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Document Control

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1.9	Input from R&D team added
2.0	Final Interface shots replaced
2.1	Change of interface shots following Global Head of R+D review

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.

You have not become the owner of any software - you have merely purchased the right to use the software. You may make one copy of the software for your own use. Other copies will be deemed a breach of copyright.

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, E5 (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, E5
(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 15:2009 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 their 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 Corporation
Continental Approach
Margate
CT9 4JG, UK

Telephone:- +44(0)1843 873311

1.3 Manual Copyright Notice

This Operation Manual is the intellectual property of TV One, © 2013. No portion of this manual may be copied or reproduced in any manner or by any means, including, but not limited to electronic and electro-mechanical, without the express written permission of TV One.

2 IMPORTANT SAFETY INSTRUCTIONS

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

- ① Read these instructions
- ① Keep these Instructions
- ① Heed all warnings
- ① Follow all instructions
- ① Do not use this apparatus near water
- ① Clean only with a dry cloth
- ① Do not block any ventilation openings. Install in accordance with the manufacturer's instructions
- ① Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- ① 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.
- ① Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- ① This unit must be connected to a mains socket outlet with a protective earth connection.
- ① The AC wall outlet should be installed near to the unit and be easily accessible.
- ① Only use attachments / accessories specified by the manufacturer
- ① Unplug this apparatus during lighting storms or when unused for long periods of time
- ① 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.

- ① 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, **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 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.

- ① Lisez ces consignes
- ① Conservez ces consignes
- ① Respectez tous les avertissements
- ① Respectez toutes les consignes
- ① N'utilisez pas cet appareil à proximité d'eau
- ① Nettoyez-le en utilisant uniquement un chiffon sec
- ① Ne bloquez pas les ouvertures de ventilation. Installez cet appareil en respectant les consignes du constructeur
- ① 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
- ① 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
- ① 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
- ① Il faut brancher l'appareil sur une prise du secteur disposant d'une mise à la terre.
- ① La prise murale de courant doit être installée près de l'unité et aisément accessible.
- ① Utilisez uniquement les fixations et accessoires spécifiés par le fabricant
- ① Débranchez cet appareil durant les orages électriques ou pendant les périodes prolongées d'inactivité
- ① 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.

- ① 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.

- ① Lesen Sie diese Anweisungen.
- ① Bewahren Sie diese Anweisungen auf.
- ① Beachten Sie alle Warnhinweise.
- ① Befolgen Sie alle Anweisungen.
- ① Verwenden Sie dieses Gerät nicht in der Nähe von Wasser.
- ① Verwenden Sie zur Reinigung nur ein trockenes Tuch.
- ① Blockieren Sie keine Lüftungsöffnungen. Installieren Sie das Gerät nach den Anweisungen des Herstellers.
- ① Stellen Sie das Gerät nicht in der Nähe von Wärmequellen wie etwa Heizkörpern, Heizklappen, Öfen oder anderen Wärme erzeugenden Geräten (einschließlich Verstärkern) auf.
- ① Setzen Sie den Sicherheitszweck von unverwechselbaren Steckern oder Erdungssteckern nicht außer Kraft. Ein unverwechselbarer 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.
- ① 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.
- ① Verwenden Sie nur Zusatzgeräte/Zubehör, die/das der Hersteller angibt.
- ① Ziehen Sie den Netzstecker dieses Geräts bei Gewittern und auch dann ab, wenn es über einen längeren Zeitraum nicht betrieben wird.
- ① 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.

- ① 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 dekompileieren.

2 INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

- ① Lea estas instrucciones
- ① Guarde estas instrucciones
- ① Respete todas las advertencias
- ① Siga todas las instrucciones
- ① No use este aparato cerca del agua
- ① Límpielo sólo con un paño seco
- ① No bloquee ninguna abertura de ventilación. Instálelo de acuerdo con las instrucciones del fabricante
- ① No lo instale cerca de fuentes de calor como radiadores, salidas de aire caliente, estufas u otros aparatos (incluyendo amplificadores) que produzcan calor.
- ① 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.
- ① 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.
- ① Use sólo accesorios / elementos especificados por el fabricante
- ① Desenchufe el aparato durante las tormentas eléctricas o si no va a usarlo durante un largo período de tiempo.
- ① 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.

- ① 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, **NO** 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.

- ① Lees deze instructies
 - ① Bewaar deze instructies
 - ① Let op alle waarschuwingen
 - ① Volg alle instructies
 - ① Gebruik dit apparaat niet in de nabijheid van water
 - ① Reinig het apparaat alleen met een droge doek
 - ① Blokkeer geen ventilatieopeningen. Installeer het apparaat volgens de instructies van de fabrikant
 - ① Plaats het apparaat niet in de nabijheid van warmtebronnen zoals radiatoren, kachels, warmtesensoren zoals thermometers, of andere apparaten (waaronder versterkers) die warmte afgeven.
 - ① 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 aardlekpun. De bredere pin of aardlekpun is er voor uw veiligheid. Als de geleverde stekker niet in het stopcontact past, vraag dan een elektricien om het verouderde stopcontact te vervangen.
 - ① Bescherm de netspanningskabel 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
 - ① Gebruik alleen de accessoires en onderdelen die door de fabrikant worden aanbevolen
 - ① Haal de stekker van dit apparaat bij onweer uit het stopcontact. Doe dit ook wanneer het apparaat lange tijd niet wordt gebruikt.
 - ① 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.
- ① Het type wisselspanningskabel 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.

- ① Läs dessa anvisningar
- ① Spara dessa anvisningar
- ① Rätta dig efter alla varningar
- ① Följ alla instruktioner
- ① Använd inte enheten nära vatten
- ① Rengör enheten endast med torr trasa
- ① Blockera inte ventilationsöppningarna. Installera enheten enligt tillverkarens anvisningar
- ① Placera inte enheten nära värmekällor, som värmeelement, varmluftsintag, spisar eller annan utrustning (inklusive förstärkare) som producerar värme.
- ① 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.
- ① 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.
- ① Använd bara anslutningar och tillbehör som specificeras av tillverkaren.
- ① Dra ur nätsladden före åskväder eller när enheten inte ska användas en längre tid.
- ① 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.

- ① 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 Intellectuell 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.

- ① Les disse anvisningene.
 - ① Ta vare på disse anvisningene.
 - ① Vær oppmerksom på alle anvisningene.
 - ① Følg alle anvisningene.
 - ① Ikke bruk dette apparatet i nærheteethernet192.168.0.2ffping 192n av vann.
 - ① Må bare rengjøres med en tørr klut.
 - ① Ikke blokker ventilasjonsåpningene. Må installeres i overensstemmelse med produsentens anvisninger.
 - ① Må ikke installeres i nærheten av varmekilder som radiatorer, varmeapparater, komfyrer eller andre apparater (også forsterkere) som produserer varme.
 - ① 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.
 - ① Beskytt ledningen mot å bli tråkket på eller klempt, spesielt ved støpselet, stikkkontakten og punktet hvor den kommer ut av apparatet.
 - ① Ikke bruk andre typer tilbehør enn det som er angitt av produsenten.
 - ① Koble apparatet fra strømforsyningen i tordenvær eller når det ikke skal brukes over en lengre periode.
 - ① 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.
- ① 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 stikkkontakten 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 dekompile noe av dette innholdet.

2 TÄRKEITÄ TURVALLISUUSOHJEITA

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

- ① Lue nämä ohjeet
 - ① Säilytä nämä ohjeet
 - ① Ota kaikki varoitukset huomioon
 - ① Noudata kaikkia ohjeita
 - ① Älä käytä tätä laitetta veden lähellä
 - ① Puhdista vain kuivalla kankaalla
 - ① Älä tuki ilma-aukkoja. Asenna laite valmistajan ohjeiden mukaisesti.
 - ① Älä asenna laitetta lähelle lämpölähteitä, kuten esim. lämpöpatteria, lämmitintä, uunia tai muita lämpöä tuottavia laitteita (vahvistimet mukaan lukien).
 - ① 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.
 - ① Varmista, että verkkojohdon yli ei kävellä eikä se jää puristuksiin etenkin pistoke- ja liitinkohdista sekä laitteesta ulostulevista kohdista.
 - ① Käytä vain valmistajan määrittämiä lisälaitteita/lisävarusteita.
 - ① Kytke laite irti verkkovirrasta ukkosmyrskyn aikana tai silloin, kun sitä ei käytetä pitkään aikaan.
 - ① 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
- ① 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 Introduction to the CORIOmaster mini



CORIOmaster mini is a powerful, small form factor multi-window processor and is a natural development of TV One's CORIOmaster product line. CORIOmaster mini is designed to deliver the power of the CORIOmaster for less demanding applications.

	CORIOmaster mini			CORIOmaster		
RU Size	1RU ¹			4RU ¹		
Modular I/O Slots	5 ²			16 ²		
Fixed Inputs	Dual Universal DVI ³			0		
Min/Max Inputs	2/12			2/28		
Min/Max Outputs	2/10			2/10		
Configuration	Factory Configured ⁴			Factory or user configured		
Layouts	1			4		
Canvasses	1			4		
Window Options*	EHQ	HQ	PV	EHQ	HQ	PV
	2	12	16	4	16	16
	4	8	16	6	12	16
	6	4	16	8	8	16
	8	0	16	---	---	---
Conversion	Up/down/cross conversion			Up/down/cross conversion		
Scaling	Yes			Yes		
Angled Windows	Yes			Yes		
Angled Outputs	Yes			Yes		

Notes:

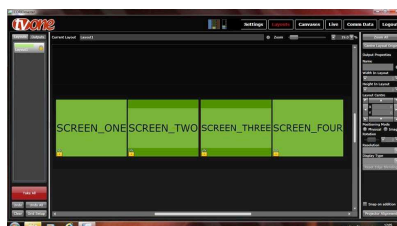
¹Both systems can be mounted by their rack ears but for CORIOmaster mini we also recommending using a side rail kit due the reduced height.

²CORIOmaster and CORIOmaster mini are fully modular system and can use a number of input and output cards.

³The fixed Universal DVI Input has its HDCP handling limited 12 keys. All other inputs can have up to 127 keys.

⁴CORIOmaster mini modules are secured using tamper proof connectors. Configuration changes can be provided by your local TV One service centre.

* The maximum windows available with CORIOmaster mini is 14 and the default EHQ Windows configuration is 4.



CORIOmaster mini is controlled using supplied software which runs on a user supplied Windows based PC.

In typical system use, users will set up their **inputs** and **outputs** before saving them as **Presets** and controlling the CORIOmaster mini from the **Live** mode.

5 Quick Guide

5.1 CORIOmaster mini Capabilities

CORIOmaster mini is a ground breaking system that allows you to display multiple inputs on multiple output displays. The inputs can be resized, rotated and have borders added for a creative look. Outputs can be displayed singly or grouped together for video walls or blended projection. Displays can be off any size, resolution or rotation.

5.2 CORIOmaster mini Terminology

When you use the CORIOmaster control software you will notice references to Inputs, Windows and Outputs. It is important that you understand what this means and how they interact before you can fully understand how to get the most from your unit.

Inputs	Inputs are just that - Inputs! An input can be configured and sent directly to one of the layouts for output.
Layout	A layout is an arrangement of one or more outputs (screens or projectors).
Canvas	Inputs are applied to a canvas to create layouts.
Outputs	Outputs show the resultant set up from the system.

5.3 CORIOmaster mini Modularity

The CORIOmaster mini frame comes as standard with a CPU module and an in built Universal DVI input (with two inputs) and a single Power Supply Unit.



The modules available for CORIOmaster mini are:-

CORIOmaster mini can accept modules for Universal DVI, 3G-SDI, HD-SDI and HDBaseT. These modules are factory fit only.

	Input Cards	Output Cards
Universal DVI	CM-DVIU-2IN ¹	CM-DVIU-SC-2OUT ¹
3G-SDI	CM-3GSDI-2IN	CM-3GSDI-SC-2OUT
HD-SDI	CM-HDSDI-4IN ²	-----
HDBaseT	-----	CM-HDBT-SC-2OUT-1ETH ³

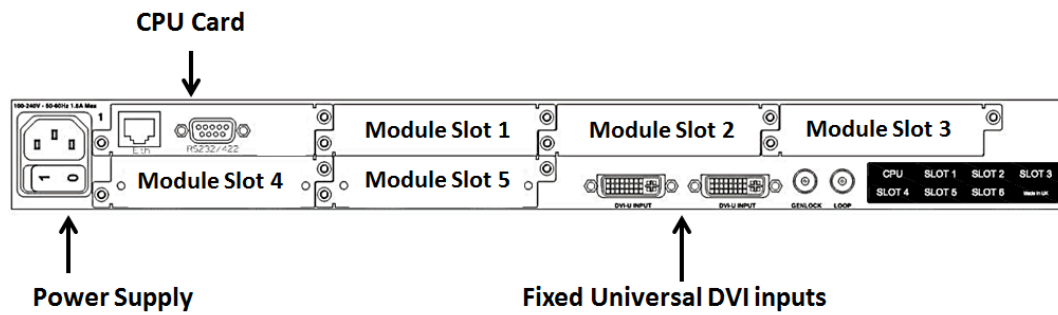
¹Universal DVI allows the connection of a number of different adaptors for HDMI, VGA, Y/C, Composite, etc.

²Although other modules have two connections, the HD-SDI card allows the connection of four HD-SDI connections.

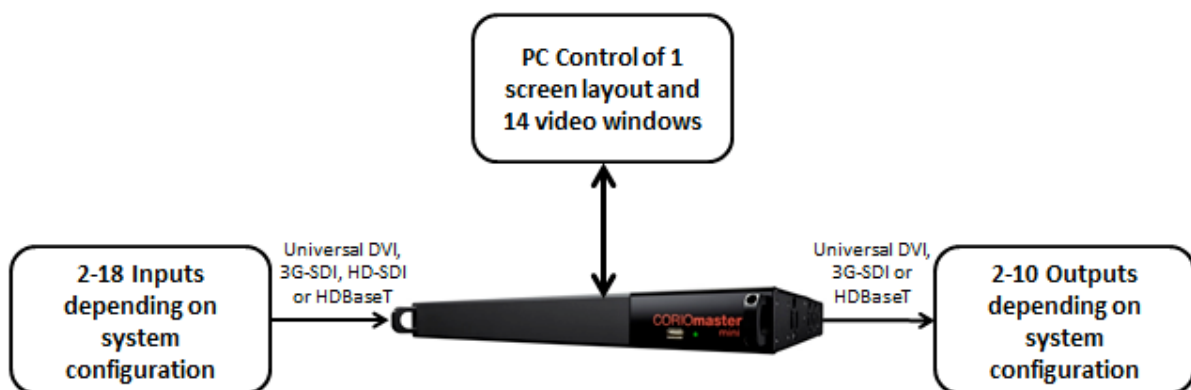
³ The HDBaseT module allows for transmission of uncompressed, HDMI quality, video, audio and LAN up to 100m, with good quality cabling. The card has two independent HDBaseT outputs and a single LAN input, supporting 100BaseT.

5.4 CORIOmaster mini Connections

The rear of the CORIOmaster mini has a dual Universal DVI input, CPU Card and a Power Supply with slots available for another 5 input or output modules together with internal space for an addition power supply.



Using these module slots the CORIOmaster mini has the following capability:



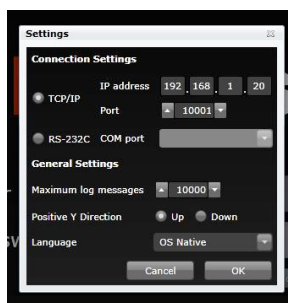
6 User Interface Tour

6.1.1 Logging In

The CORIOmaster mini is controlled using a PC application.

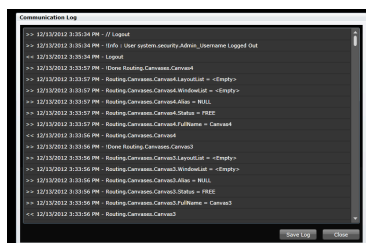


In addition to connecting with your CORIOmaster, there are also a number of useful functions available on the **Login** screen.

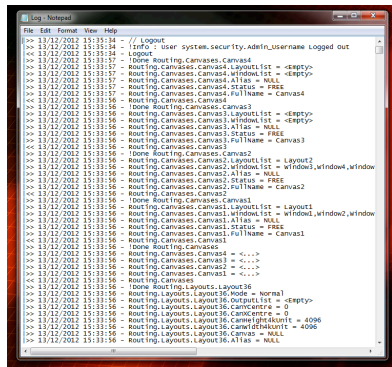


In the **Settings** area you can choose to control the system via **RS232** or using **IP**. The maximum Log size can also be set.

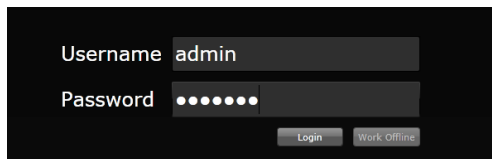
Both of these settings can be edited whilst logged in by using the **General** menu.



The **View Log** button displays the **Communications Log** which shows all of the actions being carried out by the system.



You can also **Save Log** to a text file if you wish to keep a copy of the log.



The default Login details for your system are:

Username: admin
Password: adminpw

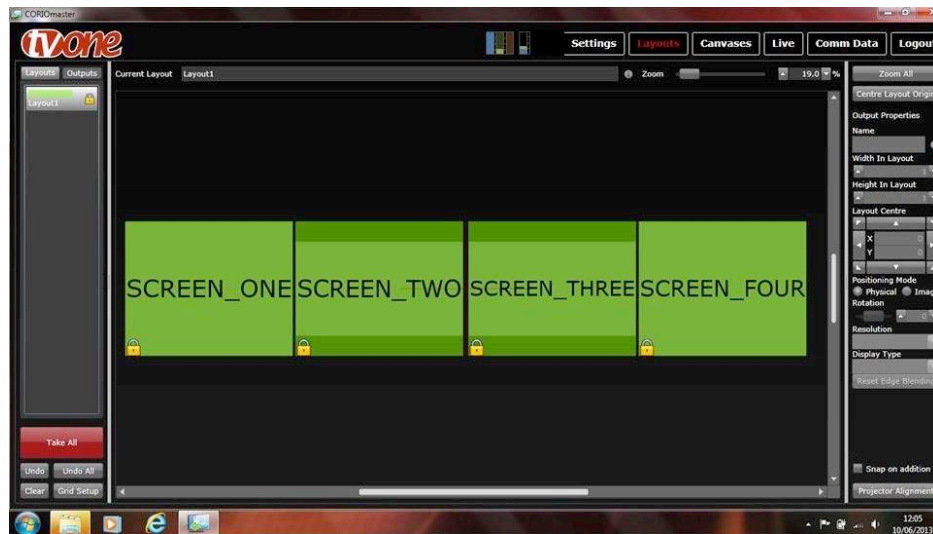
6.1.2 Configuring Inputs and Outputs

Before you can start to create Canvases and Layouts you must first set up your Inputs and Outputs using the **Settings Menu**.



In the **Settings** menu you can access **General** system data, set up **Ethernet** network connections and we set up the **Inputs** and **Outputs**.

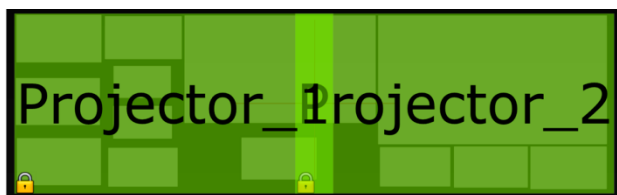
6.1.3 Output Configuration



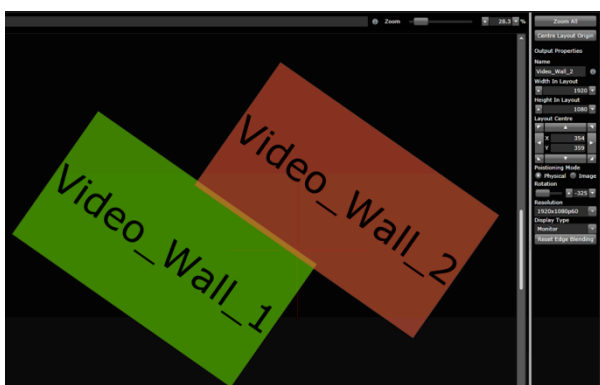
The **Layouts** menu is used to create physical screen layouts which can consist of a number of physical displays. Displays can be identical or of different sizes and resolutions. By default the display will be zoomed in to around 30% which is suitable for normal type layout setups. To see the complete layout area, use the **Zoom All** control.



In this setup a Layout has been created already.



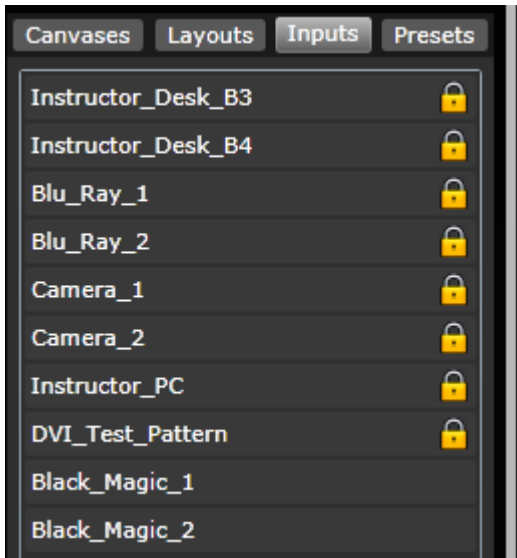
If you look at the layout area the layout – you can see ghosting on the image which shows the sources which are laid over the Layout.



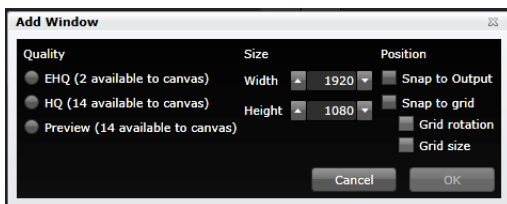
Output displays can have **Rotation** applied. All Output displays can be independently moved, scaled and rotated.

6.1.4 Creating Multiple Window Layouts

On the left of the **Canvas** menu you can select our active **Layouts** below which there is a **Take** button and a **Grid** selector. The centre area is our **Canvas** where the user can add **Windows**. The bar on the right is used for editing **Windows**.



Now, select the **Inputs** tab – you will see a list of available **Window** sources. To use an Input, drag it onto the **Canvas** area.



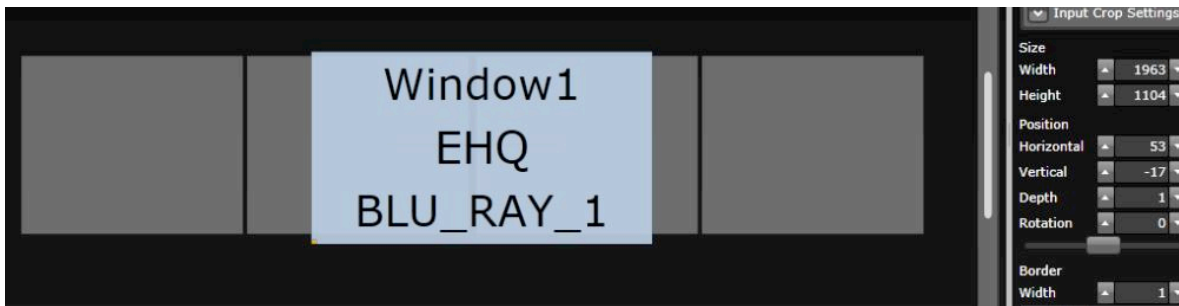
This will display the **Add Window** box for you to select the quality of **Window** you want to apply. You can also set resize settings in this window.

EHQ is normally used for full screen windows on large displays and HQ is our normal window size. All use TV One's high quality interpolation and resizing algorithms so it is not possible to compare directly but the sizes of the Windows are equivalent to:- EHQ – 1920 x 1200, HQ – 1024 x 1200 & PW- 224 x 128.



To help you keep count of the **Windows** you have used, each you can select a **Window Usage** graph which is selected by clicking the mini graph next to the **Settings** button.

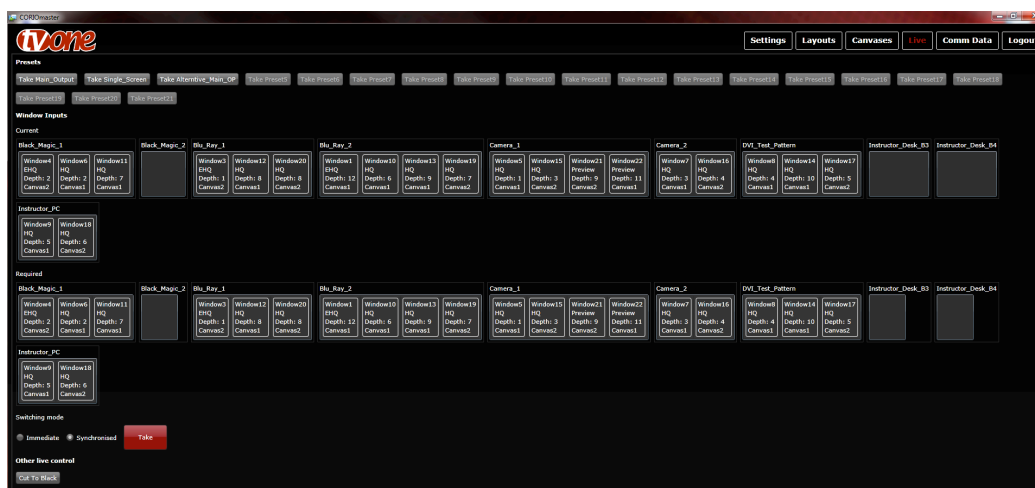
There is also an overall count down tool next to the **Take** button.



As soon as you hit OK on **Add Window** menu the **Window** will be displayed on the **Canvas**. It can be repositioned and resized using your mouse or the controls on the editing bar.

6.1.5 Working in Live Mode

Once you have created Layouts and Canvasses you save them as **Presets** which can then be quickly recalled in the **Live** mode. It is also possible to select alternative inputs from this menu.



The **Live** menu is used to control your CORIOmaster in changing environment where, in addition to changing **Presets**, you also want to change the sources of **Windows**.

7 Getting Started

7.1 Loading the Control Software

The CORIOmaster mini mainframe is controlled via supporting software that should be loaded onto a Windows based PC. The latest software can be downloaded for free from the TV One website.

Software	Microsoft Windows XP +, Windows 7, Windows 8 (32 or 64 Bit)
Other applications	Microsoft .NET 4, Silverlight 5
Other utilities	Winzip, WinRAR or 7-Zip
Display	900+ line monitor recommended

The initial connection between the computer and the CORIOmaster mini is via the RS232 connector on the rear using an appropriate cable or USB to RS232 converter and preloading 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.

The default login information is:-

User Name	admin
Password	adminpw

7.2 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

7.3 Connections

CORIOmaster mini can accept modules for Universal DVI, 3G-SDI, HD-SDI and HDBaseT.

	Input Cards	Output Cards
Universal DVI	CM-DVIU-2IN	CM-DVIU-SC-2OUT
3G-SDI	CM-3GSDI-2IN	CM-3GSDI-SC-2OUT
HD-SDI	CM-HDSDI-4IN	-----
HDBaseT	-----	CM-HDBT-SC-2OUT-1ETH

*Most cards are dual input or output except the HD-SDI input card which has 4 inputs.

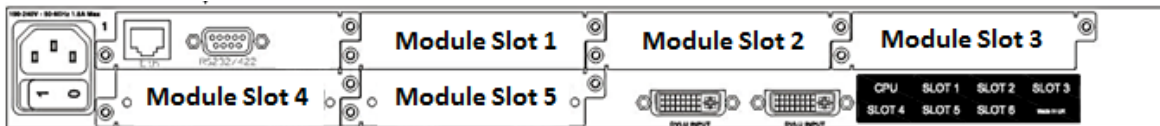
The modules are installed in the factory and are not field replaceable by users.

Due to the large number of connectors that may be connected the user is requested to use fully screened Cables with built in Ferrite chokes to meet the emission standards when using Universal DVI connections.

8 Connecting Equipment to the CORIOmaster

Your CORIOmaster mini will have been pre-configured at our factory with the cards that you order.

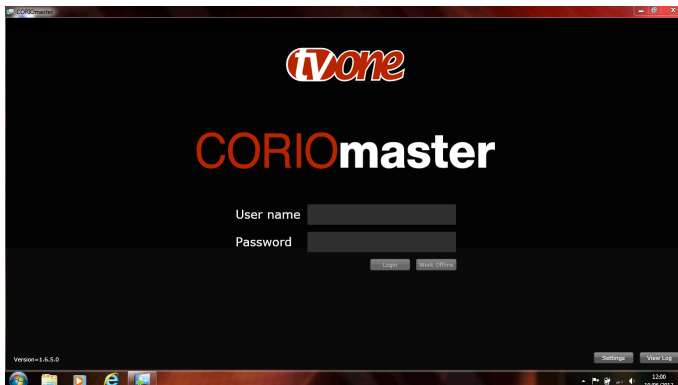
Below is a diagram of the rear of the unit. Input/output modules can be placed in slots 1 to 5.



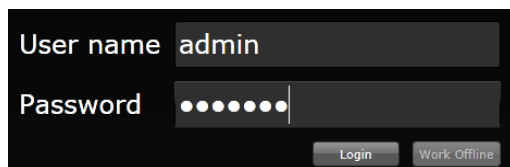
The input cards are identified as black painted with white writing.

The scaling output cards are painted white with black writing. The scaling outputs are required if and resolution conversion is required. The scaling outputs also permit gen-locking to a separate input.

8.1 Running the Application



Once the CORIOmaster application has been installed the user can run the application by double clicking on the CORIOmaster icon. The initial screen below should appear.



The default user name is **admin** with a password of **adminpw**.

8.2 Unit communications

On first running the software it is necessary to connect by RS232 to set some initial values. Click on the Settings button to configure the communications. The window shown below will appear.

It is also possible to change the y direction on the layout. Most users will be used to having positive up the screen, the default but some video users may prefer to have the

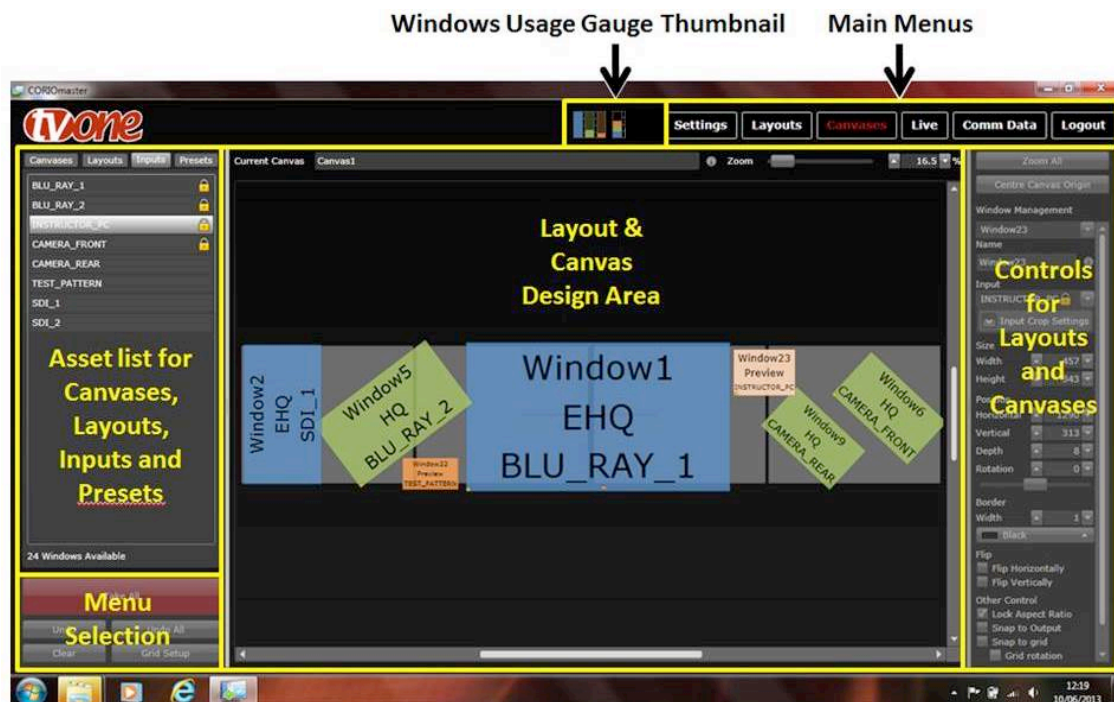
positive values represent a downward direction on the screen, this is possible by selecting the down button.

The final option is to change the menu language between German and American English. Please note that although the menus are multi-language, the strings are in English.

9 CORIOmaster General Settings

For the username type **admin**, for the password type **adminpw**. Now click on Login

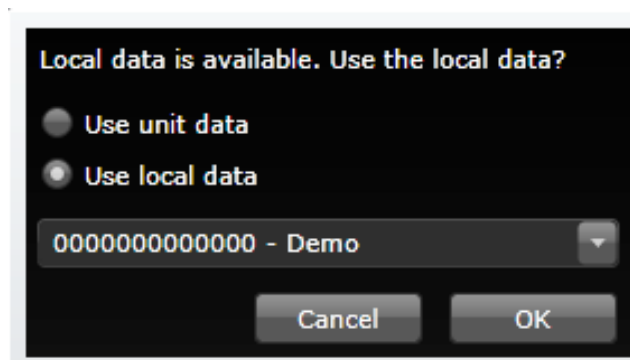
9.1 Overall View of Interface



9.2 Initial Login Actions

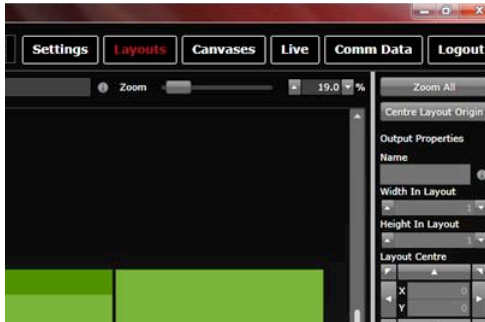
At the first connection the unit will retrieve all the data from the unit and store them locally on the PC for use by the application.

On future connections between the PC and a unit the application may offer the user the chance of CORIOmaster mini can be loaded with configurations stored on the PC.



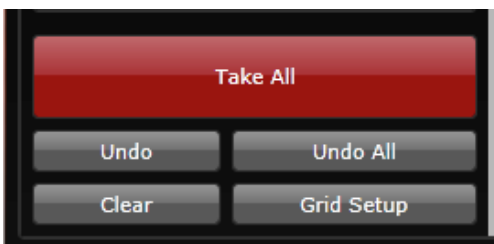
Once either the local files are chosen or a loading from the unit is selected the application will synchronise the PC and the unit so that the PC can display the current condition of the unit to the user. This may take some time to perform.

9.3 General Navigation



Six buttons are shown along the top right marked from Save All Settings to Logout. The active button is shown Red. The four buttons **Settings**, **Layouts**, **Canvases** and **Live** follow the natural way to set up the unit from installation to use in a live environment.

9.4 Sending commands to the Unit



Once logged into the unit most commands are not communicated to the unit until the **Take All** button is pressed in the bottom left of the screen.

Undo will reverse ALL changes in the current sub-tab (i.e. the current Layout or Canvas) prior to doing a 'Take All'. 'Undo All' reverses ALL changes on ALL sub-tabs (i.e. all Canvases or all Layouts) prior to a 'Take All'. Undo All will not undo changes in the Canvas tab if you are editing the Layouts and vice versa.

9.5 Save All Settings

During operation the unit can be asked to store the current complete setup in non-volatile memory. The user performs this by pressing the **Save All Settings** in the **Settings** tab. The user is asked to confirm this action. If accepted the unit copies all the settings.

On power up the unit will retrieve all the settings and configure the System with the same setup that was in use when the Save all settings button was pressed.

For systems which are not due to be left alone you can store the setups on the dedicated PC and to use the local data in the login screen to load the unit from the PC. This provides greater flexibility and a faster start up.

We recommend backing up/storing the setups on the internal SD card.

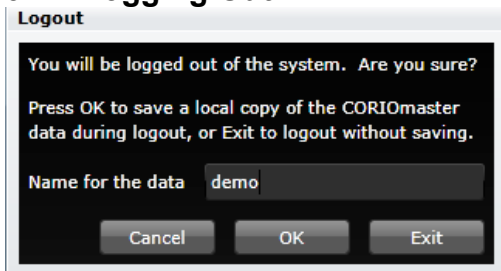
9.6 Comm Data

The **Comm Data** tab is not used under normal operation but if a communication fault should occur the tab background will change colour. If this occurs the user can open this tab and investigate what may be causing a problem.

This screen lists all the commands sent to the unit and information returned. A time stamp is used at the beginning of each line to help work out when commands are sent. The most recent command is shown at the top.

The user can also send individual commands from the command line at the bottom. The data is all stored and can be saved as a simple text file. This is designed to help resolve any customer issue where a log report can be sent to TV One that can greatly identify what may be reported as a fault. A complete log from start-up can also be used to duplicate actions on a similar machine.

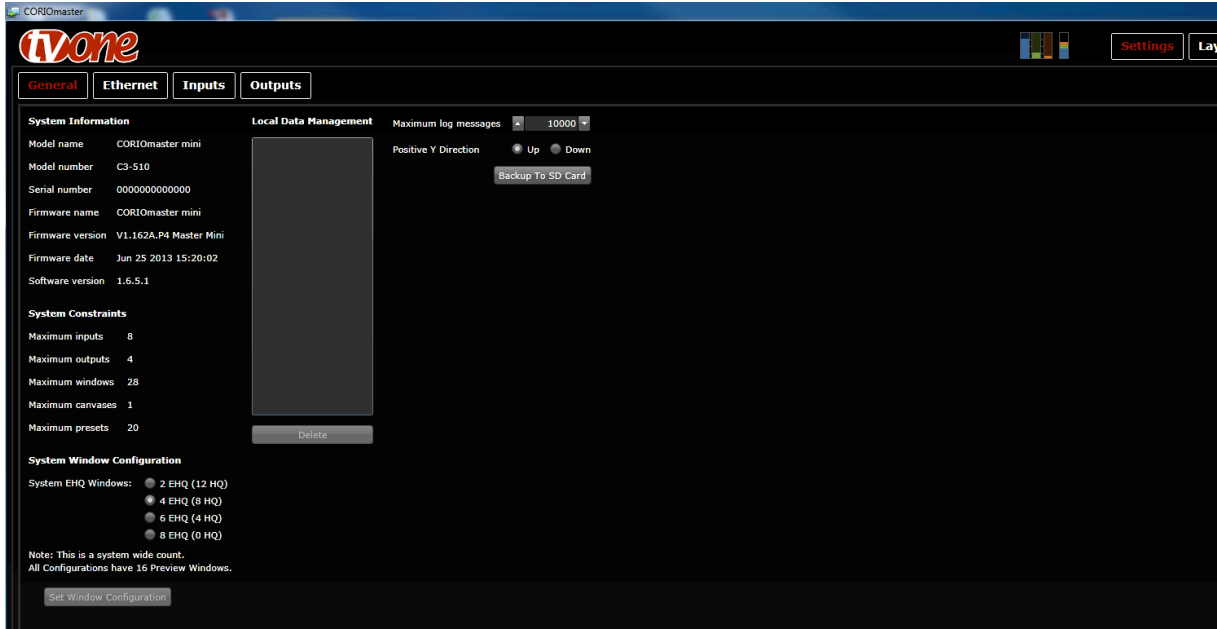
9.7 Logging Out



The user may log out at any time. All the main screens have a button in the top right market Logout. When this is clicked the unit offers the chance for the user to save all the current settings on the PC for working off line for recalling at a later login. The user should use a suitable name.

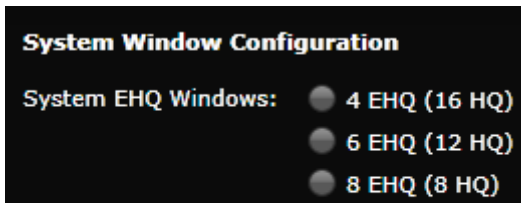
10 Settings

10.1 General Settings



In the settings menu, you can set and see your system configuration, set up Ethernet control and configure system inputs and outputs.

10.1.1 System Window Configuration Control

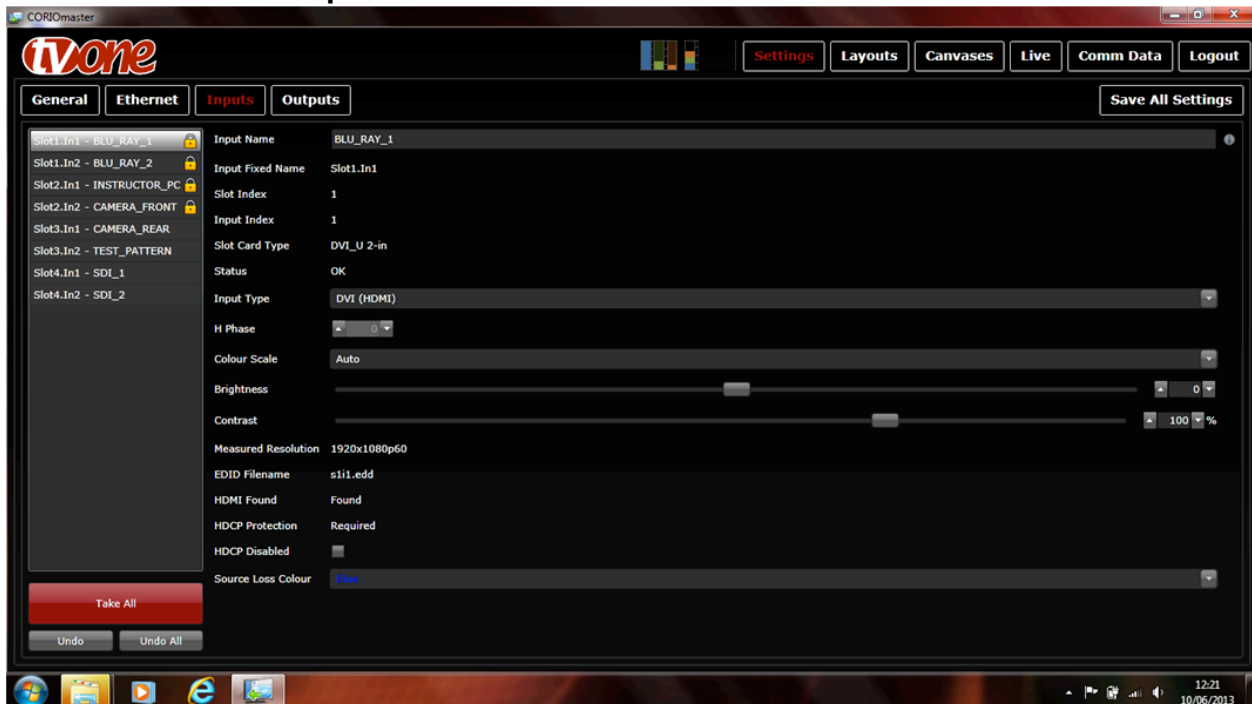


At the bottom of the General tab you can set the number of Extra High Quality (EHQ) windows that can be displayed.

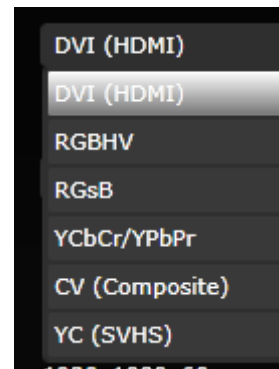
10.2 Configuring Inputs and Outputs

The Slots screen is used to pre-configure the input and output settings during installation. Once all inputs and outputs have been connected this screen permits the setting of any configuration to enable correct functionality of the unit. The input tab on the left hand side will bring a list of inputs found on the unit. By clicking on any of the inputs the user can chose the type of input to be selected.

10.3 Universal DVI Input Modules



The above image is the screen that appears when a UNIVERSAL DVI input has been selected on the left hand list.



The UNIVERSAL DVI input can choose to look for video from a number of sources. By clicking on the **Input Type** the pop up shown right appears. The user can select either a digital input DVI, or a number of alternative analogue inputs. A suitable connector must be used to input the analogue input through the UNIVERSAL DVI connector on the module.

For RGBHV, RGsB and YUV inputs the user can adjust the horizontal phase to correct for any video to sync misalignment.

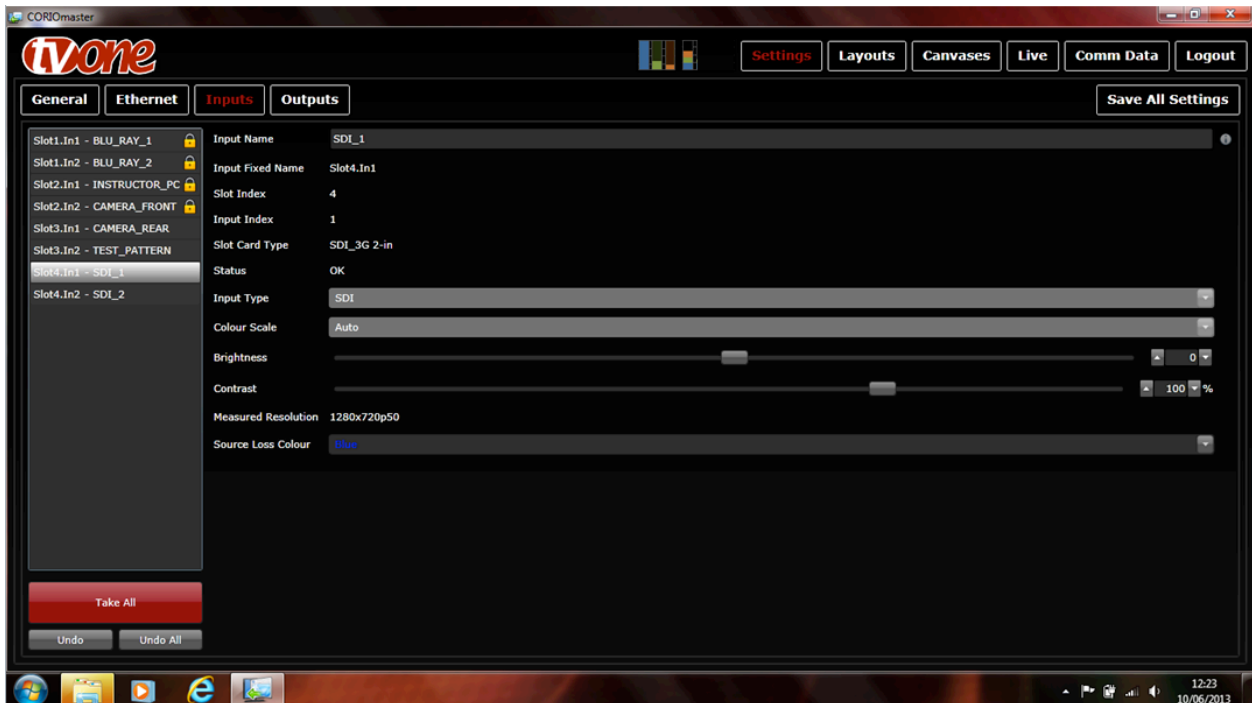
The colour Scale should be left on Auto as the system will chose the appropriate colour conversion for each input type. However if the input has the wrong colour scale the user can fix the scale conversion to correct for this.

Contrast and Brightness can be adjusted on both analogue and digital inputs.

The status line will move to OK once an input is connected and correctly locked. The resolution of the input source detected is shown on this screen. The EDID filename identifies the file sent to the source to help the device connected to switch to the most

appropriate resolution. If the source device is connected via HDMI the HDMI found line is set to Found.

10.4 SDI Input Modules



For SDI Inputs the configuration is minimal. There is no analogue option and no return channel to the source to permit auto configuration. All the user is given is the resolution of the received signal. However the user can still adjust the brightness and contrast to help balance the image before being used within the CORIOmaster

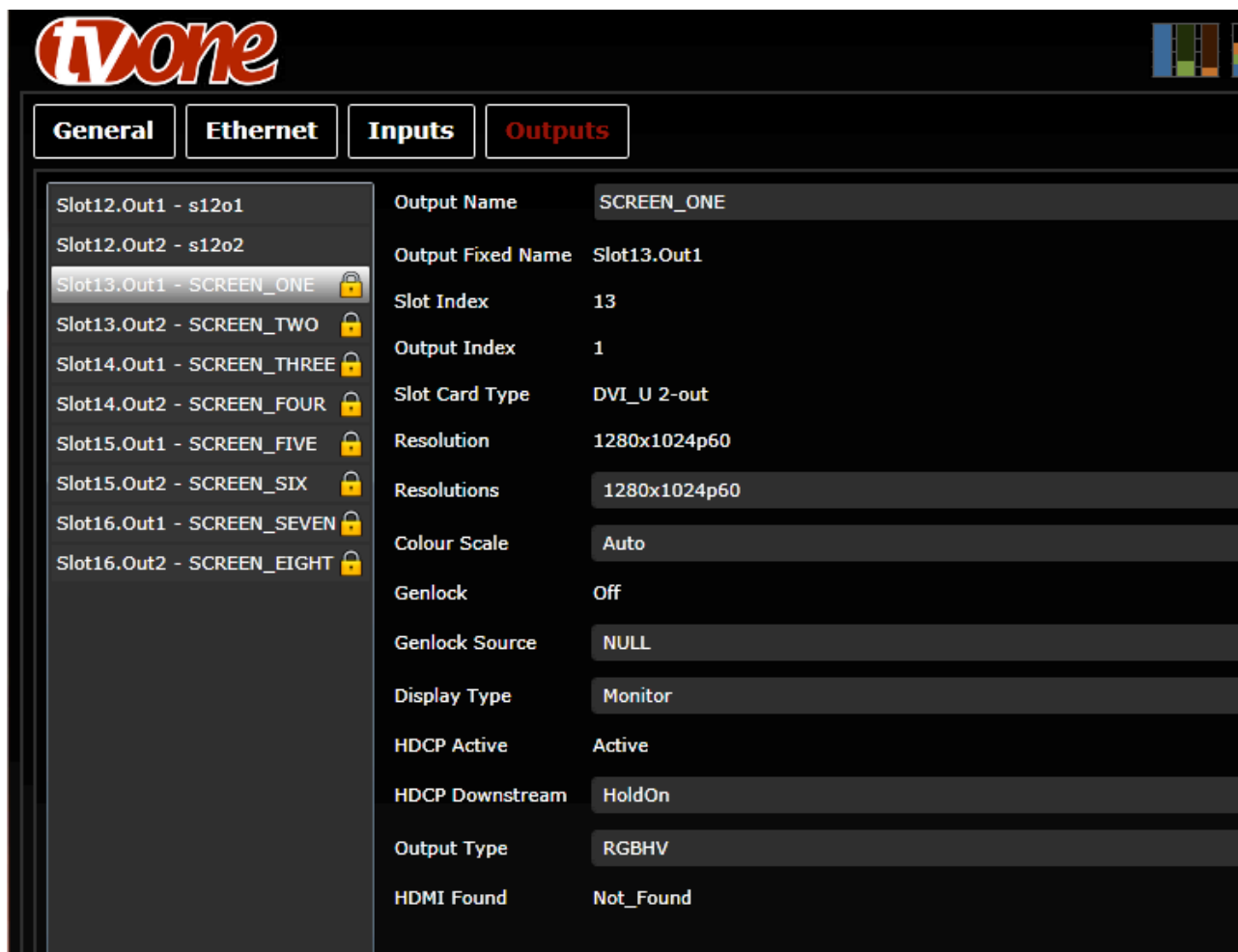
10.5 Naming Inputs

The User is advised to name inputs and outputs to permit easier operation. The default names relate to the physical slots within the unit. For each input and output the top line shows the current name.

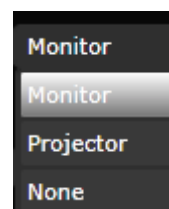
Names must start with a non-numeric character and the name must not contain any spaces.

10.6 Universal DVI Output Modules

It is important to select the correct output resolutions for each of the devices connected to the unit at this stage. Changes of resolution later in the process of generating good quality results can be compromised by setting different resolutions later. For each output click on the output resolution line and from the pop up select the correct resolution for the monitor or projector connected.



It is also important to select whether the output is a **Monitor** or **Projector** as only outputs selected as projectors will be adjusted during an edge blending process, described later. If an odd number of outputs are required on a layout any unused outputs are best set to **None**.



10.7 Naming Outputs

The user is advised to label outputs. The same restriction on names as explained for inputs also apply here. To identify input channels with HDCP ability a little yellow lock is placed by the input shown the input will work with HDCP sources.

10.8 SDI Output Modules

The SDI output modules should be configured for the desired output resolution no other adjustment is possible.

10.9 Genlock Function

Each output will normally free run at the chosen output resolution. In many situations the user may want to have these outputs co-timed. The unit therefore permits an output to be locked to an input of the same resolution.

To enable Genlock the user must first select a valid Genlock Source. The CORIOmaster control software then reports the Genlock status as text – which is either “Locked” or “Off”. Selecting a valid Genlock Source will automatically adjust the output resolution to match the input resolution. The source select is set to Null by default.

Remember to select the **Take All** button to confirm.

10.10 HDCP

The DVI inputs and output modules are fully compliant with HDCP.

On each DVI Input the user has the ability to disable HDCP communications with the source. This is strongly recommended to be used when connecting to a computer that has HDCP capability but will not be playing out protected material. Otherwise the channel will become encrypted and limit system functionality.

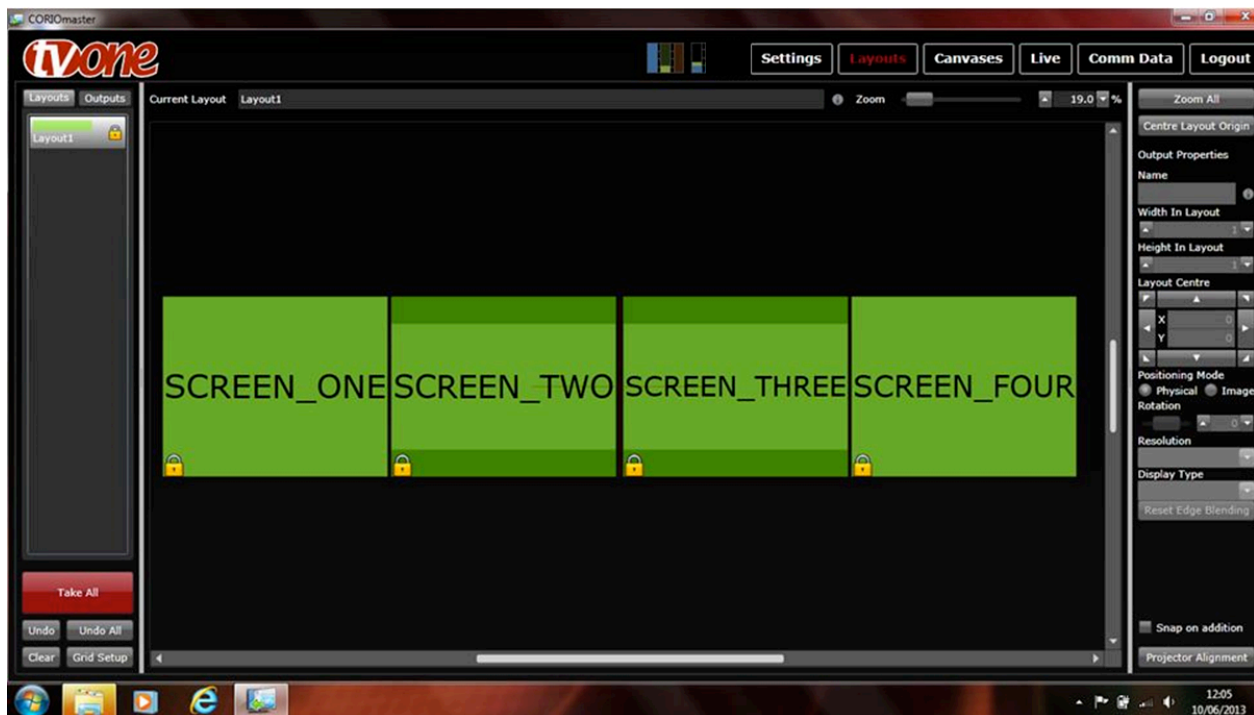
On Outputs the user can set the HDCP Downstream to Hold On, Keep Off or Follow Sources.

Keep Off	Disables HDCP key transfer and is recommended for non-compliant sinks.
Hold On	Used for compliant monitors and projectors.
Follow Sources	If the source has HDCP is present, it forces the output to HDCP. If the source is not HDCP, the output has HDCP turned off.

For correct operation with an HDCP Source ALL outputs connected to that source must be HDCP Compliant.

In the case of the CORIOmaster if one or more windows used on a canvas comes from an HDCP encrypted source then all outputs linked to the Canvas must be HDCP compliant. If not then no output image will occur.

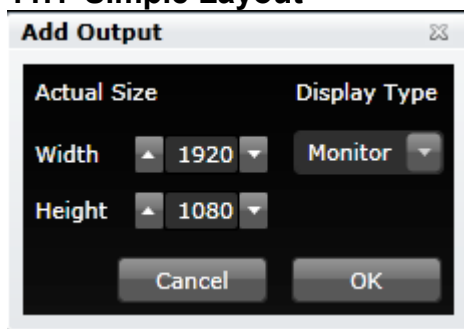
11 CORIOmaster Layout View



The layout screen is where the display area for the CORIOmaster is configured. The zoom bar, entry value, allows the area to be zoomed in and out. A wheeled mouse enables fast zoom in and out.

The left hand side shows the current layout, currently the because of hardware constraints the CORIOmaster mini unit restricts the user to one layout in the system. Click on a layout to select and this can be named on the current layout box. Names must start with a letter and contain no spaces

11.1 Simple Layout



For a layout the next stage is to place outputs onto the layout that mimic their positions in the real world. This is performed by clicking on the left hand tab marked output under the TV One logo. The layout list is now replaced with a list of available outputs. As an output can only be used once, each output disappears from the list if assigned to another layout. If an output is de-assigned from a layout it will reappear in the list and thus be available for any layout.

When an output is selected by clicking on the box next to its name a pop up window will appear asking you to select a few options. The output resolution previously set up in the Slots tab is copied by default into the size values. This is the horizontal width and height, in layout grid points that the display is expected to fill. The display type can be changed to Monitor, Projector, Router, or None, depending on what is connected to the output. Once correctly set the OK should be clicked.

The output then appears on the layout with its centre at point 0,0.

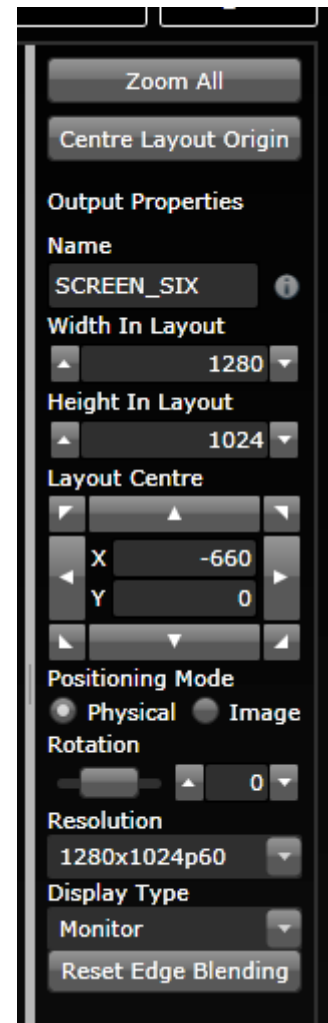
The user can now move the output in a number of ways.

For more accurate positioning the user may enter accurate numbers into the **Layout Centre** of the **Output Properties** field. For fine tuning the arrows provide a nudge facility for actual alignment.

The outputs can also be rotated on the Layout by entering a rotation angle, sliding the bar or nudging.

The Positioning mode is set to physical when the operator is moving outputs physically however at final tuning when the monitor wall may be fixed and an image is being shown where an alignment is required then moving to Image mode inverts the nudge buttons to provide a “same direction” of nudge to image shift.

Remember to press Take to send all these settings to the unit.



Below is an example where a Layout has been set up with three monitors rotated by 60 degrees anti clockwise and mounted with their centres horizontally aligned. The fourth output is associated with this layout as outputs are in pairs, it is not used however and so is labelled Spare and set to None for display type.

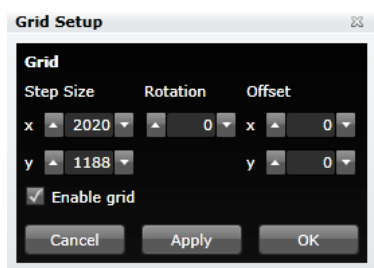


11.2 Layout Aids

To help the user construct layouts a number of extra tools have been added to the software. The **Zoom All** button sizes the layout screen to show all placed outputs. The **Centre Layout Origin** places the 0,0 point in the centre of the screen, where new outputs are placed.

11.2.1 Layout Grid

For regular positioned displays a layout grid option is provided for the user. By clicking on the grid button on the layout screen a pop up appears which permits the user to set horizontal and vertical step sizes and a rotation angle for a grid. A displacement offset is also available but is only of use for producing an absolute grid pattern for some advanced operations.

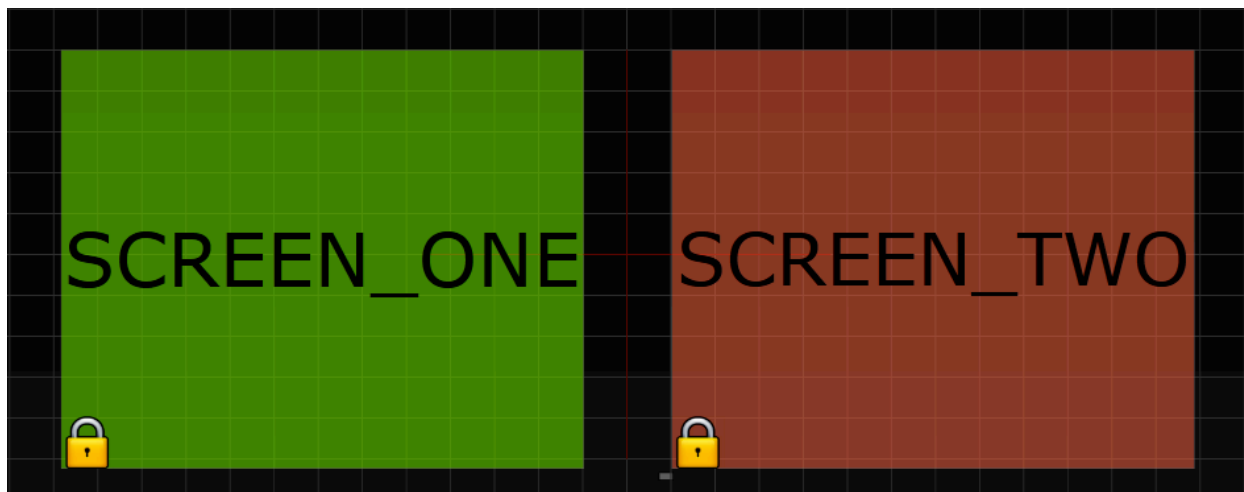


The values in the grid popup can be adjusted and when the apply button is pressed all outputs on the layout will move to the new centre positions if the Enable Grid is ticked. Once the user is happy with the positions, then press OK to close the pop up. The user must press **Take All** to send the new positions to the unit.

11.2.1.1 Using Grids for Bezel Compensation

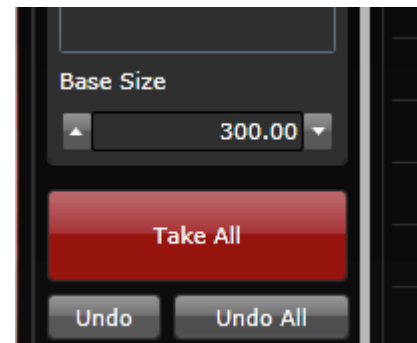
Grids can be used to allow for Bezel size when creating video walls.

For example, a user has to construct an array of 1920x1080 monitors that have a horizontal bezel of an equivalent 50 pixels horizontally and 54 pixels vertically. The horizontal gap between screens is therefore 100 pixels and vertically 108 pixels. By setting the layout grid to 2020 (1920+100) and 1188 (1080+108), and enabling the grid, A set of fine lines appear onto the central area. Now each time a new output is selected and positioned onto the screen the centre of the output will be placed onto the nearest cross point of the grid. In this way a wall of monitors can quickly be set up.



11.2.1 Base Size

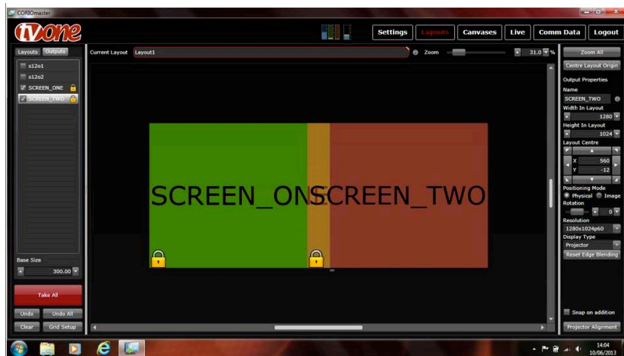
On the left hand side is a user defined value called Base Size, by default this is zero which turns off this function. If the user is using identical monitors on a layout then the Base Size has no function. If however the user is wanting to position different size monitors on a layout then the base size function can aid in producing the desired positioning and sizing.



The user needs to know the horizontal widths and resolutions (they must be identical). This does not have to be in any particular type of units, mm, inches, pixels are all possible.

This method optimises the layout resolution to the CORIOmaster's internal operation. Monitors should not have Layout areas greater in size than the resolution of the monitor. In this situation the larger 300 unit wide monitor will receive directly 1920x1080 layout area. Whilst the smaller 200mm monitors will have the 1280x720 area of the layout up scaled to 1920x1080 before sending to the smaller monitors.

11.3 Projector Alignment

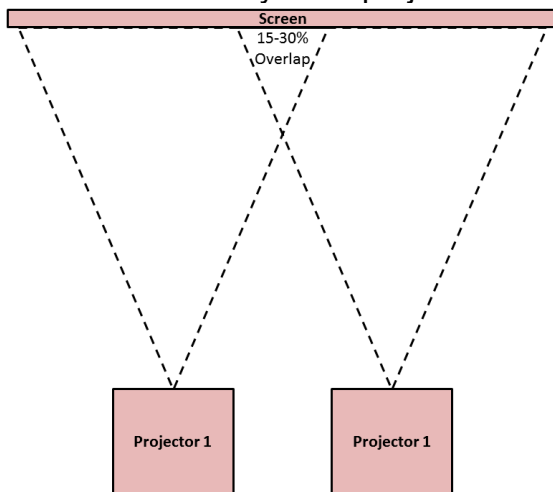


The layout grid can also be used for setting up projectors for edge blending. This time however the gridlines should be spaced smaller than the projector resolution so that the outputs overlap on the layout. **The maximum overlap is 500 pixels.**

Once the layout has been constructed and output types set to projector the projector alignment button should be pressed. This locks the output positions so that they can no longer be dragged by the mouse.

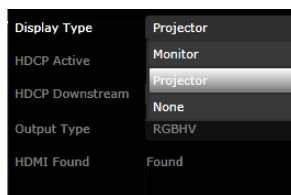
11.3.1 Edge Alignment

The user can easily set a projectors with a blended area between them.

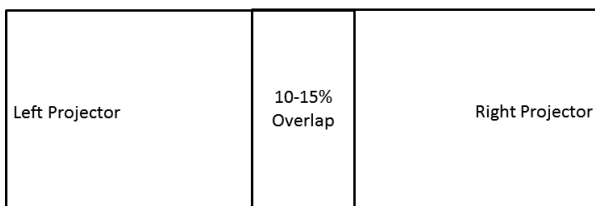


The first stage is to install your projectors to be perpendicular to each other and the screen. Also make sure the projectors are as level as is possible.

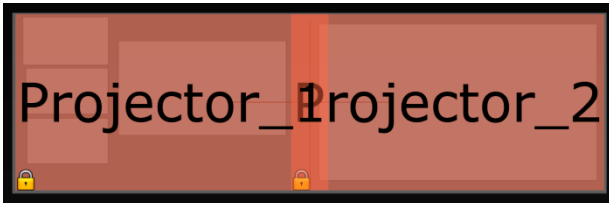
Change picture to match the one below ie with a 10-15% overlap determining your resolution and overlap to get your new aspect ratio.



In the **Layout** menu Create a layout using your two projectors making sure that they are on the size and position required. Make sure that in the **Settings** menu you have selected the **Outputs** as **Projectors** in the **Slots** menu as this gives you access to the blending menus.



Next, project a suitable pattern to check that the images are straight and level and of the same size with a 15-30% overlap. Adjust the zoom and position so that both projectors line up.



Holding down the Control key on your keyboard select both of the outputs in your active layout. The selected outputs will turn red to indicate they are active.

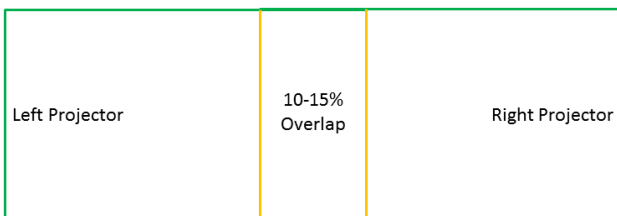


This first process is used to correctly align the array of projectors and set the initial video blend at the overlaps. The user must click on each individual output on the screen to activate it (red) or deactivate it (green).

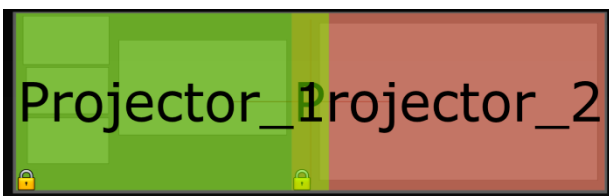
Please note – this will already be partially overlaid on each other and we have separated them here for clarity.

When two adjacent outputs are activated (red) then a set of alignment lines are inserted into the outputs. An outer border of green is displayed on both selected outputs and two red inner lines are shown at the join between the projectors.

The user should now use these lines to correct the projectors alignment by mechanical positioning or lens control on each projector. The aim is to make sure the size of the projections are the same by use of the green boxes and that the red and green lines are both parallel with each other and are projecting on top of each other to produce a single yellow line.



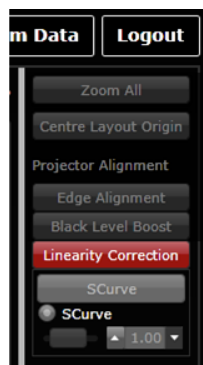
The user is able to produce a small amount of adjustment of the red lines in software by “nudging” the position of the outputs on the right-hand side. However this should only be used for minor corrections.



Next we edit the Blend between the two images. Either Outputs can be adjusted at the same time or each adjusted independently by selecting only one of them.

CORIOmaster mini can blend horizontally, vertically or a combination of both to create complex video walls using projectors.

Once all the projectors have been aligned the next stage is to correct for and brightness non linearity at the blends. This will adjust the brightness on ALL of the blends. By careful adjustment the user should be able to find the correct value that removes any brightness rise or fall originally seen.



Linearity Correction allows us to control the overlap between the two projectors.

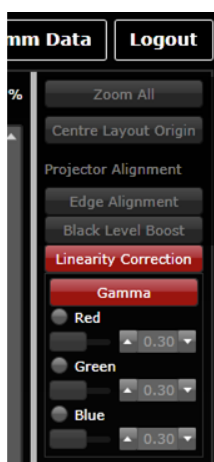
The overlap is defined in the overlap area in the line-up graphic (not the amount of the projectors).



With the control slid to the right the overlay has a strong gradient applied to both images which will result in a black edge in the centre of the image.



Moving the slider to the left overlaps the fade out between the projectors so that the black line disappears.



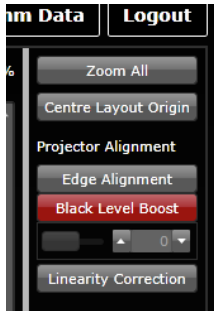
The **Linearity Correction** can also be applied using Gamma for Red, Blue and Green channels independently.

This can be useful where your projectors have a different lamp life and they fade to black in slightly different hues.

To adjust the various **Gammas**, a good way of seeing colour issues is to use a Test Signal Generator to output colour bars then White Red, Green and Blue colour fields making small adjustments until the best match across all colour fields is obtained.

By clicking on the S-Curve button it is replaced with individual R G and B Gamma adjustments. The user should change the input source from White to Red green or Blue. For each of these if they see a projector outputting a different brightness then

that output should be selected on the software (make it the only one red) and then adjust the appropriate gamma to remove any visible difference.

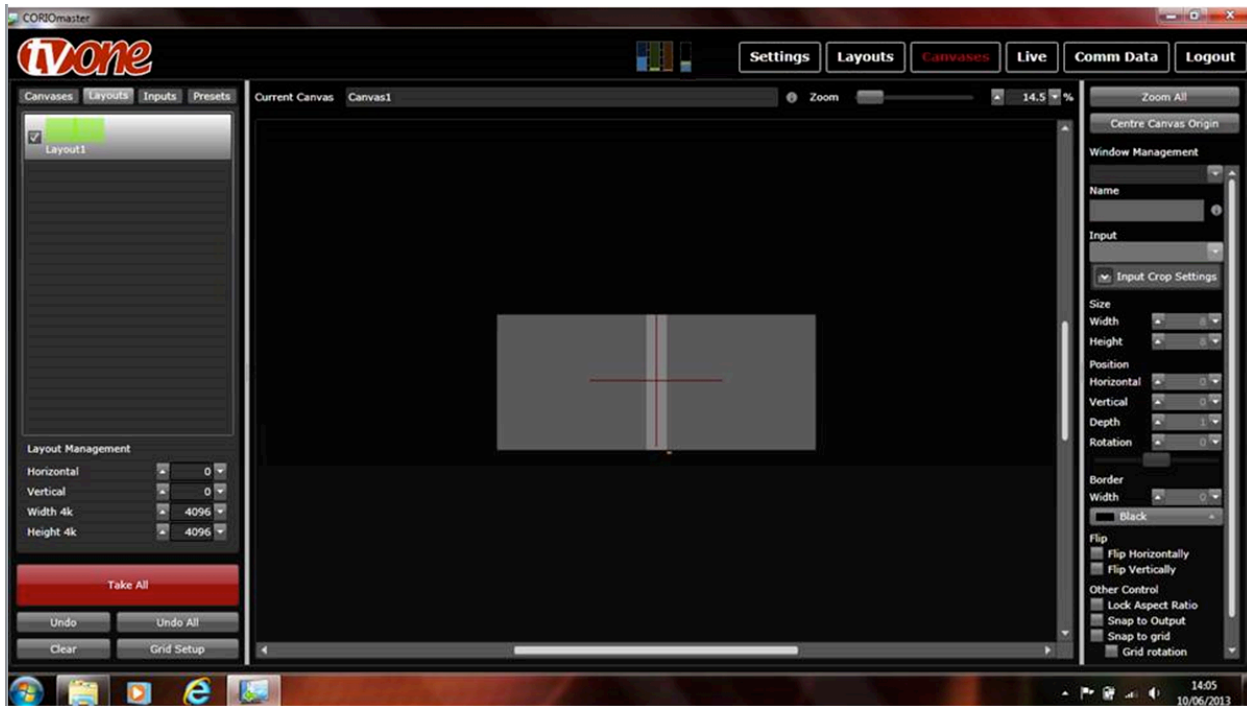


When the Gamma correction has been completed a black source should be used to adjust the 'Black Level Boost'. In very low light conditions it may be possible to see a lighter area on the blended edges. By adjusting the 'Black Level Boost' the level of brightness on each output is raised to match that at the joins.

The user should exit the Projector Alignment by clicking on the highlighted red button and then press Take to store all the settings for the newly constructed Layout.

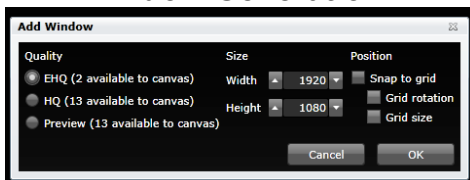
12 CORIOmaster mini Canvas View

After setting up the layout the user can then start to create the presentation on the Canvas. This is performed in the 'Canvas' tab. First assign a layout to the canvas, using the left hand layout tab.



The canvas will then show the outputs assigned to the Layout as greyed areas on the canvas.

12.1 Window Generation



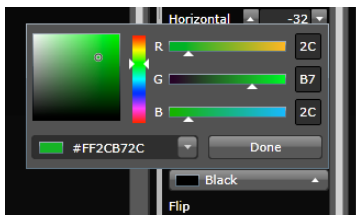
Now select the input left hand tab and a list of inputs appear. These can be dragged onto the canvas. On first dropping a pop up window appears. The user is asked to select the quality of the window to be used. After selection press OK.

Now the user can size and position the window with either the mouse or the values set on the right hand side. The Window will be coloured in according to its quality, Blue for EHQ, Green for HQ and Pink for Preview. Once all the windows have been placed the user must press the take button for these to be sent to the box. After this the windows will appear on the output devices.

12.1.1 Cropping inputs

A video source may not have good images at the edges. To help with this the inputs can be lightly cropped to remove the edge pixels and lines. By pulling down the cropping menu on the right the user may remove a few pixels/lines from an input source. The image is then automatically enlarged to fill the window.

12.1.2 Window Borders



The user may add a border to a window this is set in pixel widths and may have any colour set from the colour table. Press **done** to store the colour. Then press take to send this to the unit for display.

12.1.3 Canvas Grid

A grid can be set up to aid the positioning of windows. This grid only works on windows that have been selected to snap it to the grid. A number of grids can be used to set up windows in this way as windows using past grids that are not touched will not move to a new grid. The grid is also not stored at any time for the windows and is lost the moment it is either changed or the software is logged out.

The user can set up a grid similar in manner to that described for the layout. This permits the horizontal and vertical step size to be set and a rotation angle. The offset is now quite important as it can position the centre of the grid relative to the now fixed output locations.

A final setting is a default window size. This can be set by the user so that no matter what the input window resolution may be the window will be resized to the grid window size.

With a grid set up, on selecting a new window the user has the option of using the automatic alignment functions or just dropping the window onto the canvas for free positioning.

12.1.4 Snap to Output

When a new window is dragged onto an output the user has the option to 'Snap to output'. This will resize the window, change its aspect ratio to match the output and place it pixel for pixel on the Canvas.

12.1.5 Snap on Addition

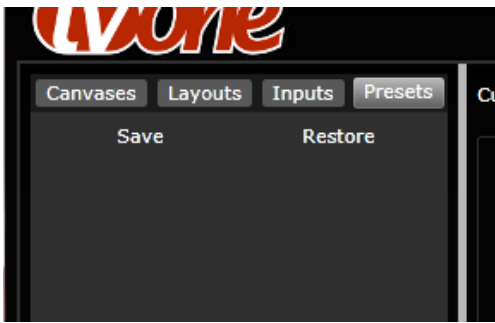
This function will place the new window adjacent to the nearest window on the canvas. This permits quick construction on a mosaic of windows.

12.1.6 Snap to Grid

This permits the new window to snap the centre of the window to a cross point on the current grid. The grid is only shown after this option is ticked and the window is active. The user can then drag the window to be near the desired cross point for the window to snap to this location.

The user has two sub options on snap to grid. The user may also snap to the rotation of the grid or leave it free to be adjusted by the rotation control. The other is to set the window option that will resize the window to the current grid window size.

12.1.7 Presets



When using the Canvas Screen the user can store system wide configurations for later recall. The user on first clicking on the Preset Tab will see no Presets.

To activate editing presets the user must restore all presets and wait. This is because all the presets are stored within the unit and must first be read from it to permit the user access.

12.1.7.1 Storing and naming presets



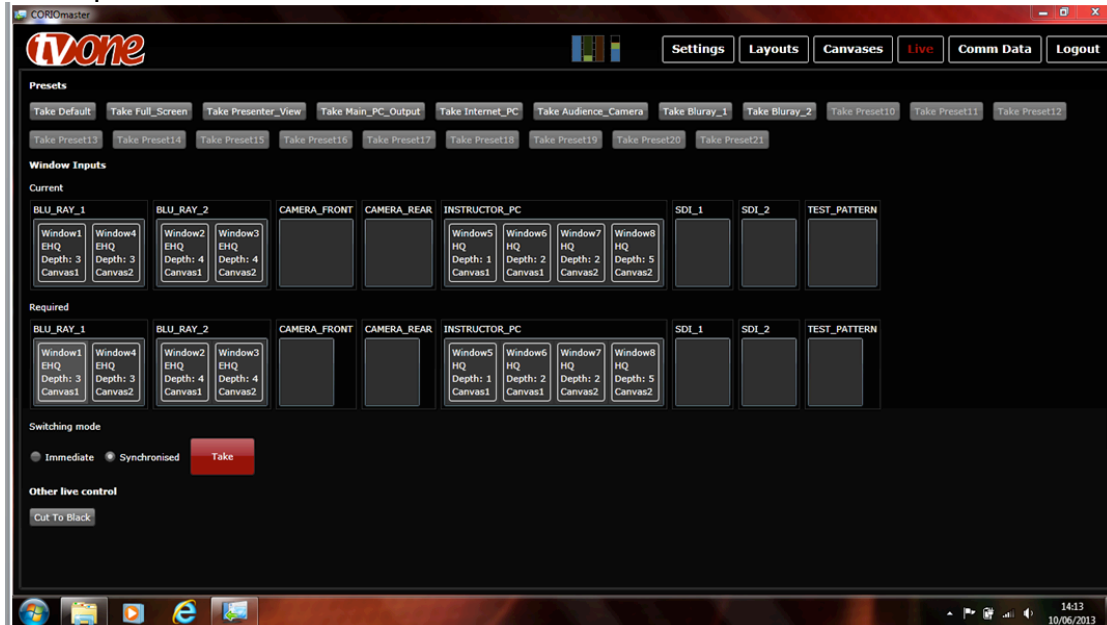
Once the user is satisfied with the Layout and Canvas positions of the windows they can save the configuration with the Store Preset x button. This will store the complete system under that Preset number. The number starts at 2 as Presets 0 and 1 are reserved for built in features. The user may also rename a Preset to a more memorable title.

The user may recall any Preset at any time from this canvas tab and load it back onto the canvas for editing windows. The user may store these changes back into the recalled Preset, so overwriting the position, or store it in a new location with a new label.

The user currently has 20 Presets available for this purpose. Once complete the user should have stored all of the fixed window positions they need for live usage.

13 CORIOmaster Live Screen

Once all the presets have been created and stored the user can use the Live Screen to control their presentation.



Once loaded, the top of the screen shows all the presets that can be recalled. By pressing any of these buttons the unit will move to that Preset and the outputs produce the correct placement of windows from that Preset.

The lower half of the screen shows which inputs are being presented on each window of the current Preset. If windows and inputs have been named then the user can see easily which windows are showing which input. Inputs are shown in alphabetical order. The user has the ability to change the input on a window. This is performed by moving the window to the new window. There are two modes which actuate swapping inputs, 'Immediate' which swaps the input instantaneously and 'Synchronised' which executes multiple swaps with the 'Take' button. Please note this is not a 'Take All' function.

A **Cut To Black** button is available that sets all outputs to black.

13.1.1 Separate control

To help control the system in Live situations the user may use third party controllers to perform the same task.

To change a window source the user must know the window number from the canvas. For window 6 for example to change the source the user must type
`Resources.window6.windowSource = slot4.in1.`

14 Useful Information

14.1 Firmware Updating

The CORIOmaster 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.

14.1.1 Connecting a PC to the CORIOmaster

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 one external drive called TV One. The first is the internal NAND and should only be accessed under direct request from TV One technical support.

The second drive is the internal SD Card and will come up with the Label TVONE. This Drive is used to hold user files. To update the unit the user must drop two files into the root directory of this drive.

14.1.2 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 M133_M00.dat for the CORIOmaster. The 133 being the version number.

The SD Card can have many M133_M00.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 be 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 M133_M00.dat files.

14.1.3 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 M133_M00.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.

14.2 Replacing Modules

CORIOmaster mini modules are factory installed and cannot be replaced in the field by end users. Module changes should be only carried out by a TV One Customer Service Engineer following approved procedures.

14.3 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 cannot accept. Due to the complexity of the CORIOmaster only a few basic commands are described here. It is strongly recommended the user controls the unit through the TV One application.

For each command an acknowledgement will be return.

14.3.1 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

User specific login functionality is not currently supported.

To logout the command is

Logout

14.4 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

14.4.1 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 fixed label for slot1 is:

Slots.slot1

The Video Modules have inputs and outputs. Inputs are addressed by **in1**, **in2**, etc and outputs are addressed by **out1**, **out2**, etc.

For example 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 Slot5 is **Slots.slot4.out1**

14.4.2 Useful Command Line Commands

CORIOmax

```
coriomax.Model_Name = CORIOmax  
coriomax.Model_Number = 8007  
coriomax.Serial_Number = 0000000000000  
coriomax.Backplane_Number = 0000000000000  
coriomax.Software_Name = CORIOmax  
coriomax.Software_Version = V1.133.P4 Master  
coriomax.RebootToMaster()  
coriomax.RebootToMatrix()  
coriomax.Software_Date = Jul 30 2012 21:05:45  
coriomax.Software_Update()
```

System

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_Port = 10001
```

system.comms.USB = <...>

```
system.comms.usb.Command_Enabled = On  
system.comms.usb.MSD_Enabled = On
```

system.OutputExtra = <...>

```
system.outputextra.ProjectionLink = Off  
system.outputextra.DefaultHiRes = 1280x720p50  
system.outputextra.DefaultLoRes = 720x576i50  
system.outputextra.DefaultGenlockRes = 720x576i50  
system.outputextra.TestSignalPattern = VColBars
```

system.Constraints = <...>

```
system.constraints.MaxInputs = 16  
system.constraints.MaxOutputs = 18  
system.constraints.MaxWindows = 36  
system.constraints.MaxCanvases = 4  
system.constraints.MaxLayouts = 36
```


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.Info()

system.filing.sdcard = <...>

system.filing.sdcard.Files()

system.filing.sdcard.Info()

system.Temperature_Control()

system.Security = <...>

system.security.Guest_Username = guest

system.security.Guest_Password =

2b3cdf32a724459ab756aa2468437e9605f0190dce27da2

system.security.Guest_Timeout = 600

system.security.User1_Username = user1

system.security.User1_Password =

91955e2341a2c9c60880f697363faf982da02974ee04437

system.security.User1_Timeout = 600

system.security.User2_Username = user2

system.security.User2_Password =

4894c216094bb3d9620744a1fca03d50140157778fc432b

system.security.User2_Timeout = 600

system.security.User3_Username = user3

system.security.User3_Password =

aafa5c1adea709bf838694d5cf25ef22026785485e9b247

system.security.User3_Timeout = 600

system.security.User4_Username = user4

system.security.User4_Password =

99ddb428e6f7bf0082ddf43816db527d4e87a921a03c09e

system.security.User4_Timeout = 600

system.security.Admin_Username = admin

system.security.Admin_Password =

29cccb55f37e5b1a055892357fd3110f96debeb40cd9840

system.security.Admin_Timeout = 600

system.security.Test_Username = test

system.security.Test_Password =

ac03726064a1c420f77c83b49f9a0bb33a2e289b78367d95

system.security.Test_Timeout = 14400

system.Menus = <...>
system.menus.Titles()

system.menus.XML()
system.menus.Details()

system.Reset()
system.SaveAllSettings()
system.RestoreAll()
system.ClearSavedSettings()
system.BackupToSDCard()
system.RestoreBackup()
system.HDCPPrintTable()
system.WPrstSeqNum = 28951
system.HDCPClearKeyFile()
system.HDCP_Status = R
system.HDCP_Debug = Off
system.Status = {Serving,busy}

Test

test.Ticker_Rate = 4657471

Aliases

aliases.s7i1 = Slots.Slot7.In1
aliases.s7i2 = Slots.Slot7.In2
aliases.Windows = Routing.Windows
aliases.Canvases = Routing.Canvases
aliases.Layouts = Routing.Layouts
aliases.MonitorViews = Routing.Monitorviews
aliases.s3i1 = Slots.Slot3.In1
aliases.s3i2 = Slots.Slot3.In2
aliases.s4i1 = Slots.Slot4.In1
aliases.s5i1 = Slots.Slot5.In1
aliases.s5i2 = Slots.Slot5.In2
aliases.Preset = Routing.Preset
aliases.Video_2 = Slots.Slot1.In2
aliases.Camera_1 = Slots.Slot6.In1
aliases.Camera_2 = Slots.Slot6.In2
aliases.Video_1 = Slots.Slot1.In1
aliases.PC_1 = Slots.Slot2.In1
aliases.PC_2 = Slots.Slot2.In2
aliases.Studio_Sync = Slots.Slot4.In2

Resources

resources.EDID = <...>
resources.edid.s4o1.FileName = nand:\TVONE\EDID\S4O1.EDD
resources.edid.s4o1.EDIDVersion = 1.3
resources.edid.s4o1.Manufacturer = TVO
resources.edid.s4o1.Name = TVOneCORIOmax

resources.edid.s4o1.SerialNumber = 0
resources.edid.s4o1.ManufactureDate = 201216
resources.edid.s4o1.Width_mm = 600
resources.edid.s4o1.Height_mm = 450
resources.edid.s4o1.HorizBdr_pix = 0
resources.edid.s4o1.VertBdr_pix = 0
resources.edid.s4o1.Extensions = 1
resources.edid.s4o1.Resolutions()
resources.edid.s4o1.Remove_File()
resources.LOGO()
resources.STILL()
resources.WARP()

Slots

slots.slot1.Cardtype = DVI_U 2-in
slots.slot1.Carddata()
slots.slot1.In1 = <...>
slots.slot1.in1.FullName = In1
slots.slot1.in1.Status = INVALID
slots.slot1.in1.Alias = Video_1
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.ColourScale = Auto
slots.slot1.in1.Type = 0
slots.slot1.in1.Set_Resolution = NULL
slots.slot1.in1.Measured_Resolution =
slots.slot1.in1.Measured_Width = 0
slots.slot1.in1.Measured_Height = 0
slots.slot1.in1.Measured_Field_Rate = 0
slots.slot1.in1.Measured_VTotal = 0
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.AnH_Offset = 0
slots.slot1.in1.AnV_Offset = 0
slots.slot1.in1.OnSrcLossColour = Blue
slots.slot1.in1.HDCP_Enabled = Off
slots.slot1.in1.HDCP_Required = Off
slots.slot1.in1.HDMI = Not_Found
slots.slot1.in1.Audio = Off
slots.slot1.in1.AudInA = NULL
slots.slot1.in1.AudInB = NULL
slots.slot1.in1.AudInC = NULL

slots.slot1.in1.AudInD = NULL
slots.slot1.in1.AFVChoiceA = Slot1.In1.AudInA
slots.slot1.in1.AFVChoiceB = Slot1.In1.AudInB
slots.slot1.in1.AFVChoiceC = Slot1.In1.AudInC
slots.slot1.in1.AFVChoiceD = Slot1.In1.AudInD
slots.slot1.in1.View = NULL
slots.slot1.in1.ViewPosCode = 0
slots.slot1.in1.AudioBars = 0

slots.slot1.PhaseRetrain()
slots.slot1.Module_Resolutions()

Routing

routing.Windows = <...>

routing.windows.Window1 = <...> to routing.windows.Window36 = <...>

windows.window1.FullName = Window1
windows.window1.Status = FREE
windows.window1.Alias = NULL
windows.window1.Input = NULL
windows.window1.InWidth = 0
windows.window1.InHeight = 0
windows.window1.InLeft = 0
windows.window1.InTop = 0
windows.window1.Canvas = NULL
windows.window1.CanWidth = 32
windows.window1.CanHeight = 24
windows.window1.CanXCentre = 0
windows.window1.CanYCentre = 0
windows.window1.Zorder = 0
windows.window1.RotateDeg = 0
windows.window1.WDP = 0
windows.window1.WDPQ = 2048
windows.window1.BdrPixWidth = 1
windows.window1.BdrRGB = 0
windows.window1.HFlip = Off
windows.window1.VFlip = Off
windows.window1.BandwidthPxps = 1

routing.Canvases = <...>

routing.Canvases.Canvas1 = <...> to routing.Canvases.Canvas4 = <...>

routing.canvases.canvas1.FullName = Canvas1
routing.canvases.canvas1.Status = FREE
routing.canvases.canvas1.Alias = NULL
routing.canvases.canvas1.WindowList = <Empty>
routing.canvases.canvas1.LayoutList = Layout1

routing.Layouts = <...>

routing.layouts.Layout1 = <...> to routing.layouts.Layout36 = <...>

routing.layouts.layout1.FullName = Layout1
routing.layouts.layout1.Status = FREE

```
routing.layouts.layout1.Alias = NULL
routing.layouts.layout1.Canvas = Canvas1
routing.layouts.layout1.CanWidth4kUnit = 4096
routing.layouts.layout1.CanHeight4kUnit = 4096
routing.layouts.layout1.CanXCentre = 0
routing.layouts.layout1.CanYCentre = 0
routing.layouts.layout1.OutputList = Slot11.Out1,Slot11.Out2,Slot13.Out1,Slot132
routing.layouts.layout1.Mode = Normal
```

routing.Preset = <...>

```
routing.preset.Alias = Preset
routing.preset.Take = 0
routing.preset.Edit = 0
routing.preset.Read = 0
routing.preset.Valid = Yes
routing.preset.NameRead =
routing.preset.SeqNumRead = 468
routing.preset.FlagsRead = 0
```

```
routing.preset.SaveRead()
routing.preset.RestoreRead()
routing.preset.RmvPresetFileRead()
```

```
routing.preset.SaveAllPresets()
routing.preset.RestoreAllPresets()
routing.preset.RemovePresetFiles()
```

CopyPreset(x,y)

14.5 CORIOmaster Control Software Configuration

14.5.1 Software overview

The software has been developed to easily access all of the functions of the CORIOmaster from a computer. Connection is possible by RS232 and Ethernet. The GUI has been designed so the user has full control and a visual representation of the whole system topography.

14.5.2 Software installation

If you haven't already got a copy of the CORIOmaster software you can download it from the following URL: http://www.tvone.com/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 Microsoft .NET 4 and Silverlight 5 running on your computer.

The version of control software depends on the version of Windows running on the PC. For Windows XP, Windows 7 and Windows 8 (32 bit) download the 32 bit version. For Windows 7 and Windows 8 (64 bit) download the 64 bit version. The files should be extracted to a temporary directory, the directory C:\Coriomaster is recommended.

Once extracted, move to the CORIOmaster directory and run the install program. Follow the install wizard and once it is finished a Desktop icon for the CORIOmaster program is generated.

Three files are placed in the C:\Program Files\TV One\CORIOmaster Control Software directory. Administrator rights are required to install the application.

15 Tech Specs

TV One Part Numbers	
CORIOmaster mini chassis with dual Universal DVI inputs	C3-510
Universal DVI dual input module	CM-DVIU-2IN
Universal DVI dual output module	CM-DVIU-SC-2OUT
3G-SDI dual input module	CM-3GSDI-SC-2OUT
HD-SDI quad input module	CM-HDSDI-4IN
HDBaseT dual output module	CM-HDBT-2OUT-1ETH
Additional Power Supply	CM-1RPS
Size & Weight	
Size (H x W x D)	44 x 431 x 334mm (1.73" x 17" x 13.1") without rack ears
Weight	5 Kg (with redundant PSU option)
Compliance	
CORIOmaster mini mainframe	FCC, CE, RoHS (ULPSU)
Input/output modules	FCC, CE, RoHS
Video Processing	
Architecture	TV One Parallel Processing Architecture
Processing	CORIO Video Processing
Quality	4:4:4 Video Processing
System Video Delay	Maximum 2 frames from input to output
Firmware	Upgradeable via software
Synchronisation	Genlock/Framelock
Control	
Application	CORIOmaster mini PC Application
PC Specifications	Microsoft XP or Windows 7 (32 or 64 Bit) running Microsoft .NET 4, Silverlight 5 with Winzip/WinRAR or 7-Zip.
Control Display	900+ Line monitor recommended
CORIOmaster mini PC control	RS232 and IP
System Inputs/Outputs	
Fixed Universal DVI Input	2 Inputs
Universal DVI Modules	Up to 10 inputs or up to 10 outputs
3G-SDI Modules	Up to 8 Inputs or up to 10 Outputs
HD-SDI Modules	Up to 16 Inputs
HDBaseT Modules	Up to 10 Outputs
Resolutions	
Analogue	PC up to 1920 x 1080/60, HDTV to 1080p/60
Digital	PC to 1920 x1200/60, HDTV to 1080p/60
TV Format Support	NTSC-M, PAL
Conversion Capability	Up/Down/Cross Conversion
Routing & Switching	
Video	Any video source routed to any window with flexible window priorities.
Audio	Audio is muted through the system
Group Switching	Independent Group Switching
Performance	
Number of Video walls	1
Display Size	Adjustable for different size and resolution video walls

Display Rotation	Rotation in 1° Increments
Adjustments	Blending and Bezel adjustment
HDCP	Key management on inputs and outputs
Operating Requirements	
Operating Temperature Range	0° to 40° C (+32° to +104° F)
Storage Temperature Range	-10° to 70° C (+14° to +158° F)
Humid Operating Range	10% to 85%
Storage Humidity Range	10% to 85%
MTBF	35,000 hours (approx.)
Power	
Typical Power Consumption	50W
Maximum Power Consumption	380W Theoretical Maximum (with dual PSU's under full load)
Voltage	110v to 240v auto-detecting
Power Supply	Single with optional dual PSA
Box Contains	CORIOmaster mini chassis with specific input/output modules fitted, Control Software, Operational Manual, Power Cable
Optional Accessories	
Redundant PSU	CM-1RPS
Rack support rails (24")	RM-120
Rack support rails (32")	RM-130
Control Software	Downloadable from Website
Warranty	5 year parts and labour