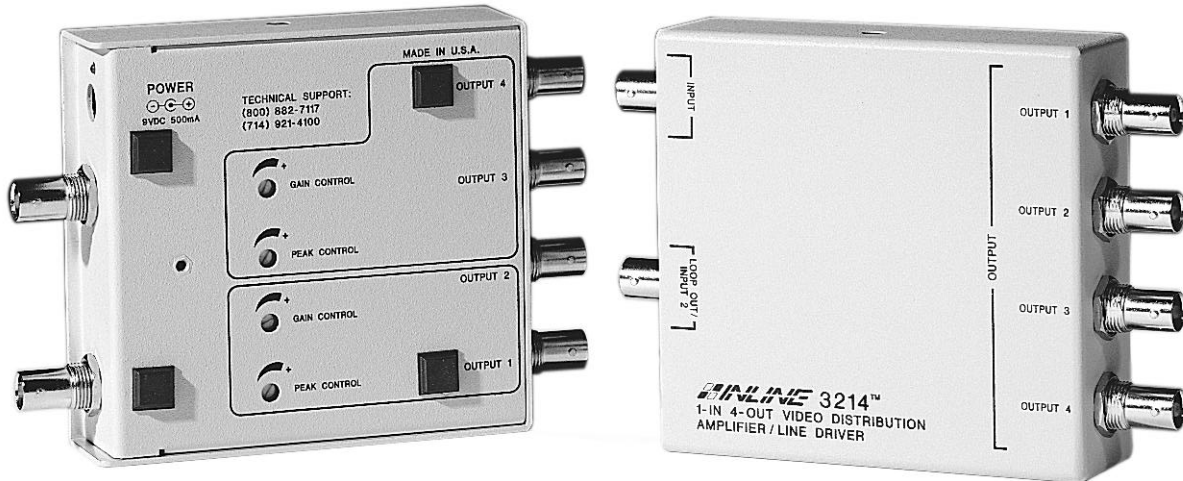


Operation Manual



High Resolution Video Distribution Amplifier / Line Driver Series:

IN3212 - 1-In, 2-Out Distribution Amplifier

IN3214 - 1-In, 4-Out Distribution Amplifier

IN3218 - 1-In, 8-Out Distribution Amplifier





Installation and Safety Instructions

For Models without a Power Switch:

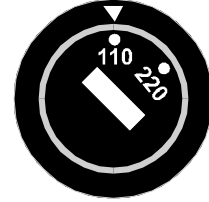
The socket outlet shall be installed near the equipment and shall be accessible.

For Models with 110 / 220V Power Selector:

Caution: Before applying power to this unit, the voltage selector must be set to the appropriate setting to match local A/C line voltage. Improper setting of the voltage selector may cause damage to the unit and create a potential fire hazard.

The voltage selector is a round switch located next to the A/C power input connector which looks like this:

Using a straight slot screwdriver or small coin, rotate the selector to the correct position so that the arrow lines up with 110 or 220 as appropriate for local power line voltage as indicated in the chart below:



Local A/C Voltage	Voltage Selector Setting
110 ~ 120 VAC	110
220 ~ 240 VAC	220

For all Models:

No serviceable parts inside the unit. Refer service to a qualified technician.

For Models with Internal or External Fuses:

For continued protection against fire hazard, replace only with same type and rating of fuse.

For IN2001 / IN3234 / IN3236 / IN3502 / IN3504 / IN3506 / IN3562 / IN3564 / IN3566 / IN3572 / IN3574 / IN3576:

Caution: Double pole / neutral fusing.

For all Models with Integral Lithium Battery:

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.



Instructions d'installation et de sécurité

Pour les modèles sans interrupteur de courant:

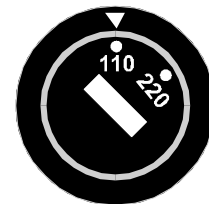
La prise de courant d'alimentation sera installée près de l'équipement et sera accessible.

Pour les modèles avec un sélecteur d'alimentation 110V/220V:

Attention: Avant de connecter l'appareil au circuit d'alimentation, le sélecteur de courant doit être positionné sur la sélection appropriée correspondant au voltage du circuit de courant alternatif local. Une mauvaise sélection peut engendrer des dommages à l'appareil et créer un danger d'incendie.

Le sélecteur d'alimentation est un commutateur rond positionné près du connecteur d'alimentation. Il se présente comme suit:

A l'aide d'un tourne-vis plat ou d'une pièce de monnaie, le sélecteur peut être tourné dans la position adéquate en veillant que la flèche corresponde avec 110 ou 220, en fonction de la valeur du circuit de courant local. (Voir tableau ci-dessous)



Circuit local AC	Position Sélecteur
110 ~ 120 VAC	110
220 ~ 240 VAC	220

Pour tout les modèles:

Pas de composants à entretenir à l'intérieur. Confiez toute réparation à un technicien qualifié.

Pour les modèles équipés de fusibles internes ou externes:

Afin d'éviter tout danger d'incendie, ne remplacer qu'avec le même type et la même valeur de fusible.

Pour IN2001 / IN3234 / IN3236 / IN3502 / IN3504 / IN3506 / IN3562 / IN3564 / IN3566 / IN3572 / IN3574 / IN3576:

Attention: Double pôle / fusible au neutre.

Pour tout les modèles avec une batterie au lithium interne:

Attention: Danger d'explosion si la batterie est incorrectement remplacée. Ne remplacez la batterie qu'avec le même modèle, ou avec un modèle recommandé par le constructeur. Traitez les batteries usagées selon les instructions du fabricant, ou selon les normes écologiques en vigueur.



Installations und Sicherheitshinweise

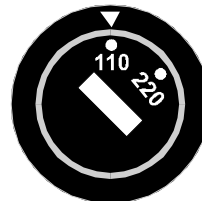
Für Geräte ohne Netzschalter:

Die Netzsteckdose soll in der Nähe des Gerätes installiert und frei zugänglich sein.

Für Geräte mit 110 / 220V Spannungswähler:

Achtung: Bevor Sie dem Gerät Spannung zuführen, muß der Spannungswähler entsprechend der Spannung des lokalen Wechselspannungsnetzes eingestellt werden. Die falsche Stellung des Spannungswählers kann eine Beschädigung des Gerätes und möglicherweise ein Feuer verursachen.

Der Spannungswähler ist ein runder Schalter in der Nähe der Netzeingangsbuchse mit folgendem Aussehen:



Drehen Sie den Wähler mit einem normalen Schraubenzieher oder einer kleinen Münze so, daß der Pfeil auf die 110 oder 220 zeigt, entsprechend der Spannung Ihres lokalen Netzes wie hier angezeigt:

Lokale Netzwechselspannung	Stellung des Spannungswählers
110 ~ 120 V	110
220 ~ 240 V	220

Für alle Geräte:

Keine Wartung innerhalb des Gerätes notwendig. Reparaturen nur durch einen Fachmann!

Für Geräte mit interner oder externer Sicherung:

Für dauernden Schutz gegen Feuergefahr darf die Sicherung nur gegen eine andere gleichen Typs und gleicher Nennleistung ausgewechselt werden.

Für IN2001 / IN3234 / IN3236 / IN3502 / IN3504 / IN3506 / IN3562 / IN3564 / IN3566 / IN3572 / IN3574 / IN3576:

Achtung: Allpolige Absicherung

Für alle Geräte mit eingebauter Lithium Batterie:

Achtung: Explosionsgefahr bei falschem Batterieeinsatz. Batterie nur ersetzen durch den gleichen oder entsprechenden Typ wie vom Hersteller empfohlen. Entsorgung verbrauchter Batterien nur nach den Anweisungen des Herstellers.



Instalacion E Instrucciones de Seguridad

Modelos Sin Interruptor:

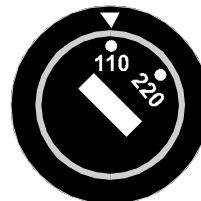
La conexión debe ser instalada cerca del equipo y debe ser accesible.

Modelos con Selector de Voltaje de 110/220V:

Precaución: Antes de operar esta unidad, el selector de voltaje debe instalarse de forma que corresponda a la línea de voltaje local. Instalación inadecuada del selector de voltaje puede causar daño a la unidad y originar un incendio.

El selector de voltaje es un cambiavía redondo localizado cerca de la conexión eléctrica, como se ve en el dibujo:

Use un destornillador común o una moneda pequeña, mueva el selector a la posición correcta, de forma que las flechas indiquen 110 o 220 de acuerdo con el voltaje local, como está indicado a continuación.



Voltaje Local A/C	Selector de Voltaje
110 ~ 120 VAC	110
220 ~ 240 VAC	220

Para Todos Los Modelos:

Dentro de la unidad, no hay partes para reparar. Llame un técnico calificado.

Modelos con Fusibles Internos o Externos:

Para prevenir un incendio, reemplace solo con el mismo tipo de fusible.

Modelos IN2001 / IN3234 / IN3236 / IN3502 / IN3504 / IN3506 / IN3562 / IN3564 / IN3566 / IN3572 / IN3574 / IN3576:

Precaución: Double Polo / Fusible Neutral.

Modelos con Bateria de Lithium Interna:

Precaución: Peligro de explosión si la batería es reemplacada incorrectamente. Reemplace solamente con la misma clase de batería, o una equivalente recomendada por el fabricante. Deseche las baterías usadas de acuerdo con las instrucciones del fabricante.

CE COMPLIANCE

All products exported to Europe by Inline, Inc. after January 1, 1997 have been tested and found to comply with EU Council Directive 89/336/EEC. These devices conform to the following standards:

EN50081-1 (1991), EN55022 (1987)

EN50082-1 (1992 and 1994), EN60950-92

Shielded interconnect cables must be employed with this equipment to ensure compliance with the pertinent Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) standards governing this device.

**FCC COMPLIANCE**

This device 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 against harmful interference when 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 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.

DESCRIPTION

The **IN3212**, **IN3214** and **IN3218** are high performance video distribution amplifiers with gain and peaking controls.

- The **IN3212** is a 1 in 2 out composite video distribution amplifier / line driver.
- The **IN3214** is a 1 in 4 out video distribution amplifier / line driver.
- The **IN3218** is a 1 in 8 out video distribution amplifier / line driver.

All three models are very similar in function, features, and operation with only a few differences as detailed in the chart below:

Feature	IN3212	IN3214	IN3218
Number of Outputs- Regular Mode	2	4	8
Number of Outputs- Split Mode	N/A	(2) 1 X 2	(2) 1 X 4
Gain Controls	1	2	4
Sharpness Controls	1	2	4

These units feature a compact design, which allows them to be installed in a very small space, and offer 300 MHz bandwidth performance. The gain and peaking controls can be adjusted to compensate for signal loss due to long cable runs, and may be used to drive a signal as far as 1000 feet, depending on the signal resolution and cable. Multiple units can also be looped together to provide additional outputs.

PRODUCT FEATURES

- **2, 4 or 8 Outputs** – Feed the signal from one video source to two, four or eight monitors, projectors, VCRs, or other output devices.
- **Gain Controls** – Boost the signal voltage to drive long cable runs.
- **Peaking Controls** – Enhance image by increasing clarity and visibility of fine details.
- **300 MHz Video Bandwidth**
- **BNC input and output connectors**
- **Wide Compatibility** – Compatible with composite video signals (NTSC / PAL / SECAM) and high resolution monochrome video signals.
- **Split Mode Operation** – By changing an internal jumper, the **IN3214** or **IN3218** can be set for split mode where they function as two independent Distribution Amplifiers:
 - **IN3214:** (2) 1x2 Distribution Amplifiers
 - **IN3218:** (2) 1x4 Distribution Amplifiers
- **Loop Output** – The loop output connector provides a passive loop-through signal. This can be looped through to additional amplifiers to create a larger DA system or to drive a local monitor.
- **Metal case enclosure** and optional mounting brackets

COMPATIBILITY

The **IN3212 / IN3214 / IN3218** offer extremely wide bandpass characteristics and are compatible with hi-resolution monochrome signals at virtually any resolution and refresh rate, as well as with low resolution color composite video signals such as NTSC, PAL, or SECAM.

INSTALLATION

1. *If operating the **IN3214 / IN3218** in unified mode without loop output (factory default,) begin with step 2.* If operating the **IN3214 / IN3218** in split mode or with the loop output connector, please refer to **INTERNAL CONTROLS** section on page 3 and set jumper as appropriate.
2. Connect the video signal from the source to the **IN3212 / IN3214 / IN3218** input.
3. Connect the output(s) to the display device(s) or other equipment.
4. Apply power to the unit (9VDC, 500 mA external adapter.)
5. Adjust gain and peaking controls as needed (see **GAIN AND PEAKING CONTROLS** section for details.)

OPERATION

The **IN3212 / IN3214 / IN3218** are designed to distribute/extend video signals. These units have gain and peaking controls which can compensate for cable losses, extending a video signal as far as 1000 feet without any degradation of the signal. Actual drive distance depends on the resolution of the signal and the quality of the cable used. Typically, low resolution video signals (15KHz) can be sent 600-800 feet, and high resolution signals (30 KHz and above) can be sent 200-400 feet.

Regular Mode / Split Mode Operation

The **IN3214 / IN3218** can function in two different amplification modes, regular mode or split mode as described below:

Regular Mode (factory default): The unit operates as a single amplifier. The input signal drives all four or eight outputs. The second connector adjacent to the input may be used as a loop output if the internal jumpers are set properly.

Split Mode: The unit operates as two independent amplifiers. Each input drives two outputs (**IN3214**) or four outputs (**IN3218**). In split mode operation, the **IN3214 / IN3218** can be used to amplify two separate composite video signals or to amplify a single S-Video signal, with the Y (luminance) signal connected to one input connector and the C (chrominance) signal connected to the second input connector.

Please note that in split mode there is no loop output connector since the second connector is used as an input. However, if a loop output is required, the inputs can be set to High Z termination using the internal jumpers and a BNC "T" can be used to split the signal at the input.

LOOP OUTPUT CONNECTOR

The loop output connector provides a passive loop-through signal. This can be looped through to additional amplifiers to create a larger DA system or to drive a local monitor. In order to use the loop output, the Input termination jumper (internal) must be set to High Z (unterminated). The location of the input termination jumper is indicated on pages 4-6.

GAIN AND PEAKING CONTROLS

The gain controls can be used to compensate for video signal voltage losses. Peaking may be used to reboost high frequency components that have been attenuated by long cable runs. The peaking control employs an equalization circuit, introducing an adjustable high frequency peak.

Gain Control

The gain control is used to increase/decrease the contrast of an image by adjusting the amplitude of the video signal. The control has a range of 0.7 to 1.4. Using the IN9333 adjustment tool, gently turn the control clockwise to increase the video gain, and counter-clockwise to decrease the gain.

Peaking Control

The peaking control enhances image detail and sharpness by boosting high frequencies. Using the IN9333 adjustment tool, gently turn the control clockwise to increase peaking, and counter-clockwise to decrease the peaking.

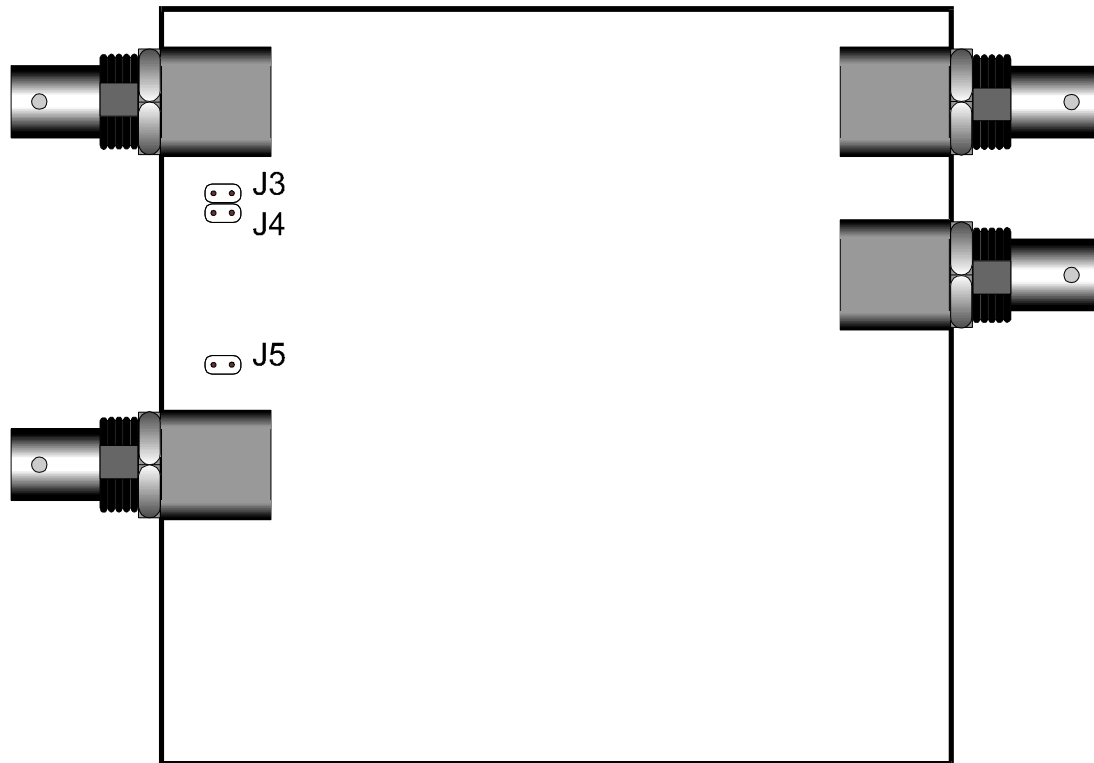
INTERNAL CONTROLS

CAUTION: *Adjustment of the IN3212 / IN3214 / IN3218 internal controls must only be carried out by qualified technicians. Care must be taken to avoid static shock to the internal components.*

The **IN3212 / IN3214 / IN3218** have internal jumpers which can be accessed using the following procedure:

1. Remove the screws from the sides of the unit.
2. (For **IN3212 / IN3214** only) Remove hex-nuts from the output BNC connectors.
3. Slide the top cover off.
4. Identify location of jumpers using the diagrams on pages 4-6 and adjust as needed.
5. Replace top cover and tighten the BNC hex-nuts (if applicable) and the side screws.

IN3212 Internal Jumpers



Jumper Functions

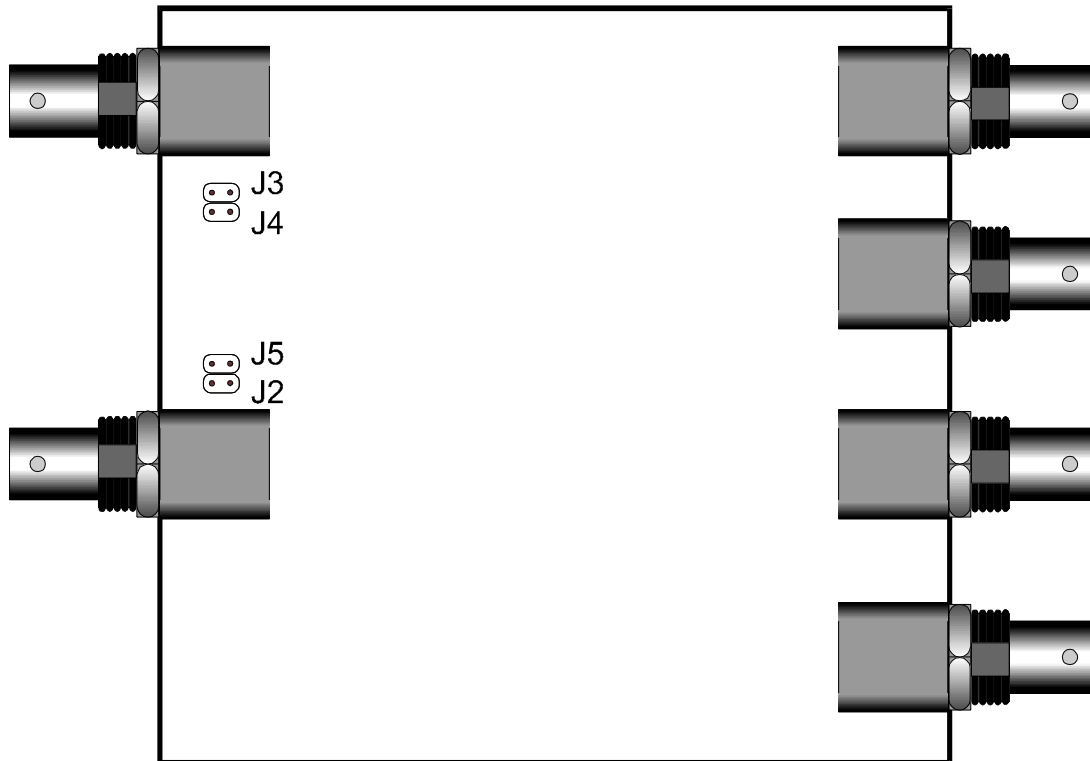
J3	*Closed Open	Input Terminated into 75 ohms Input Unterminated (High Z)
J4 & J5	*Always Closed	Jumpers Must Always Be Closed

Table of Operating Modes

	J3	J4	J5
*Input is Terminated to 75ohms (Loop Through Not Used)	Closed	Closed	Closed
Input is Unterminated (High Z) (Loop Through Connected to a Local Monitor or Another Amplifier)	Open	Closed	Closed

*Factory Default Settings

IN3214 Internal Jumpers



Jumper Functions

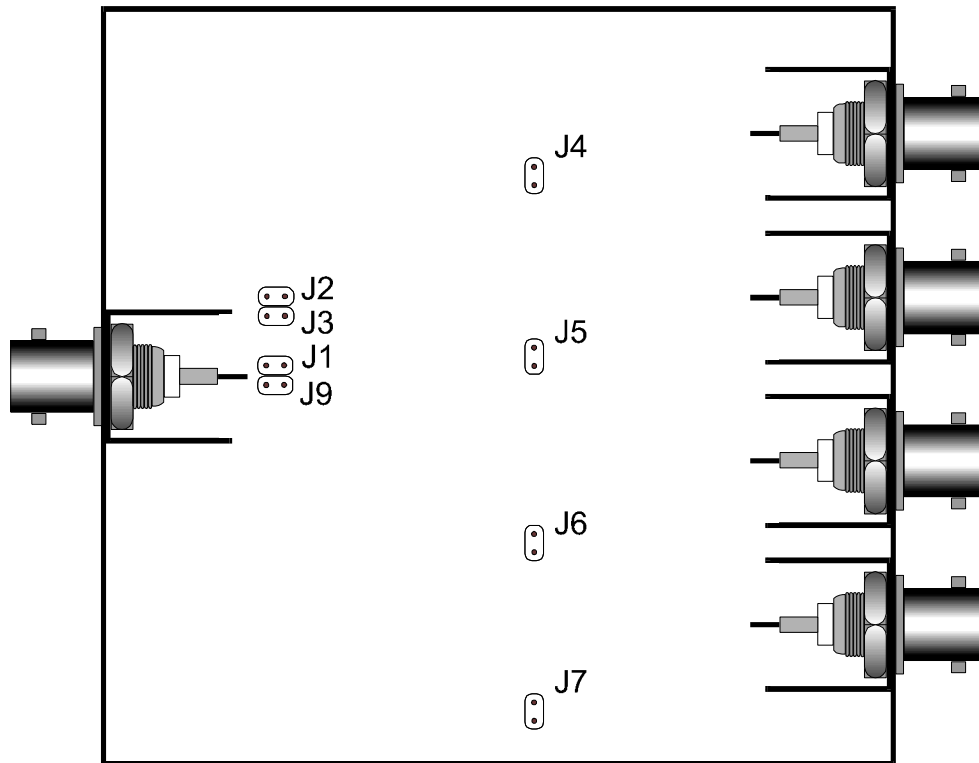
J3	*Closed Open	Input Terminated into 75 ohms Input Unterminated (High Z)
J4 & J5	*Closed Open	Unit Operates as One 1 x 4 Distribution Amplifier Unit Operates as Two 1 x 2 Distribution Amplifiers
J2	Closed *Open	Input #2 Terminated into 75 ohms Input #2 Unterminated (High Z)

Table of Operating Modes

	J2	J3	J4	J5
*Normal Mode - Unit Operates as a Single 1 x 4 Distribution Amplifier Input is Terminated (no loop through)	Open	Closed	Closed	Closed
Normal Mode - Unit Operates as a Single 1 x 4 Distribution Amplifier Input is Unterminated (Using Loop Output)	Open	Open	Closed	Closed
Split Mode - Unit Operates as Two Independent 1 x 2 Distribution Amplifiers Input 1 & Input 2 Terminated into 75 ohms	Closed	Closed	Open	Open
Split Mode - Unit Operates as Two Independent 1 x 2 Distribution Amplifiers Input 1 & Input 2 Unterminated (High Z)	Open	Open	Open	Open

*Factory Default Settings

IN3218 Internal Jumpers



Jumper Functions

J2	*Closed Open	Input Terminated into 75 ohms Input Unterminated (High Z)
J1 & J3	*Closed Open	Unit Operates as One 1 x 8 Distribution Amplifier Unit Operates as Two 1 x 4 Distribution Amplifiers
J9	Closed *Open	Input #2 Terminated into 75 ohms Input #2 Unterminated (High Z)
J4 / J5 / J6 / J7	Closed *Open	Outputs DC Coupled Outputs AC Coupled

Table of Operating Modes

	J2	J3	J1	J9
*Normal Mode - Unit Operates as a Single 1 x 4 Distribution Amplifier Input is Terminated (No Loop-Through)	Closed	Closed	Closed	Open
Normal Mode - Unit Operates as a Single 1 x 4 Distribution Amplifier Input is Unterminated (Using Loop Output)	Open	Closed	Closed	Open
Split Mode - Unit Operates as Two Independent 1 x 2 Distribution Amplifiers Input 1 & Input 2 Terminated into 75 ohms	Closed	Open	Open	Closed
Split Mode - Unit Operates as Two Independent 1 x 2 Distribution Amplifiers Input 1 & Input 2 Unterminated (High Z)	Open	Open	Open	Open

*Factory Default Settings

SPECIFICATIONS

	IN3212	IN3214	IN3218
Inputs			
Input 1	(1) BNC for composite video signals Termination: 75Ω or High Z		
Signal	Analog Video, 1.5 Vp-p max.		
Loop Out / Input 2	(1) BNC Termination: 75Ω or High Z		
Output			
Connectors	2 BNC female	4 BNC female	8 BNC female
Impedance	75Ω		
Controls			
Gain Range	0.7 (30% decrease) to 1.4 (40% increase)		
Peaking	Optimized for NTSC/PAL/SECAM Signals		
General			
Bandwidth	300 MHz @ -3dB		
Internal Jumpers	(2) Input Termination (2) Normal / Split Mode (4) AC/DC Coupling (IN3218 only)		
Power			
Voltage	9 VDC		
Power Consumption	500 mA external adapter included		
Dimensions			
Height x Width x Depth	4" x 5.6" x 1.25" / 10.2cm x 14.2cm x 3.2cm	4" x 5" x 1.6" / 10.2cm x 12.7cm x 4cm	
Weight	Product weight: 0.75 lbs. / 0.35 Kg Shipping weight: 2 lbs. / 1Kg		
Regulatory Approvals	UL1950, CAN/CSA-22.2 No.950, Third Edition CE: EN5502 (1987), EN50081-1 (1991), EN50082-1 (1992 and 1994), EN0950-92		
Parts Included			
	IN9204 9 VDC 500 mA Power Supply IN9333 Gain / Peaking Adjustment Tool Operation Manual		

Optional Accessories	
Mounting Brackets	IN9127 (for IN3214/IN3218); IN9128 (for IN3218).

TROUBLESHOOTING

Problem: *There is no image on the output of the IN3212 / IN3214 / IN3218.*

Suggestions:

- ❑ Make sure the power supply is plugged in and that the input and output cables are connected properly.
- ❑ Bypass the **IN3212 / IN3214 / IN3218** by connecting the input and output cables with a BNC barrel connector to ensure there is a video signal present.

Problem: *The output image is too dark.*

Suggestion:

- ❑ First make sure the display device contrast and brightness controls are set properly. Then increase the appropriate **IN3212 / IN3214 / IN3218** gain control until the desired image is achieved.

Problem: *The output image is too bright or the picture blooms.*

Suggestions:

- ❑ First make sure the display device contrast and brightness controls are set properly. Then decrease the appropriate **IN3212 / IN3214 / IN3218** output gain control until the desired image is achieved.
- ❑ The input termination may be set to High Z. Check the termination jumper settings (see pages 4-6.)

Problem: *The output image is not sharp enough. Vertical lines are very thin.*

Suggestions:

- ❑ Make sure you are using the appropriate video cable for your signal type. When dealing with high resolution video signals, a high quality coaxial cable must be used for long distance cable runs (50 ft. or more). IN7100 or IN7200 series cables are recommended for very long cable runs.
- ❑ Increase the peaking control of the **IN3212 / IN3214 / IN3218** to compensate for high frequency losses.

Problem: *The loop output is not working.*

Suggestion:

- ❑ The input termination for input 1 must be set to High Z. Set the internal jumpers as shown on pages 4-6.

WARRANTY

- ◆ Inline warrants the equipment it manufactures to be free from defects in materials and workmanship.
- ◆ If equipment fails because of such defects and INLINE is notified within two (2) years from the date of shipment, INLINE will, at its option, repair or replace the equipment at its plant, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications.
- ◆ Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of re-shipment to the Buyer.
- ◆ **This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.**

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