Kingray

Television
Distribution Systems

Kingray

TABLE OF CONTENTS

SHIELDED

NON-SHIELDED

All Kingray mastheads have been designed for user friendly installation and peak operating performance for the digital environment of today and well into the future. A masthead amplifier is designed to amplify low level off-air signals, so a very low noise figure is necessary as part of the amplifier design.

The Kingray Edge series masthead amplifiers include LTE filtering for protection against the increasing number of 4G/LTE transmissions, the wideband and VHF models also include low band filtering. They are available in shielded and non-shielded models, incorporating the latest surface mount technology.

Jumper links make the FM traps switchable in our wideband models. A jumper link has also been used to make the combined or separate input feature selectable, as well as the power pass feature on our UHF models. The Edge series II mastheads can be powered by 14 volt DC, 17.5 or 22 AC.

The increased use of surface mount technology has resulted in the ability to produce a smaller PCB with increased reliability and performance. All Kingray mastheads, distribution amplifiers and passive products are HD and 4K compatible.

Kingray the future proof solution EDGE

LTE

4K ULTRA HD

LTE – WHAT IS IT?

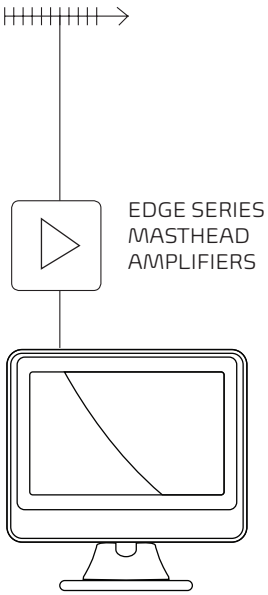
LTE stands for Long Term Evolution and is the name given to the new 4G transmissions being used by mobile phone carriers. The use of the 700 MHz spectrum for this emerging technology is providing substantial benefits for the general public, however, it has not been without its challenges for the television industry.

Transmissions of the 4G/LTE services commenced in January 2015 and almost immediately reception issues with older non filtered masthead amplifiers was reported and continues to be reported as new 4G base stations are commissioned.

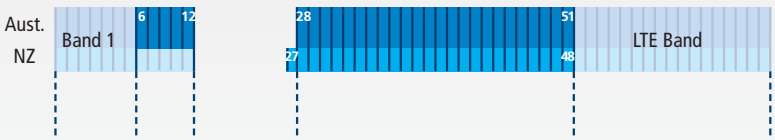
BE PROTECTED

The Kingray Edge series of masthead amplifiers has been engineered to provide a future proof solution with LTE/4G filtering to maximise interference rejection. The range includes both wideband, VHF and UHF only models where all services above 694 MHz are filtered, blocking LTE transmissions.

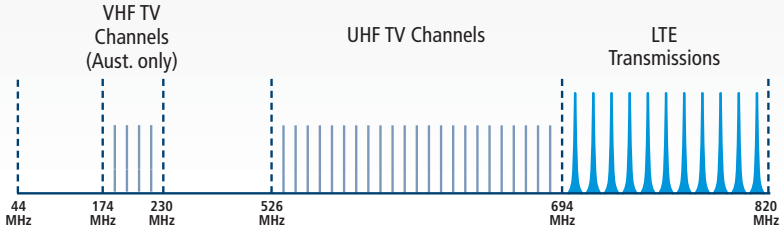
In addition to LTE filtering in the Edge series masthead amplifiers, we have also included low band filtering to eliminate all services below 174 MHz.



CURRENT TV CHANNELS



CURRENT SPECTRUM



MASTHEAD AMPLIFIERS VHF

The MHV25F is designed for todays digital television environment and specifically for areas where there is VHF transmission only. The Band 1, 2, 4 and 5 filtering ensure only channels 6 to 12 are amplified, eliminating all unwanted frequencies including those in the LTE band.

MHV25F

MHV25F

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FM TRAP OPTION	PAGER FILTER OPTION	OUTPUT FIGURE DIN45004B (dBµV)
VHF	174-230 88-230*	25	1	<2.5dB	N/A	02, 06, or 08	60	N/A	N/A	108

F Type masthead designed to amplify a VHF antenna.
Available in non-shielded (F) only. Packed without power supply.

*** FM Pass option**

MASTHEAD AMPLIFIERS UHF

The Kingray MHU series are UHF masthead amplifiers with the capability to diplex VHF, either from combined or separate VHF and UHF antennas. They are supplied with F connections and are available in shielded and non-shielded models.

MHU25F

MHU25FS

MHU25F & FS EDGE SERIES II

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FM TRAP OPTION	PAGER FILTER OPTION	OUTPUT FIGURE DIN45004B (dBµV)
VHF	44-230	-2	1, 2 or comb.	N/A	N/A	02, 06, or 08	60	N/A	N/A	108
UHF	520-694	25		<2.1dB	10dB			N/A	N/A	

F Type masthead designed to amplify a UHF antenna and diplex a separate VHF antenna or amplify the UHF component of a combined antenna.
Optional shielded (FS) or non-shielded (F) models. Packed without power supply.

MHU35F

MHU35FS

MHU35F & FS EDGE SERIES II

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FM TRAP OPTION	PAGER FILTER OPTION	OUTPUT FIGURE DIN45004B (dBµV)
VHF	44-230	-2	1, 2 or comb.	N/A	N/A	02, 06, or 08	80	N/A	N/A	108
UHF	520-694	35		<2.5dB	15dB			N/A	N/A	

F Type masthead designed to amplify a UHF antenna and diplex a separate VHF antenna or amplify the UHF component of a combined antenna.
Optional shielded (FS) or a non-shielded (F) models available. Packed without power supply.

MHB001
(MASTHEAD BOX)

Kingray's trademark 100% weatherproof masthead box. Available individually and supplied complete with F Type masthead amplifiers. Ideal to house any indoor filters, splitters and all connections outdoors.

HD Digital picture Compatible
4K ULTRA HD
LTE
Kingray the future proof solution EDGE

ISO 9001: 2008
AU97\0906
List of certified characteristics available at www.sgs.com

Manufactured under a management system certified as complying with ISO 9001: 2008 by SGS Australia Pty. Ltd.

Our ISO9001 accreditation ensures every product is tested to meet or exceed all quality standards prior to packing, enabling fault-free installation every time.

Standard Communications remains committed to the research and development of its Kingray products. Our masthead, distribution and splitter* amplifiers are designed and manufactured in our state of the art facility in Sydney, utilising the latest software, RF and CAD techniques.

MHW25F

MHW25FS

MHW25F & FS EDGE SERIES II

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FM TRAP OPTION	OUTPUT FIGURE DIN45004B (dBµV)
VHF	174-230 88-230*	12-15	1, 2 or comb.	<3.5dB	TILT 7-4dB	02, 06 or 08	60	-25dB	108
UHF	520-694	25		<2.1dB	10dB			N/A	

F Type masthead designed to amplify separate VHF and UHF antennas or a combined antenna.
Optional shielded (FS) or non-shielded (F) models available. Packed without power supply.

MHW25FE

MHW25FE EDGE SERIES II

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FM TRAP OPTION	OUTPUT FIGURE DIN45004B (dBµV)
VHF	174-470 88-470*	22-24	1	<3dB	10dB	02, 06 or 08	80	-25dB	108
UHF	470-694	25		<2.5dB				N/A	

F Type masthead designed to amplify separate VHF and UHF antennas or a combined antenna.
Optional shielded (FS) or non-shielded (F) models available. Packed without power supply.

MHW35F

MHW35FS

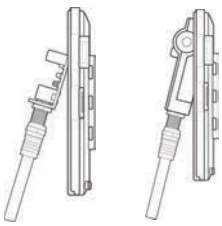
MHW35F & FS EDGE SERIES II

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FM TRAP OPTION	OUTPUT FIGURE DIN45004B (dBµV)
VHF	174-230 88-230*	22-26	1, 2 or comb.	<2dB	TILT 16-12dB	02, 06, or 08	80	-25dB	108
UHF	520-860	35		<2.5dB	15dB			N/A	

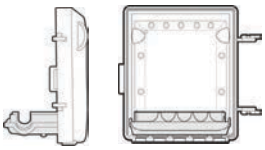
F Type masthead designed to amplify separate VHF and UHF antennas or a combined VHF/UHF antenna.
Optional shielded (FS) or non-shielded (F) models available. Packed without power supply.

*FM Pass option

PCB PIVOTS FROM THE CASE TO ALLOW EASIER ACCESS TO THE CONNECTORS.



MHB001 COVER DESIGNED TO TEMPORARILY HOLD LID FROM SHIELDED MODELS.



BOARD MARKINGS

All separate VHF/ UHF gain controls, filters/ traps are marked on the masthead boards for easy identification.

GAIN CONTROLS

The gain control provides a number of functions depending on the mastheads design, including:

- Flat Gain Response
- Positive Tilt Gain Control

HD Digital picture Compatible

4K ULTRA HD

LTE

Kingray the future proof solution EDGE

The Kingray MDA series is based on the new concept of convergent technology. The characteristics of the IC selected provide a very low noise figure (<1.6dB) with an output figure that equals our DW42, 118dB@ -60dB IMR (MDA20).

The MDA is a multi-purpose amplifier that is ideal for all digital environments. Whether used as a masthead or distribution amplifier, the low noise figure, capacity for multiple channels with low distortion and high output has proven effective in all installations.

MDA15V

MDA15V

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FILTERS	OUTPUT FIGURE DIN45004B (dBµV)
VHF	174-230	15	1	<2.0dB	10dB	06	100	174 MHz HP 230 MHz LP	113

F Type single input fully shielded masthead distribution amplifier. Designed to amplify 174-230 MHz. Packed without power supply. Requires PSK06 or PSK06F.

MDA15U

MDA15U

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FILTERS	OUTPUT FIGURE DIN45004B (dBµV)
UHF	470-860	15	1	<2.0dB	6dB	06	100	470 MHz HP 694 MHz LP	113

F Type single input fully shielded masthead distribution amplifier. Designed to amplify 470-694 MHz. Packed without power supply. Requires PSK06 or PSK06F.

MDA15W

MDA15W

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FILTERS	OUTPUT FIGURE DIN45004B (dBµV)
VHF	174-230	15	1	<2.0dB	10dB	06	100	174 MHz HP 694 MHz LP	113
UHF	470-860				6dB				

F Type single input fully shielded masthead distribution amplifier. Designed to amplify 174-694 MHz. Packed without power supply. Requires PSK06 or PSK06F.

MDA20HT

MDA20HT

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FILTERS	OUTPUT FIGURE DIN45004B (dBµV)
VHF	174-470	19	1	<1.6dB	N/A	06	100	174 MHz HP	118
UHF	470-860								

F Type single input fully shielded masthead distribution amplifier. Designed to amplify 174-860 MHz. Packed without power supply. Requires PSK06 or PSK06F.

MDA20UT

MDA20UT

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	FILTERS	OUTPUT FIGURE DIN45004B (dBµV)
UHF	520-860	19	1	<1.6dB	N/A	06	100	520 MHz HP	118

F Type single input fully shielded masthead distribution amplifier. Designed to amplify 470-860 MHz. Packed without power supply. Requires PSK06 or PSK06F.

HD Digital picture Compatible

4K ULTRA HD

LTE

Kingray the future proof solution EDGE

Splitter amplifiers are designed to be used when there is acceptable signal quality to one outlet 'unamplified' but when splitting to two or more outlets, there is insufficient signal.

Kingray provide a complete range of splitter amplifiers for all applications and they are designed for peak performance for digital terrestrial environments. The characteristics of the components selected provide a very low noise figure, a high output level and high return loss. The SA162F and SA164F is supplied with F connections and F to Belling Lee adaptors. The SAM224FSDP also has remote powering and power pass options and is supplied in a masthead housing with power supply.

SA162F

SA162F

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	MAINS	OUTPUT FIGURE DIN45004B (dBµV)
VHF	44-470	12-14	1	<3.5dB	N/A	230-240V AC	100
UHF	470-860	16		<3.5dB	N/A		

F-Type single input 2 Way VHF/UHF splitter amplifier, supplied with adaptors for conversion to Belling Lee.

SA164F

SA164F

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	MAINS	OUTPUT FIGURE DIN45004B (dBµV)
VHF	44-470	12-14	1	<3.5dB	8dB TILT	230-240V AC	100
UHF	470-860	16		<3.5dB	N/A		

F-Type single input 4 Way VHF/UHF splitter amplifier, supplied with adaptors for conversion to Belling Lee.

SAM224FSDP

SAM224FSDP

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	OUTPUT FIGURE DIN45004B (dBµV)
VHF	44-470	12-14dB	1	<3.5dB	14-8dB TILT	06, 08	70	99
UHF	470-860	16dB		<3.5dB	N/A			

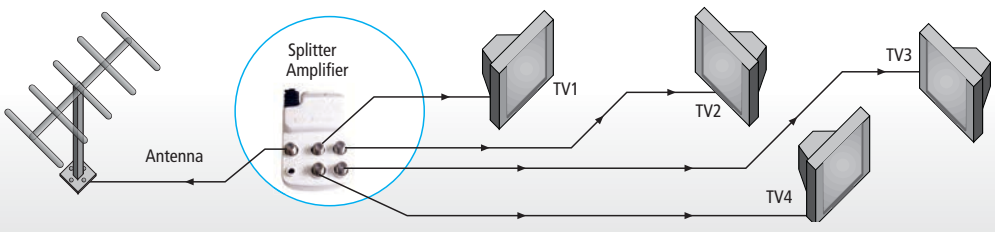
F type single input 4 Way VHF/UHF splitter amplifier in a masthead housing.
Remote power to any output port, with power through input switch feature.
Supplied with KPS06F.

HD Digital picture Compatible

4K ULTRA HD

TYPICAL SPLITTER AMPLIFIER INSTALLATION

Splitter amplifiers are used when you have enough signal to run one TV outlet but not enough for multiple outlets.



Kingray's terrestrial and satellite distribution amplifiers have been designed to suit the digital environment of today and into the future. The technology used is hybrid bipolar and GaAs, which allows for a greater output capacity, whilst having a lower noise figure. All models have mid stage gain controls for increased performance, flexible powering options and are housed in a full diecast housing (excluding the KDA20).

KDA20

KDA20 AMPLIFIER ONE IN ONE OUT

	FREQUENCY (MHz)	MAX. GAIN (dB)	NOISE FIGURE	GAIN CONTROL	INPUTS	OUTPUTS	OPERATING VOLTAGE	OPERATING TEMPERATURE	OUTPUT FIGURE DIN45004B (dBµV)
VHF/ UHF	44-860	20	<3.5dB	10dB	1	1	240V AC	-10 to 50 degrees C	104

The KDA20 is VHF/UHF television amplifier with one input and one output. Designed to plug directly into the power point, the KDA20 has the innovative feature of 240 volt piggyback plug.

DW32

DW32 PAY TV APPROVED - F1005S

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	OUTPUT FIGURE DIN45004B (dBµV)
VHF	44-230	26-28	1, 2 or comb	<3.5dB	10dB	12S/F 18S/F or 06/S/F	150	112
UHF	470-860	32			10dB			

F Type distribution amplifier designed for a separate VHF or UHF antenna or a combined antenna via jumper link at the input. Can be remotely powered to the output. Packed with a PSK06S DC power supply. Includes a -30dB testpoint.

DW42

DA43

DW42

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	TEST POINT	OUTPUT FIGURE DIN45004B (dBµV)
VHF	44-144 176-300	35-37	1, 2 or comb	<6dB	20dB	12S/F or 18S/F	300	-30dB	118
UHF	470-860	40			20dB				

F Type distribution amplifier designed for a separate VHF or UHF antenna or a combined antenna via switch at the input.
Can be remotely powered to the output. Packed without power supply. Now with -30dB test point.

DA43 PAY TV APPROVED - G40

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	EQ	TEST POINT	OUTPUT FIGURE DIN45004B (dBµV)
VHF	44-470	43 Nominal	1	<6dB	20dB	12S/F or 18S/F	300	0-15dB	-30dB	118
UHF	470-860				20dB					

F Type distribution amplifier designed for a separate VHF or UHF antenna or combined antenna at the input.
Can be remotely powered to and through the input. Packed without a power supply.
Amplifies hyperband.

SAT29D

SAT42D

SAT29D PAY TV APPROVED - F30528

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	EQ	OUTPUT FIGURE DIN45004B (dBµV)
SAT	950-3000	29	2 x SAT I.F.	<10dB	10dB	18S/F	200*	0-10dB	122-35dB IMR

Dual input F-Type satellite distribution amplifier. Capable of powering both vertical and horizontal LNB's simultaneously via the on board regulator.
*Does not include LNB current. Packed without a power supply.
Only 1 power supply required for dual polarity operation.

SAT42D PAY TV APPROVED - F30481

	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	NOISE FIGURE	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)	EQ	OUTPUT FIGURE DIN45004B (dBµV)
SAT	950-3000	40	2 x SAT I.F.	<10dB	20dB	18S/F	170*	0-15	122-35dB IMR

Dual input F-Type satellite distribution amplifier. Capable of powering both vertical and horizontal LNB's simultaneously via the on board regulator.
Packed without a power supply. *Does not include LNB current.
Only 1 power supply required for dual polarity operation.

HD Digital picture Compatible

4K ULTRA HD

The newly released Kingray television antenna range is fast gaining a reputation for exceptional performance and rugged build quality. The range has been developed to withstand the harshest of Australia's environmental conditions, with UV stabilised plastics, heavy duty mounting brackets, booms and elements have all been chosen to ensure many years of trouble free service. All models display the quality you have come to expect in a Kingray product.

NEW

K-PANEL

K-PANEL
UHF PHASED ARRAY ANTENNA

FEATURES

- 694 MHz low pass LTE filter
- Heavy duty mounting bracket with tilt
- Reflector elements individually screwed to boom
- Easy to install
- Horizontal and vertical operation
- UV stabilised weatherproof balun housing

LTE is a trademark of ETSI

	K-PANEL
GAIN	12.5dB
WIND LOAD	78 (n)
FREQUENCY RANGE	470–694 MHz
BEAM WIDTH (HORIZONTAL)	+/-25 degrees
BEAM WIDTH (VERTICAL)	+/-20 degrees
SIZE	815 x 545mm
F CONNECTOR	Yes
WEIGHT	1.65 kg
CHANNELS	21 - 51
FRONT TO BACK RATIO	22dB
NO. OF ELEMENTS	4
IMPEDANCE	75 Ohm
F CONNECTOR	Yes

NEW

NEW

KVHFY4 KVHFY6

KVHFY4
4 ELEMENT VHF YAGI

KVHFY6
6 ELEMENT VHF YAGI

COMMON FEATURES

- Heavy duty 12mm rod
- Heavy duty mounting bracket
- UV stabilised plastics
- Easy to install
- Horizontal and vertical operation
- Suitable for DAB+

	KVHFY4	KVHFY6
ELEMENTS	4	6
BAND	3	3
CHANNELS	6 – 12	6 – 12
FREQUENCY	174–230 MHz	174–230 MHz
GAIN	9.5dB	10.5dB
F/B RATIO	15dB	16dB
OVERALL LENGTH	735mm	1275mm
MAXIMUM WIDTH	835mm	834mm
F CONNECTOR	Yes	Yes

NEW

KMLP01

MINI LOG
UHF DIGITAL TV ANTENNA

FEATURES

- Compact & lightweight antenna
- UV stabilised plastics
- Easy to install
- Horizontal and vertical operation
- Includes 0.3m J-pole

	KMLP01
ELEMENTS	20
BAND	3
CHANNELS	21 – 69
FREQUENCY	470-862 MHz
GAIN	7.5dB
F/B RATIO	21dB
OVERALL LENGTH	400mm
MAXIMUM WIDTH	311mm
F CONNECTOR	Yes

	PSK06	PSK06F	PSK06S	PSK08	PSK08F	PSK12F
						
PLUG PACKS	14V DC, 150 mA	14V DC, 150 mA	14V DC, 150 mA	17.5V AC, 100 mA	17.5V AC, 100 mA	12V DC, 500 mA
INJECTOR TYPE	PAL	F	2.5mm DC	PAL	F	F
MHW25FE/F MHW35F/FS MHU35F/FS MHW25F/FS MHU25F/FS	•	•		•	•	
SAM224/DP	•	•				
SA164R	•	•				
SAT29D SAT42D						
DW32	•	•	•			•
DW42 DA43 MD100VS MD100US						•
Foxtel Approved						•

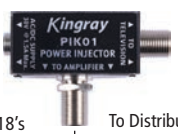
Kingray's power supplies maintain the reputation as one of the most reliable and with the highest quality within the industry.

They feature posistor protection circuitry which fully complies with Australian and New Zealand energy standards, including MEP's compliance.

SIGNAL INJECTORS & CABLES

Kingray has produced a range of high quality power and signal injectors. These products have been designed to remotely power a number of our products including amplifiers and modulators.

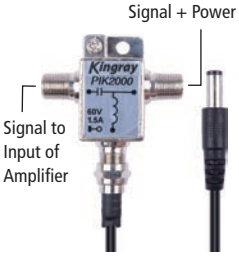
* Foxtel Approved

PIK01*	PAK01*	PIK170	PIK170F	PIK170FDC
				
Power Supply eg: PSK18's Max. 30V @ 1.5 Amp To Distribution Network To Distribution Amplifier eg: DW42	Power Power Power 1 in 2 out DC Plug Splitter Max. 30V @ 1.5 Amp	Power open ended Signal Signal + Power Max. 30V @ 300 mA Trace on wire = Positive Short Circuit Protected	Power open ended Signal Signal + Power Max. 30V @ 300 mA Trace on wire = Positive Short Circuit Protected	Signal Signal + Power Max. 30V @ 300 mA Trace on wire = Positive Short Circuit Protected

	PSK12S	PSK18F	PSK18S	PSK18KR	PSK24	PSK24F
						

PLUG PACKS	12V DC, 500 mA	18V DC, 500 mA	18V DC, 500 mA	15V DC, 1.7 A		
INJECTOR TYPE	2.5mm DC	F	2.5mm DC	2.5mm DC		
MHW25FE/F MHW35F/FS MHU35F/FS MHW25F/FS MHU25F/FS		•				
SAM224/DP		•				
SA164R						
SAT29D SAT42D		•	•			
DW32	•	•	•			
DW42 DA43 MD100VS MD100US	•	•	•	•		
Foxtel Approved	•	•	•	•		

PIK2750	PIK2000*	KLE01*	ADC322	ADC325



The Kingray All Ports Power Pass range of satellite splitters incorporate an advanced printed circuit board design which ensures peak performance across the entire terrestrial and satellite bands. This combined with the compact zinc diecast housing with its excellent screening characteristics and ease of installation provides the perfect solution for all your terrestrial and satellite requirements.

NEW

KSP2APP

KSP2APP - 2 WAY SPLITTER - ALL PORTS POWER PASS

FREQUENCY (MHZ)	INSERTION LOSS (dB)	ISOLATION LOSS (dB)	RETURN LOSS (dB)
5-40	≤4.0	≥20	≥14
40-1000	≤4.5	≥20	≥15
1000-1750	≤5.0	≥20	≥14
1750-2400	≤5.5	≥20	≥14

F-Type single input 2 Way FTA/Satellite splitter.

NEW

KSP3APP

KSP3APP - 3 WAY SPLITTER - ALL PORTS POWER PASS

FREQUENCY (MHZ)	INSERTION LOSS (dB)	ISOLATION LOSS (dB)	RETURN LOSS (dB)
5-40	≤7.5	≥20	≥12
40-1000	≤8.0	≥20	≥13
1000-1750	≤9.5	≥20	≥12
1750-2400	≤10.0	≥20	≥12

F-Type single input 3 Way FTA/Satellite splitter.

NEW

KSP4APP

KSP4APP - 4 WAY SPLITTER - ALL PORTS POWER PASS

FREQUENCY (MHZ)	INSERTION LOSS (dB)	ISOLATION LOSS (dB)	RETURN LOSS (dB)
5-40	≤8.0	≥20	≥12
40-1000	≤8.5	≥20	≥13
1000-1750	≤9.0	≥20	≥12
1750-2400	≤10.5	≥20	≥12

F-Type single input 4 Way FTA/Satellite splitter.

NEW

KSP6APP

KSP6APP - 6 WAY SPLITTER - ALL PORTS POWER PASS

FREQUENCY (MHZ)	INSERTION LOSS (dB)	ISOLATION LOSS (dB)	RETURN LOSS (dB)
5-40	≤10.5	≥20	≥10
40-1000	≤11.5	≥20	≥13
1000-1750	≤12.5	≥20	≥12
1750-2400	≤15.5	≥20	≥13

F-Type single input 6 Way FTA/Satellite splitter.

NEW

KSP8APP

KSP8APP - 8 WAY SPLITTER - ALL PORTS POWER PASS

FREQUENCY (MHZ)	INSERTION LOSS (dB)	ISOLATION LOSS (dB)	RETURN LOSS (dB)
5-40	≤10.5	≥20	≥10
40-1000	≤11.5	≥20	≥13
1000-1750	≤12.5	≥20	≥12
1750-2400	≤15.5	≥20	≥13

F-Type single input 8 Way FTA/Satellite splitter.

HD Digital picture Compatible

4K ULTRA HD

Today, more than ever, filtering and diplexing of RF signals plays an important part in providing quality pictures both domestically and commercially. Kingray have developed numerous types of quality filters and diplexers that can easily solve common reception problems for both digital and analogue signals.

FL694LP

FILTER	DESCRIPTION	CONNECTION	FEATURES
FL694LP*	4G/LTE Filter	F Type	Stops above 694 MHz -55dB @ 750 MHz
FL85HP	Band 1 Filter	F Type	Stops below 85 MHz

* Foxtel Approved

DPOUVFSDP

DIPLEXER	INPUT 1	INPUT 2	CONNECTION	FEATURES
DPOUVFSDP	40-230 MHz	520-860 MHz	F Type Shielded	Power Pass Options

NEW

KPL6P

KPL6P RG6 Push on connector

With Kingray's evolutionary KPL6P connector, installation professionals can achieve an optimum connection every time without the use of a crimp or compression tool. The KPL6P is equally suitable for quad, tri and duo shield coaxial cables, once installed on the cable the connector cannot work loose due to the KPL6P's unique mechanical design.

FEATURES

- High return loss
- Low insertion loss
- Easy installation
- Preserves cable integrity

NEW

KST659

KST659 Stripping tool

The KST659 stripping tool is designed to be used with the KPL6P connector so the tool leaves the required 8mm of dielectric exposed for correct fitment of the KPL6P onto the coaxial cable. The KST69 tool is suitable for all variants of RG6 and RG59 cable and is supplied in hang sell blister packaging.

FEATURES

- Ease of use
- Suitable for all RG6 and RG59 cables
- Durable steel blades
- Compact size

NEW

KWP11F

KWP11F Wall Plate

F to F barrel wall plate outlet.

FEATURES

- F Female connection front and back
- 0 - 3000 MHz
- High return loss barrel
- FOXTEL Approved - F30923

HD Digital picture Compatible

4K ULTRA HD

LTE

The Kingray Professional Series sets a new standard in Headend equipment, engineered from the ground up to meet the exacting demands of system designers, carriers and regulators in both Australia and around the world.

At the heart of a Kingray Professional Series installation lies the KR110 19" rack with its KLA110 45dB Launch Amplifier and low noise power supply; to ensure total system flexibility, up to 10 x KCC110 Channel Converters/Processors, 10 x KDM110 Dual Input Digital Modulators or a combination of either can be mounted. The Kingray Professional Series channel processor and launch amplifier are proudly manufactured in Australia and is accompanied by a comprehensive three year warranty.

KR110 &
KR110F

KR110

HEADEND RACK

The KR110 is a robust, dual purpose rack that will hold up to 10 modules and a KLA110 launch amplifier / power supply. The rack can be wall mounted or installed in a 19" rack simply by reversing the side support brackets. In certain high temperature environments, where the maximum operating temperatures are going to be consistently exceeded, it will be necessary to install the optional fan cooling system*. The fan cooling assembly is available attached to the 19" rack.

(Part # KR110F) combines the rack & fan
(Part # KR110KTF)

* Refer individual module specifications for operating temperature range.

KR110F - FAN SPECIFICATIONS	
NUMBER OF FANS	4
OPERATING VOLTAGE	24V DC
RATED CURRENT (TOTAL)	400mA
RATED SPEED (MIN)	3100
MAX AIR FLOW (TOTAL)	3.64 (m3/min)
NOISE	31dB (A)
LIFE EXPECTANCY	40,000 hours

FEATURES

- Strong press metal design
- Durable high quality powder coat finish
- Quick and easy to assemble

KCC110

KCC110

DIGITAL CHANNEL CONVERTER/PROCESSOR

The KCC110 is the most advanced digital channel converter/processor available. The KCC110 can be used to output the same channel as it's input channel (processing) or a different output channel to it's input channel (converting).

FEATURES

- Superior adjacent channel performance due to double saw filtering
- Very high MER level, up to 36dB*
- Input AGC circuitry
- High linearity and low phase noise
- Adjustable output power level control
- Resolution 125 kHz steps
- Adjustable bandwidth
- Stand alone or 19" rack mountable
- Programmable via any computer with an Ethernet connection or USB
- Remote control capability via KLA110 within a VPN

KCC110 - SPECIFICATIONS	
INPUT FREQUENCY RANGE	44–862 MHz
OUTPUT FREQUENCY RANGE	44–862 MHz
FREQUENCY RESOLUTION	0.125 MHz
INPUT/OUTPUT CHANNEL NAMING	By frequency (software selectable)
CHANNEL BANDWIDTH	7 or 8 MHz
OUTPUT S/N AND SPURIOUS	55dB
INPUT LEVEL RANGE	60 – 80dBµV 70dBµV optimum digital
AGC RANGE	30dB Min. automatic
OUTPUT LEVEL ADJUSTMENT	60 – 80dBµV
PHASE NOISE	< -85dBC/Hz at 10 kHz, < -103dBC/Hz at 100 kHz
MONITOR OUTPUT	-30dB
AGC LED (SIGNAL CONDITION)	Green - within range, flashing Amber - low level or high level, Red - RF output OFF.
SUPPLY VOLTAGE	24V DC
POWER CONSUMPTION	12W max
OPERATING TEMPERATURE RANGE	-10 to 55° C passive cooling -10 to 60° C fan forced cooling
RF SHIELDING	70dB

* Dependent on quality of the incoming signal

KDM110

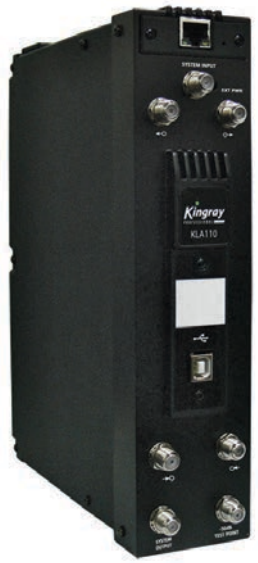
KDM110
DIGITAL MODULATOR

The KDM110 is a dual input standard definition digital modulator capable of converting two separate AV input sources to DVB-T, combining and outputting them in the one 7 MHz channel.

FEATURES

- Frequency agile 174.5-862 MHz
- Frequency offset +/- 125 / 250 kHz
- Adjustable output level
- Channel naming
- Logical Channel Numbering (LCN)
- Adjustable bandwidth
- 2/8K modulation formats
- Adjustable FEC rate
- High MER 35dB
- High carrier to noise 50dB
- Adjacent channel capable
- Rack mountable or stand alone
- Remotely contactable via KLA110 within a VPN

KDM110 - SPECIFICATIONS	
FREQUENCY RANGE	174.5–862 MHz
MODULATION FORMAT	COFDM 2K, 8K
CHANNEL BANDWIDTH	7 or 8 MHz
GUARD INTERVALS	1/4, 1/8, 1/16, 1/32
CONSTELLATION	QPSK, 16 and 64 QAM
FEC RATE	1/2, 2/3, 3/4, 5/6, 7/8
LCN	AUS, NZ, UK and EU
OUTPUT LEVEL	85dBuV
OUTPUT LEVEL ATTENUATION	-15dB
OUTPUT IMPEDANCE	75 Ohm
SIGNAL TO NOISE	50dB
MODULATION ERROR RATE	35
VIDEO	MPEG2 MP@MP, PAL: 720 x 576 25 fps, NTSC: 720 x 480 30 fps
AUDIO	MPEG1 layer 2
SI GENERATION	PAT, PMT, SDT, NIT
CHANNEL NAMING	YES
CHANNEL NUMBERING	YES with LCN
DIMENSIONS	240 x 185 x 30mm
WEIGHT	1.8 kg
VIDEO INPUT	RCA video Ch1, Ch2 75 Ohm
VIDEO INPUT LEVEL	0.5-1.7 Vpp (1 V nominal) CVBS PAL
AUDIO	RCA stereo audio L/R Ch1, Ch2
AUDIO INPUT LEVEL	0.6-3 Vpp
RF OUTPUT	75 Ohm "F" female
OPERATING TEMPERATURE RANGE	-10 to 35° C passive cooling -10 to 45° C fan forced cooling



KLA110

KLA110
LAUNCH AMPLIFIER / POWER SUPPLY

The unique design of the KLA110 incorporates a Launch Amplifier, Power Supply and Programming Interface. Designed to be mounted in the middle of the KR110. The power supply can power up to 10 modules, it can also provide external power to a masthead or pre amp if required.

FEATURES

- High output
- Low noise figure
- Low insertion loss, input separator / output combiner
- Adjustable output level
- Adjustable gain
- -30dB test point
- Wide bandwidth 44 – 862 MHz
- Embedded web based program

KLA110 - SPECIFICATIONS	
INPUT FREQUENCY RANGE	44–862 MHz
OUTPUT S/N AND SPURIOUS	55dB
MAXIMUM INPUT LEVEL	95dBµV
MAXIMUM OUTPUT LEVEL	118dBµV** @ -60dB IMR (DIN45004B)
MAXIMUM GAIN	45dB
NOISE FIGURE	< 2dB
MONITOR OUTPUT	-30dB
RF INPUT/OUTPUT LEVEL MONITOR	Via USB on power supply unit
SUPPLY VOLTAGE	24V DC
POWER CONSUMPTION	5W max
OPERATING TEMPERATURE RANGE	-10 to 55° C passive cooling -10 to 60° C fan forced cooling
RF SHIELDING	70dB

KLA110 - SPECIFICATIONS - POWER SUPPLY	
OPERATING VOLTAGE	110–240V AC, 50/60 Hz
SUPPLY VOLTAGE	24V DC
STABILITY	+/- 100 mV
POWER CAPABILITY	150W max
OPERATING TEMPERATURE RANGE	0 to 55°C
RF SHIELDING	70dB
POWER LEAD	Standard 3 pin IEC power cable

ACCESSORIES			
PSK24	24V DC 750mA power supply	KLE04	Power/data bus cable
KLE07	KLA110 power cord 240V	KSB01	RF link support bracket
KLE03	RF links for modules	KPLABEL	USB connector label
SCREWPK	KR110 rack screw pack		

KDM101A

KDM101A

DIGITAL CHANNEL CONVERTER/PROCESSOR

KDM101A is a single AV input to digital RF modulator, its purpose is to facilitate signal distribution in a coax cable network. The intuitive, simple menus, provide for a quick and easy installation, while the use of the latest intelligent electronic components combined with the latest software and hardware advances have resulted in a product that boasts optimum performance and reliability.

FEATURES

- Easy to program basic and advanced menus
- Low insertion loss antenna input (1.5dB)
- Adjustable output level, frequency and offset
- Selectable 2K, 8K carrier
- Adjustable constellation, FEC and guard interval
- Adjustable colour, brightness, contrast and saturation
- Adjustable LCN, PID, NIT, PDS and TS ID
- Programmable channel name
- Variable video and audio bit rates

KDM101A DIGITAL CHANNEL CONVERTER/PROCESSOR

FREQUENCY (MHz)	OUTPUT LEVEL dBµV	CHANNEL BANDWIDTH	CARRIER	MER	OUTPUT LEVEL ADJUSTMENT	TEMPERATURE RANGE	CARRIER TO NOISE
174-820 (AUS) 470-862 (NZ)	70-85	7 or 8 MHz	2K, 8K	>38dB typ	15dB	0 ~ +45°C	>40dB

KDM401A

KDM401A

QUAD AV TO SD DVB-T MODULATOR

The KDM401A is a commercial quality quad AV standard definition modulator with integrated multiplexing to combine all four AV inputs in one RF channel, maximising spectrum efficiency.

Programming is quick and easy either by the front panel or a computer using the Ethernet port. The housing design allows the unit to be professionally mounted in a 19" rack or shelf.

NEW FEATURES

- Quick Setup - For one or multiple modulators in the system
- USB Input - Save configuration & install configuration of a USB
- Aspect Ratio - Programmable 16:9 or 4:3

FEATURES

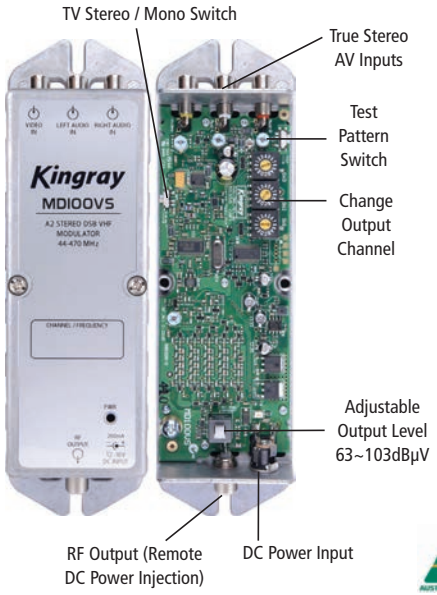
- Quad input AV SD modulator mulitplexed into one RF channel
- Easy to program basic and advanced menus
- Adjustable output level, frequency and offset
- Selectable 2K, 8K carrier
- Adjustable constellation, FEC and guard interval
- Adjustable colour, brightness, contrast and saturation
- Adjustable LCN, PID, NIT, PDS and TS ID
- Programmable channel name
- Variable video and audio bit rates

KDM401A QUAD AV TO SD DVB-T MODULATOR

FREQUENCY (MHz)	OUTPUT LEVELdBµV	CHANNEL BANDWIDTH	CARRIER	MER	OUTPUT LEVEL ADJUSTMENT	TEMPERATURE RANGE	CARRIER TO NOISE
174-820 (AUS) 470-862 (NZ)	80-95	7 or 8 MHz	2K, 8K	>38dB typ	15dB	0 ~ +45°C	>50dB

Modulators are designed to convert a base band or AV (audio video) signal into an RF signal. This allows the outputs from set top boxes, videos, DVD's, AM and FM tuners, CD players and security cameras to be integrated into any television system.

MD100VS/US PAY TV APPROVED						
	FREQUENCY (MHz)	MAX. GAIN (dB)	INPUTS	GAIN CONTROL	POWER SUPPLY	CURRENT (mA)
VHF	44-470	103	Stereo Audio/ Video	40dB	12S 18S 18KR	100
UHF	470-860					



FEATURES

- 2 models cover whole range
- Agile in 250kHz steps
- Adjustable output level
- Can be rack mounted
- Mono/Stereo sound option
- Fully shielded diecast housing
- Powered locally or remotely
- Phase lock looped for stability
- Harmonic filtering
- Variable voltage input (12-18V DC)
- Switchable test pattern

The MD100VS/US allows for an RCA stereo or mono audio/video baseband input with a frequency adjustable RF output. The unit can be remotely or rack (KR001) powered via the output socket or a separate power supply can be purchased. This provides an ideal solution for reticulating modulated RF signals throughout any system.

KR001

C19" SUB-RACK/WALL MOUNT INCLUDING PASSIVE COMBINER

The KR001 is a 19" sub-rack or wall mount designed to combine Kingray's DSB modulator range of commercial products. Up to six modules can be powered and combined via the passive base. The single output provides an optional power switch for a launch amplifier if required.

KR002

ADD-ON PASSIVE COMBINER TO SUIT THE KR001

The KR002 is designed to fit on the back of the KR001. The kit allows the addition of six inputs and one output, providing a total of 12 inputs and 2 outputs on the one 19" subrack/wall mount, if the KR002 is used in conjunction with the KR001.

CAT01

CATTV

CAT5 DISTRIBUTION SOLUTION

At the heart of the Kingray CATTV™ system is the CAT01 high output distribution amplifier – capable of supplying quality signal to up to four televison receivers.

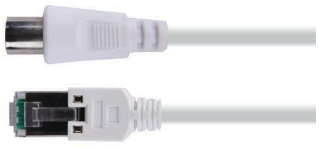
The CAT01 amplifier incorporates master gain and tilt controls, plus individual gain controls for each outlet, delivering a balanced output level regardless of cable lengths.

Available separately is the Kingray KLE02 impedance matching balun cable for connection between the RJ45 wall outlet and the television ensuring optimal performance at all times.

Rounding out the range is the optional KB02 19"rack mounting bracket.

FEATURES

- High Output
- 35dB maximum gain
- -20dB test point
- Wide bandwidth 47 - 862 MHz
- Can be rack mounted



KLE02

KB02

CAT01 - SPECIFICATIONS			
FREQUENCY RANGE	47–862 MHz	NOISE FIGURE	-8dB
GAIN	35dB max.	RETURN LOSS	-13dB
OUTPUT LEVEL	98dB (42 Ch. CENELEC)	ISOLATION	-20dB (port to port)
MIN INPUT LEVEL	63dBuV	TEST POINT	-20dB
TILT CONTROL	0–15dB	POWER	5 Volt
INPUT GAIN CONTROL	0–20dB	POWER CONSUMPTION	800mA
OUTPUT GAIN CONTROL	0–20dB		

AE3000

AE3000

AM/FM RADIO ANTENNA/ MOBILE/ BOAT/ TV ANTENNA

FEATURES

- Omni-directional
- Built-in 20dB amplifier
- Complete with 4 metres of cable and connector.

OUTPUT POWER TESTING STANDARDS FOR AMPLIFIERS

There are many tests used to measure the maximum output of an amplifier and at what stage distortions or inter modulation will occur.

All Kingray amplifiers are tested and measured in accordance with the international specifications of DIN45004-B 6.3 3 tone, which provides one of the best measures for our local environment.

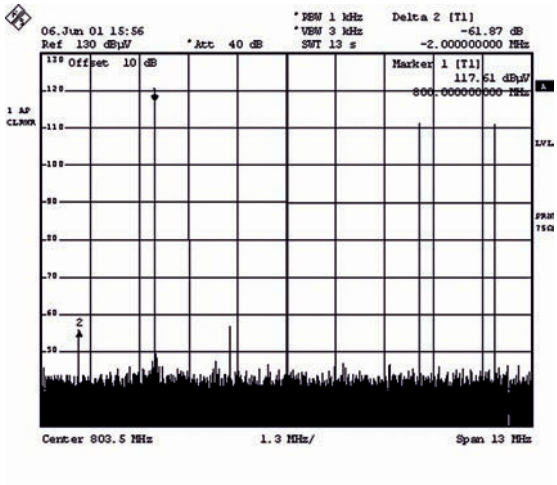
These tests are carried out at VHF and UHF with the lower of the two figures recorded (providing extra headroom). As you can see from the test, the unwanted third order distortion is being measured at the ratio of -60dB from the wanted carrier. You may find amplifiers with extraordinarily high output figures are not quoting DIN45004-B and are using a ratio of -46dB which has provided the better output figure, however there is no room for margin with this method compared with using DIN45004-B @ 60dB.

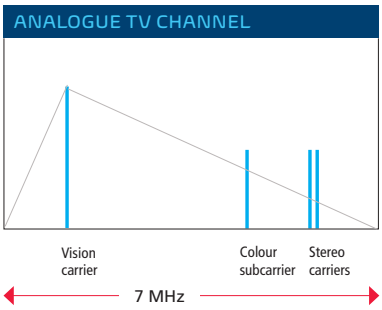
Put simply, this test provides a rough equivalent of 2 television channels, where the de-rating process can then be started. Once the maximum output figure has been established using DIN45004-B 6.3, the -60dB ratio is maintained by subtracting 3dB every time you double the amount of channels that are running through the amplifier.

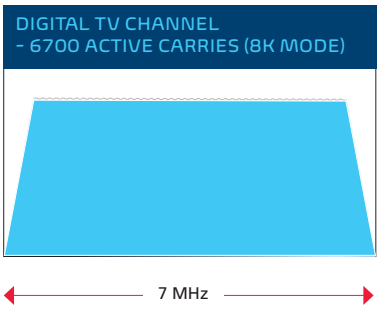
For example the DW42:
2 Channels - 118dB @ -60dB IMR
4 Channels - 115dB @ -60dB IMR
8 Channels - 112dB @ -60dB IMR etc.

BROADCAST BAND CHANNEL EXTENTS AND CENTRE FREQUENCIES (LTE CHANNEL PLAN)

	AUSTRALIAN 7 MHz DESIGNATED CHANNEL NUMBER	7 MHz CHANNEL FREQUENCY LIMITS (MHz)	7 MHz DIGITAL CHANNEL CENTRE FREQUENCY (MHz)
BAND III			
A	6	174-181	177.5
	7	181-188	184.5
	8	188-195	191.5
	9	195-202	198.5
	9A	202-209	205.5
	10	209-216	212.5
	11	216-223	219.5
	12	223-230	226.5
BAND IV			
B	28	526-533	529.5
	29	533-540	536.5
	30	540-457	543.5
	31	457-554	550.5
	32	554-561	557.5
	33	561-568	564.5
	34	568-575	571.5
	35	575-582	578.5
BAND V			
C	36	582-589	585.5
	37	589-596	592.5
	38	596-603	599.5
	39	603-610	606.5
D	40	610-617	613.5
	41	617-624	620.5
	42	624-631	627.5
	43	631-638	634.5
	44	638-645	641.5
	45	645-652	648.5
E	46	652-659	655.5
	47	659-666	662.5
	48	666-673	669.5
	49	673-680	676.5
	50	680-687	683.5
	51	687-694	690.5







DB CONVERSION TABLE

Microvolts (μV)	dBμV	dBmV	dBm	Milli-volts (mV)	dBμV	dBmV	dBm	Milli-volts (mV)	dBμV	dBmV	dBm
10.00	20	-40	-89	1.00	60	0	-49	112.20	101	41	-8
11.22	21	-39	-88	1.12	61	1	-48	125.90	102	42	-7
12.59	22	-38	-87	1.26	62	2	-47	141.30	103	43	-6
14.13	23	-37	-86	1.41	63	3	-46	158.50	104	44	-5
15.85	24	-36	-85	1.59	64	4	-45	177.90	105	45	-4
17.78	25	-35	-84	1.78	65	5	-44	199.50	106	46	-3
19.95	26	-34	-83	2.00	66	6	-43	223.90	107	47	-2
22.39	27	-33	-82	2.24	67	7	-42	251.20	108	48	-1
25.12	28	-32	-81	2.51	68	8	-41	281.80	109	49	0
28.18	29	-31	-80	2.82	69	9	-40	316.20	110	50	1
31.62	30	-30	-79	3.16	70	10	-39	354.80	111	51	2
35.48	31	-29	-78	3.55	71	11	-38	398.10	112	52	3
39.81	32	-28	-77	3.98	72	12	-37	446.70	113	53	4
44.67	33	-27	-76	4.47	73	13	-36	501.20	114	54	5
50.12	34	-26	-75	5.01	74	14	-35	562.30	115	55	6
56.23	35	-25	-74	5.62	75	15	-34	631.00	116	56	7
63.10	36	-24	-73	6.31	76	16	-33	707.90	117	57	8
70.79	37	-23	-72	7.08	77	17	-32	794.30	118	58	9
79.43	38	-22	-71	7.94	78	18	-31	891.30	119	59	10
89.13	39	-21	-70	8.93	79	19	-30	Volts (V)	dBμV	dBmV	dBm
100.00	40	-20	-69	10.00	80	20	-29	1.00	120	60	11
112.20	41	-19	-68	11.22	81	21	-28	1.12	121	61	12
125.90	42	-18	-67	12.59	82	22	-27	1.26	122	62	13
141.30	43	-17	-66	14.13	83	23	-26	1.41	123	63	14
158.50	44	-16	-65	15.85	84	24	-25	1.59	124	64	15
177.80	45	-15	-64	17.78	85	25	-24	1.78	125	65	16
199.50	46	-14	-63	19.95	86	26	-23	2.00	126	66	17
223.90	47	-13	-62	22.39	87	27	-22	2.24	127	67	18
251.20	48	-12	-61	25.12	88	28	-21	2.51	128	68	19
281.80	49	-11	-60	28.18	89	29	-20	2.82	129	69	20
316.20	50	-10	-59	31.62	90	30	-19	3.16	130	70	21
354.80	51	-9	-58	35.48	91	31	-18	3.55	131	71	22
398.10	52	-8	-57	39.81	92	32	-17	3.98	132	72	23
446.70	53	-7	-56	44.67	93	33	-16	4.47	133	73	24
501.20	54	-6	-55	50.12	94	34	-15	5.01	134	74	25
562.30	55	-5	-54	56.23	95	35	-14	5.62	135	75	26
631.00	56	-4	-53	63.10	96	36	-13	6.31	136	76	27
707.90	57	-3	-52	70.79	97	37	-12	7.08	137	77	28
794.30	58	-2	-51	79.43	98	38	-11	7.94	138	78	29
891.30	59	-1	-50	89.13	99	39	-10	8.91	139	79	30
1000.00	60	0	-49	100.00	100	40	-9	10.0	140	80	31

AUSTRALIAN DIGITAL TV CHANNELS 7MHZ BANDWIDTH

CHANNEL		LOWER CUT-OFF MHz	CENTRE FREQUENCY MHz	UPPER CUT-OFF MHz
VHF	6	174.0	177.5	181.0
	7	181.0	184.5	188.0
	8	188.0	191.5	195.0
	9	195.0	198.5	202.0
	9A	202.0	205.5	209.0
	10	209.0	212.5	216.0
	11	216.0	219.5	223.0
	12	223.0	226.5	230.0
UHF	28	526.0	529.5	533.0
	29	533.0	536.5	540.0
	30	540.0	543.5	547.0
	31	547.0	550.5	554.0
	32	554.0	557.5	561.0
	33	561.0	564.5	568.0
	34	568.0	571.5	575.0
	35	575.0	578.5	582.0
	36	582.0	585.5	589.0
	37	589.0	592.5	596.0
	38	596.0	599.5	603.0
	39	603.0	606.5	610.0
	40	610.0	613.5	617.0
	41	617.0	620.5	624.0
	42	624.0	627.5	631.0
	43	631.0	634.5	638.0
	44	638.0	641.5	645.0
	45	645.0	648.5	652.0
	46	652.0	655.5	659.0
	47	659.0	662.5	666.0
	48	666.0	669.5	673.0
	49	673.0	676.5	680.0
	50	680.0	683.5	687.0
	51	687.0	690.5	694.0
LTE	52	694.0	697.5	701.0
	53	701.0	704.5	708.0
	54	708.0	711.5	715.0
	55	715.0	718.5	722.0
	56	722.0	725.5	729.0
	57	729.0	732.5	736.0
	58	736.0	739.5	743.0
	59	743.0	746.5	750.0
	60	750.0	753.5	757.0
	61	757.0	760.5	764.0
	62	764.0	767.5	771.0
	63	771.0	774.5	778.0
	64	778.0	781.5	785.0
	65	785.0	788.5	792.0
	66	792.0	795.5	799.0
	67	799.0	802.5	806.0
	68	806.0	809.5	813.0
	69	813.0	816.5	820.0

NEW ZEALAND DIGITAL TV CHANNELS 8MHZ BANDWIDTH

CHANNEL		LOWER CUT-OFF MHz	CENTRE FREQUENCY MHz	UPPER CUT-OFF MHz
UHF	26	510.0	514.0	518.0
	27	518.0	522.0	526.0
	28	526.0	530.0	534.0
	29	534.0	538.0	542.0
	30	542.0	546.0	550.0
	31	550.0	554.0	558.0
	32	558.0	562.0	566.0
	33	566.0	570.0	574.0
	34	574.0	578.0	582.0
	35	582.0	586.0	590.0
	36	590.0	594.0	598.0
	37	598.0	602.0	606.0
	38	606.0	610.0	614.0
	39	614.0	618.0	622.0
	40	622.0	626.0	630.0
	41	630.0	634.0	638.0
	42	638.0	642.0	646.0
	43	646.0	650.0	654.0
	44	654.0	658.0	662.0
	45	662.0	666.0	670.0
	46	670.0	674.0	678.0
	47	678.0	682.0	686.0
	48	686.0	690.0	694.0
LTE	49	694.0	698.0	702.0
	50	702.0	706.0	710.0
	51	710.0	714.0	718.0
	52	718.0	722.0	726.0
	53	726.0	730.0	734.0
	54	734.0	738.0	742.0
	55	742.0	746.0	750.0
	56	750.0	754.0	758.0
	57	758.0	762.0	766.0
	58	766.0	770.0	774.0
	59	774.0	778.0	782.0
	60	782.0	786.0	790.0
	61	790.0	794.0	798.0
	62	798.0	802.0	806.0
	63	806.0	810.0	814.0
	64	814.0	818.0	822.0
	65	822.0	826.0	830.0
	66	830.0	834.0	838.0
	67	838.0	842.0	846.0
	68	846.0	850.0	854.0
	69	854.0	858.0	862.0

NOTES

GOVERNMENT APPROVALS

Kingray products have all the necessary Australian and New Zealand Government approvals. All comply with Electromagnetic Emission (EMC) guidelines, represented by the RCM.

For mains operated products, we use the Regulatory Compliance Mark (RCM) to indicate electrical safety and EMC compliance.

PAY TV APPROVAL

Throughout this catalogue a number of products have been marked with [PAY TV APPROVED]. These products have been approved by one or more of the following pay television companies:
1. Foxtel Australia
2. Sky New Zealand

Refer to the individual company for their 'approved parts list' verification.

DIN45004B

All Kingray amplifiers are channel loaded and tested to DIN45004B, an internationally accepted standard. This provides an output figure, which is quoted for each amplifier. A simple definition is included on p.19 of this catalogue.

Standard Communications Pty Ltd warrants KINGRAY products to be free from defects in material and workmanship from the date of installation and reserve the right to void warranty if the product was misused, improperly installed or damaged by the claimant. See specific product warranty form for the warranty period.

For further information, instruction manuals or specification sheets on any products seen in this catalogue, call your nearest branch or visit:
www.kingray.net.au

Kingray

1300 463 463 kingray.net.au

A division of Standard Communications Pty Ltd.
Head Office: PO Box 96, Winston Hills, NSW 2153, Australia.
New Zealand: PO Box 58446 Botany, Auckland, 2163, NZ. T: (09) 274 0955.
All other international enquiries email: export@gme.net.au

Iss7 - 0717