Wideband Fibre Receiver

INSTRUCTION MANUAL

WFRXVHT-G1 | WFRXVH-G2

Whyte Technologies

www.whytetechnologies.com

CONTENTS

SAFETY

Before installation and operation carefully read these instructions. Observe the warnings given.

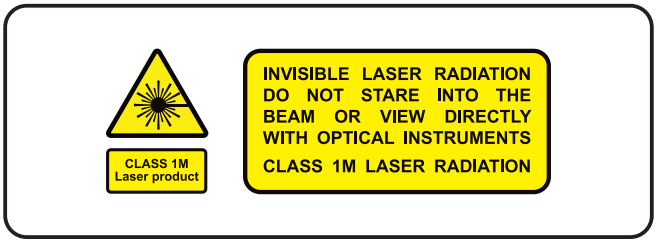
These Fibre Transmitters are intended for indoor use only. Do not install the transmitters in damp, humid hot or dusty areas.

Switch off and remove the power supply when making RF or Optical connections to the transmitters to avoid damage or potential exposure to the laser light radiation.

Always Earth bond the transmitters using the Earth Bonding Lug to a suitable bonding point using 4mm2 diameter earth cable.

WARNING Class 1M laser products usually produce beams with a large diameter. Therefore, only a small part of the whole laser beam can enter the eye.

However, Class 1M laser products can be harmful to the eye if the beam is viewed using magnifying optical instruments.



PRECAUTIONS

To ensure trouble free operation:

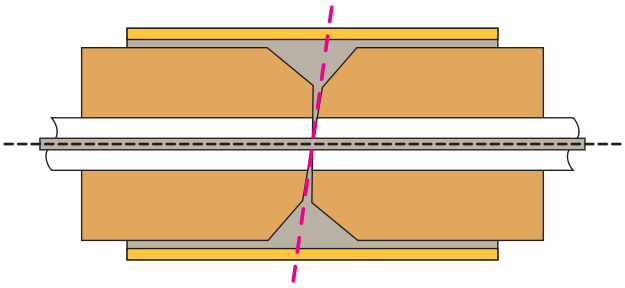
Do not remove the cover or disassemble the transmitter(s) as this will instantly void the guarantee and potentially expose you to invisible laser radiation.

The 75Ω Female F connectors on this unit are designed for use with '100' type coaxial cable that has a centre core diameter of 1mm2 where you are using larger core '125' or '167' coaxial cable F connectors with suitable reduction pins must be used, otherwise damage to the unit will occur which will invalidate the warranty.

Do not overtighten the F connectors (finger tight only).

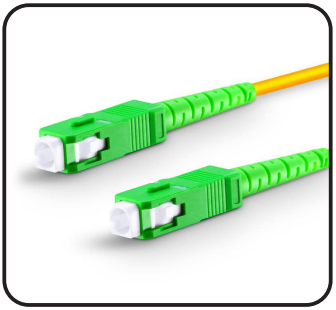
The optical interfaces are SC APC (Angled Physical Contact) across the entire Whyte Technologies Series F product range. See figure 1 below. Optical connections only require insertion to where the connector clicks in place excessive force should not be used.

Figure 1



SC APC Connector (8° Angle)

Female SC APC sockets



Male SC APC

GUARANTEE

All Whyte products are guaranteed for a period of 4 years from the date of purchase against defects. Within this guarantee period, Whyte Technologies will repair or replace the faulty product. In the unlikely event of a fault, please return any faulty products through your distributor.

The Guarantee will be deemed as null and void if the serial number of the product is removed, damaged or illegible. The Guarantee excludes defects caused by incorrect use, accidental damage, disassembly, water, fire, lightning damage, or a lack of ventilation.

GENERAL DESCRIPTION

WFRXVHT-G1 and WFRXVH-G2 are Wideband Optical Receivers from the Whyte Series F Range. When used with a Whyte Fibre Optic Transmitter, signal degradation between the RF source (the LNB) and the Wideband Optical Receiver is a mere 0.2dB MER.

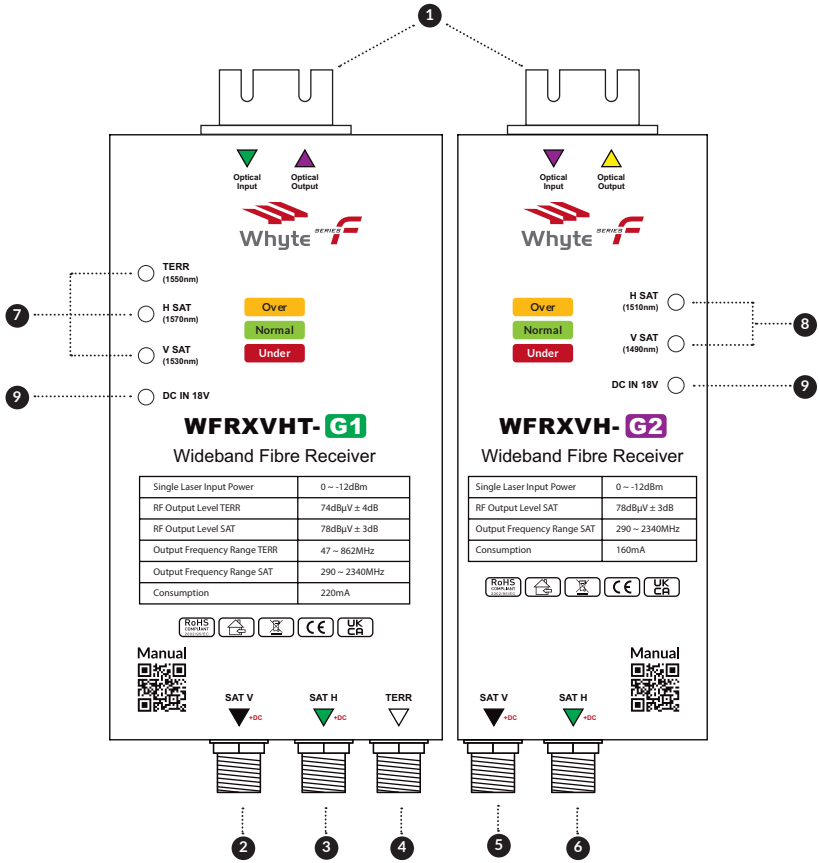
A tri-colour LED indicates the correct optical input power level to achieve the specified SAT and TERR RF output levels.

Features include:

- 4 Years Warranty
- Optical Input LED Indicators
- Powered via the SAT Outputs
- Ultra Low MER Degradation <0.2dB
- SC APC Fibre Input / Output connector
- WB SAT V and H (WFRXVH-G2 model)
- WB SAT V, H and TERR output (WFRXVHT-G1 model)

PRODUCT DESCRIPTION

Models Shown WFRXVHT-G1 and WFRXVH-G2



1. Fibre Optic Connector(s)
2. SAT V RF Output (G1)
3. SAT H RF Output (G1)
4. TERR RF Output (G1)
5. SAT V RF Output (G2)
6. SAT H RF Output (G2)
7. Laser Input Level Indicators (G1)
8. Laser Input Level Indicators (G2)
9. DC Indicators

TECHNICAL DESCRIPTION

The WFRXVHT-G1 is a Wideband SAT and TERR RF over Fibre Optic Receiver designed for use in Whyte RF Over Fibre IRS equipment (FIRS).

The WFRXVH-G2 is a Wideband SAT only over fibre optic receiver module designed for use in Whyte RF Over Fibre IRS systems.

These receivers feature an Optical Loop-through so that the WFRXVHT-G1 and WFRXVH-G2 receivers can be linked together enabling two satellites (Wideband) and terrestrial to be received over one fibre using five laser wavelengths, or one Quattro SAT + TERR (also over a single fibre). This configuration requires two Whyte Fibre Optic Transmitters that are also interconnected using the Optical Loope-through.

LASER GROUPS

For the convenience of installation Whyte fibre products are grouped so that it is easy to match up your devices.

Group 1 (green identifier G1) laser products utilise the following laser frequencies:

1530nm SAT 1 VERTICAL (or Quattro VL)
1550nm TERR
1570nm SAT 1 HORIZONTAL (or HL)

Group 2 (purple identifier G2) laser products utilise the following laser frequencies:

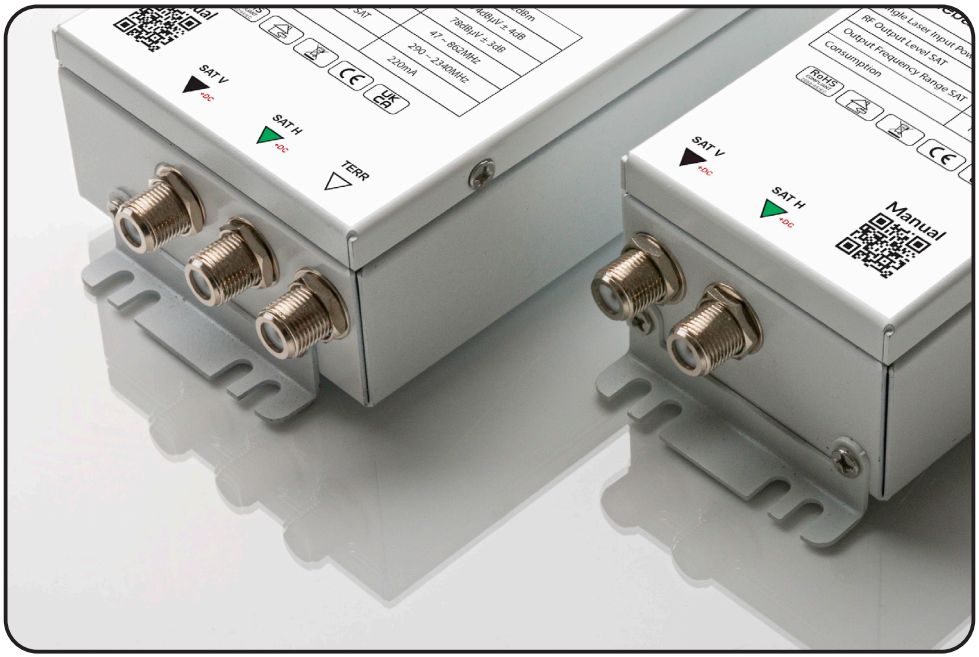
1510nm SAT 2 VERTICAL (or Quattro VH)
1590nm SAT 2 HORIZONTAL (or Quattro HH)

INSTALLATION INSTRUCTIONS

MOUNTING THE RECEIVER(S)

Select a suitable location to install the fibre transmitter(s). Do not install the fibre transmitter(s) in damp, humid, hot, or dusty areas. Using the screw slots on the moulded corner brackets, secure the transmitter using the appropriate fixing screws and wall plugs to suit the relevant wall surface or cabinet. See Figure 2.

Figure 2



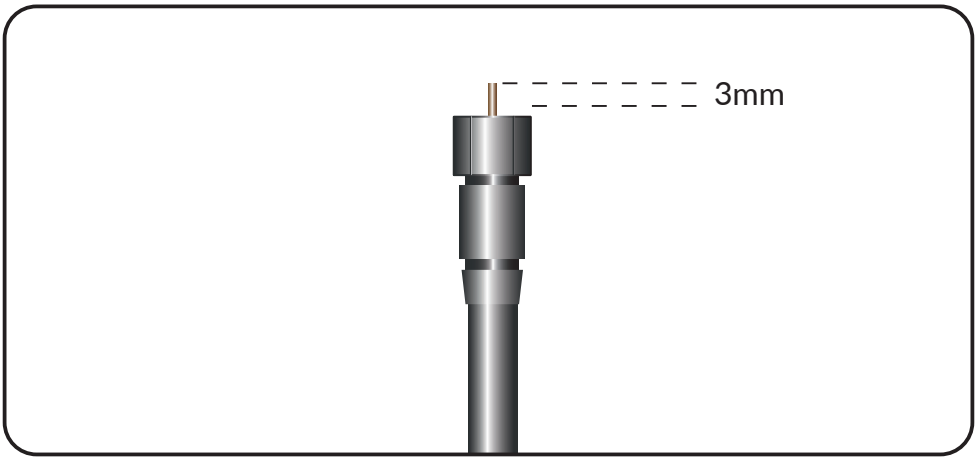
The slotted screw fixing points enable easy access

Connecting the Subscriber Cables

Ensure that all drop cables have drip loops prior to their entering the building. Connect the SAT and TERR drop cables to the corresponding Satellite & TERR Inputs of the transmitter.

The diagram below shows an ideal F-Type coaxial connector configuration.

Figure 3



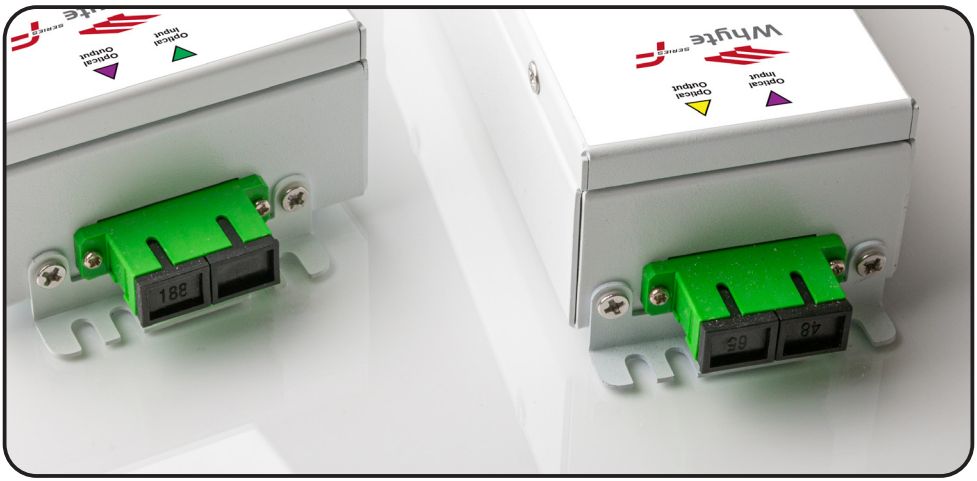
Ideal centre core conductor length relative to the nut edge

Optical Connections

The SC APC optical Input and Output comes pre-fitted with a protective dust cap. As with all optical connections ensure that the surfaces are clean and free from contamination before making the connection. See figure 4.

Please note:
Safe practices when working with lasers should always be observed!

Figure 4



SC APC Female Connectors

DC POWER

The White fibre receivers are powered via their SAT RF F-Type outputs. These are 18V DC trunk power devices and can be powered via either Wideband SAT outputs.

Please note:
The WFRXVHT-G1 cannot be powered via the TERR RF Output this path is DC blocked on this Receiver.

DUAL WIDEBAND SAT

Dual wideband satellite can be supported using two transmitters G1 and G2 and two matching receivers also G1 and G2. Whyte dSCRs support dual wideband input when the input switch is set to Wideband providing two satellite paths at the REC outputs via DiSEqC switching on the receiver.

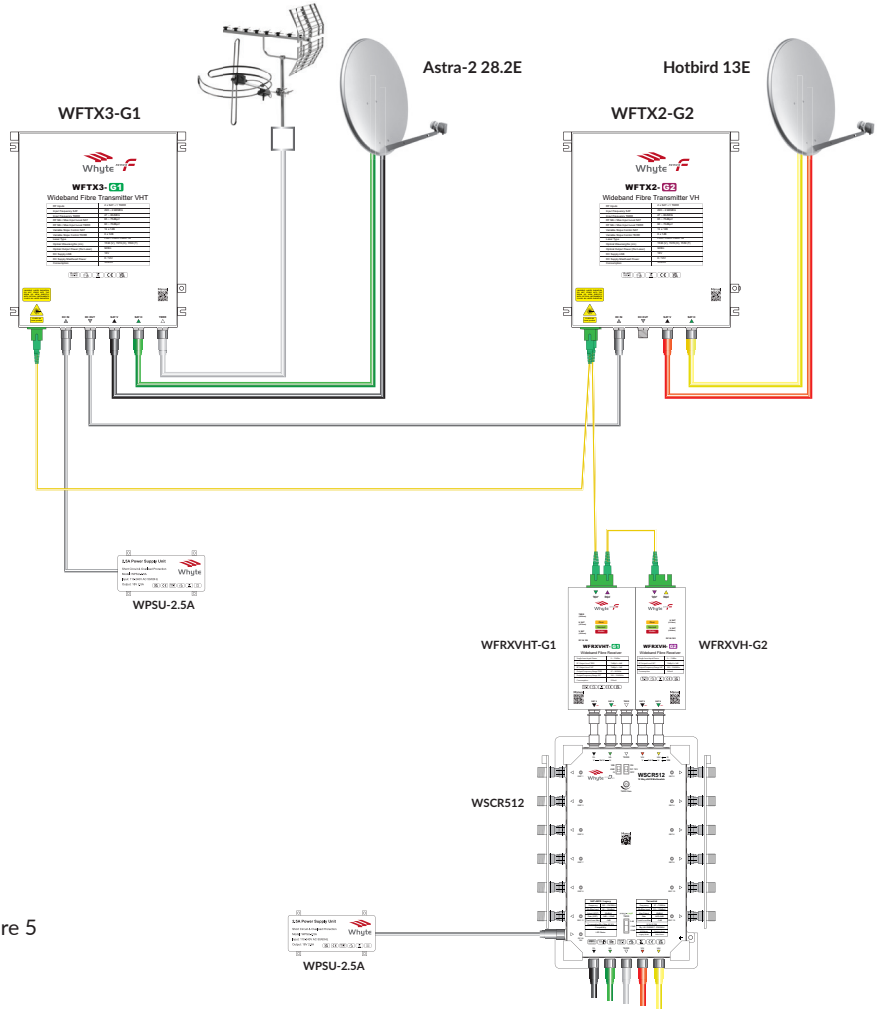


Figure 5

By linking transmitters and receivers together a single fibre will carry four satellite paths and one terrestrial path with a dedicated wavelengths per path. Here the STB would select the required satellite path via the appropriate DiSEqC command.

QUATTRO FIRS

In instances where a Quattro LNB source is required Transmitters are used in pairs via the optical loop in / loop out connectivity. Here each individual path is also supported by Variable Slope Control (VSC) and can be adjusted to present the flattest output for your Fibre IRS system. See figure 6.

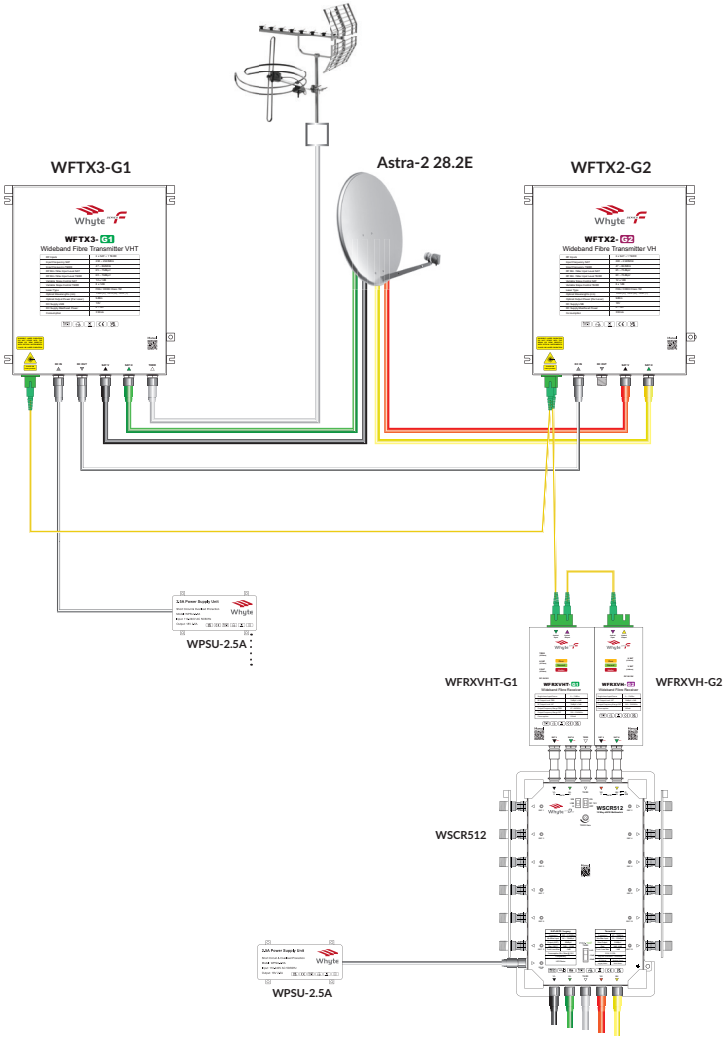


Figure 6

The above Receivers are shown as an input to a Whyte dSCR, however this could also be a local RF group with additional IRS components for a Hybrid IRS system.

OPTOMISING SYSTEM PERFORMANCE

System performance is optimised by setting the RF Input levels to the transmitters as shown below:

75dBµV SAT Most powerful Transponder in band
70dBµV TERR Most powerful Transponder in band

Once the ideal RF input levels have been established the process of slope correction can take place. At input levels outside those recommended above, the performance may not be optimal. Ensure that your inputs are within these parameters for best performance.

For the slope correction process, you will need a Whyte Fibre receiver that matches your transmitter group and a spectrum analyser. The Variable Slope Control (VSC) is utilised to produce the flattest possible response in all instances for each path. By optimising the RF input levels and applying corrective slope adjustment the best results can be achieved across the whole system.

OPTICAL WINDOW OF OPERATION

At 0 ~ -12dBm optical input, the system is within the optical window of operation. This optical input level is in reference to a single laser source. For test and measurement, the 1550nm wavelength, is supported by most Optical Power Meters (OPMs).

For more accurate measurements the other lasers should be turned off at the Transmitter. In scenarios where there is a direct connection from the Transmitter to the Receiver then an appropriate optical attenuator should be used at the input of your receiver to avoid exceeding the optical window of operation.

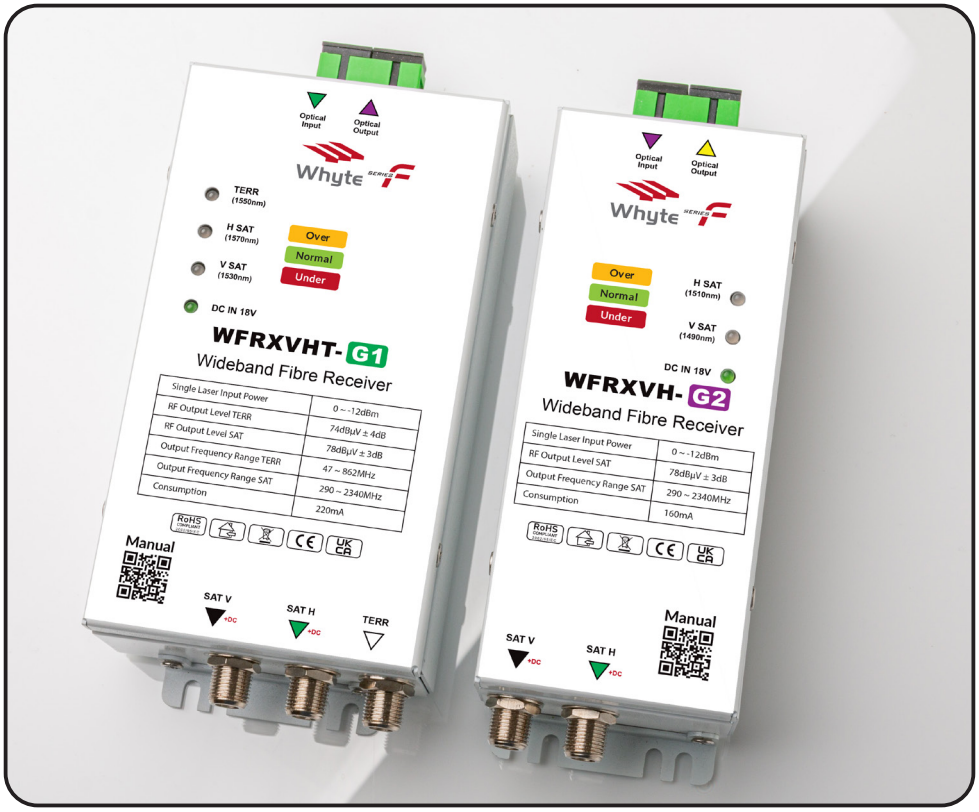
The recommended value of this attenuator would be 10dB or 15dB. When planning your FIRS System, the performance will be dependent on a well-designed System Plan. Whyte Technologies offer free system planning for all your coax and fibre IRS system requirements.

OPTICAL INPUT LEVEL INDICATORS

The optical input indicator LEDs provide a visual guide to the optical input level being presented to the receiver.

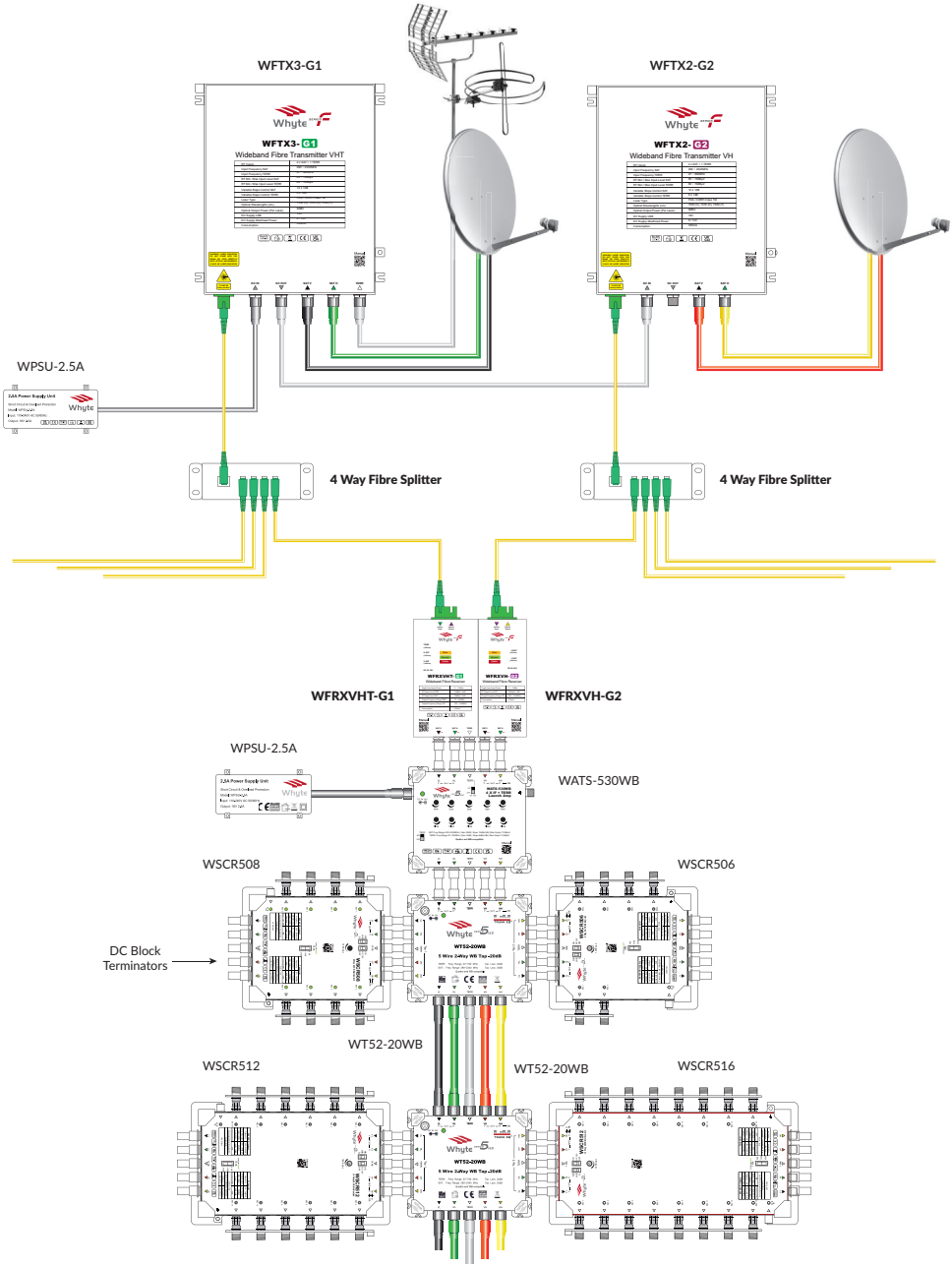
LED State	Reason
ORANGE	The Optical input is too high an optical tap, splitter or attenuation is required
GREEN	The Optical input level is within the normal operating range
RED	The Optical input is too low, or the laser is turned off

These LED states are also relative to a typical Wideband SAT or TERR Transponder/ Mux loading of the Astra-2 Satellite at 28.2° East and a typical DTT Transmitter + DAB + FM



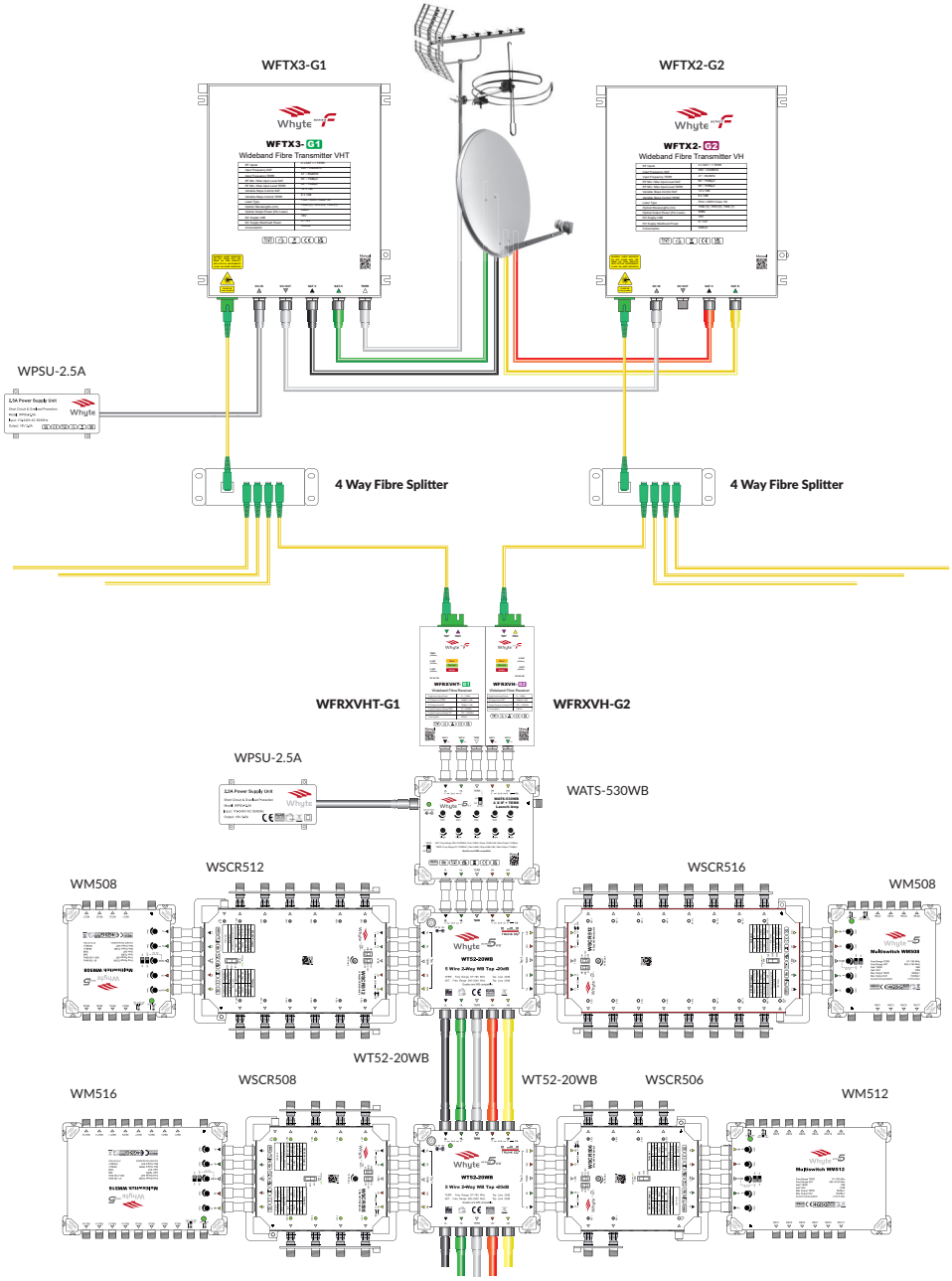
EXAMPLE CONFIGURATIONS

FTTH - Dual SAT + TERR Fibre IRS to the block



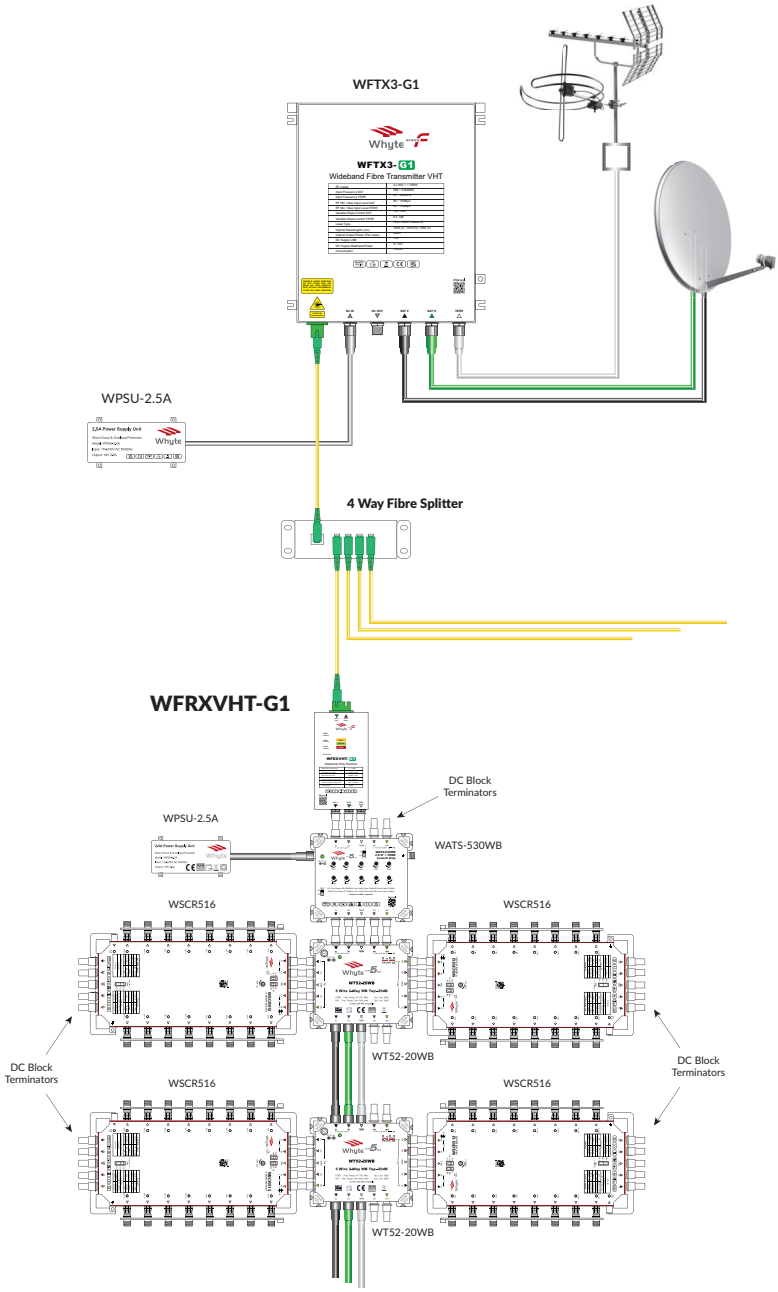
EXAMPLE CONFIGURATIONS

FTTH - Hybrid Quattro IRS



EXAMPLE CONFIGURATIONS

FTTH - Hybrid Quattro IRS



SPECIFICATIONS

Model	WFRXVHT-G1
Optical Input / Output	2x SC APC
Optical Input Wavelengths	1530nm, 1550nm & 1570nm
Optical Input Power (Single Laser)	0 ~ -12dBm
RF Output Frequency SAT / TERR	290 ~ 2340MHz / 87 ~ 790MHz
RF Output Sequence	V, H & T (left to right)
RF Output Level SAT / TERR	78dBµV ±3dB / 74dBuV ±4dB
RF Return Loss	>10dB
RF Connector Type	75Ω F type (Female)
Optical Input Indicator	LED (per laser)
DC Input	18V DC (via SAT Outputs)
DC Power Indicator	Green LED On / Off
Consumption at 18VDC	220mA
Dimensions L x W x H (mm)	160 x 76 x 44
Weight	404g

The EU Declaration of Conformity can be viewed at www.whytetechnologies.com.
In the interest of continuous improvement, all specifications of products are subject to change without notice.

SPECIFICATIONS

Model	WFRXVH-G2
Optical Input / Output	2x SC APC
Optical Input Wavelengths	1490nm & 1510nm
Optical Input Power (Single Laser)	0 ~ -12dBm
RF Output Frequency SAT / TERR	290 ~ 2340MHz
RF Output Sequence	V & H
RF Output Level SAT / TERR	78dBµV ±3dB
RF Return Loss	>10dB
RF Connector Type	75Ω F type (Female)
Optical Input Indicator	LED (per laser)
DC Input	18V DC (via SAT Outputs)
DC Power Indicator	Green LED On / Off
Consumption at 18VDC	160mA
Dimensions L x W x H (mm)	160 x 58 x 44
Weight	330g

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