9 WIRE MULTISWITCH
INSTRUCTION MANUAL

MODELS:

WM908

WM912

WM916

WM924

WM932

CE

CONTENTS

SAFETY

The Multiswitches are intended for indoor use only. Do not install the Multiswitch in damp, humid, hot or dusty areas.

Switch off and remove the power supply when making connections to the Multiswitch to avoid damaging the unit.

Always earth bond the Multiswitch using the earth bonding lug and/or the earth terminal bars to a suitable earth bonding point using minimum 4mm^2 diameter earth cable.

PRECAUTIONS

To ensure trouble free operation:
Do not remove the cover of the multiswitch or disassemble it as this will invalidate the guarantee.

The female F connectors on this unit were designed for use with '100' type coaxial cable with a centre core diameter of 1mm^2. When using larger CT125 or CT167 cables, you must ensure that suitable F connectors with reducing pins are used otherwise damage to the unit will occur which will invalidate the guarantee.

Do not over tighten the F connectors (finger tight only).

GUARANTEE

All Whyte products are guaranteed for a period of 4 years from the date of purchase.

GENERAL DESCRIPTION

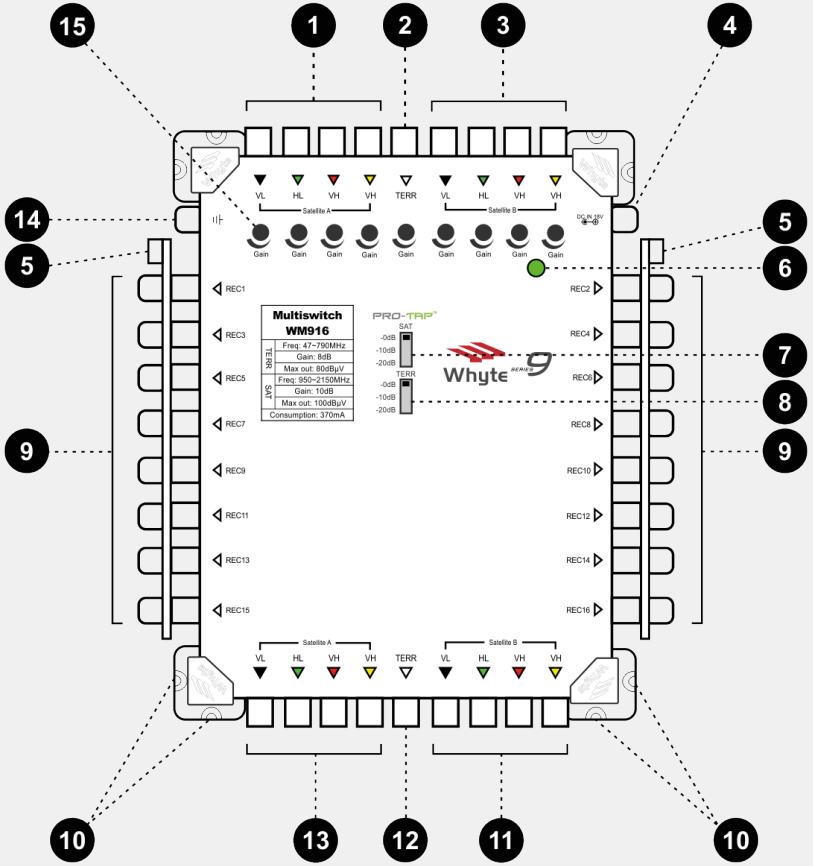
Whyte™ Series 9 Multiswitches are a 9 wire, DiSEqC compatible, Cascading Multiswitch range that combines up to 2 different satellites and Terrestrial TV & Radio. They are compact and universally flexible and hence can be used to build small to very large Integrated TV and Satellite Reception Systems (IRS) when used in conjunction with Series 9 Launch Amplifiers and Splitters as may be required. All Series 9 Multiswitches can be used in "standalone" or in "cascade" mode.

All Multiswitches in the Series 9 range come fitted with Whyte Pro-Tap™ technology.

All Whyte Series 9 Multiswitches have colour coded inputs and come fitted with Earth Terminal Bars. Each Series 9 Multiswitch comes complete with 9 F Type Couplers to enable quick interconnection of Multiswitches as well as to Series 9 Amplifiers and Splitters.

For ease of installation, the subscriber ports are orientated single file and the multiswitch has adequate stand-off to provide space for easy termination and servicing.

PRODUCT DESCRIPTION



1. Inputs Satellite A
2. Input Terrestrial
3. Inputs Satellite B
4. Auxiliary 18V Input
5. Earth Terminal Bar
6. LED Power Indicator
7. Satellite Pro-Tap™
8. Terrestrial Pro-Tap™
9. Subscriber (REC) Outputs
10. Corner Mounting Brackets
11. Outputs Satellite B
12. Output Terrestrial
13. Outputs Satellite A
14. Earth Lug
15. SAT & TERR Gain Controls

TECHNICAL DESCRIPTION

GENERAL

Whyte Series 9 Multiswitches provide a SAT gain of 10dB and a TERR gain of 8dB. A 10dB Gain control is provided to enable calibration of all SAT and TERR inputs. To achieve a compact design, the SAT/TERR inputs and outputs are in a close zig-zag formation. Therefore an F Connector Insertion Tool (F Connector Screw Driver) should be used to connect the SAT and TERR input and output cables. Do not over tighten; finger tighten only.

The recommended max input signal level for SAT is between 60~90dBµV and TERR 50~85dBµV.

All Whyte Series 9 Multiswitches come fitted with Pro-Tap™ Technology. Developed by Whyte Technologies, a Pro-Tap™ is an inbuilt “Protean Tap” that enables the installer to easily and individually, set the SAT and TERR tap losses to 0dB, -10dB or -20dB.

The Multiswitches are DiSEqC 1.0/2.0 compatible. In the absence of a DiSEqC command, the Multiswitch will revert to position A. Therefore, it is advisable to use the Satellite A position for satellite services that use set top boxes which, do not have DiSEqC capability; for example Sky Digital.

STANDALONE MODE

Series 9 Multiswitches can be used in stand alone mode when powered directly via the 18V Auxiliary Input by using a Whyte Power Supply Unit (sold separately). Any unused (open) SAT/TERR Trunk Outputs must be terminated using 75Ω Isolated F-Type Terminators.

CASCADE MODE

Multiple Whyte Series 9 Multiswitches can be connected in cascade using the supplied F Type Couplers. In Cascade Mode, the PSU can be connected to any Series 9 Multiswitch, Splitter or Amplifier within the system for ease of installation. Hence, all Series 9 equipment will be remotely powered via the HL and HH Trunk Lines. Care must be taken to select the appropriate type and number of PSU's required depending on the current requirements of the system as a whole. Remember to calculate the total current consumption of all Multiswitches, Amplifiers and LNB's within the system. Always terminate the SAT/TERR Trunk Outputs of the last Multiswitch in a cascade using 75Ω Isolated F-Type Terminators.

INSTALLATION INSTRUCTIONS

MOUNTING THE MULTISWITCH

Select a suitable location to install the Multiswitch. Do not install the Multiswitch in damp, humid, hot or dusty areas. Using the screw slots on the Corner Brackets, secure the Multiswitch using the appropriate fixing screws and wall plugs to suit the relevant wall surface or cabinet.

CONNECTING THE SAT & TERR INPUT AND OUTPUT TRUNK CABLES:

Use suitably sized Satellite Dishes to provide equal and adequate signal levels from the satellites being received. Ensure that the Satellite Drop Cables are connected correctly to the LNB's. Ensure that the F Connectors are properly sealed against water ingress. If a Composite Cable (multi core coaxial cable) has been used, ensure that the outer jacket is not facing upwards and cannot collect rain water. Check the Terrestrial Drop Cable and ensure that this has also been sealed against water ingress. If a Triplexer has been used to combine FM and DAB aerials with the UHF Terrestrial Aerial, ensure that this is also water tight. Ensure that all drop cables have drip loops prior to their entering the building.

Use an F Connector Insertion Tool (F Connector Screwdriver) to connect the SAT and TERR drop cables to the corresponding Satellite A, Satellite B & TERR Inputs on the Multiswitch. Connect any additional Multiswitch or Trunk Cables to the Satellite A, Satellite B & TERR Outputs as applies. Ensure that you terminate the last Multiswitch in a cascade using 75Ω Isolated F-type Terminators.

EARTH BONDING

Earth bond the Multiswitch to the Earth Bonding Lug and/or the Earth Terminal Bars using minimum 4mm² Earth Bonding Cable. It is best practise to earth bond across all Multiswitches using a single unbroken Earth Bonding Wire. To achieve this, strip away 3cm of the insulation of a length of 4mm² Earth Bonding Wire. See Figure 1.

Unscrew the Earth Bolt on the Earth Terminal Bar to provide enough clearance to wrap the Earth Bonding Wire around the Earth Bolt. See Figure 2. Tighten the Earth Bolt and route the Earth Bonding Wire to all other Earth Terminal Bars and terminate as detailed above. Make sure that the Earth Bonding Cable is connected directly to the building's PME.

Figure 1

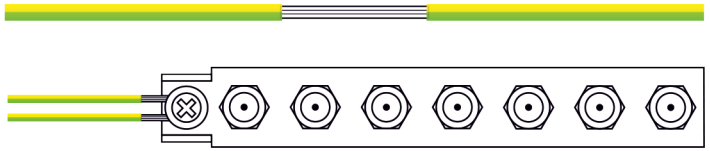


Figure 2

CONNECTING THE SUBSCRIBER CABLES

Terminate the Subscriber Cables with good quality F Connectors and connect to the Subscriber Outputs. The F Connectors should be fitted to the coaxial cable correctly, ensuring that the centre core protrudes 3mm above the F Connector body. See figure 3. Ensure that you do not exceed the bending radius of the Coaxial Cable being used. The Subscriber Cables may be arranged either side of the Multiswitch before being terminated and connected. If required, the Subscriber Cables may be arranged to one side of the Multiswitch, with the cables passing under the Multiswitch before being terminated and connected to the Subscriber Outputs on the opposite side. See figure 4.

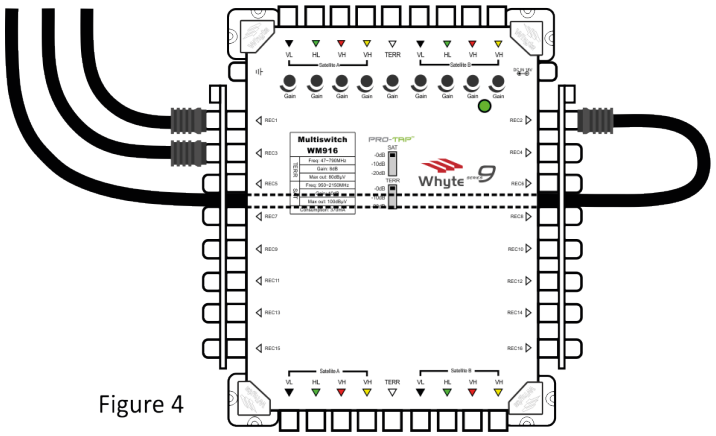


Figure 4

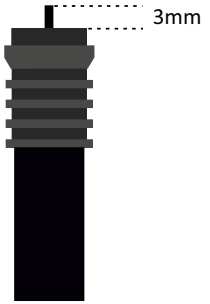


Figure 3

CONNECTING THE POWER SUPPLY UNIT (PSU)

Calculate the total current consumption of the Series 5 Multiswitch(es), LNB and any Series 5 Launch Amplifiers that make up the complete IRS System. The current consumption of the Series 5 Multiswitch range can be found in the Specification section of this manual. If in doubt, assume the current consumption of each LNB to be 200mA max (0.2A). Connect a suitable Whyte PSU to the Auxiliary 18V DC Input. If more than one PSU is required, the additional PSU(s) may be connected to any other Multiswitch, Launch Amplifier, Tap or Splitter within the system. When all connections have been made, connect the PSU to a 240V socket to power up the IRS System. It is highly advisable to isolate and hence divide the system in to DC Groups containing only a single PSU per group, by using F-type DC blockers (not supplied).

COMMISSIONING THE MULTISWITCH

See Figure 5: In this brief example, each Multiswitch will be calibrated to provide a signal level of SAT 80dBµV and TERR 70dBµV at the Subscriber Output.

1. Ensure that the input signal level is between 70 to 90dBµV SAT and 62 to 85dBµV TERR. Note: How to calculate the minimum input signal level. The Multiswitch has a SAT gain of 10dB. As we are seeking 80dBµV at the Subscriber Output, therefore, the minimum SAT input signal level must be 70dBµV. Hence 70dBµV (min input signal level) + 10dB (gain) = SAT 80dBµV. The Multiswitch has a TERR gain of 8dB. Hence 62dBµV (min input signal level) + 8dB gain = TERR 70dBµV.

2. Connect a spectrum analyser to any Subscriber Output of the Multiswitch

3. Set the SAT and TERR Pro-Taps to -20dB

4. Using the Gain Control, adjust each of the 4 polarities on Satellite A to provide to an average signal level of 80dBµV. If the signal level can not be turned up sufficiently to reach 80dBµV, set the SAT Pro-Tap to -10dB and re-adjust the gain for all 4 polarities of Satellite A. If the signal level can not be turned up sufficiently, set the Pro-Tap to -0dB and readjust the gain for all 4 polarities. Note: Also check C/N, BER and MER to ensure good signal quality.

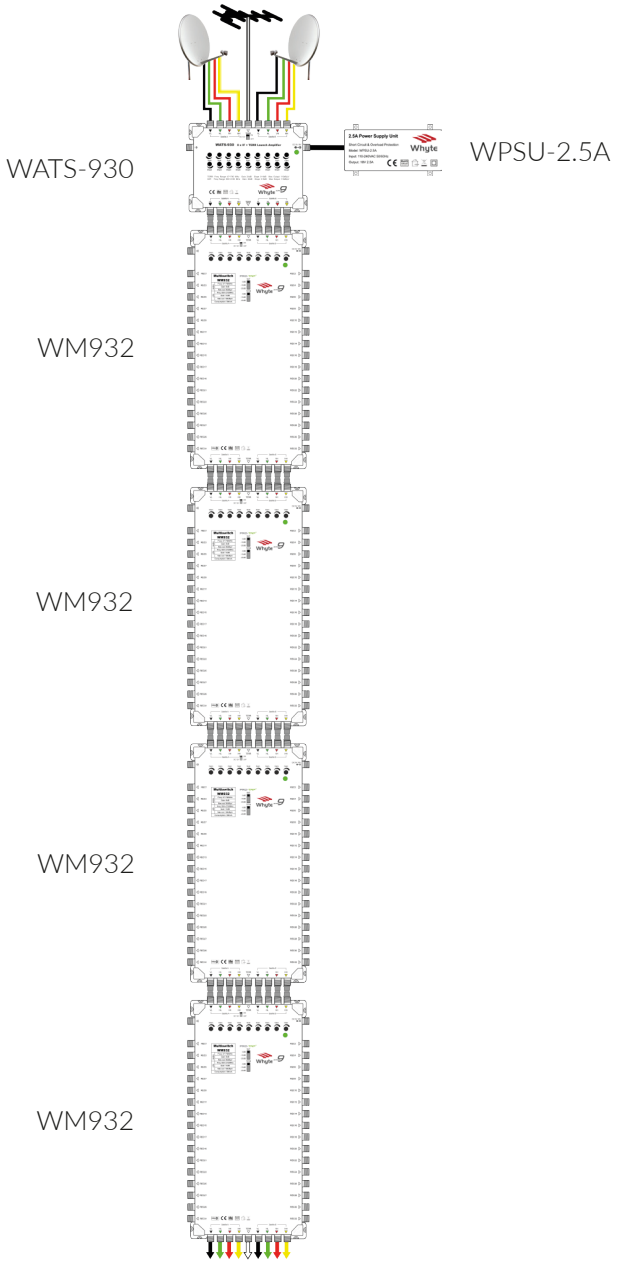
5. Set the spectrum analyser to DiSEqC B and adjust the gain for all 4 polarities for Satellite B to an average signal level of 80dBµV by following the directions as detailed above.

6. Set the Spectrum Analyser to Terrestrial. Using the TERR Gain Control adjust the Terrestrial signal level to 70dBµV. If the signal level cannot reach 70dBµV, set the TERR Pro-Tap to -10dB and readjust the TERR Gain Control. If required, set the Pro-Tap to -0dB and readjust the Gain Control to achieve an average signal level of 70dBµV.

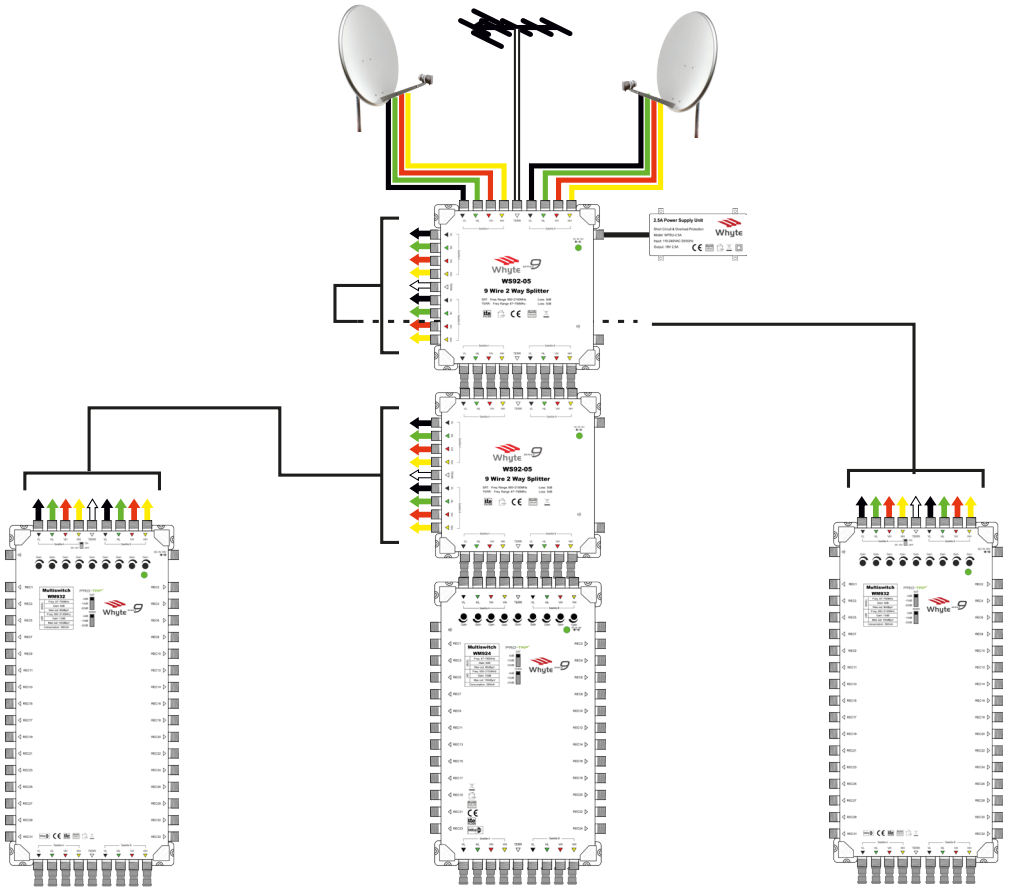
7. Repeat the above for all other Multiswitches in the IRS System if this applies.

EXAMPLE APPLICATION

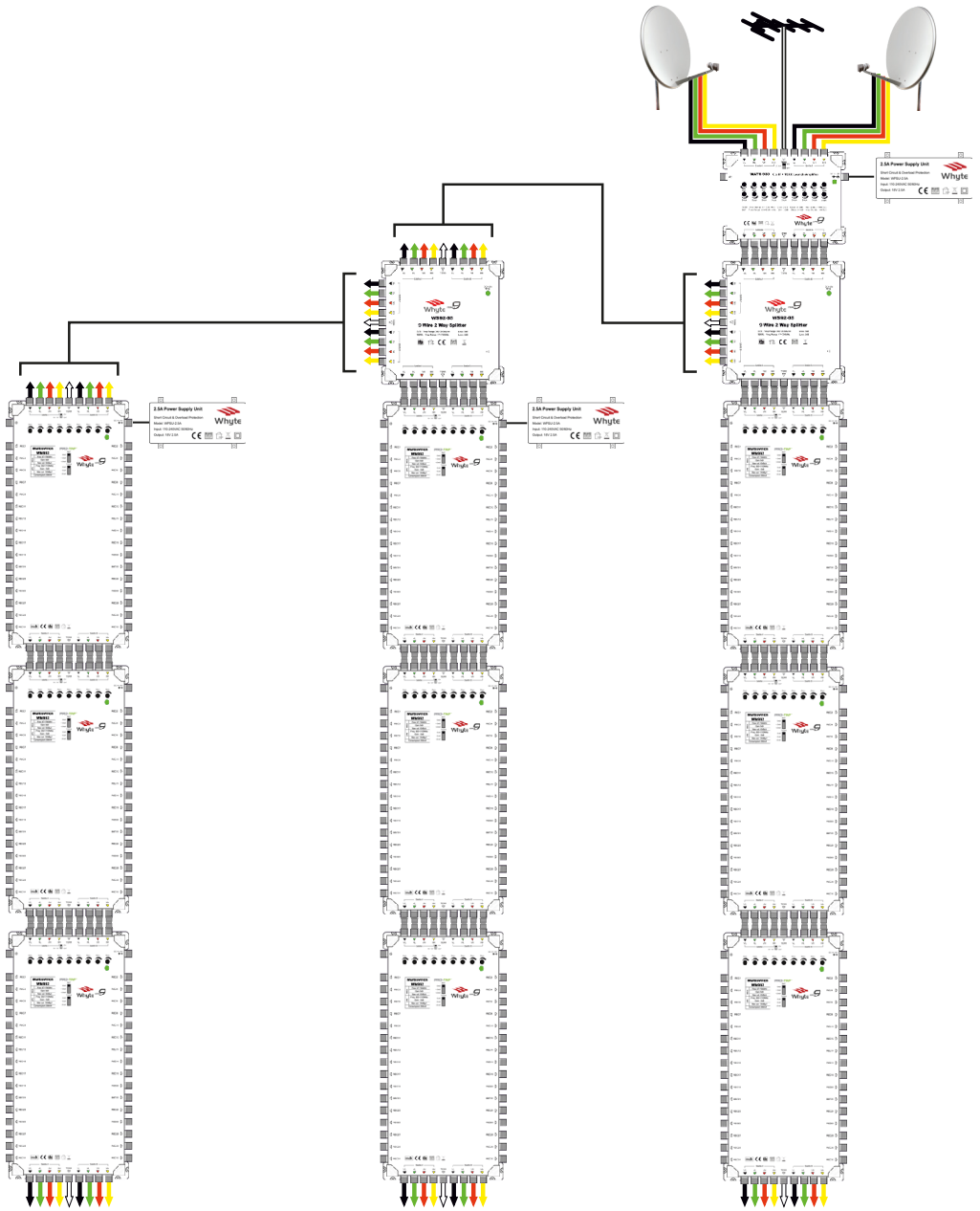
FIGURE 5



3 X 9 WIRE MULTISWITCHES IN STAR WIRED CONFIGURATION



9 WIRE MULTI-TRUNK CASCADE CONFIGURATION



SPECIFICATIONS

Model		WM908	WM912	WM916	WM924	WM932
Frequency	950-2150	950-2150MHz	950-2150MHz	950-2150MHz	950-2150MHz	950-2150MHz
	47-790	47-790MHz	47-790MHz	47-790MHz	47-790MHz	47-790MHz
Inputs (F Connectors)		8 SAT+1 TERR	8 SAT+1 TERR	8 SAT+1 TERR	8 SAT+1 TERR	8 SAT+1 TERR
Outputs (F Connectors)		8 Taps	12 Taps	16 Taps	24 Taps	32 Taps
Trunk Loss	SAT	4±1dB	4±1dB	4±1dB	4±1dB	4±1dB
	TERR	4±1dB	4±1dB	4±1dB	4±1dB	4±1dB
Gain	Tap SAT	10±2dB	10±2dB	10±2dB	10±2dB	10±2dB
	Tap TERR	8±2dB	8±2dB	8±2dB	8±2dB	8±2dB
Gain Control	SAT	10±2dB	10±2dB	10±2dB	10±2dB	10±2dB
	TERR	10±2dB	10±2dB	10±2dB	10±2dB	10±2dB
Tap ATT	SAT & TERR	-0/-10/-20dB	-0/-10/-20dB	-0/-10/-20dB	-0/-10/-20dB	-0/-10/-20dB
Isolation	Trunk-Trunk	≥28dB	≥28dB	≥28dB	≥28dB	≥28dB
	Cross-Polar	≥25dB	≥25dB	≥25dB	≥25dB	≥25dB
	Tap-Tap (SAT)	≥25dB	≥25dB	≥25dB	≥25dB	≥25dB
	Tap-Tap (TERR)	≥21dB	≥21dB	≥21dB	≥21dB	≥21dB
	Rejection	≥20dB	≥20dB	≥20dB	≥20dB	≥20dB
Max Input	SAT	90dBµV	90dBµV	90dBµV	90dBµV	90dBµV
	TERR	85dBµV	85dBµV	85dBµV	85dBµV	85dBµV
Max Output	SAT (IMA³-35dB)	100dBµV	100dBµV	100dBµV	100dBµV	100dBµV
	TERR (IMA³-60dB)	>80dBµV	>80dBµV	>80dBµV	>80dBµV	>80dBµV
Switching Voltage		15±0.8V	15±0.8V	15±0.8V	15±0.8V	15±0.8V
Trunk Max Current Pass (per line)		2A	2A	2A	2A	2A
Switching Commands		DiSEqC 1.0/2.0 13V-18V	DiSEqC 1.0/2.0 13V-18V	DiSEqC 1.0/2.0 13V-18V	DiSEqC 1.0/2.0 13V-18V	DiSEqC 1.0/2.0 13V-18V
Current Consumption		330mA Max	330mA Max	330mA Max	350mA Max	350mA Max
Dimensions (mm)		211x147x45	211x211x45	211x211x45	211x275x45	211x339x45
Weight		757g	1024g	1070g	1400g	1700g

Whyte Technologies
Chevron Distribution Ltd
Unit 13, Watermill Business Centre
Edison Road
Enfield, EN3 7XF
Phone: 0330 999 1980
E-mail: info@whytetechnologies.com

@WhyteTech

Whyte Technologies

@WhyteTechnologies

@WhyteTechnologies

www.whytetechnologies.com