

INSTALLATION INSTRUCTIONS

The proTLA41 is a single-output multi-band MATV headend launch amplifier, suitable for small-to-medium size systems of up to around 100 outlets. The amplifier's advanced design and push-pull output stage ensure good intermodulation performance, combined with low power consumption for cool and economical running.

Three separate antenna inputs are provided for Band II (FM radio), Band III (DAB or TV) and UHF TV. Each input is well-filtered prior to amplification, giving good immunity to out-of-band interference from any nearby base stations or similar transmitters. The gain from the UHF antenna input features a fixed upward equalisation slope of around 4 dB to offset the inevitable increasing cable loss in the passive distribution network toward the higher frequency end of the band. Line-power at 5V DC is available at the UHF antenna input for a PROception proMHD11L or proMHD11M preamplifier which may be required if the off-air UHF signals are low, or the antenna download is long.

A fourth input – AUX UHF – is provided to allow connection of locally-generated signals such as CCTV. This auxiliary input has lower gain than the main UHF input to minimise noise degradation of the antenna signals. Each of the four inputs has its own gain control, allowing simple optimisation of the outgoing signal levels.

The amplifier is intended to be used with a passive distribution network using splitter and tap-off units from the PROception proSPL and proTAP ranges. It is also suitable for use in conjunction with the 'passive terrestrial' type of satellite multiswitch in integrated reception systems (IRS) provided that the gain and output capability are compatible with the requirements of the particular multiswitch(es) used. An accurate directionally-coupled monitor point is provided, allowing simple and precise set-up of the outgoing signal levels – a feature probably unique in an amplifier of this class.

Application guidance

Passive network design

The amplifier is suitable for feeding passive networks with attenuation of up to about 32 dB at VHF, rising to around 40 dB at the top of the UHF band. The accompanying application example diagram (Fig. 1) shows the star-wired approach where all the taps are located near to the amplifier, with direct drop cables to each outlet. With the tap values shown the drop cable length can be up to around 55 m of '100' size benchmarked cable. The Fig. 1 system is easily scaled for a smaller number of outlets by omitting some of the tap banks and changing the initial proTAP812 to a 4- or 6-way splitter to minimise the overall attenuation.

2-Year Guarantee

This guarantee covers failure of your PROception product resulting from manufacturing defect within a period of 2 years from the date of supply to the end-user.

This guarantee does not cover damage to the product caused by abuse, tampering, defective installation or natural causes such as lightning discharge. Repair or attempted repair, other than by the manufacturer, will render this guarantee void.

This guarantee does not affect a consumer's statutory rights.

Performance data given are typical unless otherwise stated. Proception Limited reserves the right to change product designs and specifications without prior notice.

Proception Limited,
177-187 Rutland Road
SHEFFIELD
S3 9PT

United Kingdom

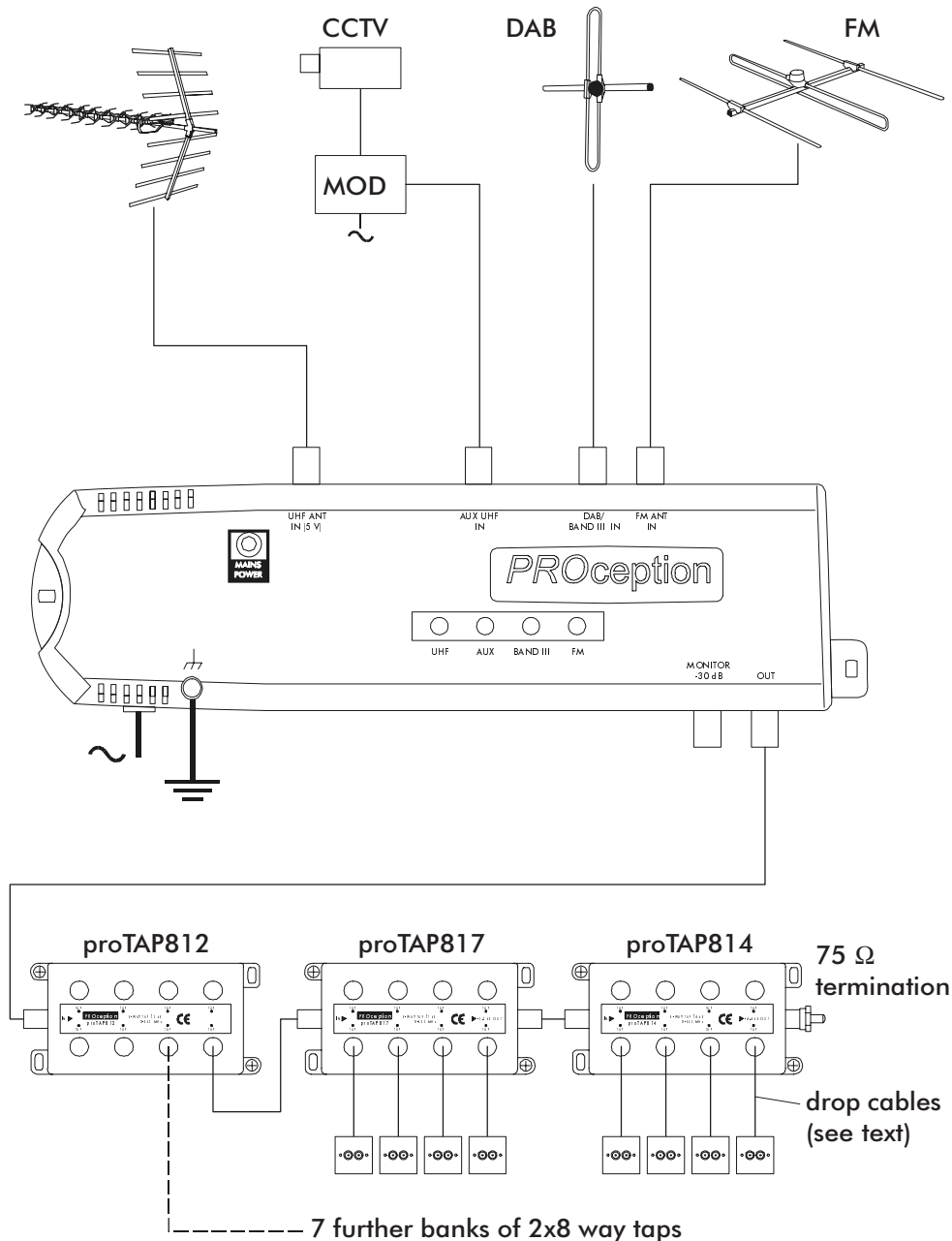
Web: <http://www.proception.co.uk/>

e-mail: support@proception.co.uk



PD2011-9045-01

Fig. 1 – Application example: 128 point star-wired system using a cluster of seventeen 8-way taps.



Safety Instructions

OVERHEATING

This amplifier is intended for use in moderate climates only. It should not be used in tropical regions. The recommended ventilation clearances and other precautions given in the relevant section of this instruction leaflet should be observed to prevent overheating. No unit should be fixed where it is likely to become smothered by soft furnishing fabrics such as curtains, or by thermal insulation material in a roof space or building void. Mains powered equipment should not be left resting on a carpet.

WATER AND FIRE RISKS

The appliance is not waterproof. It is intended for indoor use only and must not be fixed where it could be exposed to dripping or splashing water. Objects containing liquids should not be placed on or near the appliance. To prevent risk of fire, no object with a naked flame should be placed on or near the appliance, or its associated wiring.

MAINS PLUG AND DISCONNECTION FROM THE SUPPLY

The appliance is supplied with a standard fused plug fitted. If this is unsuitable, refer to the instructions below. If you need to change the fuse in the fitted plug, a 3 Amp fuse to BS 1362 carrying the ASTA or BSI approval mark must be used. Always replace the plastic fuse carrier when renewing the fuse. The plug (or other means of disconnection from the supply, if used) should remain readily accessible for operation when necessary. The LED power indicator on this equipment should not be regarded as providing reliable indication of supply disconnection.

CHANGING THE PLUG

If the fitted mains plug is not suitable for the socket-outlets in use, it should be cut off and a new plug fitted.

Wiring the new plug: Instructions supplied with the new plug should be followed. The brown wire must be connected 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 a 3-pin plug (the appliance does not require an earth connection). Ensure that the cord grip in the plug is correctly used and clamps the sheath of the cord firmly.

Fuse Rating: If the new plug is a fused type, the fuse fitted should be rated at not more than 3 Amp.

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

Technical data

proTLA41 MATV Headend Launch Amplifier				
Input & bands	Band II ANT	Band III ANT	UHF ANT	AUX UHF ¹
Signal frequency range	87.5 .. 108 MHz	174 .. 230 MHz	470 .. 862 MHz	470 .. 862 MHz
Gain (at max. setting)	32 dB	32.5 dB	35-39 dB	30 dB
Gain equalisation characteristic	Flat	Flat	Approx. 4 dB slope	Flat
Gain flatness	≤1 dB	≤1 dB	≤1.5 dB ²	≤1.5 dB
Input filter rejection (relative to mid-band gains)	>24 dB f<68 MHz >40 dB f>144 MHz	>25 dB f<150 MHz >25 dB f>265 MHz	>30 dB f<400 MHz >7 dB f>926 MHz	>19 dB f<300 MHz
Gain control type	Front-end	Front-end	Interstage	Front-end
Line power for UHF preamplifier	–	–	5 V at 25 mA max. ³	–
Common parameters				
Gain control range (all inputs)	>16 dB (typ. 20 dB)			
Noise figure	7 dB typ. (all inputs & bands except AUX UHF)			
Output capability (with analogue TV)	110 dBμV for 5 analogue TV channels (plus DTT, FM & DAB at lower level)			
Output capability (all-digital TV)	104 dBμV for 6 or 7 DTT muxes (plus FM & DAB at lower level)			
Monitor point	Attenuation 30±1 dB, directional type with output return loss >20 dB			
Mains power requirement	230 V 50 Hz at approx. 6.5 W (8 VA)			
Signal connector type	'F' (IEC 60169-24)			
Operating temperature range	-10 .. +40 °C			
Standards compliance	Safety: BS EN 60065:2002; EMC: BS EN 50083-2:2006; bonding terminal provided			

Notes

1. This input is intended for connection of locally generated signals such as CCTV.
2. The UHF ANT input has a fixed upward gain slope of approx. 4 dB. Gain flatness figure allows for corresponding downward cable slope.
3. Recommended preamplifiers: PROception types proMHD11L & proMHD11M. Not suitable for powering 12 V preamplifiers.

UHF preamplifier power

A PROception masthead preamplifier can be used if necessary to obtain sufficient TV signal level at the main UHF input. The headend amplifier will automatically power a proMHD11L (9 dB gain) or proMHD11M (16 dB gain) preamplifier. The line-power will automatically shut down if no preamplifier is used and the antenna presents a DC short circuit.

Any attenuator connected to the UHF antenna input should be of the DC-blocked type (e.g. PROception type proATT20V). In special cases where the input line power is not required it can be completely disabled by means of an internal jumper link. Please contact Proception technical support for details of how to use this facility.

Using the auxiliary UHF input

This input is provided to allow simple connection of local TV sources such as a security CCTV camera (via a suitable modulator). It is not recommended to use this input for additional off-air sources unless separate input filtering is provided. The launch level of any auxiliary analogue TV channels on the system should be kept to the minimum necessary to obtain adequately noise-free pictures. Local modulator channel(s) must of course be carefully chosen, avoiding $N\pm 1$ and $N\pm 5$ relationships with the main off-air channels.

The gain via this input is adequate for use with modulators having an output level around 75 dBμV – e.g. the PROception proMOD1. Any external gain added ahead of the AUX UHF input must be kept to an absolute minimum, otherwise the C/N ratio of the main off-air UHF signals will be degraded.

Signal levels

To achieve good performance it is essential that that every system is set-up by a competent person using an accurate signal level meter or spectrum analyser connected to the amplifier's monitor point. The following table gives general guidance: it shows recommended launch levels and the corresponding input, **monitor point** and system outlet levels for a typical system, both before and after the UK digital switch-over (DSO). See the table footnotes for more detail.

Signal type and band ¹	Acceptable input level range	Recommended launch levels	Levels at monitor point	Levels at system outlets Nominal	Acceptable range ²
VHF radio					
Band II FM	58 .. 78 dB μ V	90 dB μ V	60 dBμV	60 dB μ V	54 .. 74 dB μ V
Band III DAB	51 .. 71 dB μ V	83 dB μ V	53 dBμV	50 dB μ V	30 .. 70 dB μ V
UHF TV before DSO³					
Analogue TV – Group A	71 .. 91 dB μ V	106 dB μ V	76 dBμV	70 dB μ V	60 .. 80 dB μ V
Analogue TV – Group B	71 .. 91 dB μ V	108 dB μ V	78 dBμV	70 dB μ V	60 .. 80 dB μ V
Analogue TV – Group C/D	71 .. 91 dB μ V	110 dB μ V	80 dBμV	70 dB μ V	60 .. 80 dB μ V
Digital TV – Group A	57 .. 77 dB μ V	92 dB μ V	62 dBμV	56 dB μ V	45 .. 65 dB μ V
Digital TV – Group B	57 .. 77 dB μ V	94 dB μ V	64 dBμV	56 dB μ V	45 .. 65 dB μ V
Digital TV – Group C/D	57 .. 77 dB μ V	96 dB μ V	66 dBμV	56 dB μ V	45 .. 65 dB μ V
UHF TV after DSO^{4,5}					
Digital TV – Group A	64 .. 84 dB μ V	99 dB μ V	69 dBμV	63 dB μ V	45 .. 75 dB μ V
Digital TV – Group B	64 .. 84 dB μ V	101 dB μ V	71 dBμV	63 dB μ V	45 .. 75 dB μ V
Digital TV – Group C/D	64 .. 84 dB μ V	103 dB μ V	73 dBμV	63 dB μ V	45 .. 75 dB μ V

Notes

1. This table is given for general guidance only and assumes a passive distribution network with a nominal loss between the amplifier output and each system outlet of around 30 dB in Band II rising to 40 dB in Band V (UHF Group C/D). Different levels may need to be specified if the characteristics of the passive network differ widely from this. UK transmission parameters are assumed and care should be taken when using the amplifier in territories with differing transmission standards.
2. Acceptable levels at system outlets are in accordance with the recommendations of DTG R-Book 5.
3. Before DSO the system should be set-up on the analogue TV channels. The pre-DSO digital levels shown assume that the digital muxes are received at -14 dB relative to analogue. In some cases the digital levels will be lower and care should be taken to ensure that they are within the acceptable range at all system outlets.
4. The post-DSO levels shown are based on a figure of -7 dB relative to the former analogue signals. This applies to the public service (PSB) muxes from most main transmitter sites, so little or no adjustment should be necessary at DSO in many cases. Where adjustment is needed, or when setting up a new system after DSO, be sure to use the highest level multiplexes for setting-up. At many sites the commercial (COM) muxes will be around 3 dB lower than the PSB muxes.
5. If a single local analogue TV channel is present on an otherwise all-digital system after DSO (via the AUX UHF input) it is recommended to set its launch level to be about the same as the PSB digital muxes.

Installation notes

Location and fixing

Choose a suitable central location to fix the amplifier. The location must be dry and not subject to prolonged ambient temperature conditions of less than -10 °C or more than +40 °C. Fix the amplifier to a sound vertical surface such as a wall or equipment mounting board. Ventilation gaps of at least 50 mm should be left around the front and sides of the unit. More clearance will be required above and below the unit to allow access for the signal cables.

When installing the unit in a roof space or similar building void ensure that it will not come into contact with thermal insulation material.

Cables and signal connections

To preserve RF screening integrity the signal connections to the unit should be made using good quality coaxial cable and connectors. This is particularly important with digital terrestrial TV (DTT) to minimise the ingress of impulsive electrical interference from electrical appliances. The use of CAI benchmarked cable is strongly recommended. All signal connections are made with Type-F connectors. The use of good quality crimp or compression connectors, used in accordance with the manufacturer's instructions will give the best results. The importance of achieving sound braid connections cannot be over-stressed. Completed connections should always be tightened with a spanner – leaving them finger-tight can sometimes lead to poor connections and attenuation of the signal.

Unused inputs

If either of the VHF inputs and/or the AUX UHF input are not to be used the corresponding gain controls should be turned to minimum. Provided that this is observed there is no need to fit terminating resistors.

Mains supply connection and safety notes

The amplifier is supplied with a fitted mains plug and may be plugged directly into a 13 A (BS 1363) socket outlet. If socket outlets of a different type are in use, please refer to the safety instructions on page 7. Alternatively the plug may be cut off and the amplifier wired into a readily accessible fused connection unit, fitted with an approved 3 A fuse to BS 1362. This method of connection is recommended for permanent distribution system applications, since it reduces the risk of tampering and accidental disconnection. If the amplifier 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 final distribution board of rating not exceeding 6 A. A readily accessible isolating switch should be provided to allow the unit to be disconnected from the supply.

Any new fixed wiring installed to supply power to this amplifier should comply with BS 7671 (IEE wiring regulations) and, where relevant, Part P of the UK building regulations. The amplifier is of Class 2 construction and does not require a protective earth connection. This does not obviate the need to provide a circuit protective (earth) conductor in the supply wiring, as required by BS 7671.

System equipotential bonding

All signal distribution systems should comply with the safety requirements of BS EN 60728-11. This effectively requires earthed equipotential bonding of every system. For further guidance see the CAI code of practice COP 03.

The amplifier is provided with a bonding terminal. A bonding conductor of 4 mm² should be provided, connected to the main earth terminal of the electrical installation which supplies the unit. Bonding may be effected using PROception proBAR5 or proBAR8 equipotential bonding bars, allowing the amplifier to be removed for maintenance without disturbing the bonding of the signal cables.