

# The Science Explained - IXOS<sup>®</sup> HDMI<sup>™</sup> Cables

## Xen

## Best

XHT658

### SP-OFC (Silver Plated Oxygen-Free Copper) Conductors:

Electrons travel on the outer surface area of the conductor. By coating copper with a softer, less resistant metal like silver the conductivity of the cable increases, allowing electrons to move faster through the conductor. This means the signal travels faster with less resistance and further with less signal loss.

### Large 25 Gauge SP-OFC Conductors:

Increasing the gauge (thickness) of the conductor also decreases the resistance while increasing the conductivity and speed of the cable.

### Proprietary Nitrogen Gas-Injected Polyethylene Dielectrics:

The best conductor insulator is a vacuum because in a vacuum there is nothing touching the conductor, therefore the electrons can move freely down the conductor without being absorbed into the insulator and being released back into the conductor causing a timing issue of the signal (which is called skin effect). All insulation materials have absorption properties but have a low surface area which lessens the degree of absorption and re-admittance of the signal back into the conductor to cause signal delays or distortion. By injecting nitrogen into the dielectric millions of bubbles are produced. This process keeps the surface area of the insulation around the conductor extremely low, therefore acting similar to a conductor in a vacuum.

### Patented 4-Layer PC Board:

The IXOS<sup>®</sup> PC board increases the distance of the connector pins' soldering points. Increasing the distance between the conductors minimises the possibility of the signal hopping from one conductor to the other, known as FEXT (Far End Cross Talk). Also, increasing the distance between the conductors at the pins where no insulation is present helps stabilise the impedance (air is the best insulator as mentioned above). This stability is very important on a digital signal.

### Cast Metal Plug:

The IXOS<sup>®</sup> XHT658 connector housing is a zinc cast design which increases noise rejection properties at the plug. Typically at the back of an electrical component there are many electromagnetic (EMI) interferences due to the power supply. The cast metal plug rejects EMI much better than a molded plug with an inner aluminum foil shield. Often the foil is ripped during the injection molding process allowing noise to enter.

### Triple Layer Shielding:

To provide the maximum protection against Radio Frequency (RFI) and Electromagnetic Interference (EMI), each pair of signal wires is 100% shielded with an aluminum foil wrap. The entire cable is then wrapped with another aluminum foil wrap and a braid screen for ultimate protection from RFI and EMI.

### 24K Gold Plated Connectors:

Gold plating serves as a protector against oxidation (rusting) on the copper pins. Oxidation of the pins decreases the conductivity, which decreases the rate of signal transfer.

### XHT658 is HDMI v1.3 Cat 2:

- 10.2 Gbps up to 7.5m
- 6.82 Gbps up to 11m

### Supports:

- Screen resolutions up to 1440p at 120Hz
- 16 Bit Color Deep Color<sup>™</sup>
- x.v. Color<sup>™</sup>
- Dolby TrueHD<sup>™</sup> and DTS-HD Master Digital Audio



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## Overture

## Better

XHT458

### PC-OFC (Pure Crystal Oxygen-Free Copper) Conductors:

Just as any other raw material found in the Earth there are many grades of copper. PC-OFC is the highest grade (lowest impurity) of copper without undergoing an extremely costly impurity removing process. PC-OFC has the longest crystals of copper with the least amount of breaks due to fewer impurities, resulting in a smooth channel for the electrons to flow through the conductor.

### 26 Gauge PC-OFC Conductors:

As the conductor material has an effect on resistance and speed, so does the gauge (size) of the conductor. Increasing the gauge of the conductor decreases the resistance while increasing the conductivity, speed and linearity of the cable.

### Proprietary Nitrogen Gas-Injected Polyethylene Dielectrics:

The best conductor insulator is a vacuum because in a vacuum there is nothing touching the conductor, therefore the electrons can move freely down the conductor without being absorbed into the insulator and being released back into the conductor causing a timing issue of the signal (which is called skin effect). All insulation materials have absorption properties but have a low surface area which lessens the degree of absorption and re-admittance of the signal back into the conductor to cause signal delays or distortion. By injecting nitrogen into the dielectric millions of bubbles are produced. This process keeps the surface area of the insulation around the conductor extremely low, therefore acting similar to a conductor in a vacuum.

### Patented 4-Layer PC Board:

The IXOS<sup>®</sup> PC board increases the distance of the connector pins' soldering points. Increasing the distance between the conductors minimises the possibility of the signal hopping from one conductor to the other, known as FEXT (Far End Cross Talk). Also, increasing the distance between the conductors at the pins where no insulation is present helps stabilise the impedance (air is the best insulator as mentioned above). This stability is very important on a digital signal.

### Cast Metal Plug:

The IXOS<sup>®</sup> XHT458 connector housing is a zinc cast design which increases noise rejection properties at the plug. Typically at the back of an electrical component there are many electromagnetic (EMI) interferences due to the power supply. The cast metal plug rejects EMI much better than a molded plug with an inner aluminum foil shield. Often the foil is ripped during the injection molding process allowing noise to enter.

### Triple Layer Shielding:

To provide the maximum protection against Radio Frequency (RFI) and Electromagnetic Interference (EMI), each pair of signal wires is 100% shielded with an aluminum foil wrap. The entire cable is then wrapped with another aluminum foil wrap and a braid screen for ultimate protection from RFI and EMI.

### 24K Gold Plated Connectors:

Gold plating serves as a protector against oxidation (rusting) on the copper pins. Oxidation of the pins decreases the conductivity, which decreases the rate of signal transfer.

### XHT458 is HDMI v1.3 Cat 2:

- 10.2 Gbps up to 5m
- 6.82 Gbps up to 7.5m

### Supports:

- Screen resolutions up to 1440p at 120Hz
- 16 Bit Color Deep Color<sup>™</sup>
- x.v. Color<sup>™</sup>
- Dolby TrueHD<sup>™</sup> and DTS-HD Master Digital Audio



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## Studio

## Good

XHT288

### PC-OFC (Pure Crystal Oxygen-Free Copper) Conductors:

Just as any other raw material found in the Earth there are many grades of copper. PC-OFC is the highest grade (lowest impurity) of copper without undergoing an extremely costly impurity removing process. PC-OFC has the longest crystals of copper with the least amount of breaks due to fewer impurities, resulting in a smooth channel for the electrons to flow through the conductor.

### 28 Gauge PC-OFC Conductors:

As the conductor material has an effect on resistance and speed, so does the gauge (size) of the conductor. Increasing the gauge of the conductor decreases the resistance while increasing the conductivity, speed and linearity of the cable.

### Proprietary Nitrogen Gas-Injected Polyethylene Dielectrics:

The best conductor insulator is a vacuum because in a vacuum there is nothing touching the conductor, therefore the electrons can move freely down the conductor without being absorbed into the insulator and being released back into the conductor causing a timing issue of the signal (which is called skin effect). All insulation materials have absorption properties but have a low surface area which lessens the degree of absorption and re-admittance of the signal back into the conductor to cause signal delays or distortion. By injecting nitrogen into the dielectric millions of bubbles are produced. This process keeps the surface area of the insulation around the conductor extremely low, therefore acting similar to a conductor in a vacuum.

### Patented 4-Layer PC Board:

The IXOS<sup>®</sup> PC board increases the distance of the connector pins' soldering points. Increasing the distance between the conductors minimises the possibility of the signal hopping from one conductor to the other, known as FEXT (Far End Cross Talk). Also, increasing the distance between the conductors at the pins where no insulation is present helps stabilise the impedance (air is the best insulator as mentioned above). This stability is very important on a digital signal.

### Copper Foil Plug Shielding:

Underneath the molded housing of the IXOS<sup>®</sup> XHT288, the entire plug is wrapped with a copper foil shield. Even though it is not as effective as the cast metal plug design, it is still effective to reject noise induced at the plug.

### Triple Layer Shielding:

To provide the maximum protection against Radio Frequency (RFI) and Electromagnetic Interference (EMI), each pair of signal wires is 100% shielded with an aluminum foil wrap. The entire cable is then wrapped with another aluminum foil wrap and a braid screen for ultimate protection from RFI and EMI.

### 24K Gold Plated Connectors:

Gold plating serves as a protector against oxidation (rusting) on the copper pins. Oxidation of the pins decreases the conductivity, which decreases the rate of signal transfer.

### XHT288 is HDMI v1.3 Cat 2:

- 10.2 Gbps up to 3m
- 6.82 Gbps up to 5m

### Supports:

- Screen resolutions up to 1440p at 120Hz
- 16 Bit Color Deep Color<sup>™</sup>
- x.v. Color<sup>™</sup>
- Dolby TrueHD<sup>™</sup> and DTS-HD Master Digital Audio



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