

TELETEST™

the cameraman's choice



TELESEND® HD Video Wireless Systems

Instructions

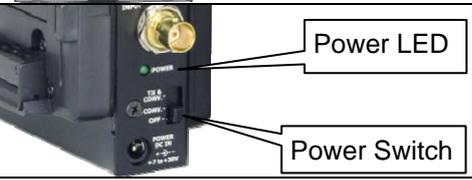
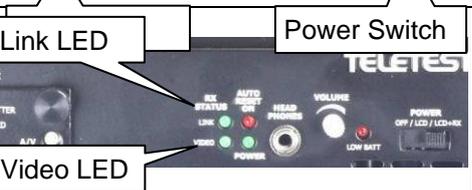
Document Number: **Part # xxx-xxx**

Document Name: **TELESEND Instructions V4**

This document refers to all versions of the **TELESENDS**

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1 Quick Start Instructions

<p>Step 1.</p> <ul style="list-style-type: none"> • Mount the transmitter onto the rear of the camera. • Mount the battery onto the rear of the transmitter. • Connect the HD-SDI or HDMI video output from the camera to the transmitter. • If required, connect the audio from the output on the camera into the audio input on the transmitter 	
<p>Step 2.</p> <ul style="list-style-type: none"> • Mount the battery onto the rear of the LCD receiver. 	
<p>Step 3.</p> <ul style="list-style-type: none"> • Turn the Power Switch on the transmitter to TX & CONV • The green power LED should light. 	
<p>Step 4.</p> <ul style="list-style-type: none"> • Move Power Switch on LCD receiver to LCD + RX • The A/V button should not need pressing as it should be on HDMI, which is needed for the HD wireless link. 	
<p>Step 5.</p> <ul style="list-style-type: none"> • After 5-10 seconds, when the LCD monitor has "locked" onto the transmitter, the A Link LED will light green. • Then, when the LCD monitor receives video from the transmitter, the A Video LED will light green. 	

2 Using the Lightweight Stand

- A director's body absorbs microwaves, so if they are in a field and they turn their back on the transmitter whilst holding the LCD receiver, the signal will be lost.
- If the director doesn't turn around again within 5-10 seconds, the LCD will need to be reset and this takes about 10 seconds for the TX and RX to lock back together, which is very inconvenient.
- So in fields or wide open spaces, the LCD receiver should always be mounted on the **Lightweight Stand** so the director may move freely, leaving the LCD receiver always facing the transmitter.

<p>30-70m ← - - - - -</p> 	<p>In a Street Performance is improved when there are walls for microwaves to bounce off.</p>	<p>20-30m ← - - - - -</p> 	<p>In a Field Performance is reduced as microwaves have nothing to bounce off. Use the Lightweight Stand provided so the director can walk around freely with the receiver always pointing to the transmitter.</p>
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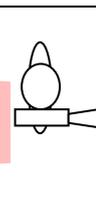
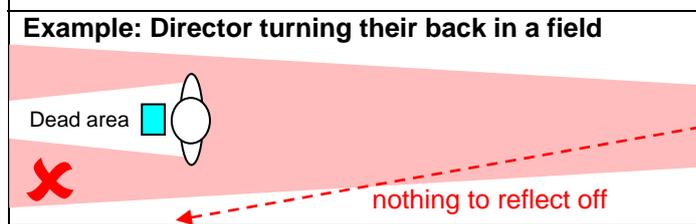
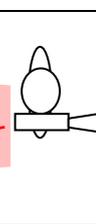
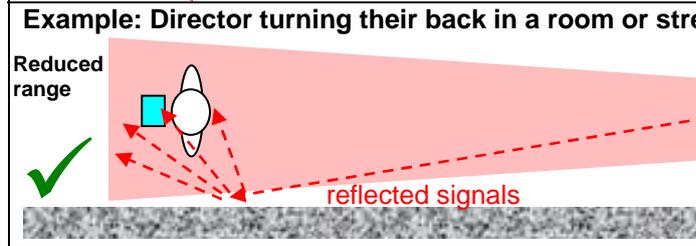
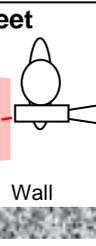
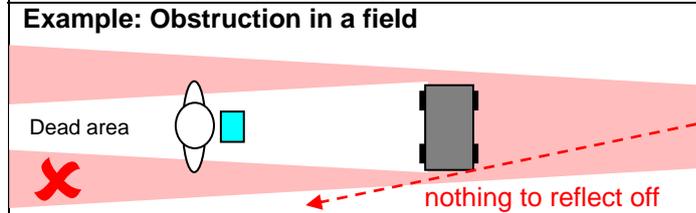
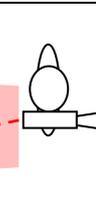
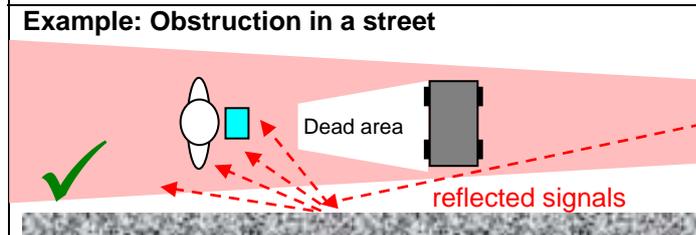
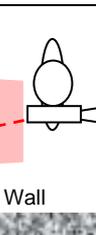
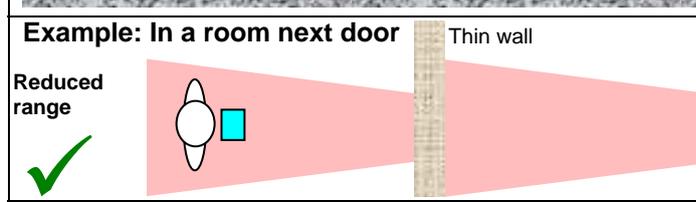
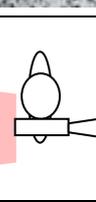
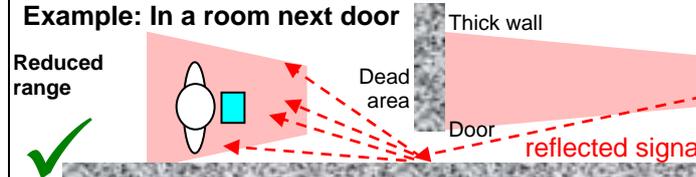
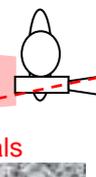
3 Understanding Microwave Links

The receiver may lose signal if the director:

- is too far from the cameraman so the microwaves cannot reach them, or
- has turned their back on the cameraman so is now blocking the microwaves, or
- is in a room next door & the wall is made out of concrete rather than brick, wood or plasterboard.

When the receiver loses signal, the picture pixelates before freezing then turning black.

- If the reason for the break up is removed within 5-10secs, the picture comes straight back on.
- If the signal has gone for more than 10secs, the receiver must be turned off and on again.

<p>Example: Anywhere</p> 	 <p>If there is clear line of sight between the transmitter and receiver, unless there is excessive interference from other transmitters, the director will receive a perfect picture.</p>
<p>Example: Director turning their back in a field</p> 	 <p>If the director is in a field and they turn their back on the transmitter, they will NOT get a signal because their body has blocked the microwaves & there is nothing in the field for the microwaves to reflect off.</p>
<p>Example: Director turning their back in a room or street</p> 	 <p>If the director is in a room or a street and they turn their back on the transmitter, then although their body is blocking the microwaves, they WILL still get a signal from the microwaves that have been reflected off the walls, but with reduced range.</p>
<p>Example: Obstruction in a field</p> 	 <p>If the director is in a field and a vehicle passes by, then they will NOT get a signal because the vehicle has blocked the microwaves and there is nothing for the microwaves to reflect off.</p>
<p>Example: Obstruction in a street</p> 	 <p>If the director is in a street and a vehicle passes by, then although the vehicle is blocking the microwaves, the director WILL still get a signal from the microwaves that have been reflected off the walls, but the picture may pixelate as the vehicle passes.</p>
<p>Example: In a room next door</p> 	 <p>If there is a thin wall or floor that is made of wood, plasterboard, house brick or breeze block, the microwaves will pass through but with reduced range.</p>
<p>Example: In a room next door</p> 	 <p>Microwaves will not pass through walls or floors made of reinforced concrete. In such instances, leave doors open and the microwaves may find their way into the room by reflecting off walls etc</p>

4 Transmission distances

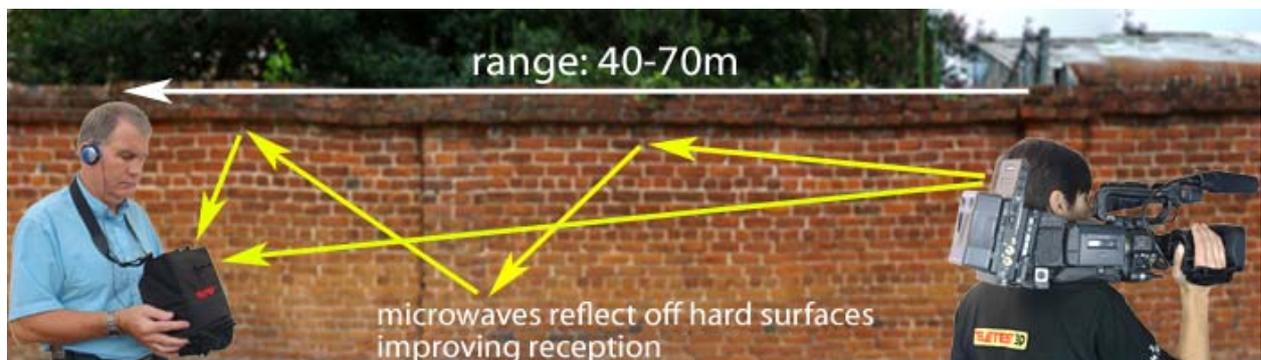
The TELESENDS transmitter range is between 5m and 70m depending on where you are and how they are used.

Like all microwave video links (and this applies to IDX's Camwave / WEVI, Teradek's Bolt and others) there must be a line of sight between the transmitter and receiver to be used most effectively. If the line of sight is broken, for example the director turns their back on the transmitter, they will only get a picture if there are hard surfaces for the microwaves to reflect off.

Microwave links do not perform well on rainy and humid days and when there are trees, grass and humans (!) between the transmitter and receiver. This is because water and organic material absorbs microwaves.

4.1 In a street or room

Range: 40-70m. If there is clear line of sight between the transmitter and receiver, unless there is excessive interference from other transmitters, the director will receive a perfect picture.



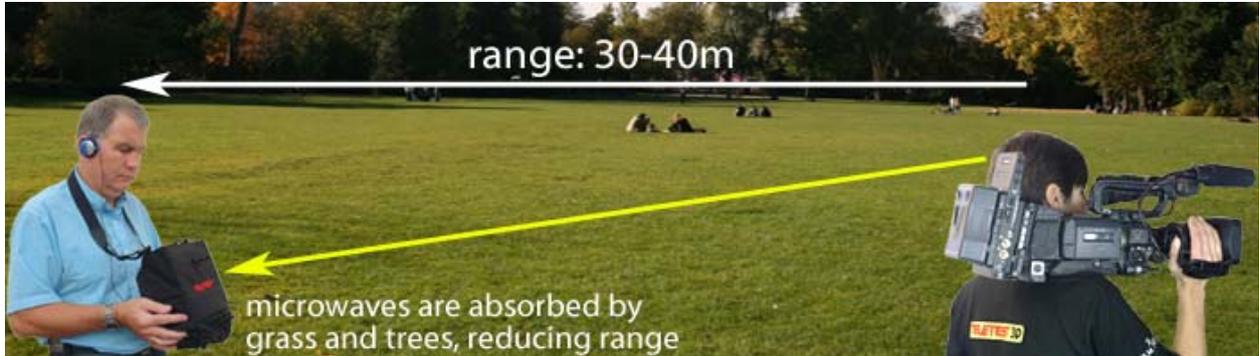
Range: 20-30m. If the director is in a room or a street and they turn their back on the transmitter, even though their body is blocking the microwaves, they should still get a signal from the microwaves that have reflected off the walls, but with a reduced range.



Intentionally blank

4.2 In a field or wide open spaces

Range: 30-40m. If there is clear line of sight between the transmitter and receiver, unless there is excessive interference from other transmitters, the director will receive a perfect picture. However, the range will be reduced because grass and trees (organic material) absorb microwave frequencies.



Range: 0-5m. If the director is in a field and they turn their back on the transmitter, they will NOT get a signal because their body has blocked the microwaves and there is nothing in the field for the microwaves to reflect off.



4.3 Using the light stand



As described earlier, if a shoot is taking place in a field or a wide open space, if the director doesn't turn around again within 5-10 seconds, the LCD will need to be reset and this takes about 10 seconds for the TX and RX to lock back together, which is very inconvenient.

So in fields or wide open spaces, Teletest recommends that the LCD receiver is mounted on the Lightweight Stand (included) so the director may move freely, leaving the LCD receiver always facing the transmitter.

4.4 Live broadcast Links

Because live broadcast links must have a signal that never breaks up, it is necessary to reduce the range expectations of all licence exempt broadcast video links. The TELESEND should transmit broadcast quality pictures without break up around 20-30m if the camera is moving around and 40-50m if the transmitter is fixed.

Moving range: 20-30m. For example, if you wish to shoot a "red carpet" where the cameraman needs to be wireless, you set up the LCD receiver on its light stand, high above the heads of people and as close to the camera as possible. You then run cables from the LCD receiver to the OB van. The LCD receiver can be powered by a battery or 12V supply.



Fixed range: 30-50m. For example, you have an OB van on one side of the road and you need a link to another side, you can use the radio link as a "bridge". If the transmitter and LCD receiver are fixed, then you will achieve greater ranges. The LCD receiver and transmitter can be powered by batteries or 12V supplies.



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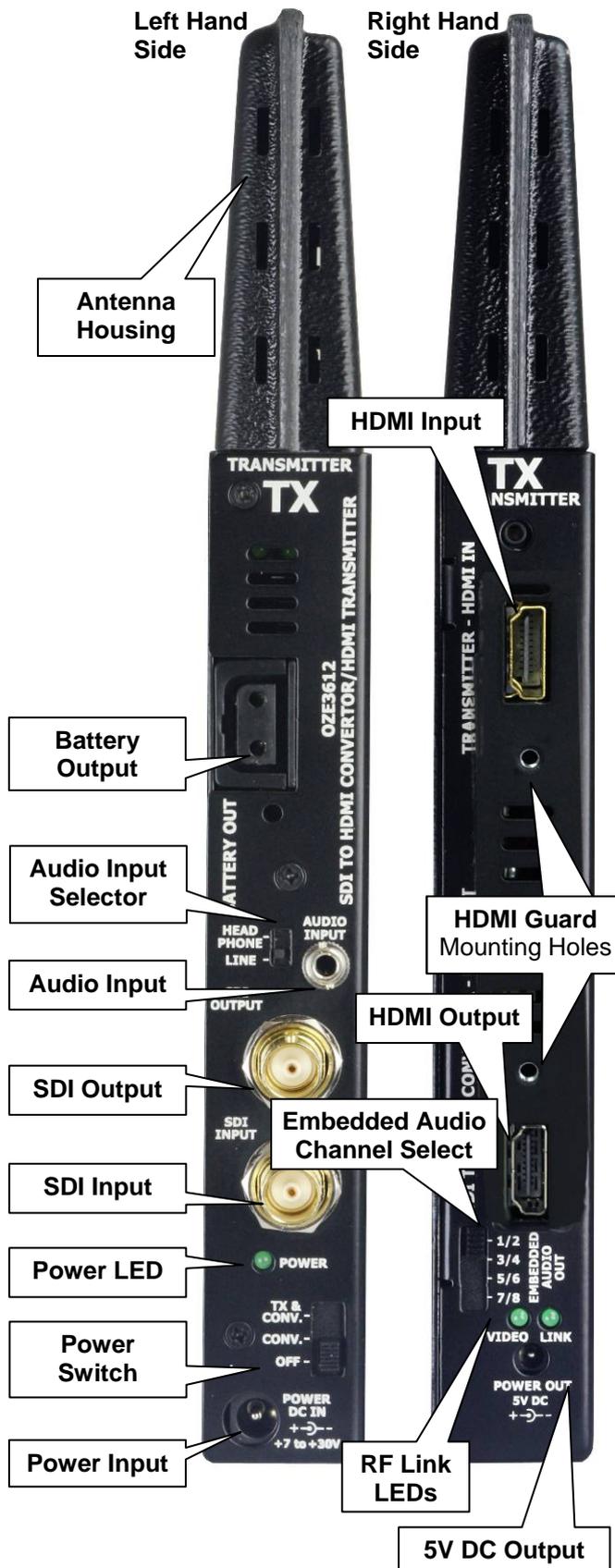
5 Kit Checklist

This list refers to the items supplied in a typical Teletest HD LCD Receiver and Transmitter Kit.

<p>HD LCD Receiver</p> <p><i>With:</i> Stand Battery plate on rear Menu guard on front</p> 	<p>Lightweight Stand For mounting the LCD Receiver onto.</p> <p><i>This should always be used in fields so the director can walk around freely without losing the signal</i></p> 
<p>LCD Carry Case</p> <p><i>With:</i> Shoulder strap</p> 	<p>XLR5 to 3.5mm jack plug audio cable For connecting camera / audio mixer balanced line output to the transmitter</p> 
<p>Transmitter Shoulder Bag For use with smaller camcorders</p> <p><i>With:</i> Shoulder and waist straps</p> 	<p>BNC + 3.5mm video & audio cable For connecting handheld camcorders to the transmitter in the Shoulder bag</p> 
<p>HD Transmitter</p> <p>HD-SDI version Battery plate on front Battery plate on rear</p> 	<p>3.5mm to 3.5mm jack plug audio cable For connecting camera / audio mixer headphone output to the transmitter</p> 
<p>Flight Case</p> 	<p>Video Cable</p> <p>HD-SDI version BNC - BNC cable</p> <p>HDMI only version HDMI - HDMI cable</p> 

Products

5.1 HD-SDI Transmitter



Antenna Housing

Plastic housing that must not be blocked to maintain signal strength.

Battery Output

A D-Tap socket that is connected directly to a battery adapter if fitted.
It is not connected to the Power Socket

Analogue Audio Input

A stereo 3.5mm socket that takes the audio output from the camera to the 'SDI to HDMI convertor', with a switch to select input type.
Headphone level attenuated 80% over Line level

Embedded SDI Audio Input

A four position switch to select one of the 4 pairs of audio channels

SDI Output

BNC plug which is the SDI loop through output.
Relocked, broadcast quality

SDI Input

BNC plug which is the SDI input to the 'SDI to HDMI convertor'.

Green Power LED

Power Switch

Power to 'SDI to HDMI Convertor' only
Power to Convertor and Transmitter

Power Input

A 2.1mm DC socket, centre positive.
Cuts power from battery when plug inserted

5V DC Power Input

A 1.3mm DC socket, 500mA, centre positive.

HDMI Input

A HDMI socket which is the input to the 'HDMI transmitter'.

HDMI Output

A HDMI socket which is the output from the 'SDI to HDMI Convertor'.

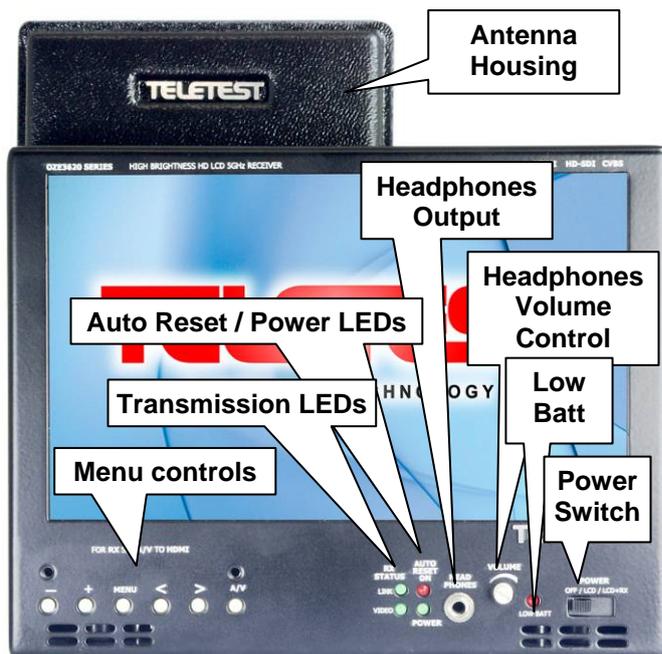
HDMI Guard Mounting Holes

Two M3 mounting holes for the 'HDMI Guard' that protects the 'HDMI Loop Through Cable'.

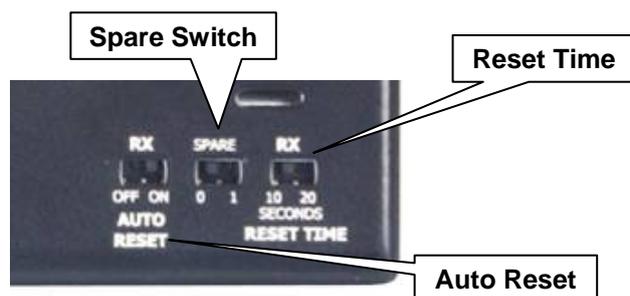
Accessories Included

'HDMI Guard' with 'Cover'
'HDMI Loop Through Cable'
3.5mm to stereo phono plugs, 1.5m cable

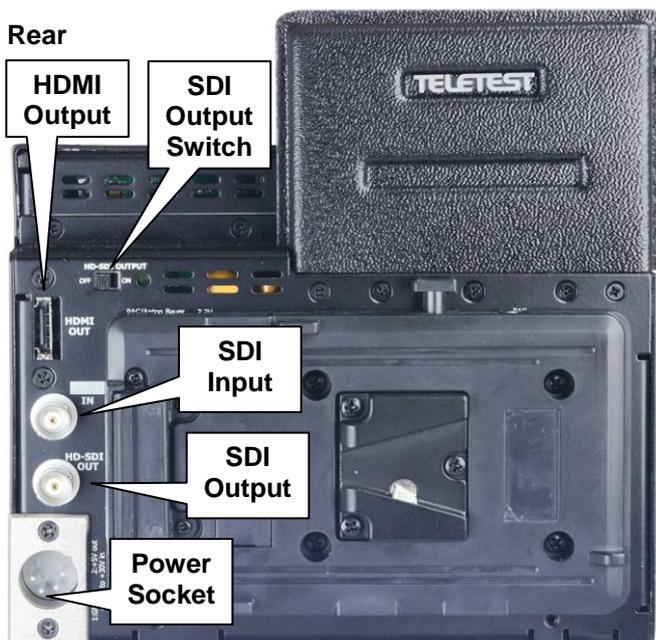
5.2 HD-SDI Receiver



Front



Side



Rear

Antenna Housing

Plastic housing that must not be blocked to maintain signal strength.

Headphones Volume Control

Rotary knob

Headphones Output

A stereo 3.5mm socket.
32ohm headphone driver level

Power LED

Green

Low Battery LED

Red

Power Switch

Power to LCD only
Power to LCD and receiver

Menu Switches

5 for the on-screen Menu controls

A/V Switch

Press to select the:

- HDMI input (which is the receiver) or
- SDI input (which is the rear BNC)

Spare Switch

For any upgrades in the future

RX Auto Reset / Reset Time Switches

If on, and there is no received signal for 10 or 20 seconds, the receiver automatically resets itself, to try and regain a signal.

SDI Input

BNC plug: SDI input to the LCD monitor.

SDI Output

BNC plug: SDI output from the receiver.

SDI Output Switch

There is an switch to turn the SDI output on or off, to save battery power when not in use.

HDMI Output

HDMI socket: HDMI output from the receiver.

Power Socket

An XLR4 DC socket, Pin1 negative, Pin4 positive.

Accessories Included

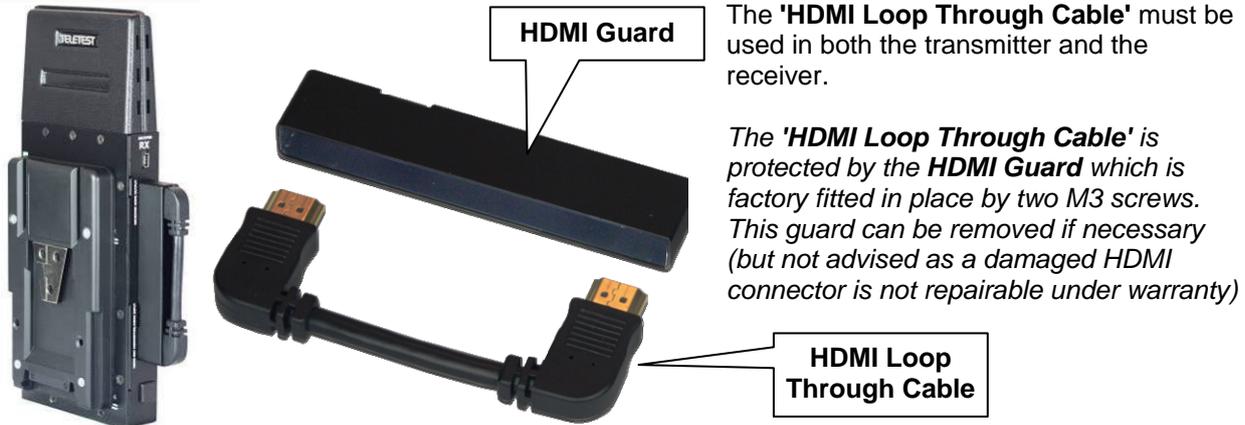
Monitor stand

6 Instructions

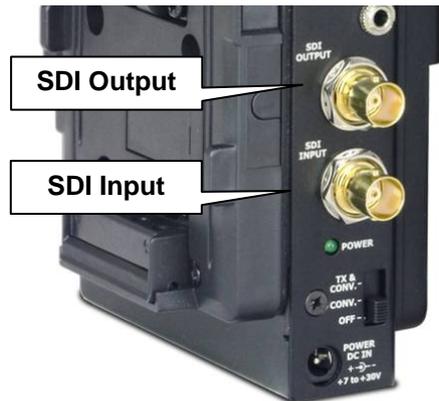
6.1 Setting up the HD-SDI Transmitter and HD-SDI Receiver

This set up assumes the transmitter is connected to a camera with a HD-SDI output and the receiver is connected to a monitor with a HD-SDI input.

6.1.1 Connect HDMI Loop Through Cable



6.1.2 Connecting Video Cables to the Transmitter

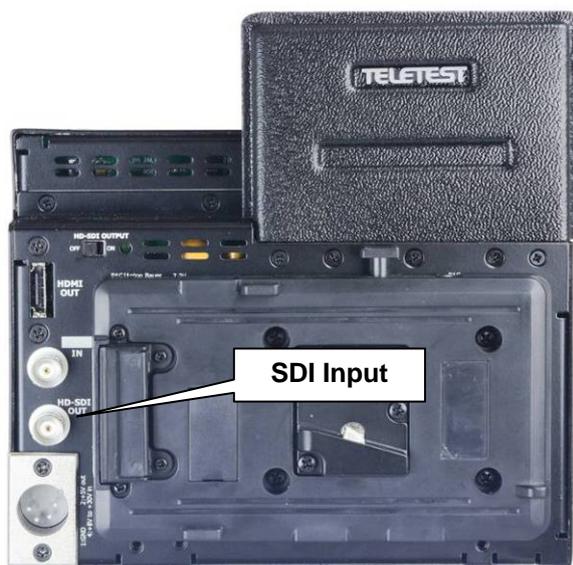


Connect a BNC cable from the HD-SDI output of the camera to the **SDI Input** plug. For a broadcast quality loop-through to a local monitor, connect a BNC cable to the **SDI Output** plug.

NOTE: Whilst the 'SDI to HDMI Converter' is capable of converting SD-SDI and 3G signals to HDMI, the HDMI transmitter can **only** transmit HD images. This means a **TELESEND transmitter cannot transmit SD-SDI or 3G signals converted to HDMI.**

See the specifications later in the document for a full list of SDI standards.

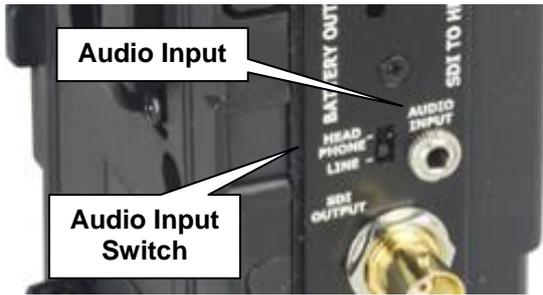
6.1.3 Connecting a Video Cable to the Receiver



If you cannot receive a wireless transmitted signal because there is too much interference in the area, Connect a BNC cable to the SDI input plug on the rear of the monitor.

Using the A/V button on the front of the monitor, ensure the monitor is set up for SDI input.

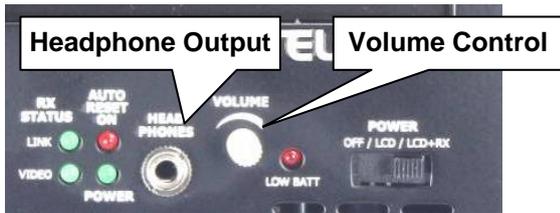
6.1.4 Connecting Audio Cables to Transmitter



Connect a 3.5mm stereo jack socket **Audio Input** from the line level phono outputs or to the headphone output on the camera or sound recorder's trolley. Set the **Audio Input Switch** to match the audio source.

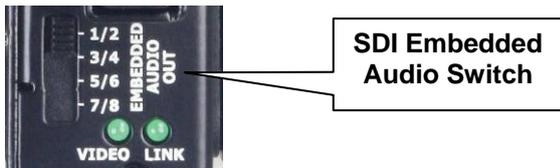
If using the headphone output from the camera, ensure the volume level is set at less than 50% to avoid distortion.

6.1.5 Connecting Audio Cables to Receiver



Insert headphones into the **Headphone Socket** on the front of the monitor and adjust the **Volume Control** level to suit.

6.1.6 Selecting SDI Embedded Audio Channels



The four position slide switch on the side is used to select the pair of SDI embedded audio channels to transmit:

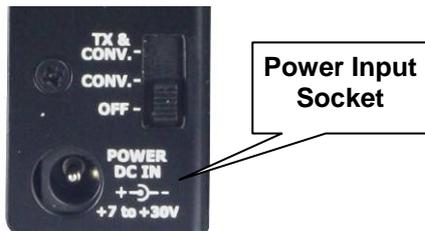
- 1/2, 3/4, 5/6, 7/8

6.1.7 Fitting Batteries



Slide a battery onto the female battery plates (if fitted) on the transmitter and receiver.

6.1.8 Connecting External Power Supplies



Connect a power supply, typical 12V 3A, with a 2.1mm (centre positive) plug to the power socket.

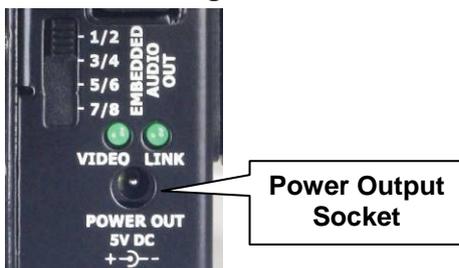
When inserted, this breaks the power source from any batteries fitted to the battery adapters.

Inside the transmitter is a DC-DC convertor which will take +7V to +30V.

The receiver is limited to only +11V to +16V.

There is limited fused and diode protection from incorrect voltage applied.

6.1.9 Powering External Convertors



There is a 1.3mm (centre positive) socket on the side of the transmitter which provides 5VDC, with an internal re-settable fuse rated at 550mA.

This is used to power external convertors, such as CVBS to HDMI convertors.

6.2 Starting up the Transmitter and Receiver

6.2.1 Turn On Transmitter and Receiver

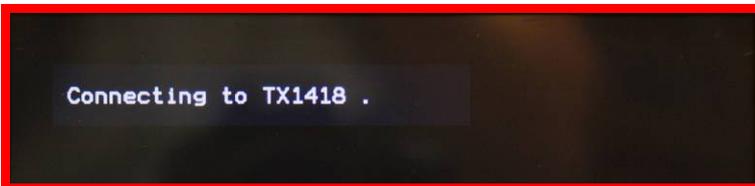


Turn on the **Power Switch** to 'TX & CONV.' on the transmitter and 'LCD & RX' on the LCD receiver.

*If you wish to use the transmitter as a 'stand alone' SDI to HDMI convertor, then slide the **Power Switch** to 'CONV'.*

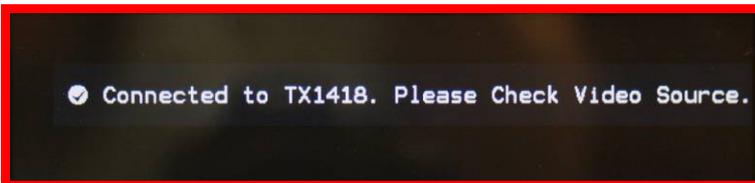
The following images show the actual messages from the receiver on an LCD monitor.

6.2.2 Handshaking



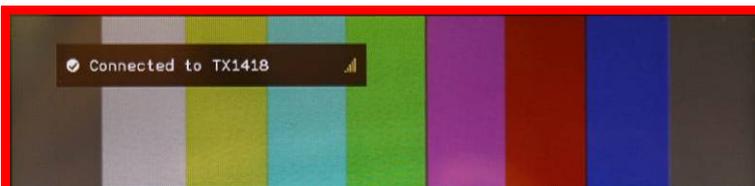
This message appears during the initial 'Handshake' between the paired transmitter and receiver. This can take between 5-10 seconds if there are no other 5GHz 'radars' around, or a little longer if the spectrum is cluttered.

6.2.3 Connected but No Video



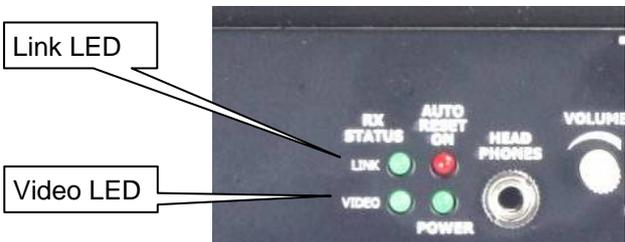
This message appears when the transmitter and receiver are connected but there is no video present at the transmitter.

6.2.4 Connected



When the LCD Receiver has "locked" onto the transmitter, the Link LED on the front of the monitor will light green.

Then, when the LCD receiver has video from the transmitter, the Video LED will light green.



6.3 Transmitter and Receiver In Use

The TELESENDs are designed to be "turn on and forget" - there is nothing to adjust. The most frequently asked questions are down to the following facts:

- The power switches not pushed all the way to **TX & CONV.** position.
- Faulty video cables.
- Extreme operating temperatures.
- The antenna housing is covered / blocked from line of sight by something.
- Too much metal nearby eg a line of cars in a car park.
- Too much water / moisture nearby eg a river / sea or snow / waterlogged field.

Remember:

- SD signals cannot be transmitted, it is HD only.
- If the transmitter and receiver have problems connecting, turn them both on and off again within 20m line of site of each other (10m through a wall).

7 LCD Menu

The push buttons to access the menu are hidden under the 'Menu guard' (or "Director's Guard" as we prefer to call it!)



The menu is self explanatory but there are a few details worth noting, listed below:

7.1 Battery Symbol

If this symbol appears, holding down the 'AV' button for 5-6 seconds removes the battery symbol logo. If you'd like to reinstate the logo, hold it down again and it will reappear.

7.2 Canon 5D Mode (LCD only, not wireless link)

Long-press of the > button for 5-6 seconds enters the 5D camera mode under HDMI function

The 5D mode on the 5D-ii/O/P addresses the blink issue that occurs when a Canon 5D camera is used in conjunction with the monitor.

On the main monitor menu, you need to set the camera setting to 480P. Then, with the menus off, press the 5D-II button.

This will optimise the monitor for 5D usage (and some other cameras). This is important if someone plus a 5D directly into the monitor, NOT across the digital link (as the link will not do SD SDI).

8 Battery Adapters

Battery adapters are normally fitted at the Teletest factory, however they can also be fitted by a customer with experience of servicing electronic products.



HD-SDI TELESEND pair without battery adapters



With V-lock battery adapters fitted

TELESENDS can be fitted with any combination of broadcast battery adapters, male or female:

- Female adapters for batteries, mounted on the rear of the TX/ RX
- Male adapters for cameras / monitors, mounted on the front of the TX/ RX

9 Specifications

See the telesend brochure for all specifications.

Visit www.teletest.tv and find the download for the relevant product.

10 Optional Accessories

See the telesend brochure for all specifications or visit www.teletest.tv for the product of your choice.

11 Guarantee

TELESENDS are guaranteed for 1 year parts and labour, returned to the Manufacturer (or Reseller) at the Customer's cost.

The following faults are considered as damage by the customer and are not repairable under warranty:

- Modifications.
- Damage to any connector.
- Damage due to any incorrect voltage applied.
- Damage due to misuse eg dropped, water damage.
- Battery adapters changed by non-Teletest staff.