Installation Instructions

Labgear UHF Variable Mastheads

PUH141 + PSM114V: UHF 470-862 MHz 4-way 12-16 dB comes with PSM114V
PUH111 + PSM114V: UHF 470-862 MHz 4-way 16-24 dB comes with PSM114V

These new technically advanced UHF antenna preamplifiers offer unparalleled combination of low noise, good input filtering and high output capability. The amplifier units consist of fully screened, sealed modules fitted with Type-f connectors. These preamplifiers come with a moulded ABS weatherproofing enclosure for outdoor applications.
Features and Benefits

- System can be commissioned in side the house by adjusting the variable power supply to optimise signal level
- Industry-leading noise performance
- Inputs well filtered below 470 MHZ to minimise interference from Tetra transmissions
- Ideal for both Analogue and digital (DTT) applications.
- Indoor or outdoor use
- The PUH141 can be powered via any of its outputs and signal levels can be optimised by adjusting the unique PSM114V to set the levels without the need to go outside.

PUH111 + PSM114V- high gain 16-24 dB variable gain masthead kit.
The PUH111 Kit enables you to stock one product for 3 applications; it is suitable for DTT applications where the off air signals need to be lifted by a minimal amount. This unique method allows you vary the voltage which in turn adjusts the gain of the amplifier. Where more gain is required leave the power supply at the factory setting to give you maximum gain. Examples are very long cable runs, with remotely mounted antennas;

- Receiving extremely weak signals in badly screened locations
- Small distribution systems using passive taps after the preamplifier.
- Comes with PSM114V to optimise required signal in side the house

PUH141- UHF 470-862 MHz 12-16dB 4- way distribution amplifier comes with PSM114V
The PUH141 provides a fully DTT-compatible solution for feeding several TV points from one antenna. The wiring can be mainly on the outside of the building, making this a popular solution for the retro fit on older buildings, now with more gain it lends its self to be used in weaker signal areas and signal can be optimised by the PSM114V. The PUH141 can be powered from any output making installation even easier.

Notes
These amplifiers have a maximum input capability of around 75dBµV (for 5 analogue TV channels with 6 lower-level DTT multiplexes). If signal levels exceed this figure it is unlikely that a preamplifier would be required.
Masthead preamplifiers should never be used as a substitute for an adequate antenna, although they can reduce the antenna size required in many cases. A preamplifier will not cure problems caused by co-channel interference or multi-path propagation (ghosting), both of which may point the need for a more directional antenna.

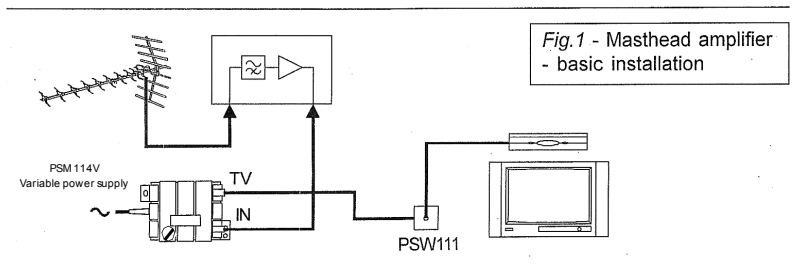


Fig.1 - Masthead amplifier - basic installation

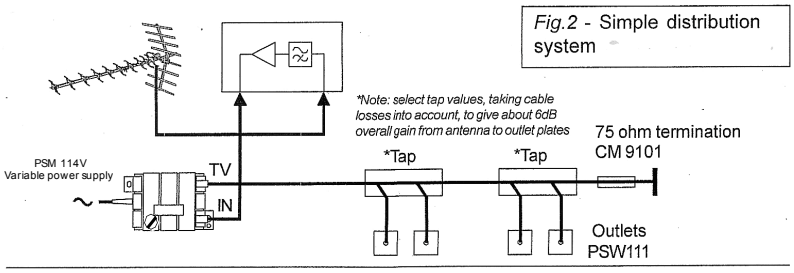


Fig.2 - Simple distribution system

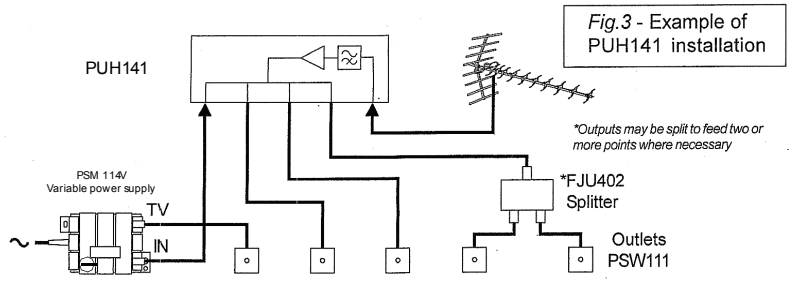


Fig.3 - Example of PUH141 installation

Fig.4 - Mounting wth cable tie

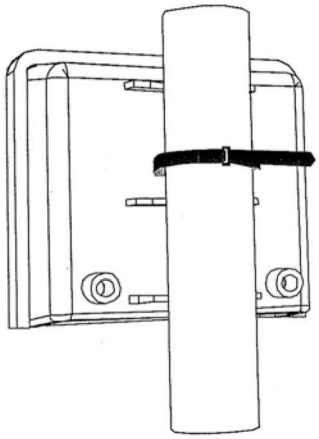
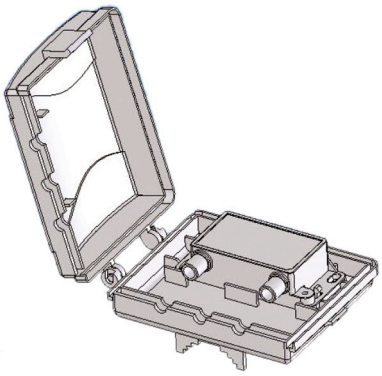


Fig.5 - Flat surface mounted with screws



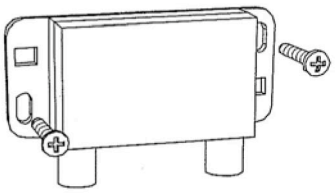


Fig.6 - Flat surface mounted with screws - amplifier only (unclip from moulding)

Fixing methods
Mount the amplifier on a vertical section of the mast below the antenna using the cable tie provided-fig 4
The amplifier will not be affected by proximity to the antenna, but reasonable clearance – about 300mm- should be maintained to avoid disturbing the antennas performance.
Alternatively, the amplifier can be mounted be methods in figs 5 & 6.

Signal connections
Type-f connectors provide a reliable low-cost method of connection with excellent screening integrity and impedance match. Select the appropriate male connectors to fit the cable type used, from '0.63' to '233'. This method of connection is superior in all respects to saddle-and-clamp types that it replaces. Good quality coaxial cable to EN50117-2 should be used, ideally to be used in conjunction with high quality crimp on connectors.
Connectors should be properly fitted in accordance to manufacturer's instructions, using the correct crimp tool.
F connectors should always be tightened with a spanner. Leaving it finger tight may result in unwanted signal ingress or leakage, as well as suck-outs in the frequency response.
System Earth Bonding
Earth bonding terminals are provided on the amplifier casting for the use where necessary to comply with BS EN 50083-1

Technical Data	PUH141	PUH111
Operating Frequency	470-862 MHz	470-862 MHz
Number of outputs	4	1
Gain (variable via PSM114V) (note 1)	9-16dB	16-24dB
Filter rejection dc….400MHz	>25dB	>25dB
Noise figure	>2.5dB	>1.6dB
Input Signal Handling (note 3)	75dBµV	77dBµV
Output Signal Handling (note 3)	99dBµV	103dBµV
Input Return loss	9dB	9dB
Output isolation	30dB	-
Power requirements (max gain)	11…13V	11…13V
Current Consumption	45mA	40mA
Through line powering	No	No
EMC compliance	EN50083-2	EN50083-2
Connectors	IEC60169-24 (type f)	IEC60169-24 (type f)
Operating Temperature	-10…+40ºC	-10…+40ºC
Dimensions	142 x (W) x 86 (H) x 36 (D)	98 x (W) x 86 (H) x 36(D

Note 1: All figures apply between relevant input and each of the relevant output(s).
Note 2: Typical minimum filter rejection dc…400MHz
Note3: For 5 (max.) analogue TV signals plus 6 DVB-T multiplexes at <-14dB relative level.

PSM114V 2…12V variable 100mA power supply with Type-F connections

Installation

Mounting and ventilation

Fix the unit to the wall, skirting board, mounting board o similar hard surface. A ventilation gap of at least 25mm should be left around the front and sides of the unit.

Do not leave the power unit resting on a carpet.

Do not install the power unit where it may become smothered with curtains or other fabrics.

When installing the power unit in a roof space ensure that it will not become buried in thermal insulation materials.

Signal connections are made to the coaxial sockets on the right-hand side of the power unit. Good quality coaxial cable to EN50117-2 must be used. Labgear recommend the use of CAI "benched marked" cable.

- The down lead from the masthead amplifier must be connected to the socket marked 'IN'.
- The signal output from the socket marked 'TV' is connected to the receiving installation (satellite receiver, VCR, TV, etc.) or to the input of the cabled distribution system.

Connections

A connection to the PSM114V is made using Type-f (male) connectors. The use of high quality crimp connectors is preferred and the use of Labgear FPC100 is recommended.

F type connectors should always be tightened with a spanner. Leaving them finger tight may result in unwanted signal ingress or leakage, as well as suck-outs in the frequency response.

Mains power connections

The PSM114V power unit is fitted with a fitted mains plug and may be plugged directly into a socket outlet. Alternatively the plug may be cut off and the power unit wired into a fused connection unit, fitted with an approved 3A fuse to BS1362. The PSM114V is a class 2 construction and do not require a protective earth connection. If the power unit is not connected to the mains using the fused plug supplied or a fused connection unit, it must be protected by means of a fuse or MCB at the distribution board of rating no more than 6A.

Short circuit protection

The power supply is protected against output short-circuit by means of a PTC device. Should this protection operate, the power indicator LED colour will change from Green to Red to indicate a fault condition. To reset the protection, disconnect the unit from the mains and allow at least one minute for cooling before trying again.

General Safety notes

To avoid risk of electric shock during installation we recommend that the power unit and all associated TV receivers, etc. are isolated from the mains until the installation is complete.

Fixed wiring for electrical supply to these products should be carried out in accordance with BS7671 (IEE Wiring Regulations).

Distribution systems supplying signals to more than one household should comply with the safety requirements of BS EN50083-1. This requires the system to be earth bonded or the use of isolated outlets.

Technical Data	PSM114V	
Signal Connector type	Type-F (female)	IEC60169-24
DC output	2…12V	Voltage tolerance 5%
Short Circuit Protection	Indefinite, with warning	
Signal frequency range	44…862MHz	
Signal insertion loss	0.5dB	
Power requirement	230 V AC 50 Hz at <3W	Fitted mains plug
Power indicator	Two colour LED	Green-Red (see text)
Operating Temperature	0…40ºC	
Dimensions	65(H)x 80(W) x45 (D) mm	Excludes connectors

General Safety Precautions

The PSM114V are not waterproof and is intended for indoor use only and **must not** be fixed where they could be exposed to dripping or splashing water. Objects containing liquids should not be placed on or near the appliances.

To prevent the risk of fire, objects with naked flames (such as lighted candles) must not be placed on or near the appliances.

Fitted Mains plug

These appliances are supplied with the standard fused plug already fitted. If this is not suitable, refer to the instructions below. In the unlikely event that you need to change the fuse in the plug, a 3 Amp fuse to BS1362 carrying the ASTA or BSI approval mark must be used. Always re-fit the plastic fuse carrier when replacing the fuse.

Changing the Plug

If the fitted mains plug is not suitable for the socket outlets in your home, it should be cut off and an appropriate new plug fitted.

Wiring the new plug: Any instructions supplied with the new plug should be followed (these may state how much insulation to remove from the wires in the mains cord). The **Brown** wire must be fitted to the **live (L)** terminal of the plug and the **Blue** wire to the **neutral (N)** terminal. Neither wire should be connected to the **earth (E)** terminal of the 3-pin plug (this appliance does not require an earth connection). Ensure that the cord grip is the plug is a fused type; the fuse fitted should be rated at no more than 3 Amp.

Caution: The old plug should be destroyed promptly since it could be dangerous if plugged into a live socket.