Whyte SERIES 17

17 Wire Multiswitch
INSTRUCTION MANUAL

WM1708 | WM1712 | WM1716 | WM24 | 1732

PRO-TAP

Whyte Technologies

www.whytetechnologies.com

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 4mm² 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 1mm². 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 against defects. Within this guarantee period, Whyte Technologies will repair or replace the faulty product. In the unlikely event, please return any faulty products to your dealer.

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

GENERAL DESCRIPTION

Whyte™ Series17 Multiswitches are a 17 wire, DiSEqC compatible, Cascading Multiswitch range that combines up to 4 different satellites and Terrestrial TV & Radio.

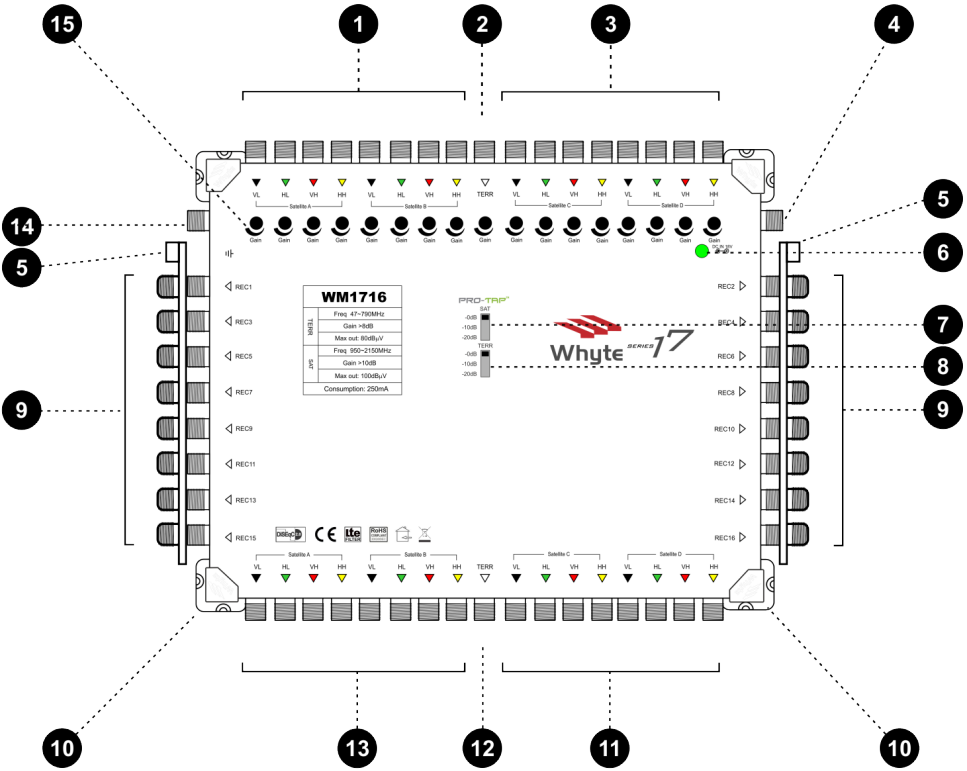
They are compact and universally flexible and hence can be used to build small to very large Integrated TV and Satellite Integrated Reception Systems (IRS), when used in conjunction with Series17 Launch Amplifiers and Splitters as may be required.

All Series17 Multiswitches can be used in “standalone” or in “cascade” mode and come fitted with Whyte Pro-Tap™ technology.

The Whyte Series17 Multiswitches have colour coded inputs and come fitted with Earth Terminal Bars. Each Series17 Multiswitch comes complete with 17 F Type Couplers to enable quick interconnection of the Multiswitches as well as to Series17 Amplifiers and Splitters.

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

PRODUCT DESCRIPTION



1. Inputs Satellite A & B
2. Input Terrestrial
3. Inputs Satellite C & D
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 C & D
12. Output Terrestrial
13. Outputs Satellite A & B
14. Earth Lug
15. SAT & TERR Gain Controls

TECHNICAL DESCRIPTION

GENERAL

Whyte Series 17 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 the F-connectors.

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

All Whyte Series 17 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 whilst maintaining a through loss of 4dB.

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 17 Multiswitches can be used in stand alone mode when powered directly via the 18V Auxiliary Input by using a Whyte Power Supply Unit (WPSU-2.5A sold separately).

Any unused (open) SAT/TERR Trunk Outputs must be terminated using 75Ω Isolated F-Type Terminators.

CASCADE MODE

Multiple Whyte Series 17 Multiswitches can be connected in cascade using the supplied F Type Couplers. In Cascade Mode, the PSU can be connected to any Series 17 Multiswitch, Splitter or Amplifier within the system for ease of installation.

Hence, all Series 17 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 the UHF, FM and DAB aerials, 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 their corresponding Satellite & TERR Inputs on the Multiswitch. Connect any additional Multiswitch or Trunk Cables to the Satellite & TERR Outputs as applies.

Ensure that you terminate the last Multiswitch in a cascade using 75Ω Isolated F-type Terminators.

EARTH BONDING

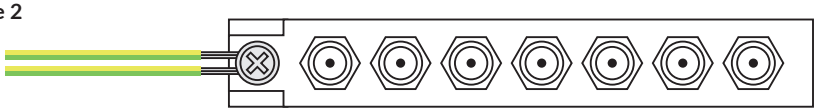
Earth bond the Multiswitch to the Earth Bonding Lug and/or the Earth Terminal Bars using minimum 4mm² Earth Bonding Cable. It is best practise to earth bond across all Multiswitches using a single unbroken Earth Bonding Wire. To achieve this, strip away 3cm of the insulation of a length of 4mm² Earth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

Calculate the total current consumption of the Series 17 Multiswitch(es), LNB's and Series 17 Launch Amplifiers that make up the complete IRS System.

The current consumption of the Series 17 Multiswitches can be found in the Specification section of this manual. If in doubt, assume the current consumption of each LNB to be 200mA (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 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 divide the system in to DC Groups containing a single PSU per group, by using F-type DC blockers.

CONNECTING THE SUBSCRIBER CABLES

Terminate the Subscriber Cables with good quality F Connectors and connect to the Subscriber Outputs.

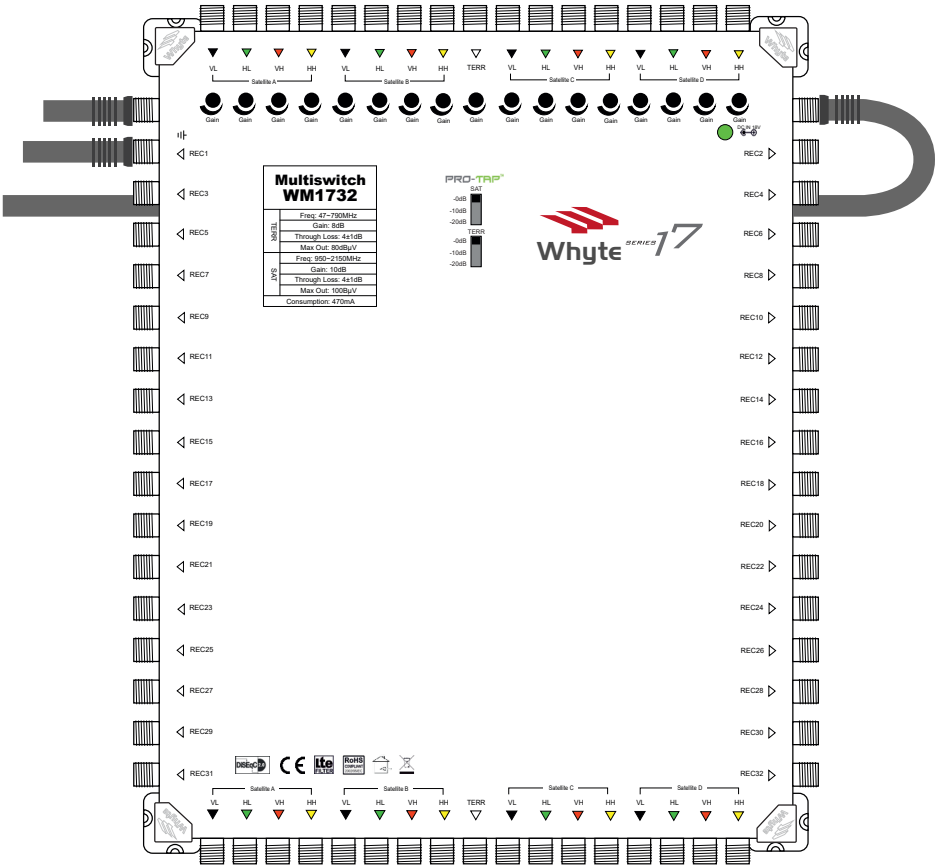
The F Connectors should be fitted to the coaxial cable correctly, ensuring that the centre core protrudes 3mm above the F Connector body. See figure 3.

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 3

Figure 4



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 Outputs.

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 first 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 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. Repeat the above for Satellites C & D.

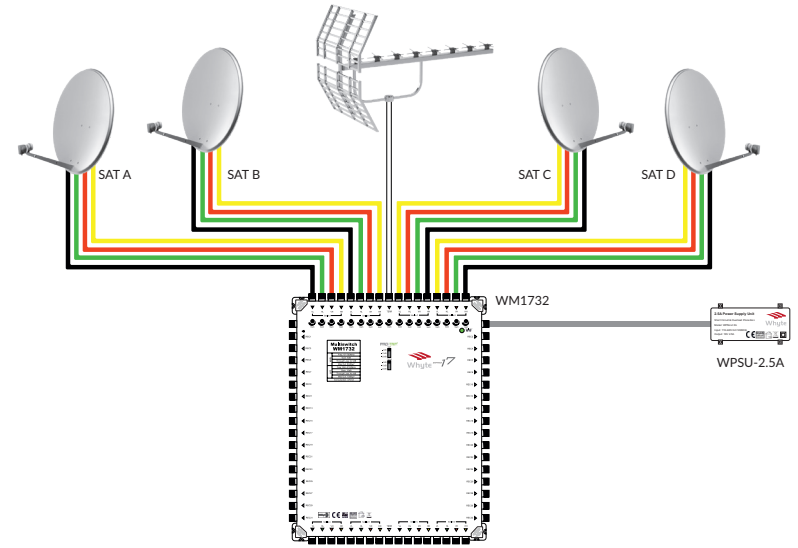
6. Set the Spectrum Analyser to Terrestrial. Using the TERR Gain Control adjust the Terrestrial signal level to 70dBµV. If the signal level cannot reach 70dBµV, set the TERR Pro-Tap to -10dB and readjust the TERR Gain Control. If required, set the Pro-Tap to -0dB and readjust the Gain Control to achieve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

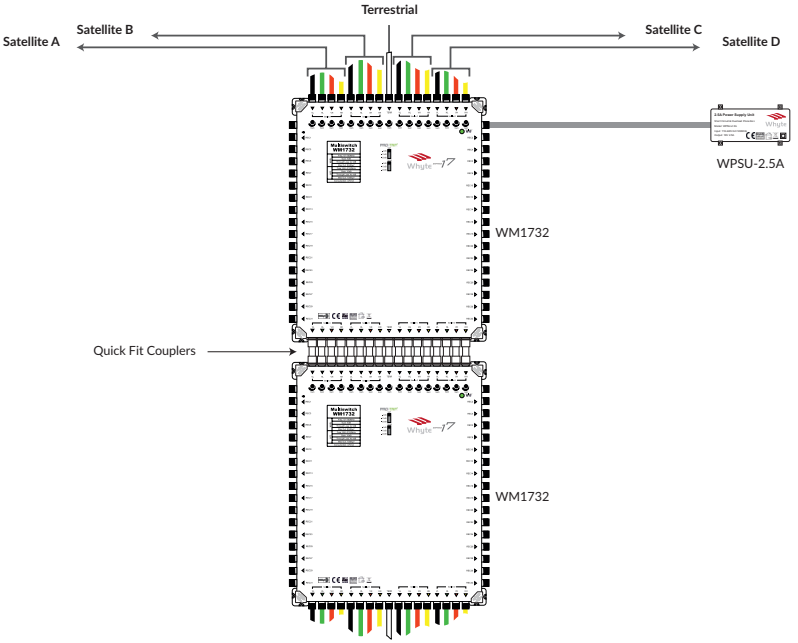
7. Repeat the above for all other Multiswitches in the IRS System if this applies.

EXAMPLE CONFIGURATION

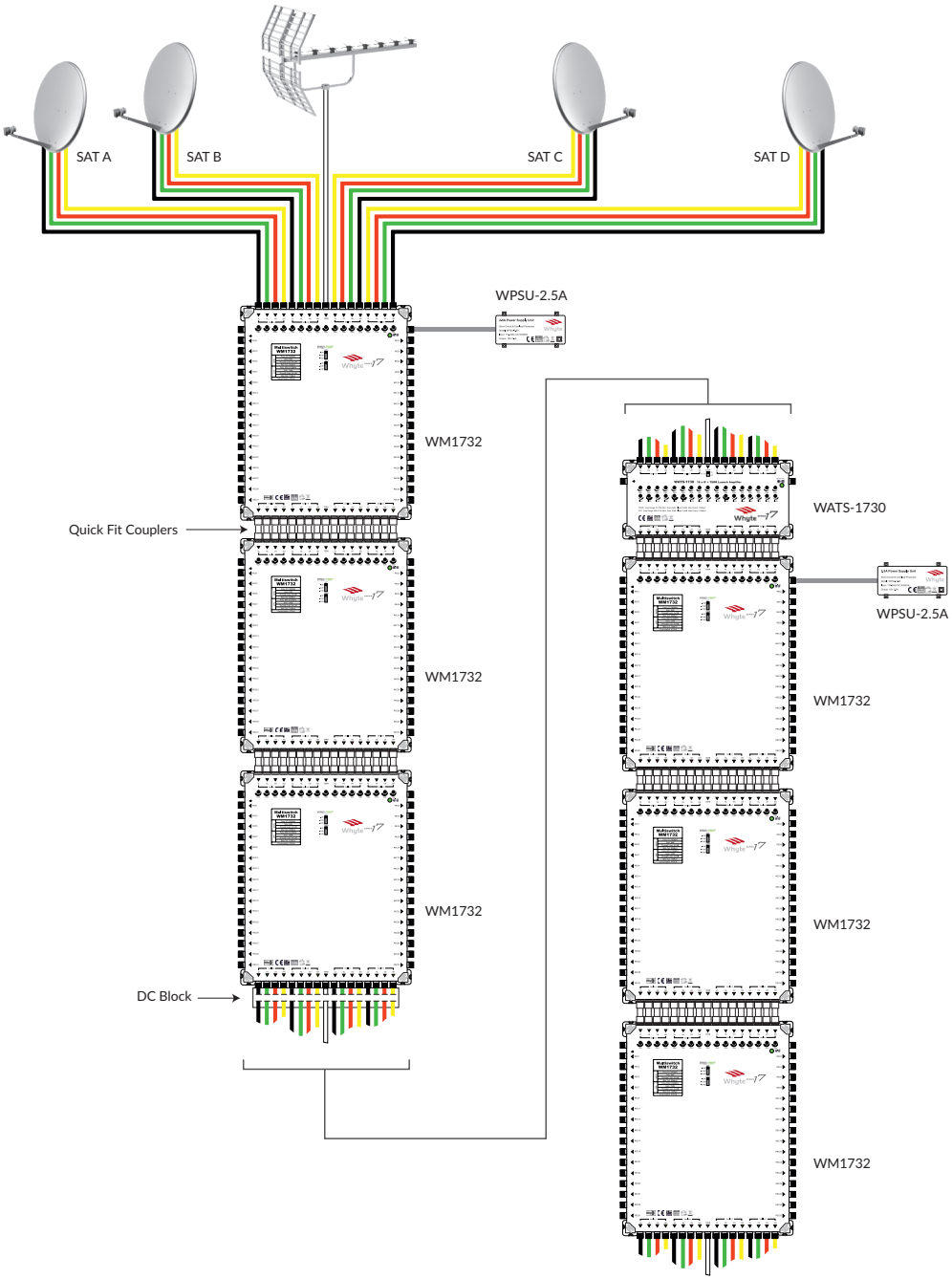
17 WIRE MULTISWITCH STANDALONE CONFIGURATION

Figure 5





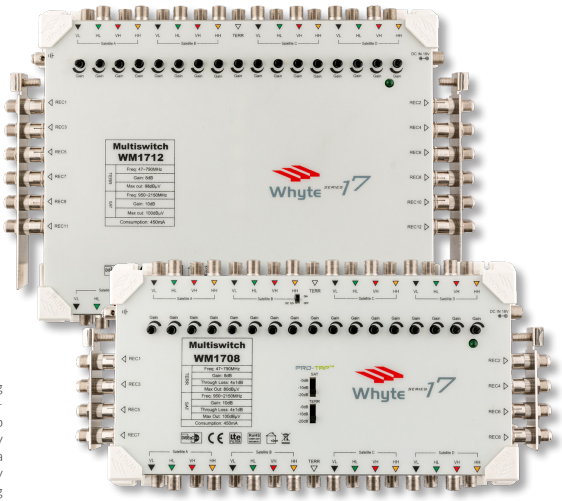
17 WIRE SINGLE TRUNK CASCADE CONFIGURATION



Series **17** Multiswitches

WM1708 | WM1712

- 4 Years Warranty
- Line Powered Cascading Multiswitch
- Use as standalone when powered with a Whyte PSU
- SAT gain 10dB / TERR gain 8dB
- Gain Control on all inputs
- Comes with Earth Bars fitted
- Uses receiver power to reduce demands on PSU
- Colour coded inputs and outputs
- Switchable 12V DC Supply to Terrestrial input
- LED Power Indicator & 4G LTE filter
- Separate SAT & TERR Pro-Taps™ for ease of installation
- Comes with 17 F-Type couplers for easy connection to Series 17 Multiswitches, Splitters & Amplifiers



Whyte Series 17 is a range of 17 wire line powered Cascading Multiswitches. The Whyte Series 17 range comes fitted with Pro-Tap™ Technology. Developed by Whyte Technologies, a Pro-Tap is an in-built "Protean Tap" which enables the installer to easily select input tap losses of 0, -10 or -20dB whilst still maintaining a trunk through loss of only 4dB. IRS System pre-planning is virtually not required as tap loss settings are selected at the commissioning stage.

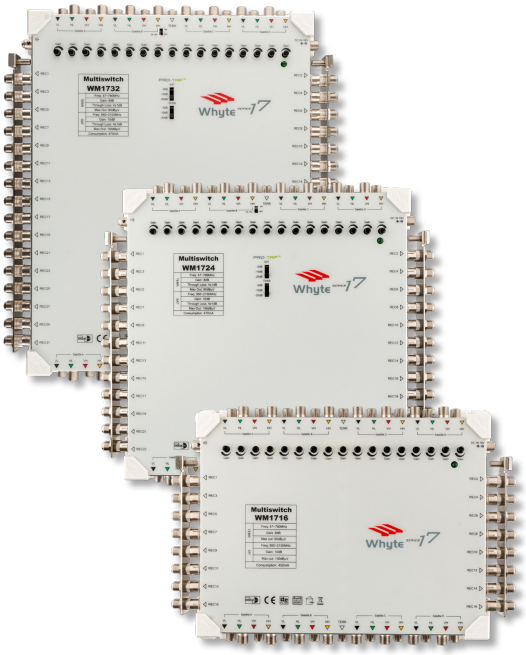
PRO-TAP

MODEL		WM1708	WM1712
Frequency Range	SAT	950-2150MHz	950-2150MHz
	TERR	47-790MHz	87-790MHz
Input (F-Type Female)		16 SAT + 1 TERR	16 SAT + 1 TERR
Tap Outputs (F-Type Female)		8	12
Gain	SAT	≥10dB	≥10dB
	TERR	≥8dB	≥8dB
Gain Control	SAT	10dB±2dB	10dB±2dB
	TERR	10dB±2dB	10dB±2dB
Pro Tap™ Attenuation Select		0 / -10 / -20dB	0 / -10 / -20dB
Return Loss	SAT Trunk Input / Output	>10dB / >10dB	>10dB / >10dB
	TERR Trunk Input / Output	>8dB / >8dB	>8dB / >8dB
	Tap Output	>8dB	>8dB
Max Output Level	SAT (IMA^3 -35dB)	100dBµV	100dBµV
	TERR (IMA^3 -60dB)	>90dBµV	>90dBµV
Isolation	Trunk-Trunk	>28dB	>28dB
	Cross-Polar	≥23dB	≥23dB
	Tap-Tap (SAT)	>25dB	>25dB
	Tap-Tap (TERR)	≥20dB	≥20dB
	Rejection	≥20dB	≥20dB
Impedance		75Ω	75Ω
Switching Commands	Legacy	13/18V / 22kHz / DiSEqC	13/18V / 22kHz / DiSEqC
Power Supply Voltage		18V DC	18V DC
Powering	Via DC In	YES	YES
	Via HL & HH Input	YES	YES
Power Consumption (Max) @ 18V		450mA	450mA
Power Indication		LED	LED
Trunk Max Current Pass (per Line)		2A	2A
Masthead Supply (Switchable)	TERR Input Only	12V DC 100mA	12V DC 100mA
Earth Terminal Bars (Tap Outputs)		YES	YES
Earth Lug		Up to 6mm^2 core	Up to 6mm^2 core
Dimensions including Earth Bars W x L x H (mm)		308 x 214 x 43mm	308 x 224 x 43mm
Weight		1086g	1448g

Series **17** Multiswitches

WM1716 | WM1724 | WM1732

- 4 Years Warranty
- Line Powered Cascading Multiswitch
- Use as standalone when powered with a Whyte PSU
- SAT gain 10dB / TERR gain 8dB
- Gain Control on all inputs
- Comes with Earth Bars fitted
- Uses receiver power to reduce demands on PSU
- Colour coded inputs and outputs
- Switchable 12V DC Supply to Terrestrial input
- LED Power Indicator & 4G LTE filter
- Separate SAT & TERR Pro-Taps™ for ease of installation
- Comes with 17 F-Type couplers for easy connection to Series 17 Multiswitches, Splitters & Amplifiers



Whyte Series 17 is a range of 17 wire line powered Cascading Multiswitches. The Whyte Series 17 range comes fitted with Pro-Tap™ Technology. Developed by Whyte Technologies, a Pro-Tap is an in-built "Protean Tap" which enables the installer to easily select input tap losses of 0, -10 or -20dB whilst still maintaining a trunk through loss of only 4dB. IRS System pre-planning is virtually not required as tap loss settings are selected at the commissioning stage.

PRO-TAP

MODEL		WM1716	WM1724	WM1732
Frequency Range	SAT	950-2150MHz	950-2150MHz	950-2150MHz
	TERR	87-790MHz	87-790MHz	87-790MHz
Input (F-Type Female)		16 SAT + 1 TERR	16 SAT + 1 TERR	16 SAT + 1 TERR
Tap Outputs (F-Type Female)		16	24	32
Gain	SAT	≥10dB	≥10dB	≥10dB
	TERR	≥8dB	≥8dB	≥8dB
Gain Control	SAT	10dB±2dB	10dB±2dB	10dB±2dB
	TERR	10dB±2dB	10dB±2dB	10dB±2dB
Pro Tap™ Attenuation Select		0 / -10 / -20dB	0 / -10 / -20dB	0 / -10 / -20dB
Return Loss	SAT Trunk Input / Output	>10dB / >10dB	>10dB / >10dB	>10dB / >10dB
	TERR Trunk Input / Output	>8dB / >8dB	>8dB / >8dB	>8dB / >8dB
	Tap Output	>8dB	>8dB	>8dB
Max Output Level	SAT (IMA^3 -35dB)	100dBµV	100dBµV	100dBµV
	TERR (IMA^3 -60dB)	>90dBµV	>90dBµV	>90dBµV
Isolation	Trunk-Trunk	>28dB	>28dB	>28dB
	Cross-Polar	≥23dB	≥23dB	≥23dB
	Tap-Tap (SAT)	>25dB	>25dB	>25dB
	Tap-Tap (TERR)	≥20dB	≥20dB	≥20dB
	Rejection	≥20dB	≥20dB	≥20dB
Impedance		75Ω	75Ω	75Ω
Switching Commands	Legacy	13/18V / 22kHz / DiSEqC	13/18V / 22kHz / DiSEqC	13/18V / 22kHz / DiSEqC
Power Supply Voltage		18V DC	18V DC	18V DC
Powering	Via DC In	YES	YES	YES
	Via HL & HH Input	YES	YES	YES
Power Consumption (Max) @ 18V		450mA	470mA	470mA
Power Indication		LED	LED	LED
Trunk Max Current Pass (per Line)		2A	2A	2A
Masthead Supply (Switchable)	TERR Input Only	12V DC 100mA	12V DC 100mA	12V DC 100mA
Earth Terminal Bars (Tap Outputs)		YES	YES	YES
Earth Lug		Up to 6mm^2 core	Up to 6mm^2 core	Up to 6mm^2 core
Dimensions including Earth Bars W x L x H (mm)		308 x 224 x 43mm	308 x 278 x 43mm	308 x 342 x 43mm
Weight		1500g	1918g	2328g

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