the orange one signifying a positive connection has been made. The HDMI audio will now be de-embedded and routed to the Output/s of the A2-7300 Audio Breakout unit.



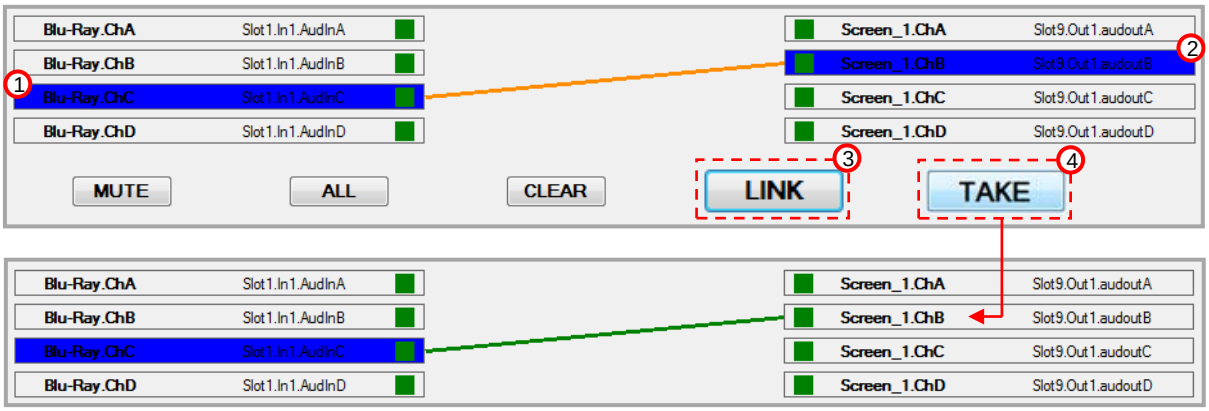
4. HDMI Input to HDMI Breakaway -

In order for a Breakaway HDMI Output to function correctly, all four stereo channels on that Output must have a clock reference in order to work. These channels must be from the same source but can be put in any order. There are two ways of routing HDMI channels: in groups of four where the channels stay in order: or individually where the channels can be separately routed and or duplicated to any number of Output channels. When switching in Groups Input channels will be routed in order 'A', 'B', 'C' and 'D' to their corresponding Output group i.e. 'A' to 'A', 'B' to 'B', 'C' to 'C' etc. When routing individually any combination of connection can be made but the Output must have all four channels assigned and they must originate from the same source.

To link channels in groups: In the Audio View tab click on one of the four channel buttons of the HDMI Input to be routed, this could be any one of the four stereo channels of that Input. The button will then be highlighted blue. Click on the corresponding Output channel that matches the highlighted Input i.e. 'A' and 'A', this will also highlight blue marking it as selected. Click the **LINK** button and all four Input channels will be assigned in order to the four Output channels. Orange lines will link the Output buttons to that Input. Click **TAKE** once and green lines will replace the orange ones signifying positive connections. The HDMI stereo Input channels will now be present on the four corresponding Output channels of the Breakaway HDMI Output.

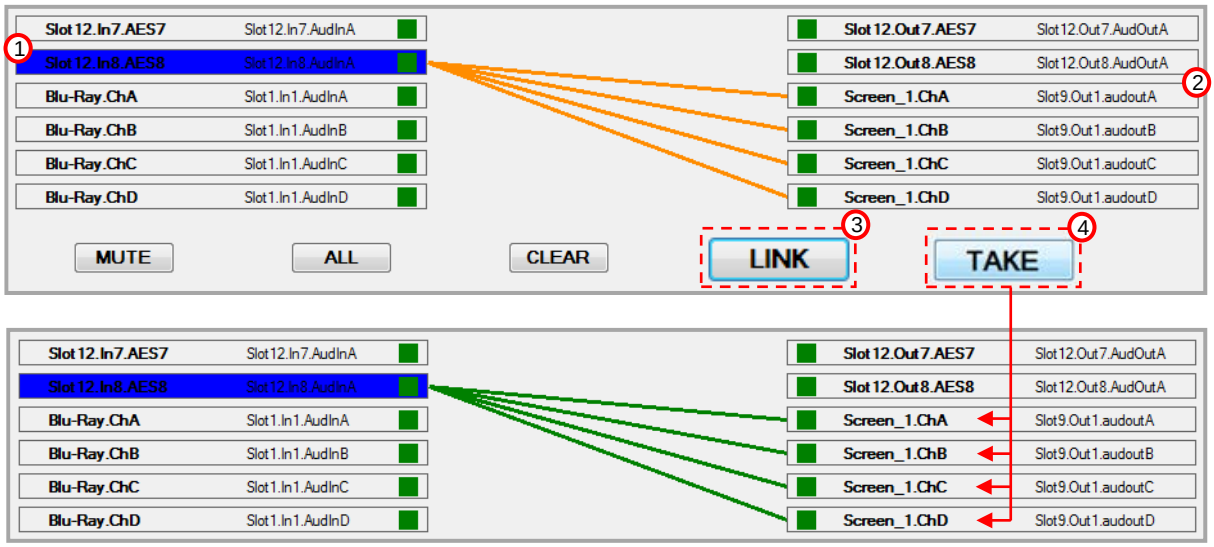


To link individual channels: In the Audio View tab click on one of the four channel buttons of the HDMI Input to be routed, this could be any one of the four stereo channels of that Input. The button will then be highlighted blue. Click on any HDMI Breakaway Output channel, this could be a channel that does not match the Input channel i.e. 'AudInA' to 'AudOutC', this will also highlight blue marking it as selected. Click the **LINK** button and an orange line will link the Output button to that Input. Click **TAKE** and a green line will replace the orange one signifying a positive connection has been made. The HDMI stereo Input channels will now be present on the selected Output channels of the Breakaway HDMI Output.



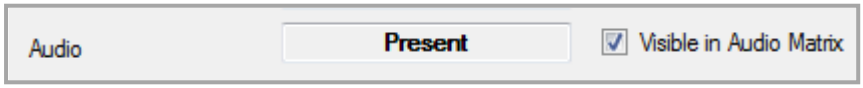
5. AES Input to HDMI Breakaway -

In the Audio View tab click on the button of the AES Input to be routed, the button will then be highlighted blue. Click on any of the channels on the HDMI Breakaway Output. which this will also highlight blue marking them as selected. Click the **LINK** button and the AES Input will be duplicated across all four Output channels and orange lines will link that Input to the Outputs. Click **TAKE** and green lines will replace the orange ones signifying positive connections have been made. The audio sources that are connected to the A2-7300 Audio Breakout unit will now be embedded on the HDMI Breakaway Output.

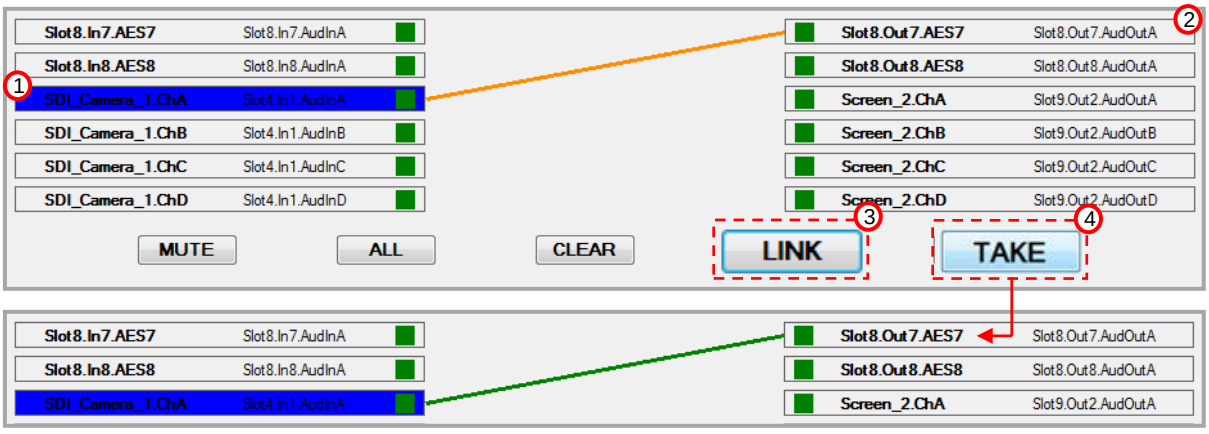


6. SDI Input to AES Output –

SDI sources should be made manually added to the Audio View Matrix using the 'Visible in Audio Matrix' function in the Input Settings window of the Matrix View Tab.



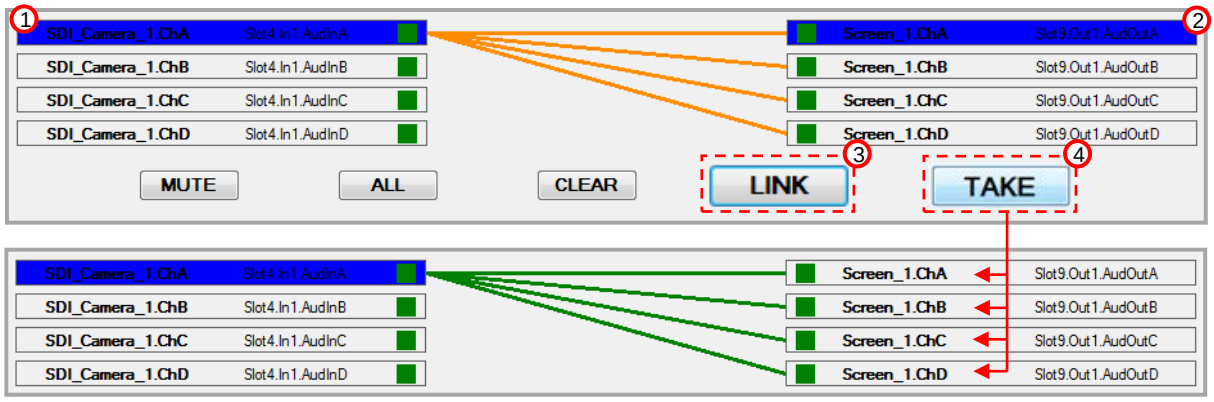
In the Audio View tab click on the button of the SDI Input to be routed, the button will then be highlighted blue. Click on any number of AES Outputs, these will also highlight blue marking them as selected. Click the **LINK** button and an orange line will link the Output button to that Input. Repeat this as many times as is required. Click **TAKE** and a green line will replace the orange one signifying a positive connection has been made. The SDI audio will now be de-embedded and routed to the Output/s of the A2-7300 Audio Breakout unit.



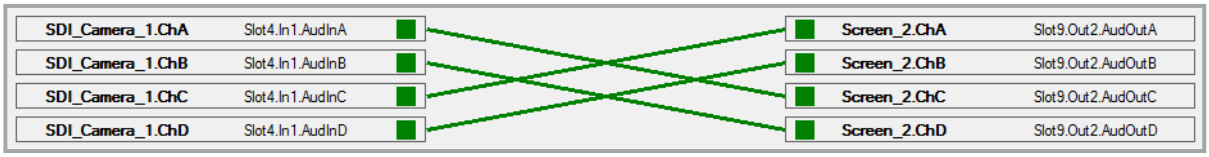
7. SDI Input to HDMI Breakaway –
SDI sources should be made manually added to the Audio View Matrix using the 'Visible in Audio Matrix' function in the Input Settings window of the Matrix View Tab.

In order for a Breakaway HDMI Output to function correctly, all four stereo channels on that Output must have the same clock reference in order to work. These channels must be from the same source but can be put in any order. There are two ways of routing SDI Audio: in a group where channel 'A' is duplicated across all four Output channels; or individually where the channels can be separately routed and or duplicated to any number of Output channels. Group switching should be used when there is only a single stereo channel present on the Input. Channel 'A' will be routed to an Output in a group i.e. 'A' to 'A', 'A' to 'B', 'A' to 'C' etc. This will maintain a clock reference on all four Output channels. When routing individually any combination of connection can be made but the Output must have all four channels assigned and they must originate from the same source.

To link channels in a group: In the Audio View tab click on channel 'A' button of the SDI Input to be routed. The button will then be highlighted blue. Click on the corresponding Output channel that matches the highlighted Input i.e. 'AudInA' to 'AudOutA', this will also highlight blue marking it as selected. Click the **LINK** button and channel 'A' will be assigned to all four Output channels. Orange lines will link the Output buttons to that Input. Click **TAKE** once and green lines will replace the orange ones signifying positive connections. The SDI stereo Input channel will now be present on the four Output channels of the Breakaway HDMI Output.



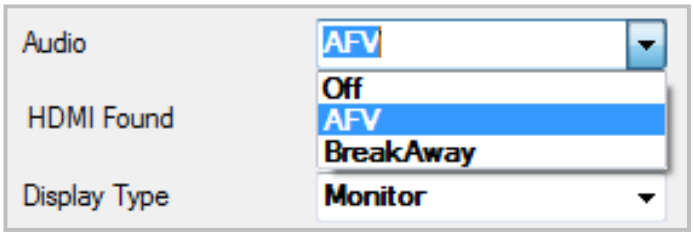
To link individual channels: In the Audio View tab click on one of the four channel buttons of the SDI Input to be routed, this could be any one of the four stereo channels of that Input. The button will then be highlighted blue. Click on any HDMI Breakaway Output channel, this could be a channel that does not match the Input channel i.e. 'AudInA' to 'AudOutC' , this will also highlight blue marking it as selected. Click the **LINK** button and an orange line will link the Output button to that Input. Click **TAKE** and a green line will replace the orange one signifying a positive connection has been made. The SDI stereo Input channels will now be present on the selected Output channels of the Breakaway HDMI Output.



8. Audio Follow Video (AFV) -

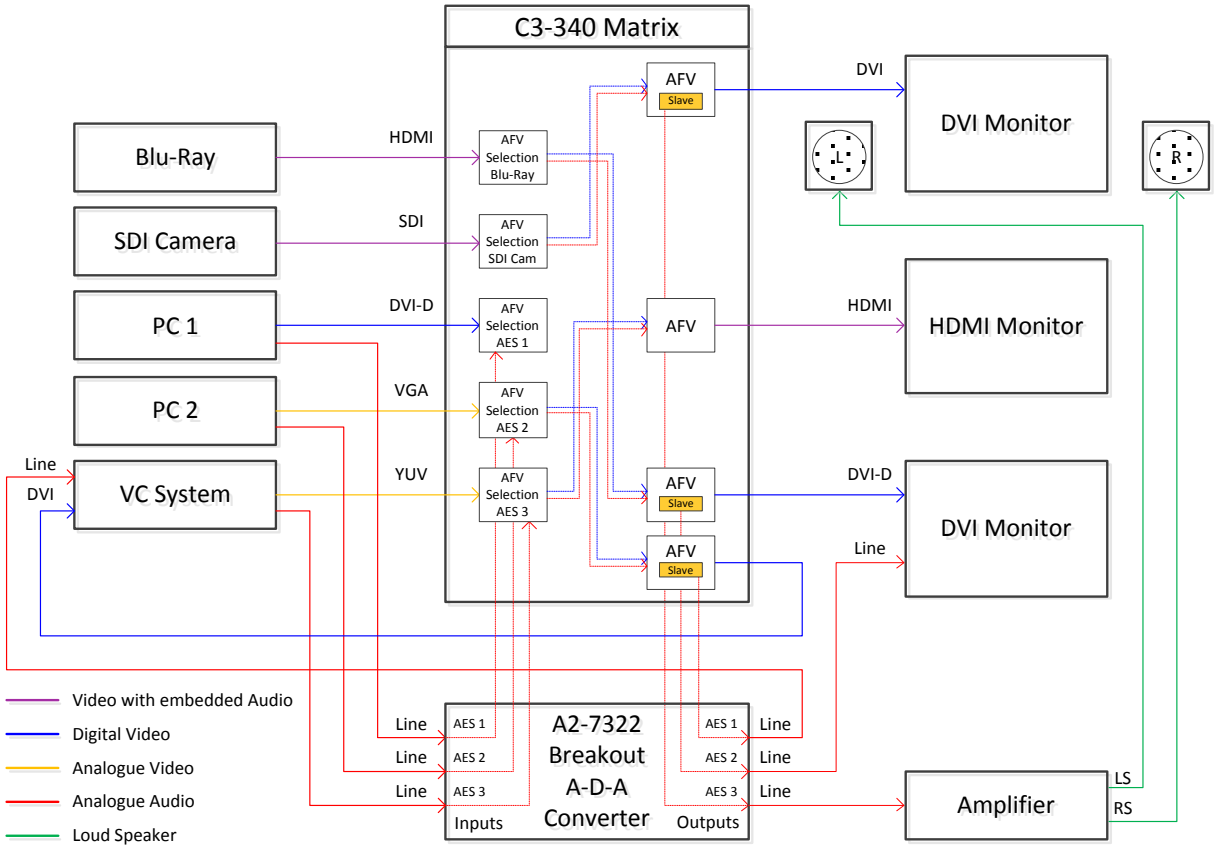
In the Matrix View (Video) tab click on the Output Settings button of the Output that needs to be set to AFV.

Click on the **Audio** drop down tab and select **AFV**. The Audio that has been assigned to or embedded on a Video Input stream will now be present on that Output and will change when switching to another Input.

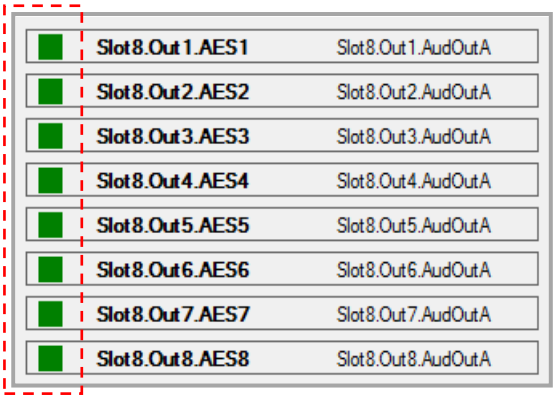


9. AFV Output (Slave) via AES Audio Module -

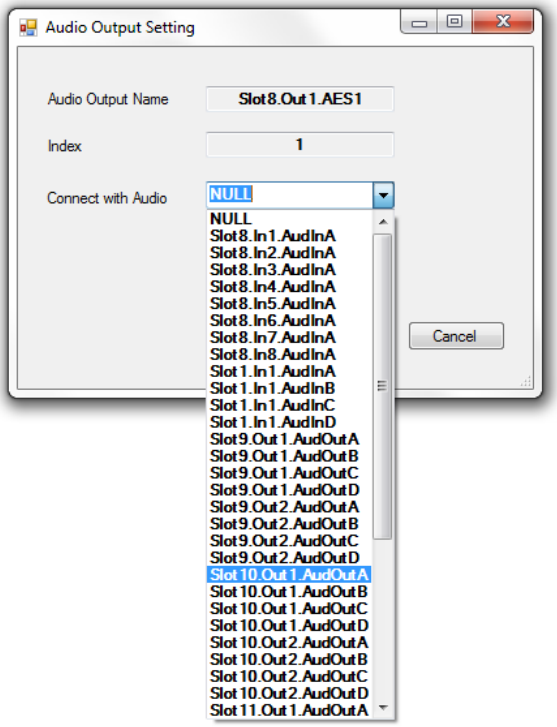
The User can de-embed the Audio that is present on a specific Output that has been set to AFV. This is particularly useful for when using monitors or systems that do not support HDMI embedded Audio streams i.e. DVI or analogue Video. This can be done via the Audio Module used in conjunction with one of TV One's A2-7000 Audio breakout units. This can be either presented as an AES digital stream or converted into an analogue feed that can then be used for distribution or amplification.



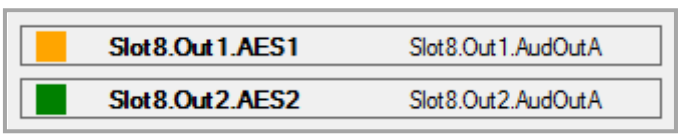
The user can assign or ‘Slave’ any AES Output channel to de-embed the Audio from any Output set to AFV. In the AES Output section of the Audio Matrix, click on the green square and the Audio Output Settings window will appear.



In the Audio Output Settings window click on the ‘Connect with Audio’ drop down menu. This displays all valid audio Input and Output channels.

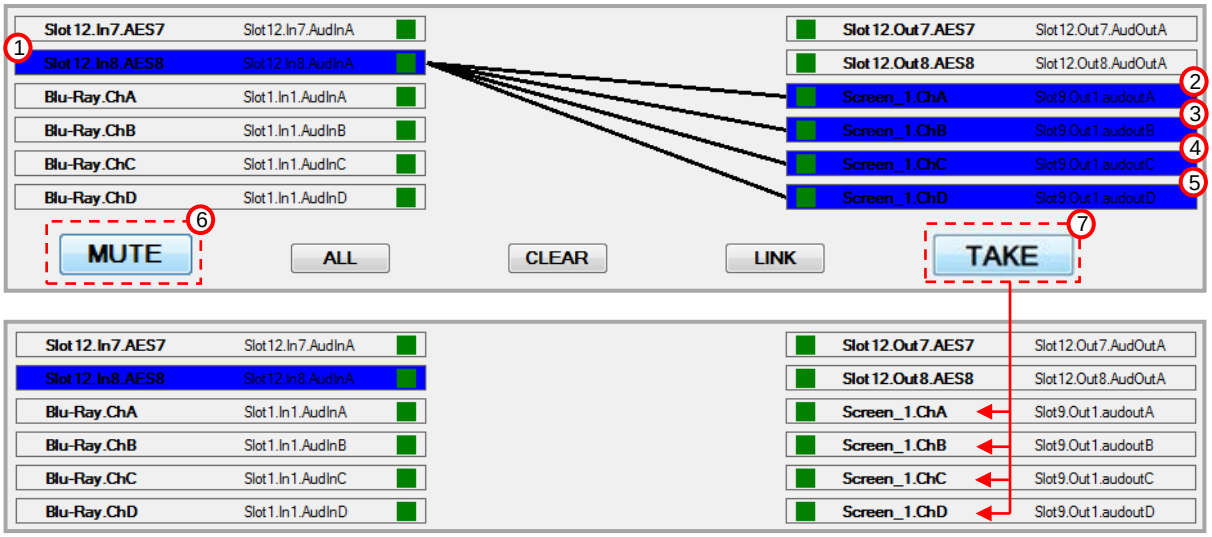


Select the Output that has been previously set to AFV and click on OK. The Output Settings window will disappear and the button will turn Amber, indicating that a direct connection has been made. The Output is then excluded from normal Matrix routing as it has been configured as a direct connection and secure.



10. Mute Outputs -

In the Audio View tab click on the button of the Outputs to be muted, the buttons will then be highlighted blue. Click the **MUTE** button and the green connection lines will turn black. Click on the **TAKE** button and the lines will be removed signifying the connection between Inputs and Outputs are removed.



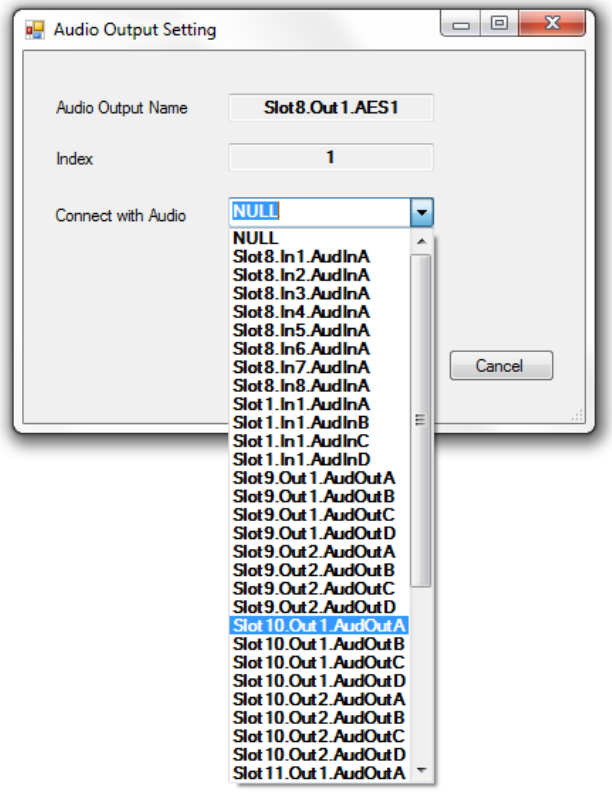
11. Headphone Monitoring –

The Audio Module also has a 3.5mm stereo audio jack which allows the user to connect a pair of headphones to monitor Audio routed within the Matrix. This is permanently locked and paralleled to AES Output 1 of the Audio Module, so whatever signal is routed to that Output can be monitored via headphones. The user can monitor specific Input or Output Audio signals that have been linked or 'Slaved' to AES Output.

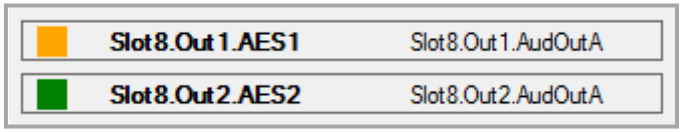
***Please note**:* In this version of firmware there is no volume/gain control for the headphones so caution should be used when routing signals of with different gain levels. It is not possible to monitor any AES output other than AES Output 1.

In the AES Output section of the Audio Matrix, click on the green square of AES1and the Audio Output Settings window will appear.

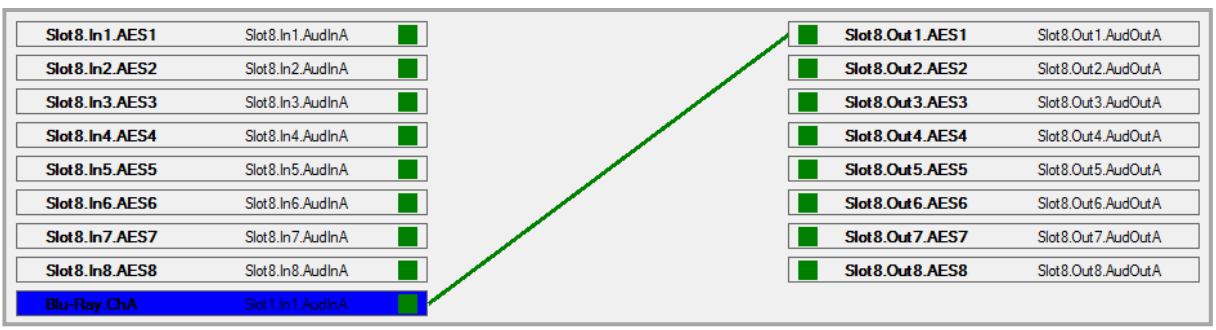
In the Audio Output Settings window click on the ‘Connect with Audio’ drop down menu. This displays all valid audio Input and Output channels.



To monitor an Output - Select the Output to be monitored and click on OK. The AES Output Settings window will disappear and the button will turn Amber, indicating that a direct connection has been made. The selected Output will now be present on AES1 and will remain assigned until deselected using ‘NULL’. AES1 is then excluded from normal Matrix routing as it has been configured as a direct connection and secure.

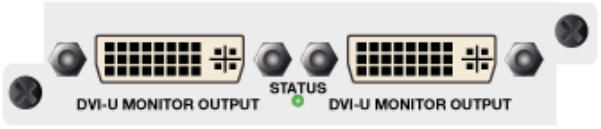


To monitor an Input - Select the Input to be monitored and click on OK. The AES Output Settings window will disappear and a green line will link the selected Input to AES1, indicating that a direct connection has been made. The selected Output will now be present on AES1.



12.9 Monitor View

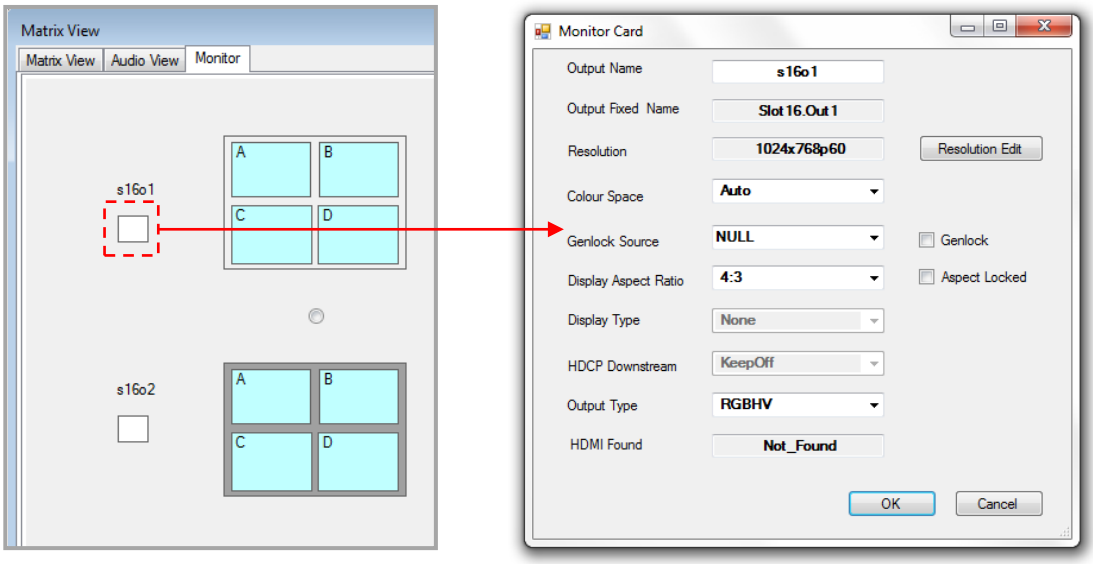
A Monitor module can be installed which has two DVI-U outputs, this enables the Matrix to display all the Input and Output signals on one or two connected devices. This allows the user to display a combination of Input and Output signals represented as thumbnail images on a pre-configured layout.



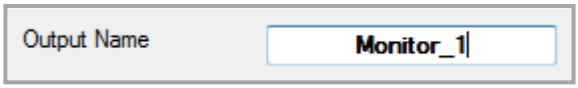
The thumbnails are low resolution which reduces impact on the system infrastructure. Sampled at 224 x 128 they are designed to give a representation of the Input and Output signals and are not a true reflection of Aspect Ratio and Resolution. However, the Matrix will automatically adjust the thumbnails according to what configuration changes have been implemented.
The thumbnails are laid out in a Multiviewer configuration, allowing the user to monitor incoming signals from connected sources and monitor what signal is connected to each Output. This comprises of a number of pre-defined thumbnail layouts which the user can configure depending on how they choose to view the signals. The thumbnail layouts known as 'Views' can be either displayed together as a single layout over both DVI-U Outputs, i.e. Input signals on one and Output signals on the other, or as a single layout duplicated on both Outputs. The system allows the user to be flexible with how the setup is laid out and the number of thumbnails within each View but there are restrictions on how Thumbnail Views are combined within a single layout. This is to reduce irregular or incorrect Aspect Ratios.

12.9.1 Monitor Output Settings

The user can configure the Output of the Monitor module in the same way as the DVI-U Output scaling module: Output name (Alias) can be set making it possible to give the Outputs logical names; Output resolutions can be set to suite the display device; Colour Space can be set to change between RGB, YUV and Auto; the Output can be Genlocked to an Input; the Output Aspect Ratio can be set; The Output type can be set to RGBHV (analogue and digital) RGBS, RGsB and YUV. Click on the square Output button, this will open the Monitor Output Settings window.

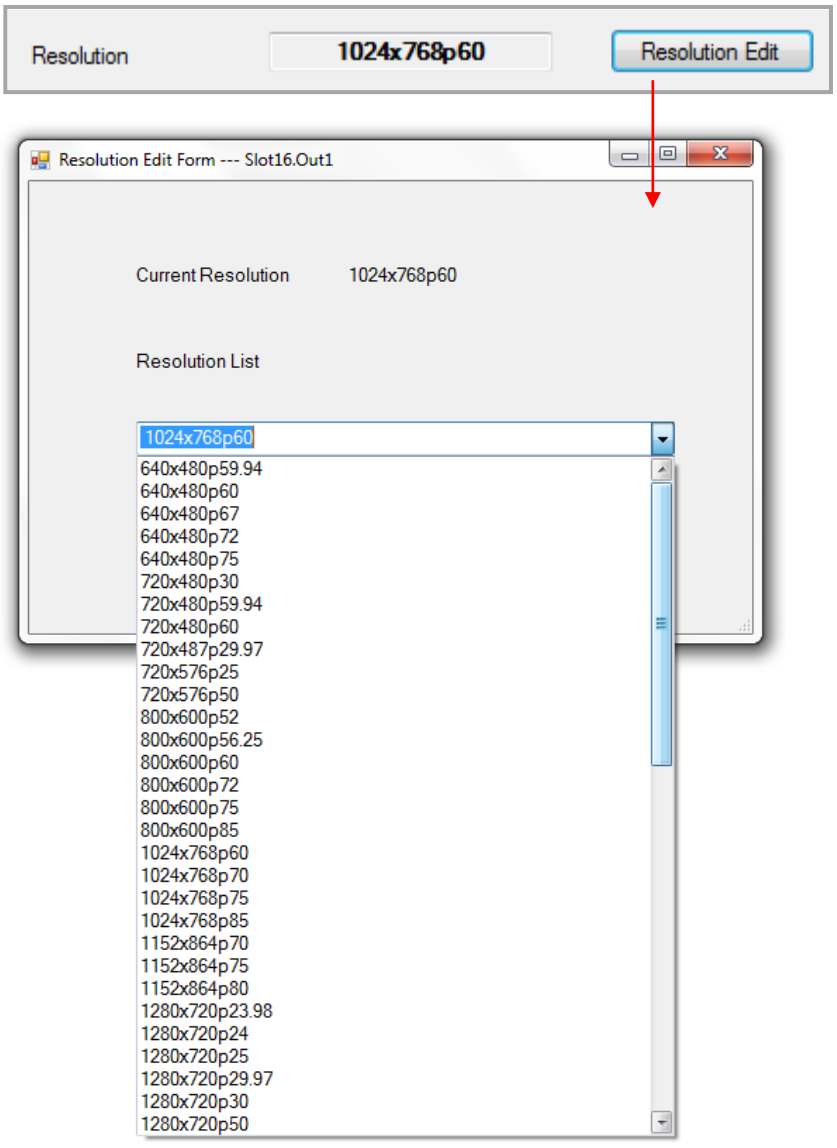


Output Name – As with the Input and Output modules it is possible to change the name of the Output on the Monitor module to something that is easily recognisable or more logical such as ‘Inputs’ and ‘Outputs’, these are known as ‘Aliases’.
***Please note**:* Aliases should not start with a number or contain characters, gaps between words should be filled with an underscore (_).

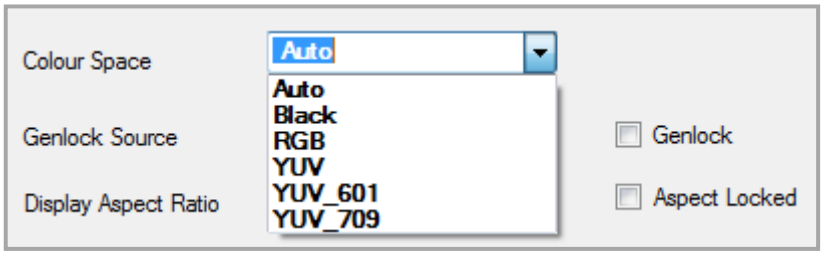


Output Fixed Name – This is the name allocated by the unit that describes its Slot and Output position.

Resolution Edit - This gives the user the ability to change the resolution of a specific Monitor Output to match the display device. Click on the ‘Resolution Edit’ button, the Resolution Edit window will appear, click the drop down menu arrow and select the required resolution. Press ‘**Apply**’ then ‘**OK**’. Applying resolution changes may take several seconds.
***Please note**:* It is not possible to set the Monitor module Output resolution to PAL or NTSC as neither CV nor YC can be configured.

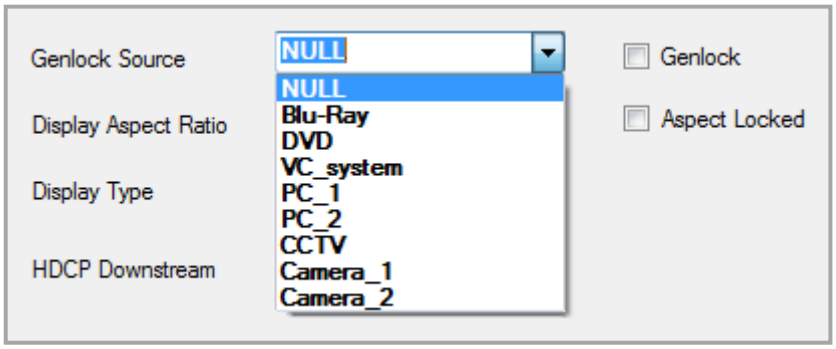


Colour Space - This allows the user to change the Colour Space of the outgoing signal. The options are: '**Auto**' the Matrix will select the best 'RGB' or 'YUV' Colour Space to use for any Output type: '**Black**' the Output is set to full black (Mute); '**RGB**' this forces the Matrix to select RGB; **YUV** this forces the Matrix to automatically select the best 'YUV' Colour Space 601(SD) or 709(HD); '**YUV_601/709**' forces the Output to a specific Colour Space setting. The default setting is 'Auto'
***Please note**:* This changes the Colour Space and does not affect the configured 'Output Type'



Genlock - This allows the user to synchronise the Monitor Outputs to a selected Input.
***Please note**:* Output Resolution and framerate must exactly match the Input settings for Genlocking to work correctly, settings are automatically adjusted when Genlock is set. The Default setting for Genlock is off and the Genlock Source set to **NULL**.

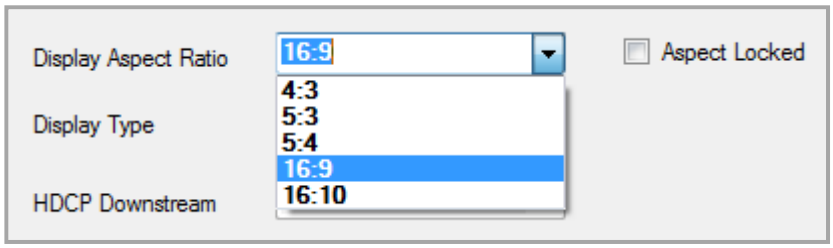
Genlock Source - This is a full list of Input modules represented by their slot allocation number. It is not dynamically populated so may not have active or valid sources plugged in to each displayed Input. The user should select an Input that is known to be valid, if an invalid source is selected a popup window will appear advising the user.



Click on the '**Genlock**' check box to lock the dropdown menu. The menu will grey out.

Click on '**OK**' at the bottom of the Output Settings window. A popup window will appear warning the user that the Output resolution will be automatically set to match the selected Input, the resolution will be displayed in the popup. Click on '**OK**' to confirm, the popup will disappear and 'Please wait…' will be displayed on the Output Settings window. The '**OK**' button is greyed out until the Genlock settings have been fully implemented.

Display Aspect Ratio - This allows the user to change the Aspect Ratio of the outgoing signal on the Output of Monitor module. Click on the dropdown menu and select the required Aspect Ratio. Click on '**OK**' at the bottom of the Output Settings window and the new Aspect Ratio will be implemented.



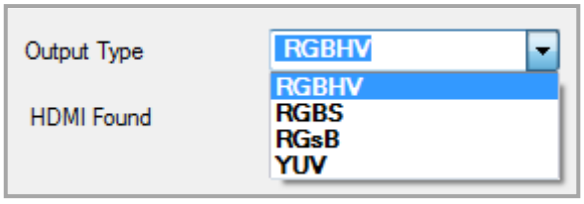
Aspect Locked – Because set resolutions change the way the Video signals are handled, this feature allows the user to lock the Aspect Ratio irrespective of the Output resolution that has been set.

Display Type - This feature is disabled in this version of Firmware.

HDCP Downstream - This feature is disabled in this version of Firmware.

Output Type – This feature allows the user to change the connectivity configuration of the DVI-U Output. Because DVI-U has the capability of supporting different connection formats, the Monitor module utilises different pin configurations to match the display devices physical connectivity and sync. It is important to select the correct configuration to match the display device as improper connectivity may lead to loss of video. The options are RGBHV (analogue and digital), RGBS, RGsB and YUV.
***Please note**:* It is not possible to set the DVI-U Output of the Monitor module to CV or YC.

The default Output Type is '**RGBHV**'. In this mode it will work with DVI-D, DVI-A, HDMI and analogue RGB\VGA signals.



In some HDMI systems YUV Colour Space is required, the user should click on the drop down menu, select '**YUV**' then press '**OK**' on the Output Settings window. This will also set the activate analogue YUV for YPbPr applications.

HDMI Found – '**Found**' is shown when an HDMI display has been connected and acknowledged, '**Not_Found**' is shown when the display is disconnected or not compatible. This may be particularly useful when troubleshooting a system setup where the display device is remote to the C3-340 via signal transmission equipment

12.9.2 Configuring the Monitor Layouts

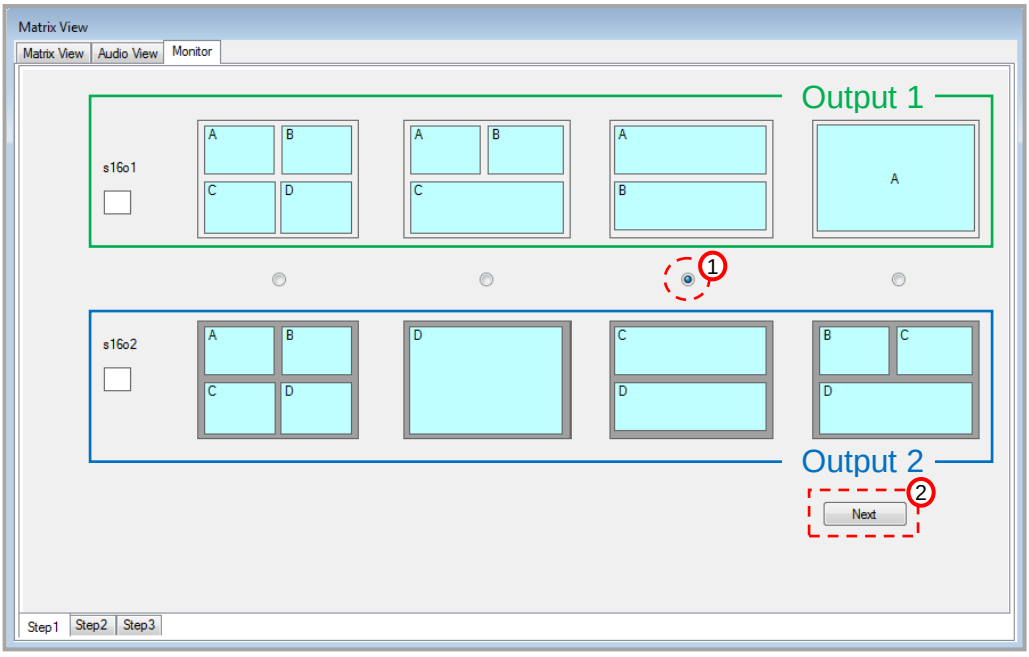
This section will cover how to set up the Monitor Module with regards to how the images are laid out on screen using the CORIOmatrix Monitor GUI. This will include: deciding how the two physical Outputs will function together; how many thumbnails to use; and what signals will be viewed in each thumbnail.
There are three 'Steps' to setting up the Monitor Module, each Step will guide the user through creating a layout which best suits their needs.
***Please note**:* It is possible jump between 'Steps' to edit layouts but each must be followed sequentially for changes to be implemented as the design of each Step impacts on the overall functionality. There is a '**Next**' button on the first two steps and a '**Take**' after the third, these should be used to correctly design the overall layout.

- **Step 1 (View Layout)** – This allows the user to design the way the Monitor Outputs will function, how the groups of thumbnails (Views) are displayed on each screen, , and how the two Monitor Outputs will function together.

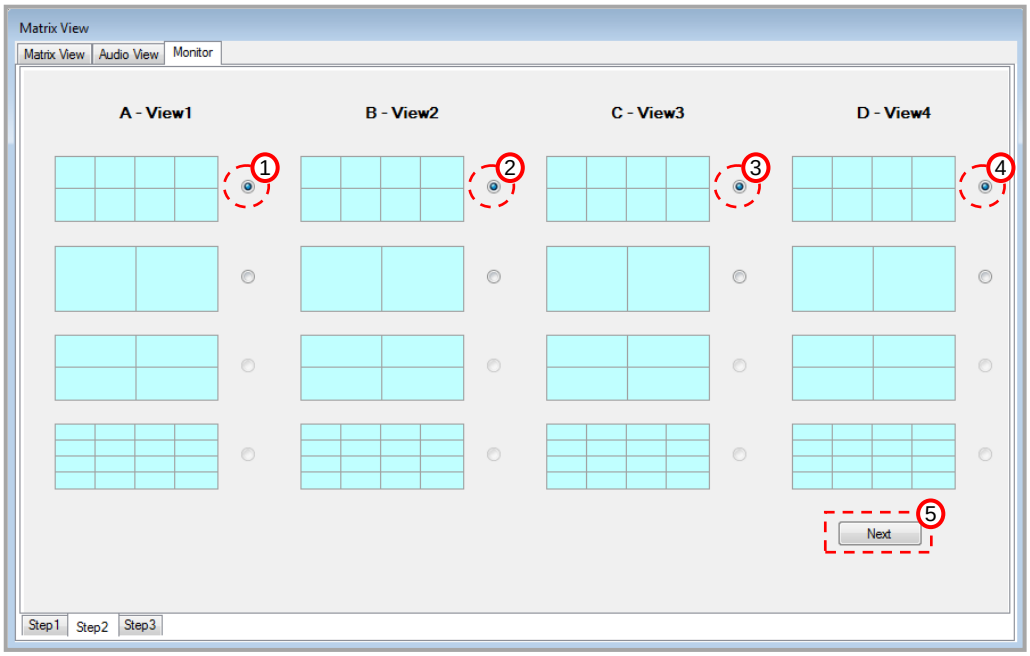
- **Step 2 (Thumbnail View)** – This allows the user to design the way the thumbnails are grouped together and displayed as a 'View'. This dictates the number of thumbnails that make up the overall layout.

- **Step 3 (Thumbnail Allocation)** – This allows the user to decide what Input or Output is represented in each thumbnail.

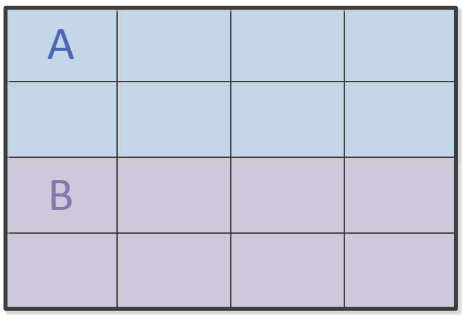
Step One (View Layout) – This tab is separated into two rows of boxes, each box represents a layout. Each row symbolizes the possible layouts for each of the two Outputs of the Monitor module. The top row for Output 1 and the bottom row for Output 2. Each layout comprises of one, two, three or four windows known as 'Views' marked as '**A**', '**B**', '**C**' or '**D**'. Each View represents a group of thumbnails and will dictate how the overall layout will function. The user can decide how the layout for each Output will work by clicking on the check box adjacent to the required layout design (see below). Click the '**Next**' button to move onto the next Step.



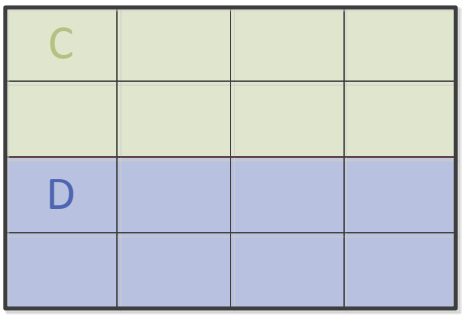
Step Two (Thumbnail View) – This tab is divided into four columns, each column represents the design options for each of the four Views. Each View can contain two, four, eight or sixteen thumbnails. The availability of each view is dependent on the layout chosen in the previous Step (View Layout). This is done automatically to reduce the effect of incorrect thumbnail Aspect Ratio. Unavailable Views have the selection check box greyed out. The user can decide on the number thumbnails for each View by clicking on the check box adjacent to the required View design (see below). Click the '**Next**' button to move onto the next Step.



The configuration shown below is made up of a combination of settings in Step1 and Step two. This will produce a layout of two Views per Output made up of eight thumbnails each giving a total of sixteen thumbnails. The two Outputs are independent of each other.



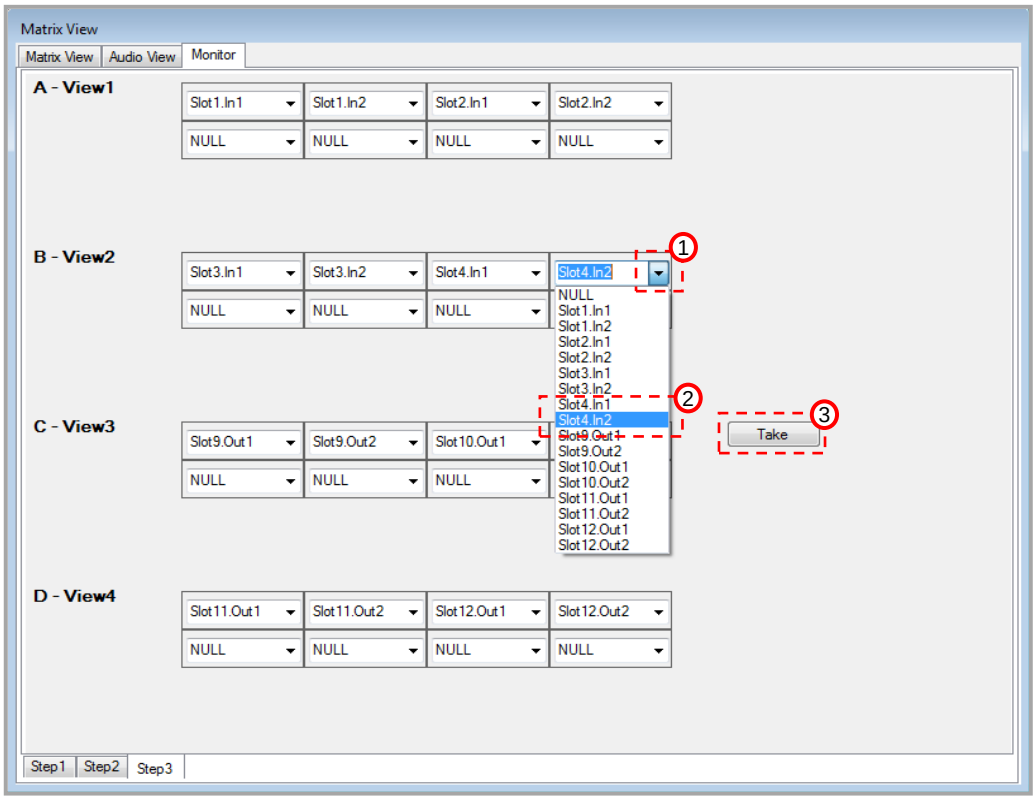
Output 1



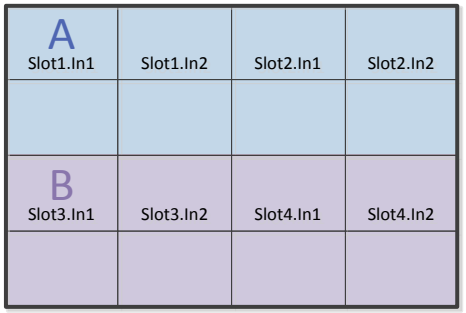
Output 2

Step Three (Thumbnail Allocation) – This tab is divided into four rows, each row represents the thumbnail allocation for each of the four Views. The user has the flexibility to design the layout where Input or Output can be allocated to any thumbnail.
***Please note**:* Each thumbnail is unique, no two thumbnails can be the same. Once an Input or an Output has been allocated it cannot be assigned a second time. To re-allocate an Input or Output to another thumbnail the user must first set the current thumbnail to NULL or to an un-assigned Input or Output.

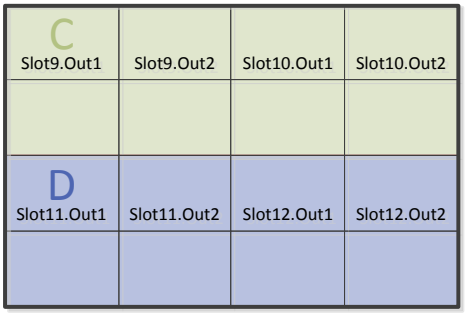
To allocate and Input or Output to a thumbnail first click on the dropdown menu arrow, a list of all available Inputs and Outputs will appear. Click on the required Input or Output and the dropdown list will disappear. The user should repeat this until the layout is populated as required. Click on '**Take**' to activate the configuration.
***Please note**:* This is the full list of Input and Output modules represented by their slot allocation number. It is not dynamically populated, so may not have active or valid sources or display plugged in to each Input or Output. Missing or Invalid Inputs are displayed as a blue thumbnail, muted or un-linked Outputs are black. Unallocated thumbnails are light blue.



The configuration shown below shows the Inputs spread across Output 1 and the Outputs across Output 2.



Output 1



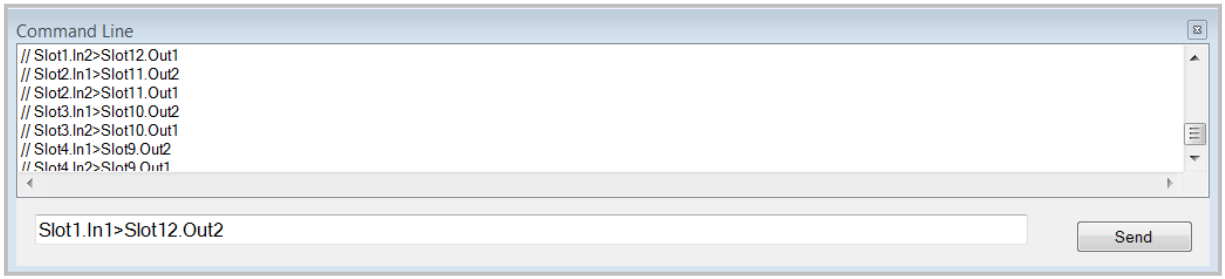
Output 2

13 Command Line Interface

The ‘Command Line’ interface is located below the ‘Matrix View’ window and to the right of the Command Line Shortcut buttons. It consists of a text entry field which gives the user the ability to perform tasks on the unit by manually entering strings of text based control protocol direct to the unit. It also has a feedback window which allows the user to monitor the control communications in real-time.
This is especially useful for testing serial command strings when programming 3rd party control equipment. Enter the required line of text in the blank text entry field and then click ‘Send’. The unit will acknowledge and respond with feedback in the window above the text entry field. If you enter an incorrect line of text an Error message window will appear and the unit will ignore the command.

An example of how to send a simple switching command to connect the source plugged into the first Input on the card in slot 1 to the second Output on the card in slot 12 -
Type and send: ‘***Slot1.in1>Slot12.Out2***’.

An example of how to send a simple system configuration command to change the unit IP address from 192.168.0.1 to 192.168.0.10 -
Type and send: ‘***System.Comms.Ethernet.IP_Address = 192.168.0.10***’.



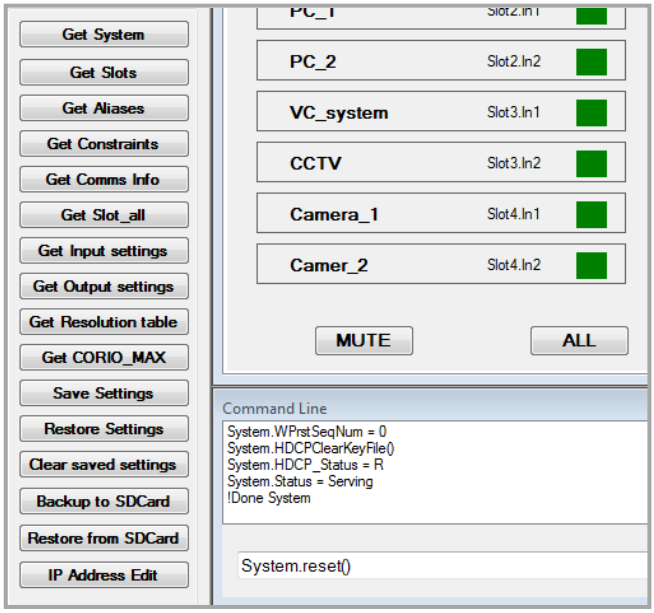
A list of all the serial control protocols is provided in this document.

13.1 Command Line Shortcuts

The Command Line shortcut buttons are located to the left hand side of the of the ‘Matrix View’ and ‘Command Line’ interface. These shortcuts are functions associated within the Command Line structure and would normally be entered manually as covered in the previous section. This gives the user the ability to easily perform tasks and retrieve key information relating to the setup and configuration of the CORIOmatrix.

Each shortcut button performs tasks in the ‘Command Line’ interface and directly communicates with the CORIOmatrix. This is more efficient than manually typing strings into the text entry field, which could be quite time consuming if multiple commands are required.

Each of the buttons has a unique function that may be to used retrieve a menu structure, display hardware properties, detect unit configurations and show system details.



Get System - This function will display a list of sub-menus which form the basis of the control menu structure. Each sub-menu is the Root directory for a set of commands.

Get Slots – This function displays a list of all the available card slots on the unit and whether or not they are allocated.

Get Aliases – This function will display all the Aliases (Input Source Names) for both the Inputs and Outputs

Get Constraints - This function displays a list of system constraints with regards to its physical limitations, i.e. maximum Inputs and Outputs etc. It also contains sub-menus.

Get Comms Info - This function displays a list of system communication settings, i.e. IP address and Subnet etc. From here you can edit the communications settings.

Get Slot_all - This function displays a list of all available slots and the cards that occupy them. From there you can access the data on any Input or Output on the system.

Get Input settings - This function displays a list of all the data associated with every Input card in the system including aliases, signal types, resolutions and connections etc. This function also performs a ‘Refresh’ which will update the Inputs connection status.

Get Output settings - This function displays a list of all the data associated with every Output card in the system including aliases, resolutions display aspect ratios and connections etc.

Get Resolution table - This function displays the table of all the available resolutions for all of the connected Output cards.

Get CORIO_MAX - This function displays the system details including: model information; serial numbers; software version and upgrade date etc.

Save Settings – This function writes the current setup configuration to a non-volatile memory within the CORIOmatrix. Click on the button and a confirmation Yes/No window will appear, a popup will then tell the user 'Saving Settings Please wait'. The next time the unit is rebooted the last saved configuration is loaded. It is advisable to use this function to avoid loss of data when setting up complex configurations. Saving settings may take a short while to execute.
***Please note**:* The saved settings are stored locally and could be lost if the firmware is updated. Please see 'Backup to SD Card' for secure storage. In this version of firmware saving setting should only be done via RS232 and not IP.

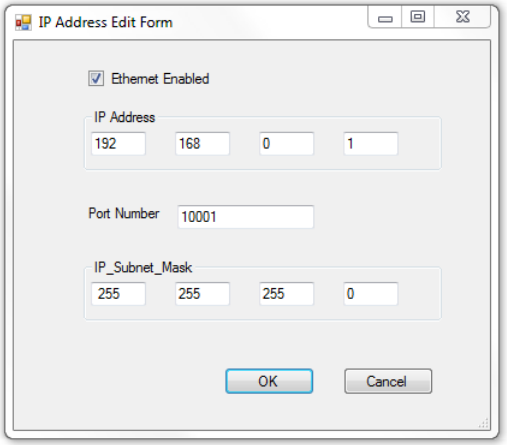
Restore Settings – This function allows the user to revert back to the last saved configuration. Click on the button and a confirmation Yes/No window will appear, a popup will then tell the user 'Loading Setting Please wait'.

Clear Saved Settings – This function allows the user to clear the saved settings from the internal memory. Click on the button and a confirmation Yes/No window will appear, a popup will tell the user 'All settings will be removed after the next reboot'. However before rebooting the Matrix the settings could be backed up to the internal SD Card as they are not cleared from the application software immediately.
***Please note**:* WARNING clearing saved settings will permanently remove ALL configuration settings including communication and global system settings.

Backup to SD Card – This function allows the user to store a configuration on the internal SD card. This is recommended prior to updating firmware or for when a specific configuration needs to be loaded onto another unit. Click on the button and a confirmation Yes/No window will appear, a popup will tell the user to 'Please wait'.

Restore from SD Card – This function allows the user to restore settings that have been backed up on to the SD Card. Click on the button and a confirmation Yes/No window will appear, a popup will tell the user to 'Please wait'. The Backup files will then be written to the NAND drive overwriting any current configuration. However the current configuration will not be overwritten until the Matrix is rebooted, so it is possible to back up the existing configuration to the SD Card before it is overwritten.

IP Address Edit – When this button is pressed the 'IP Address Edit Form' will appear. This allows the user to enable or disable the Ethernet interface and edit the IP address and Subnet mask.
***Please note**:* The IP address should be set in the same range but not identical to the address set on the administrator PC.



14 Monitoring Card Control

The monitoring card can be placed in any slot that can take a normal output card.
For the purpose of this chapter the card is assumed to be in slot 16.

The correct card type can be confirmed by the command

Slots.slot16.CardType

The reply must be

Slots.slot16.CardType = DVI_U 2-out Mon

14.1 Setting Output Channels

Similar to the normal output channels the user needs to correctly configure the outputs to drive the monitors on the two possible outputs.

This is performed by the commands sent from the root for each output shown below

Slots.slot16.out1 and **Slots.slot16.out2**

The most likely controls needed is to set the output resolution to that of the Monitor connected. For a 1920x1080p60 monitor on out1 the instruction below should be sent

Slots.slot16.out1.resolution = 1920x1080p60

Currently the Monitoring card does not support low resolution outputs or Composite outputs.

Full details can be found under the normal output card description. But in the case of the Monitor card there is no HDCP control. The output is never HDCP protected as all of the images shown on the monitor outputs are derived from sources with a maximum resolution of 224 by 128 pixels.

14.2 Placing Outputs onto a Reference Canvas

The output width and height for each output in canvas resolution can be set with

Slots.Slot16.out1.WidthInLayout
Slots.Slot16.out1.HeightInLayout

The current default canvas size for each output is set to 896 by 512 and it is recommended to stay with these values. The unit will upscale to higher resolutions and produce optimum images.

If both outputs are to show the same then they can be centred on the origin by sending commands

Slots.slot16.out1.LayoutXCentre = 0
Slots.slot16.out1.LayoutYCentre = 0
Slots.slot16.out2.LayoutXCentre = 0
Slots.slot16.out2.LayoutYCentre = 0

If the user wants independent outputs the user must separate the outputs. In the examples below the second output has been moved by 2000 horizontally by the commands.

Slots.slot16.out2.LayoutXCentre = 2000
Slots.slot16.out2.LayoutYCentre = 0

14.3 Four Viewing Regions.

Now that the user has set up two outputs onto the reference canvas the next stage is to place four views onto the canvas that are sized and positioned correctly so that they will appear on the two outputs. These four views are positioned and sized with the four commands

Viewx**.CanHeight**
Viewx**.CanWidth**
Viewx**.CanXCentre**
Viewx**.CanYCentre**

Where x can be 1,2,3,4

The Width settings should be devisable by 224 and the height by 128.

If a single view is desired on output 1 then it should be set to 896(4x224) by 512 (4*128) and centred at the origin.

View1.CanHeight = 512
View1.CanWidth = 896
View1.CanXCentre = 0
View1.CanYCentre = 0

On Output 2 we can put the other three views and place two in the top half of size 448 by 256 where, now based around the (2000,0) screen origin they are placed (2000±224,-128). *Note: vertical is minus up the screen!*

View2.CanHeight = 256
View2.CanWidth = 448
View2.CanXCentre = 1776
View2.CanYCentre = -128

View3.CanHeight = 256
View3.CanWidth = 448

View3.CanXCentre = 2224
View3.CanYCentre = -128

Finally the fourth view can be placed at the bottom of the second output with

View4.CanHeight = 256
View4.CanWidth = 896
View4.CanXCentre = 2000
View4.CanYCentre = 128

If the user does not want to use all four vierws then unused views should be set to a width of zero*. Note : The higher views will sit on top of lower numbered views so tiling is possible.*

14.4 Setting the number of Images in a View

Mapping images into a View is based on a numbering system where the top left-hand image is (1,1). And maybe the only image. For view 1 this should be set to take a four by four array of images so the bottom right would be (4,4). These array positions are converted into single numbers by multiplying the horizontal position by 16 and adding to the vertical. For the above example this gives 4*16+4 = 68. For each view the bottom right-hand position needs setting with the command, for this example

View1.Vnum = 68
View2.Vnum = 34
View3.Vnum = 34
View4.Vnum = 66

The above will produce unity size images in the windows. The user may however adjust the size by setting different values.

In View1 the value 68 corresponds to a 4x4 array. This could be set to a 2x2 array with **View1.Vnum = 34** and so double the size of the image or even just **View1.Vnum = 17** that places a single image of x4.

14.5 Placing images into the Views

Now that the user has configured the two outputs and placed the four views onto the canvas the next stage is to direct the required input or output to the position in the monitoring views. This is all performed by sending commands to the input or output cards. For each input our output the user must direct it to a particular view and then a position within the view.

Above we described the method of calculating the first and last position in a view array. All start at 17 and finish at the Vnum for that view.

For example we may want to send input on Slot1.in1 to the top left position of View 1.

We set this by

Slots.slot1.in1.View = MonitorViews.View1
Slots.slot1.in1.ViewPosCode = 17

A second example could be to send the output 2 from slot 13 to View 3 in the top right hand position of the 2x2 array.

Slots.slot13.out2.View = MonitorViews.View3
Slots.slot13.out2.ViewPosCode = 33.

As this is an output the user may wish to double its size in the view. This would require changing the Vnum and then the position.

View3.Vnum = 17
Slots.slot13.out2.ViewPosCode = 17

If two images are sent to one common location the images will fight each other for the position and a rolling image is often seen. The user is advised that if this happens they must set the rogue source to null

Slots.slotx**.out**y**.view = Null** or **Slots.slot**x**.in**y**.view = Null**

14.6 Audio Bar monitoring

For inputs and outputs with embedded audio the user can enable audio bars on the images to help monitor the channels to prove sound is also being routed correctly.

These are enabled with

Slots.slotx**.out**y**.AudioBars = {0,1,2,3,4}**
or
Slots.slotx**.in**y**.AudioBars = {0,1,2,3,4}**

Where 0 is off and 1-4 enable the number of audio channels the user wishes to monitor.

15 Firmware Updating

The CORIOmatrix has been designed for easy updating of both Software and Firmware to enable new facilities to be easily incorporated into units in the field. The method requires use of the USB rear connector to upload the new Firmware. Before carrying out this process the unit must have been powered up and logged into by use of the RS232 port.
***Please note**:* Prior to upgrading the firmware it is recommended that the user save all configuration settings on the internal SD Card. This is performed via a function in the application software called 'Backup to SD Card' expect this to take a minute or two to complete.

15.1 Connecting a PC to the CORIOmatrix

To upload the new Firmware a PC should be connected to the Rear USB connector. If this is the first time the PC is connected the Pc may request drivers to be found, this is for the Serial Emulator, if these are not available then cancel this stage. The PC will then find the internal SD Card and will display the Label TVONE. This Drive is used to hold user files and saved configurations. To update the unit the user must drop two files into the root directory of this drive.

15.2 Firmware File Description

The Firmware for the unit is a single file containing all the sub files required to load the system. The naming is in the form Mxxx_S34.dat for the CORIOMatrix. The xxx being the version number.

The SD Card can have many Mxxx_S34.dat files in the root directory. The user selects the desired file by the PLSBOOT file. This file is a 12 character long file that holds in text form the file to the uploaded. When a new file is sent to a customer a PLSBOOT is also sent that can replace the existing PLSBOOT in the root directory, the user can also directly edit the PLSBOOT on the TVONE drive to change the text to any of the Mxxx_S34.dat files.

15.3 Firmware update process

Once the new Firmware file and PLSBOOT file pointing to this file has been placed onto the TVONE drive the user should disconnect the USB cable and return to the RS232 control .

From the command line type **Coriomax.software_update()**

The reply should show that the PLSBOOT has been found and that it is loading the Mxxx_S34.dat file.
The process then checks the file for integrity and will start Erasing the FLASH.
Files are then deleted and replaced. A message stating update successful will be shown followed by a rebooting of the system running the new Firmware. If it fails at any stage a command TVONE> prompt will appear.

16 Replacing Modules

A module can be removed and replaced in the field. This should be only carried out by a competent person and all appropriate ESD precautions must be observed.

It is recommended to power down the unit before changing any card. A card can be removed and replaced with power still applied to the unit without causing damage.

To replace a module first remove the two retaining screws. Carefully remove the board using a flat blade screwdriver between the case and the back-panel side edges. Remove card and place in antistatic bag.

To insert the new card, remove from antistatic bag and slide into the now vacant slot. Carefully push home pressing on the rear metal of the module.

Use the retaining screws to secure the new card in the unit.

17 Appendix A :CORIOmax control strings

Type **root** to see the top level branches listed below:

17.1 CORIOmax

coriomax.Model_Name = CORIOmax
coriomax.Model_Number = 8007
coriomax.Serial_Number = 2218031000397
coriomax.backplane_Number = 2218008000168
coriomax.Software_Name = CORIOmax
coriomax.Software_Version = V1.68.P4
coriomax.Software_Date = OCT 25 2011 18:55:08
coriomax.Software_Update()

17.2 System

The system branch provides information about the particular system in use. Some values are read only others can be written. To write into a location you type the alternative value after the “=” sign.

This could be On/Off or a valid number.

system.Comms = <...>
    system.comms.RS232 = <...>
        system.comms.rs232.Baudrate = 115200
        system.comms.rs232.RS422_Mode = Off
    system.comms.Ethernet = <...>
        system.comms.ethernet.Enabled = On
        system.comms.ethernet.MAC_Address = 00:16:9E:48:B7:00
        system.comms.ethernet.IP_Address = 192.168.0.1
        system.comms.ethernet.IP_Subnet_Mask = 255.255.255.0
        system.comms.ethernet.Command_Enabled = On
        system.comms.ethernet.Command_Port = 10001
    system.comms.USB = <...>
        system.comms.usb.Command_Enabled = On
        system.comms.usb.MSD_Enabled = On
system.Constraints = <...>
    system.constraints.MaxInputs = 32
    system.constraints.MaxOutputs = 24
    system.constraints.MaxWindows = 25
    system.constraints.MaxCanvases = 25
    system.constraints.MaxLayouts = 25
    system.constraints.FreeWinList()
    system.constraints.FreeCanvasList()
    system.constraints.FreeLayoutList()
    system.constraints.Bandwidth_Meters = <...>

```
                    system.constraints.bandwidth_meters.Channel1 = 0%
                    system.constraints.bandwidth_meters.Channel2 = 0%
                    system.constraints.bandwidth_meters.Channel3 = 0%
                    system.constraints.bandwidth_meters.Channel4 = 0%
          system.constraints.WDP_Free = <...>
                    system.constraints.wdp_free.WDP_Q1 = 0
                    system.constraints.wdp_free.WDP_Q2 = 0
                    system.constraints.wdp_free.WDP_Q3 = 0
system.Filing = <...>
          system.filing.nand = <...>
                    system.filing.nand.Files = <...>
                              system.filing.nand.files.TEXTTEST.TXT()
                              system.filing.nand.files.ID.TXT()
                              system.filing.nand.files.M035_M00.DAT()
                              system.filing.nand.files.I1 = <...>
                              system.filing.nand.files.TVONE = <...>
                    system.filing.nand.Info()
          system.filing.sdcard = <...>
                    system.filing.sdcard.Files()
                    system.filing.sdcard.Info()
system.Temperature_Control()
system.Security = <...>
          system.security.Guest_Timeout = 600
          system.security.User1_Username = user1
          system.security.User1_Password =
          system.security.User1_Timeout = 600
          system.security.User2_Username = user2
          system.security.User2_Password =
          system.security.User2_Timeout = 600
          system.security.User3_Username = user3
          system.security.User3_Password =
          system.security.User3_Timeout = 600
          system.security.User4_Username = user4
          system.security.User4_Password =
          system.security.User4_Timeout = 600
          system.security.Admin_Username = admin
          system.security.Admin_Password =
          system.security.Admin_Timeout = 600
system.Menus = <...>
          system.menus.Titles()
          system.menus.XML()
          system.menus.Details()
system.Reset()
system.SaveAllSettings()
system.RestoreAll()
System.ClearSavedSettings()
```

17.3 Test

test.Ticker_Rate()

17.4 Aliases

This provides a list of Aliases known by the machine. Currently it is a read only command.

From the list it is possible to identify all the current aliases in use.

The right hand side of each equation is the formal name for the resource, the left hand side after the aliases tag shows the current set alias, printed in bold below.

aliases.**s1i1** = Slots.Slot1.In1

The default alias for Slots.Slot1.In1 is s1i1.

If the input is renamed using the command

Slots.slot1.in1.alias = camera1

The user should use the fixed name for the resource rather than its current alias when changing the alias.

On typing **aliases** in the list we now have

Aliases.**camera1** = Slots.Slot1.In1

The default s1i1 has been removed and will no longer be recognised by the system

17.5 Resources

Provides information on devices connected to the unit.

resources.EDID = <...>
resources.edid.S10I1 = <...>
resources.edid.S10I1.Filename =
resources.edid.S10I1.EDIDversion =
resources.edid.S10I1.Manufacturer =
resources.edid.S10I1.Name =
resources.edid.S10I1.SerialNumber =
resources.edid.S10I1.ManufactureDate =
resources.edid.S10I1.Widthmm =
resources.edid.S10I1.Heightmm =
resources.edid.S10I1.HorizBdr_pix =
resources.edid.S10I1.VertBdr_pix =
resources.edid.S10I1.Extensions =
resources.edid.S10I1.Resolutions()
resources.edid.S10I1.Remove_File()

resources.edid.S10I2 = <...>
resources.edid.S10O1 = <...>
resources.edid.S10O2 = <...>
resources.edid.S11I1 = <...>
resources.edid.S11I2 = <...>
resources.edid.S11O1 = <...>
resources.edid.S11O2 = <...>
resources.edid.S12I1 = <...>
resources.edid.S12I2 = <...>
resources.edid.S12O1 = <...>
resources.edid.S12O2 = <...>
resources.edid.S13I1 = <...>
resources.edid.S13I2 = <...>
resources.edid.S13O1 = <...>
resources.edid.S13O2 = <...>
resources.edid.S14I1 = <...>
resources.edid.S14I2 = <...>
resources.edid.S14O1 = <...>
resources.edid.S14O2 = <...>
resources.edid.S15I1 = <...>
resources.edid.S15I2 = <...>
resources.edid.S15O1 = <...>
resources.edid.S15O2 = <...>
resources.edid.S16I1 = <...>
resources.edid.S16I2 = <...>
resources.edid.S16O1 = <...>
resources.edid.S16O2 = <...>
resources.edid.S1I1 = <...>
resources.edid.S1I2 = <...>
resources.edid.S1O1 = <...>
resources.edid.S1O2 = <...>
resources.edid.S2I1 = <...>
resources.edid.S2I2 = <...>
resources.edid.S2O1 = <...>
resources.edid.S2O2 = <...>
resources.edid.S3I1 = <...>
resources.edid.S3I2 = <...>
resources.edid.S3O1 = <...>
resources.edid.S3O2 = <...>
resources.edid.S4I1 = <...>
resources.edid.S4I2 = <...>
resources.edid.S4O1 = <...>
resources.edid.S4O2 = <...>
resources.edid.S5I1 = <...>
resources.edid.S5I2 = <...>
resources.edid.S5O1 = <...>
resources.edid.S5O2 = <...>
resources.edid.S6I1 = <...>
resources.edid.S6I2 = <...>
resources.edid.S6O1 = <...>

resources.edid.S6O2 = <...>
resources.edid.S7I1 = <...>
resources.edid.S7I2 = <...>
resources.edid.S7O1 = <...>
resources.edid.S7O2 = <...>
resources.edid.S8I1 = <...>
resources.edid.S8I2 = <...>
resources.edid.S8O1 = <...>
resources.edid.S8O2 = <...>
resources.edid.S9I1 = <...>
resources.edid.S9I2 = <...>
resources.edid.S9O1 = <...>
resources.edid.S9O2 = <...>

resources.LOGO()

resources.STILL()

resources.WARP()

17.6 Slots

Main area of Control of a Matrix

slots.Slot1 = <...>
slots.slot1.Cardtype = DVI 2-in
slots.slot1.Carddata = <...>
slots.slot1.carddata.AD7441A_A = <...>
slots.slot1.carddata.AD7441A_B = <...>
slots.slot1.In1 = <...>
slots.slot1.in1.FullName = In1
slots.slot1.in1.Status = OK
slots.slot1.in1.Alias = s1i1
slots.slot1.in1.WindowList = <Empty>
slots.slot1.in1.Typechoice = DVI
slots.slot1.in1.Aspectchoice = 4:3
slots.slot1.in1.Brightness = 0
slots.slot1.in1.Contrast = 100
slots.slot1.in1.Type = 0
slots.slot1.in1.Set_Resolution =
slots.slot1.in1.Measured_Resolution = 595x201p77
slots.slot1.in1.Measured_Width = 595
slots.slot1.in1.Measured_Height = 201
slots.slot1.in1.Measured_Field_Rate = 77
slots.slot1.in1.Measured_Frame_ip = p
slots.slot1.in1.EDID_Filename = s1i1.edd
slots.slot1.in1.ForceLinkRefresh()

```
                    slots.slot1.in1.LeftCrop = 0
                    slots.slot1.in1.RightCrop = 0
                    slots.slot1.in1.TopCrop = 0
                    slots.slot1.in1.BottomCrop = 0
                    slots.slot1.in1.OnSrcLossColour = Blue
                    slots.slot1.in1.HDCP_Enabled = Off
                slots.slot1.In2 = <...>
slots.Slot2 = <...>
slots.Slot3 = <…>
slots.Slot4 = <...>
slots.Slot5 = NO CARD
slots.Slot6 = NO CARD
slots.Slot7 = NO CARD
slots.Slot8 = NO CARD
slots.Slot9 = NO CARD
slots.Slot10 = NO CARD
slots.Slot11 = NO CARD
slots.Slot12 = NO CARD
slots.Slot13 = <...>
        slots.slot13.Cardtype = DVI 2-out
        slots.slot13.Carddata()
        slots.slot13.Out1 = <...>
                slots.slot13.out1.FullName = Out1
                slots.slot13.out1.Status = UNKNOWN
                slots.slot13.out1.Alias = s13o1
                slots.slot13.out1.AspectChoice = 4:3
                slots.slot13.out1.Type = 0
                slots.slot13.out1.Resolution = 1366x768p60
                slots.slot13.out1.Width = 1366
                slots.slot13.out1.Height = 768
                slots.slot13.out1.Field_Rate = 60
                slots.slot13.out1.Frame_ip = p
                slots.slot13.out1.Genlock = Off
                slots.slot13.out1.GenlockSource = Null
                slots.slot13.out1.Layout = <No Layout Assigned>
                slots.slot13.out1.WidthInLayout = 0
                slots.slot13.out1.HeightInLayout = 0
                slots.slot13.out1.LayoutXCentre = 0
                slots.slot13.out1.LayoutYCentre = 0
                slots.slot13.out1.RotateOutDeg = 0
                slots.slot13.out1.WarpTable_Filename =
                slots.slot13.out1.WarpTable = 0
                slots.slot13.out1.EDID_Filename =
                slots.slot13.out1.InsList = NULL
        slots.slot13.Out2 = <...>
slots.Slot14 = <...>
slots.Slot15 = <...>
slots.Slot16 = <...>
```

17.7 Routing

Not recommended to use this area at present

routing.Windows = <...>
(HD Windows)
routing.windows.Window1 = <...>
routing.windows.window1.FullName = Window1
routing.windows.window1.Status = FREE/ALLOCATED/IN-USE
routing.windows.window1.Alias = <none>
routing.windows.window1.Input = <No Input Assigned>
routing.windows.window1.InWidth = 0
routing.windows.window1.InHeight = 0
routing.windows.window1.InLeft = 0
routing.windows.window1.InTop = 0
routing.windows.window1.Canvas = <No Canvas Assigned>
routing.windows.window1.CanWidth = 0
routing.windows.window1.CanHeight = 0
routing.windows.window1.CanXCentre = 0
routing.windows.window1.CanYCentre = 0
routing.windows.window1.Zorder = 0
routing.windows.window1.RotateDeg = 0
routing.windows.window1.WDP = 0 (FIXED TO HARDWARE AT PRESENT)
routing.windows.window1.WDPQ = 2048 (1.4) 1024(5..20) 0(21-36) 1(37-40)
routing.windows.window1.BdrPixWidth = 0
routing.windows.window1.BdrRGB = 00RRGGBB (Hex (00-FF))
routing.windows.window1.HFlip = Off
routing.windows.window1.VFlip = Off
routing.windows.window1.BandwidthPxps = 0
routing.windows.Window(2..25) = <...>
routing.Canvases = <...>
routing.canvases.Canvas1 = <...>
routing.canvases.canvas1.FullName = Canvas1
routing.canvases.canvas1.Status = FREE/ALLOCATED/IN_USE
routing.canvases.canvas1.Alias = <none>
routing.canvases.canvas1.WindowList = <Empty>
routing.canvases.canvas1.LayoutList = <Empty>
routing.canvases.canvas1.BBWidth = 0
routing.canvases.canvas1.BBHeight = 0
routing.canvases.canvas1.BBLeft = 0
routing.canvases.canvas1.BBRight = 0
routing.canvases.canvas1.BoundaryPolicy = 0
routing.canvases.Canvas(2..25) = <...>
routing.Layouts = <...>
routing.layouts.Layout1 = <...>
routing.layouts.layout1.FullName = Layout1
routing.layouts.layout1.Status = FREE/ALLOCATED/IN USE

routing.layouts.layout1.Alias = <none>
routing.layouts.layout1.Canvas = <No Canvas Assigned>
routing.layouts.layout1.CanWidth = 0
routing.layouts.layout1.CanHeight = 0
routing.layouts.layout1.CanXCentre = 0
routing.layouts.layout1.CanYCentre = 0
routing.layouts.layout1.OutputList = <Empty>
routing.layouts.layout1.Mode = Normal
routing.layouts.Layout(2..25) = <...>

17.8 Other Commands

To be defined in the near future

StartBatch
Endbatch

Namespaces
Flush
Defaults
AddAlias
RemoveAlias
Take0,Take1..10
Copy 0to1, …Copy 0to10
Filetransfer

CORIOmatrix

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