

**Kingray**

# KDM401

QUAD AV TO DIGITAL (DVB-T)  
MODULATOR

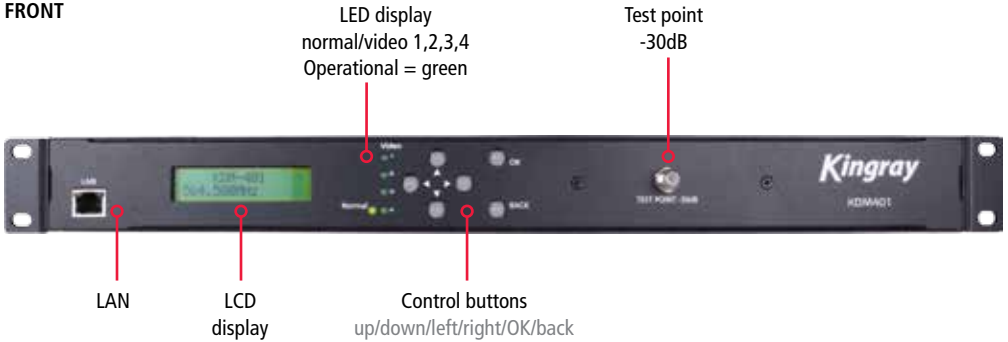


INSTRUCTION MANUAL

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## FRONT



## BACK



## INTRODUCTION

Thank you for purchasing the Kingray KDM401 SD modulator. Please read this manual carefully prior to installation as it contains information which will ensure you achieve the best performance from your KDM401.

## Main features

- Quad composite video inputs SD DVB-T modulator.
- Multiple video format compatibility including 576i (720 x 576) PAL.
- Audio format compatibility including MPEG-1 Layer 2
- Fully compliant with DVB-T standard
- Frequency range (Australia): 174 – 820 MHz
- Frequency range (New Zealand): 470 – 862 MHz
- Programmable PMT/Video/Audio/PCR PID
- Programmable channel name and logical channel number insertion.
- User friendly setup including basic and advanced menus controlled via button and display on LCD or via LAN and PC.

## SAFETY INSTRUCTIONS

All the safety and operating instructions should be read before the product is operated.  
For your safety ensure all instructions are adhered to.

### Cleaning

Unplug the unit from the power point before cleaning. Do not use liquid or aerosol cleansers, use a damp cloth.

### Attachments

Do not use attachments that are not recommended by Kingray as they can cause hazards.

### Water and moisture

Do not use this product near water.

### Mounting

The KDM401 can either be rack or shelf mounted. Ensure the unit is mounted securely so as not to cause harm to anyone or to damage the product by being dislodged.

### Power cord protection

Power-supply cords should be routed so they are not pinched or placed where they could cause a trip hazard.

### Ventilation

Slots and openings in the housing are provided for ventilation to prevent overheating and ensure reliable operation. These openings should never be blocked or covered by placing the unit on a carpet, flooring, furniture or fabric surface. The unit should not be placed in a built-in structure such as a cupboard or rack without proper ventilation.

### Power sources

The KDM401 is designed to be mains powered, connection to the mains should be made using the power lead provided.

### Lightning

For added protection of this unit; unplug it from the power point when left unattended or unused for long periods of time. This will protect the product from lightning strikes or power surges.

### Object and liquid entry

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.

### Servicing

Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

### Damage requiring service

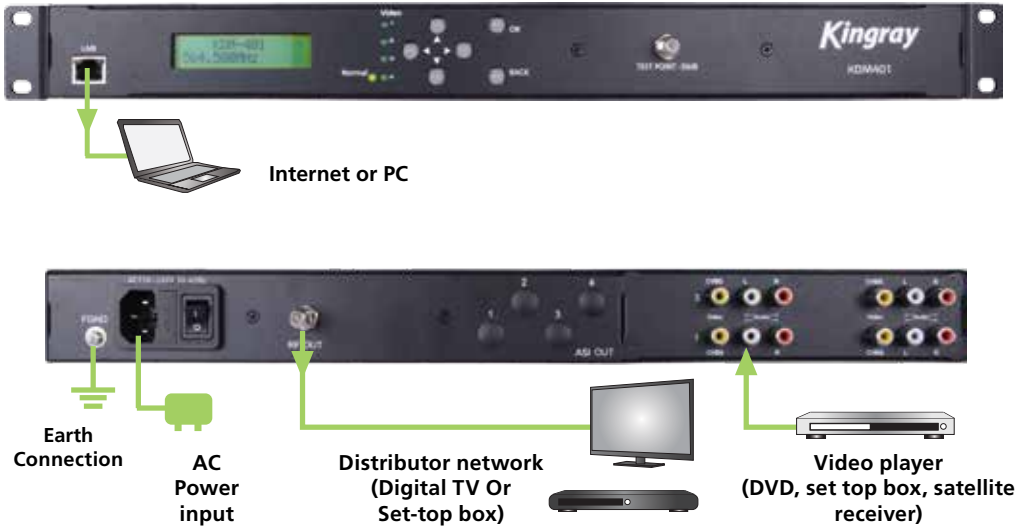
Unplug this unit and return it to your Kingray distributor or Standard Communications branch for servicing if any of the following occurs:

1. The power-supply cord or plug is damaged
2. Liquid has been spilled, or objects have fallen into the unit.
3. The unit has been exposed to rain or water
4. If the unit has been dropped or damaged in anyway

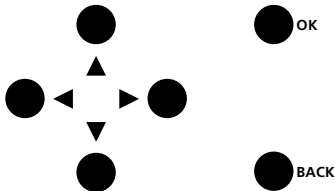
### Heat

The unit should be positioned away from any heat sources such as radiators, fireplaces, cooking stoves, or other products (including amplifiers) that produce heat.

## INSTALLATION



## GENERAL OPERATION



After boot-up press the **OK button** to enter the menus.

Use the **▲** or **▼** arrows to select between basic and advanced menus.

In the **Menu** and **Submenu**, press the **▲** or **▼** arrows to scroll up or down.

In the **Setting**, press the **▲** or **▼** arrows to modify values.

In the **Menu**, press the **◀** or **▶** arrows to scroll forwards or backwards.

In the **Setting**, press the **◀** or **▶** arrows to scroll forwards or backwards.

In the **Menu**, press the **OK button** to select the Submenu.

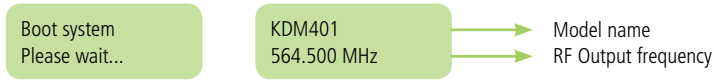
In the **Submenu**, press the **OK button** to select the setting.

In the **Setting**, press the **OK button** to confirm the setting.

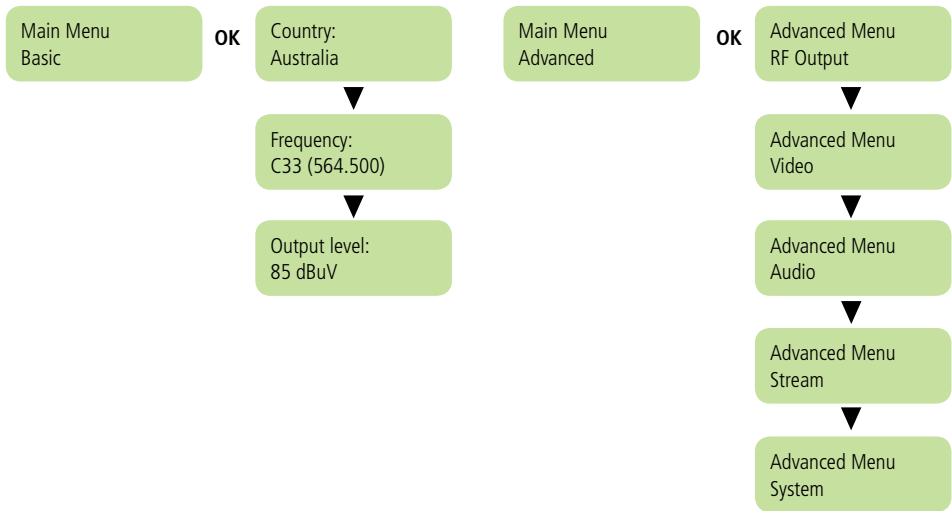
In the **Submenu**, press the **Back button** to return to the Menu.

In the **Setting**, press the **Back button** to return to the Submenu.

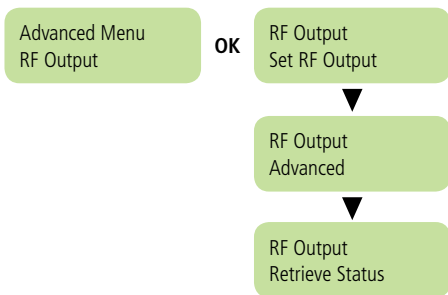
## System Booting



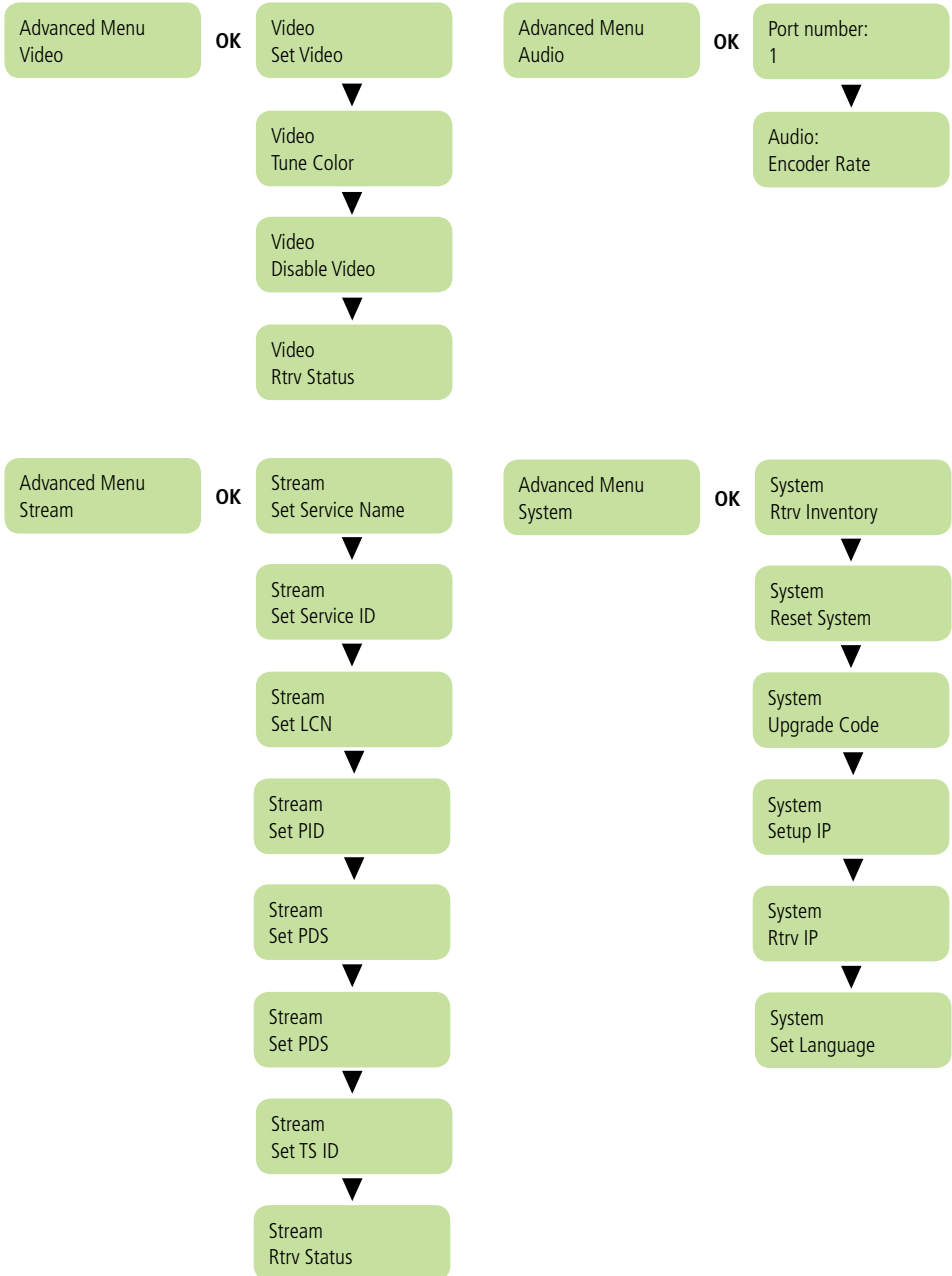
## Main Menu



## Submenu in Advanced Menu



## Submenu in Advanced Menu continued...



## Operating Adjustment via LCD and Buttons

For 'Basic and Advanced Menu' settings, press the **OK button** to access the adjustment mode. In this mode '**\***' will be displayed in the upper right corner. Use the **▲** or **▼** arrows to select parameter values, then press the **OK button** to confirm the setting.

### BASIC MENU

Press the **OK button** to enter the menu selecting page, then press the **▲** or **▼** arrows to select basic menu and press the **OK button** again. In this menu you can change basic parameters such as output level and frequency.

Country:  
Australia

In the basic menu, the first page is 'Country' selection.

Country: \*  
Australia

Press the **OK button** to access the adjustment mode. The LCD display will show '**\***' in the upper right corner. You can now press the **▲** or **▼** arrows to select the country you require. Press the **OK button** to save.

→ **Australia, Europe, New Zealand.**

Frequency:  
C33 (564.5 MHz)

Use the same steps as above (C6-C69).

Output Level:  
85 dBuV

Use the same steps as above (80-95 dBuV).

Are you sure?  
y

When the 'Setup RF Output' has been set, there will be a confirmation on the display. Press **▲** or **▼** arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

### ADVANCED MENU

#### RF Output

RF Output  
Setup RF Output

Following the main Submenu flow charts (pages 6 and 7) enter the 'Setup RF Output' mode.

Country:  
Australia

Press the **OK button** to enter the next page for country selection.

Country: \*  
Australia

Press the **OK button** to access the adjustment mode. The LCD display will show an '**\***' in the upper right corner. You can now press the **▲** or **▼** arrows to select the country you require. Press the **OK button** to save.

→ **Australia, Europe, New Zealand.**

Frequency:  
C33 (564.5 MHz)

Use the same steps as above to set the Frequency (C6-C69).

Output Level:  
85 dBuV

Use the same steps as above to set the Output Level (80-95 dBuV).



Carrier:  
8K

Use the same steps as above to set the Carrier (2K, 8K).

Constellation:  
QAM64

Use the same steps as above to set the Constellation (QAM16\*, QAM64).

FEC:  
7/8

Use the same steps as above to set the FEC (1/2, 2/3, 3/4, 5/6, 7/8).

Guard Interval:  
1/32

Use the same steps as above to set the Guard Interval (1/4, 1/8, 1/16, 1/32).

I/Q Swap:  
DISABLE

Use the same steps as above to Enable/Disable the Spectral Inversion.

Are you sure?

y

When the 'Setup RF Output' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

\* When selecting QAM16 please refer to Appendix B (recommended MPEG2 code rate).  
The minimum code rate must be greater than 17.77 Mbps

## RF Output Advanced

---

RF Output  
Advanced

Following the main Submenu flow charts (pages 6 and 7) enter the 'RF Output Advanced' mode.

Freq Offset:  
No Offset

Press the **OK button** to enter Freq Offset. Press the **OK button** to access Freq Offset adjustment mode. Use the ▲ or ▼ arrows to set the offset. Press the **OK button** to save. (No offset, +/- 125, 250, 275 kHz)

RF Output:  
ENABLE

Use the same steps as above to Enable/Disable the RF Output Enable mode.

Single Tone:  
DISABLE

Use the same steps as above to Enable/Disable the Single Tone Mode.

Are you sure?

y

When the 'RF Output Advanced' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Retrieve RF Output Status

---

Following the main Submenu flow charts (pages 6 and 7) enter the 'Retrieve Status' mode, you can check the parameters of your previous settings in 'Setup RF Output'.

## Video

---

Video  
Set Video

Following the main Submenu flow charts (pages 6 and 7) enter the 'Set Video' mode.  
Press the **OK button** to enter the Submenu.

Port Number:  
1

Press the **OK button** to access port number adjustment mode. Use the ▲ or ▼ arrows to select the port number, press the **OK button** to save.

Encoder Rate:  
6M

Press the **OK button** to enter encoder the adjustment mode. Use the ▲ or ▼ arrows to set the Encoder rate, press the **OK button** to save.

Are you sure?

y

When the 'Set Video' has been set, there will be a confirmation on the display.  
Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Tune Color

---

Video  
Tune Color

Following the main submenu flow charts (pages 6 and 7) enter the 'Video Tune Color' mode.  
Press the **OK button** to enter the Submenu.

Port Number:  
1

Press the **OK button** to access port number adjustment mode. Use the ▲ or ▼ arrows to select the port number, press the **OK button** to save.

**NOTE:** Use the same steps in Tune Color for ports 2-4.

Cont:  
20

Press the **OK button** to enter the adjustment mode. Use the ▲ or ▼ arrows to set the first digit, use ► arrow to select the second digit, use the ▲ or ▼ arrows to set. Press the **OK button** to save. (0-50).

Brightness: 21

Use the same steps as above to set – Bright (0-50).

Hue: 25

Use the same steps as above to set – Hue (0-50).

Saturation: 35

Use the same steps as above to set – Saturation (0-50).

Are you sure?

y

When the 'Tune Color' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Disable Video

---

Video  
Disable Video

Following the main submenu flow charts (pages 6 and 7) enter the 'Disable Video' mode.  
Press the **OK button** to enter the Submenu.

Disable Video:  
1

Press the **OK button** to enter the adjustment mode. Use the ▲ or ▼ arrows to select the port number. Press the **OK button** to disable the video channel (1-4, all).

**NOTE:** Use the same steps in Disable Video for ports 2-4.

Are you sure?

y

When the 'Disable Video' has been set, there will be a confirmation on the display.  
Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Retrieve Video Status

---

Following the main and Submenu flow charts (pages 6 and 7) enter the 'Video Retrieve Status' mode, you can check the parameters of your previous settings for each individual port in 'Video'.

## Audio

---

Advanced Menu  
Audio

Following the main Submenu flow charts (pages 6 and 7) enter the 'Advanced Menu System'. Press the **OK button** to enter the Submenu.

Port Number:  
1

Press the **OK button** to access port number adjustment mode. Use the ▲ or ▼ arrows to select the port number, press the **OK button** to save.

**NOTE:** Use the same steps in Audio for ports 2-4.

Encoder Rate:  
128K

Press the **OK button** to enter the encoder adjustment mode. Use the ▲ or ▼ arrows to set the Encoder rate, press the **OK button** to save. (128K, 256K, 384K).

Are you sure?

y

When the 'Audio' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Stream

---

Advanced Menu  
Stream

Following the main Submenu flow charts (pages 6 and 7) enter the 'Stream Set Service Name' mode. Press the **OK button** to enter the Submenu.

Stream  
Set Service Name

Press the **OK button** to enter the next page of the menu.

Port Number:  
1

Press the **OK button** to access port number adjustment mode. Use the ▲ or ▼ arrows to select the port number, press the **OK button** to enter the next page to set the service name.

**NOTE:** Use the same steps in Stream Set Service Name for ports 2-4.

Service Name:  
KINGRAY SD MOD

Press the **OK button** to enter the edit mode. Use the ▲ or ▼ arrows to edit the first character of the Service Name. 0-9 and A-Z can be used up to 15 characters. Press the ► arrow to advance to the next character and the ▲ or ▼ arrows to set. Press the **OK button** to save.

Are you sure?

y

When the 'Stream Service Name' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Set Service ID

---

Stream  
Set Set Service

Press the **OK button** to enter the next page of the menu.

Port Number:  
1

Press the **OK button** to access port number adjustment mode. Use the ▲ or ▼ arrows to select the port number, press the **OK button** to enter the next page to set the service name. Use the same steps in Stream Set Service Name for ports 2-4.

Service ID:  
100

Press the **OK button** to enter the edit mode. Use the ▲ or ▼ arrows to edit the first character of the Service Name. Use values between 1-65535. Press the ► arrow to advance to the next character and the ▲ or ▼ arrows to set. Press the **OK button** to save.

Are you sure?

y

When the 'Stream Service ID' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Set LCN

---

Stream  
Set LCN

Following the main Submenu flow charts (pages 6 and 7) enter the 'Stream Set LCN' mode. Press the **OK button** to enter the Submenu.

Port Number:  
1

Press the **OK button** to access port number adjustment mode. Use the ▲ or ▼ arrows to select the port number, press the **OK button** to enter the next page to set the LCN.  
**NOTE:** Use the same steps in Set LCN for ports 2-4.

LCN:  
200

Press the **OK button** to enter LCN adjustment mode. Press the **OK button** to access edit mode. Now press the ▲ or ▼ arrows to set the first number of the LCN. Press the ► arrow to advance to the next number and the ▲ or ▼ arrows to set. Press the **OK button** to save (1-1023).

Are you sure?

y

When the 'Stream Set LCN' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Set PID

---

Stream  
Set PID

Following the main Submenu flow charts (pages 6 and 7) enter the 'Stream Set PID' mode. Press the **OK button** to enter the Submenu.

Port Number:  
1

Press the **OK button** to access port number adjustment mode. Use the ▲ or ▼ arrows to select the port number, press the **OK button** to enter the next page to set the PID values.  
**NOTE:** Use the same steps in Set PID for ports 2-4.

PMT:  
1328

Press the **OK button** to enter the 'Stream Set PID' edit mode. Set the first number of the PID using the ▲ or ▼ arrows, use the ► arrow to advance to the next digit. Press the **OK button** to save (32-8190 excluding 71).

PCR:  
769

Use the same steps as above to set the PCR (32-8190 excluding 71).

Video:  
769

Use the same steps as above to set the Video (32-8190 excluding 71).

Audio  
770

Use the same steps as above to set the Audio (32-8190 excluding 71).

Are you sure?

y

When the 'PID' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Set NIT

---

Stream  
Set NIT

Following the main Submenu flow charts (pages 6 and 7) enter the 'Stream Set NIT' mode. Press the **OK button** to enter the Submenu.

OrgNetwork ID:  
8228

Press the **OK button** to enter the 'Original Network ID' edit mode; use the ▲ or ▼ arrows to set ID. Press the ► arrow to advance to the next character and the ▲ or ▼ arrows to set. Press the **OK button** to save (1-65535).

Network ID:  
1

Use the same steps as above to set the Network ID (1-65535).

Network Name:  
NETWORK

Use the same steps as above to enter the Network Name (A-Z, 0-9, 7 Characters).

Network Ver:  
1

Use the steps above to enter the Network Version (0-9).

Are you sure?

y

When the 'NIT' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Set PDS

---

Stream  
Set PDS

Following the main Submenu flow charts (pages 6 and 7) enter the 'Stream Set PDS' mode. Press the **OK button** to enter the Submenu.

Private Data:  
00003200

Press the **OK button** to enter edit mode and use the ▲ or ▼ arrows to set the first Private Data number. Press the ► arrow to advance to the next character and the ▲ or ▼ arrows to set. Press the **OK button** to save (8 Hex).

**NOTE:** Australia: 00003200, New Zealand: 00000037

Are you sure?

y

When the 'Stream Set PDS' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Set TS ID

---

Stream  
Set TS ID

Following the main Submenu flow charts (pages 6 and 7) enter the 'Stream Set TS ID' mode. Press the **OK button** to enter the Submenu.

TS ID:  
1

Press the **OK button** to enter edit mode and use the ▲ or ▼ arrows to set the first TS ID number. Press the ► arrow to advance to the next character and the ▲ or ▼ arrows to set. Press the **OK button** to save (1-65535).

Are you sure?

y

When the 'Stream Set TS ID' has been set, there will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, all the settings above will be stored in the memory. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Retrieve Stream Status

---

Following the main Submenu flow charts (pages 6 and 7) enter the 'Advanced Menu System'. In 'Retrieve Status' mode. Press **OK button** to check the parameters of your previous settings in 'Stream'.

## System

---

Advanced Menu  
System

Following the main Submenu flow charts (pages 6 and 7) enter the 'Advanced Menu System'. Press the **OK button** to enter the Submenu.

System  
Rtrv Inventory

Press the **OK button** to enter the next page, press the **OK button** again to check both hardware and software versions.

## Reset System

---

System  
Reset System

Following the main Submenu flow charts (pages 6 and 7) enter the 'System Reset System' mode. Press the **OK button** to enter the Submenu.

Reset Mode  
Hard/Soft Reset

Press the **OK button** to enter 'Reset Mode'. Use the ▲ or ▼ arrows to select between either Hard or Soft Reset. Press the **OK button** to enter the next page.

Reset Mode  
Reset to Default

Press the **OK button** to enter 'Reset to Default'. There will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, the system will be reset to default. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Upgrade Code

---

System  
Upgrade Code

Following the main Submenu flow charts (pages 6 and 7) enter the 'System Reset System' mode. Press the **OK button** to perform the upgrade.

Process Command  
Please wait...

Once upgrade is complete, press the **OK button** to reboot.

## Setup IP

---

System  
Setup IP

Following the main Submenu flow charts (pages 6 and 7) enter the 'System Setup IP'. Press the **OK button** to enter the Submenu.

Enable DHCP:  
DISABLE

Press the **OK button** to enter 'Enable DHCP' mode. Press the **OK button** to enter edit mode. Press ▲ or ▼ arrows to Enable/Disable the DHCP. Press the **OK button** to save.

IP address:  
192.168.1.168  
Netmask:  
255.255.255.0  
Default Gateway:  
192.168.1.3

Press the **OK button** to access IP adjustment mode. Set the first number of the IP address/ Netmask/Default Gateway using the ▲ or ▼ arrows, then use the ► arrow to advance to the next digit. Press the **OK button** to save (0-999).

**NOTE:** Repeat above steps for Netmask and Default Gateway.

Are you sure?

y

Press the **OK button** to enter 'Reset to Default'. There will be a confirmation on the display. Press ▲ or ▼ arrows to select YES or NO. Select 'y' for yes, the system will be reset to default. Select 'n' for no to cancel. Press the **OK button** to confirm.

## Retrieve System IP

Following the main Submenu flow charts (pages 6 and 7) enter the 'System Retrieve IP'. In 'Retrieve Status' mode. Press **OK button** to check the parameters of your previous settings in 'Setup IP'.

## Set language

System  
Set Language

Following the main Submenu flow charts (pages 6 and 7) enter the 'Set Language'. Press the **OK button** to enter the Submenu.

Language:  
English

Press the **BACK button** to exit.

## OPERATING ADJUSTMENT VIA WEB BROWSER

### Ethernet connection

The web browser will allow the user to fully configure the KDM401 unit via an Ethernet connection. Your computer will require a static IP address in the range 192.168.1.XXX

1. Connect the PC to the LAN port of the KDM401 unit. See below diagram.



2. The configuration process must be made in local mode, although later you will be able to access the unit from any PC in the LAN.
3. Launch the web browser and delete browsing history.



4. Enter the KDM401 IP address.



5. Click on ENTER to access the welcome screen.  
Enter the default password '1234'.



## RF Parameters

### Setup RF output

Using the interface below set the required RF settings, once complete click Save Settings to save.



### Advanced RF setting

Using the interface below set the advanced RF settings if required, click Save Settings to save.



## Video Parameters

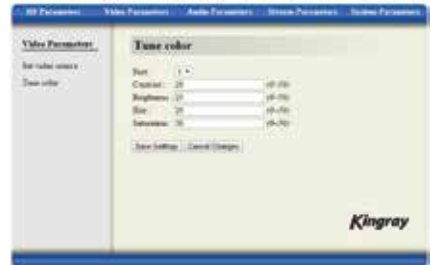
### Set video source

Using the interface below set the source, resolution and encoder rate, once complete click Save Settings to save.



### Tune color

Using the interface below set the contrast, brightness, hue and saturation for each port, click Save Settings to save.



## Audio Parameters

Using the interface below set the encoder rate of each port, click Save Settings to save.





## Stream Parameters

### Set Service Name

Using the interface below set the service name of each port, click save Settings to save.

Stream Parameters

Set Service Name

Port 1 Service Name: KINGRAY\_3D\_W021

Port 2 Service Name: KINGRAY\_3D\_W022

Port 3 Service Name: KINGRAY\_3D\_W023

Port 4 Service Name: KINGRAY\_3D\_W024

Save Settings Cancel Changes

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### Set Service ID

Using the interface below set the Service ID for each port, click Save Settings to save.

Stream Parameters

Set Service ID

Port 1 Service ID: 101

Port 2 Service ID: 102

Port 3 Service ID: 103

Port 4 Service ID: 104

Save Settings Cancel Changes

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### Set LCN

Using the interface below set the LCN for each port, click Save Settings to save.

Stream Parameters

Set LCN

Port 1 LCN: 101

Port 2 LCN: 102

Port 3 LCN: 103

Port 4 LCN: 104

Save Settings Cancel Changes

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### Set PID

Using the interface below set the PMT, PCR, Video and Audio PID for each port, click Save Settings to save.

Stream Parameters

Set PID

Port 1 PMT PID: 1010 PCR PID: 1011 Video PID: 1012 Audio PID: 1013

Port 2 PMT PID: 1020 PCR PID: 1021 Video PID: 1022 Audio PID: 1023

Port 3 PMT PID: 1030 PCR PID: 1031 Video PID: 1032 Audio PID: 1033

Port 4 PMT PID: 1040 PCR PID: 1041 Video PID: 1042 Audio PID: 1043

Save Settings Cancel Changes

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### Set NIT

Using the interface below set the original network ID, network ID, network name and network version, click Save Settings to save.

Stream Parameters

Set NIT

Original Network ID: 1010

Network ID: 1011

Network name: Kingray (All host / stations)

Network Version: 1012

Save Settings Cancel Changes

Kingray

## Set PDS

Using the interface below set the PDS, click Save Settings to save.



## Set TSID

Using the interface below set the TSID, click Save Settings to save.



## System Parameters

---

### System Reset

Using the interface below the system can be reset.



### Retrieve Inventory

Using the interface below the software version, software date, hardware version and database version can be retrieved.



### Upgrade Code

Using the interface below the code can be upgraded.



### Backup Parameters

Using this interface the parameters can be backed up.



## Restore Parameters

Using this interface the parameters can be restored from a stored file.



## Set IP

Using this interface the IP address can be changed.



System Parameters continued...

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## Set Language

Using this interface the language used can be set



## Set Password

Using this interface the password can be set



## CHANNEL TABLE LIST – AUSTRALIA

### Appendix A

| Channel  | Channel Frequency MHz | Dig. Central Frequency MHz | Channel | Channel Frequency MHz | Dig. Central Frequency MHz | Channel | Channel Frequency MHz | Dig. Central Frequency MHz |
|----------|-----------------------|----------------------------|---------|-----------------------|----------------------------|---------|-----------------------|----------------------------|
| Band III |                       |                            | 36      | 582–589               | 585.5                      | LTE     |                       |                            |
| 6        | 174–181               | 177.5                      | 37      | 589–596               | 592.5                      | 52      | 694–701               | 697.5                      |
| 7        | 181–188               | 184.5                      | 38      | 596–603               | 599.5                      | 53      | 701–708               | 704.5                      |
| 8        | 188–195               | 191.5                      | 39      | 603–610               | 606.5                      | 54      | 708–715               | 711.5                      |
| 9        | 195–202               | 198.5                      | Band V  |                       |                            | 55      | 715–722               | 718.5                      |
| 9A       | 202–209               | 205.5                      | 40      | 610–617               | 613.5                      | 56      | 722–729               | 725.5                      |
| 10       | 209–216               | 212.5                      | 41      | 617–624               | 620.5                      | 57      | 729–736               | 732.5                      |
| 11       | 216–223               | 219.5                      | 42      | 624–631               | 627.5                      | 58      | 736–743               | 739.5                      |
| 12       | 223–230               | 226.5                      | 43      | 631–638               | 634.5                      | 59      | 743–750               | 746.5                      |
| Band IV  |                       |                            | 44      | 638–645               | 641.5                      | 60      | 750–757               | 753.5                      |
| 27       | 519–526               | 522.5                      | 45      | 645–652               | 648.5                      | 61      | 757–764               | 760.5                      |
| 28       | 526–533               | 529.5                      | 46      | 652–659               | 655.5                      | 62      | 764–771               | 767.5                      |
| 29       | 533–540               | 536.5                      | 47      | 659–666               | 662.5                      | 63      | 771–778               | 774.5                      |
| 30       | 540–547               | 543.5                      | 48      | 666–673               | 669.5                      | 64      | 778–785               | 781.5                      |
| 31       | 547–554               | 550.5                      | 49      | 673–680               | 676.5                      | 65      | 785–792               | 788.5                      |
| 32       | 554–561               | 557.5                      | 50      | 680–687               | 683.5                      | 66      | 792–799               | 795.5                      |
| 33       | 561–568               | 564.5                      | 51      | 687–694               | 690.5                      | 67      | 799–806               | 802.5                      |
| 34       | 568–575               | 571.5                      |         |                       |                            | 68      | 806–813               | 809.5                      |
| 35       | 575–582               | 578.5                      |         |                       |                            | 69      | 813–820               | 816.5                      |

## NEW ZEALAND

### Appendix A

| Channel | Channel Frequency MHz | Dig. Central Frequency MHz | Channel | Channel Frequency MHz | Dig. Central Frequency MHz | Channel | Channel Frequency MHz | Dig. Central Frequency MHz |
|---------|-----------------------|----------------------------|---------|-----------------------|----------------------------|---------|-----------------------|----------------------------|
| Band IV |                       |                            | Band V  |                       |                            | E54     | 734–742               | 738                        |
| E21     | 470–478               | 474                        | E38     | 606–614               | 610                        | E55     | 742–750               | 746                        |
| E22     | 478–486               | 482                        | E39     | 614–622               | 618                        | E56     | 750–758               | 754                        |
| E23     | 486–494               | 490                        | E40     | 622–630               | 626                        | E57     | 758–766               | 762                        |
| E24     | 494–502               | 498                        | E41     | 630–638               | 634                        | E58     | 766–774               | 770                        |
| E25     | 502–510               | 506                        | E42     | 638–646               | 642                        | E59     | 744–782               | 778                        |
| E26     | 510–518               | 514                        | E43     | 646–654               | 650                        | E60     | 782–790               | 786                        |
| E27     | 518–526               | 522                        | E44     | 654–662               | 658                        | E61     | 790–798               | 794                        |
| E28     | 526–534               | 530                        | E45     | 662–670               | 666                        | E62     | 798–806               | 802                        |
| E29     | 534–542               | 538                        | E46     | 670–678               | 674                        | E63     | 806–814               | 810                        |
| E30     | 542–550               | 546                        | E47     | 678–686               | 682                        | E64     | 814–822               | 818                        |
| E31     | 550–558               | 554                        | E48     | 686–694               | 690                        | E65     | 822–830               | 826                        |
| E32     | 558–566               | 562                        | LTE     |                       |                            | E66     | 830–838               | 834                        |
| E33     | 566–574               | 570                        | E49     | 694–702               | 698                        | E67     | 838–846               | 842                        |
| E34     | 574–582               | 578                        | E50     | 702–710               | 706                        | E68     | 846–854               | 850                        |
| E35     | 582–590               | 586                        | E51     | 710–718               | 714                        | E69     | 854–862               | 858                        |
| E36     | 590–598               | 594                        | E52     | 718–726               | 722                        |         |                       |                            |
| E37     | 598–606               | 602                        | E53     | 726–734               | 730                        |         |                       |                            |

## CHANNEL TABLE LIST – EUROPE

### Appendix A

| Channel  | Channel Frequency MHz | Dig. Central Frequency MHz | Channel | Channel Frequency MHz | Dig. Central Frequency MHz | Channel | Channel Frequency MHz | Dig. Central Frequency MHz |
|----------|-----------------------|----------------------------|---------|-----------------------|----------------------------|---------|-----------------------|----------------------------|
| Band III |                       |                            | Band V  |                       |                            | LTE     |                       |                            |
| E5       | 174–181               | 177.5                      | E38     | 606–614               | 610                        | E49     | 694–702               | 698                        |
| E6       | 181–188               | 184.5                      | E39     | 614–622               | 618                        | E50     | 702–710               | 706                        |
| E7       | 188–195               | 191.5                      | E40     | 622–630               | 626                        | E51     | 710–718               | 714                        |
| E8       | 195–202               | 198.5                      | E41     | 630–638               | 634                        | E52     | 718–726               | 722                        |
| E9       | 202–209               | 205.5                      | E42     | 638–646               | 642                        | E53     | 726–734               | 730                        |
| E10      | 209–216               | 212.5                      | E43     | 646–654               | 650                        | E54     | 734–742               | 738                        |
| E11      | 216–223               | 219.5                      | E44     | 654–662               | 658                        | E55     | 742–750               | 746                        |
| E12      | 223–230               | 226.5                      | E45     | 662–670               | 666                        | E56     | 750–758               | 754                        |
| Band IV  |                       |                            | E46     | 670–678               | 674                        | E57     | 758–766               | 762                        |
| E21      | 470–478               | 474                        | E47     | 678–686               | 682                        | E58     | 766–774               | 770                        |
| E22      | 478–486               | 482                        | E48     | 686–694               | 690                        | E59     | 744–782               | 778                        |
| E23      | 486–494               | 490                        |         |                       |                            | E60     | 782–790               | 786                        |
| E24      | 494–502               | 498                        |         |                       |                            | E61     | 790–798               | 794                        |
| E25      | 502–510               | 506                        |         |                       |                            | E62     | 798–806               | 802                        |
| E26      | 510–518               | 514                        |         |                       |                            | E63     | 806–814               | 810                        |
| E27      | 518–526               | 522                        |         |                       |                            | E64     | 814–822               | 818                        |
| E28      | 526–534               | 530                        |         |                       |                            | E65     | 822–830               | 826                        |
| E29      | 534–542               | 538                        |         |                       |                            | E66     | 830–838               | 834                        |
| E30      | 542–550               | 546                        |         |                       |                            | E67     | 838–846               | 842                        |
| E31      | 550–558               | 554                        |         |                       |                            | E68     | 846–854               | 850                        |
| E32      | 558–566               | 562                        |         |                       |                            |         |                       |                            |
| E33      | 566–574               | 570                        |         |                       |                            |         |                       |                            |
| E34      | 574–582               | 578                        |         |                       |                            |         |                       |                            |
| E35      | 582–590               | 586                        |         |                       |                            |         |                       |                            |
| E36      | 590–598               | 594                        |         |                       |                            |         |                       |                            |
| E37      | 598–606               | 602                        |         |                       |                            |         |                       |                            |

## RECOMMENDED MPEG-2 CODE RATE

### Appendix B

| Modulation Constellation | FEC   | 7 MHz Bandwidth   |       |      |       | 8 MHz Bandwidth |       |      |       |       |       |       |       |       |       |       |  |       |  |       |  |       |  |       |  |       |  |
|--------------------------|-------|---|-------|------|-------|-----------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|--|-------|--|-------|--|-------|--|-------|--|
|                          |       | Guard Interval  |       |      |       | Guard Interval  |       |      |       |       |       |       |       |       |       |       |  |       |  |       |  |       |  |       |  |       |  |
|                          |       | 1/4   | 1/8   | 1/16 | 1/32  | 1/4             | 1/8   | 1/16 | 1/32  |       |       |       |       |       |       |       |  |       |  |       |  |       |  |       |  |       |  |
| 16QAM                    | 3/4   | Weak ability of error correcting and anti-interference in this area |       |      |       | 18.10           |       |      |       |       |       |       |       |       |       |       |  |       |  |       |  |       |  |       |  |       |  |
|                          | 5/6   |   |       |      |       |                 |       |      |       | 18.43 |       |       |       | 19.25 |       |       |  | 20.11 |  |       |  |       |  |       |  |       |  |
|                          | 7/8   |   |       |      |       |                 |       |      |       | 18.47 |       |       |       | 19.35 |       |       |  | 20.49 |  | 21.11 |  |       |  |       |  |       |  |
| 64QAM                    | 1/2   | 18.10   |       |      |       | 18.10           |       |      |       |       |       |       |       |       |       |       |  |       |  |       |  |       |  |       |  |       |  |
|                          | 2/3   |   |       |      |       |                 |       |      |       | 19.35 |       |       |       | 20.49 |       |       |  | 21.11 |  | 19.91 |  | 22.12 |  | 23.42 |  | 24.13 |  |
|                          | 3/4   |   |       |      |       |                 |       |      |       | 19.59 |       | 21.77 |       | 23.05 |       | 23.75 |  | 22.39 |  | 24.88 |  | 26.35 |  | 27.14 |  |       |  |
|                          | 5/6   |   |       |      |       |                 |       |      |       | 21.77 |       | 24.19 |       | 25.61 |       | 26.39 |  | 24.88 |  | 27.65 |  | 29.27 |  | 30.16 |  |       |  |
| 7/8                      | 22.86 |   | 25.40 |      | 26.89 |                 | 27.71 |      | 26.13 |       | 29.03 |       | 30.74 |       | 31.67 |       |  |       |  |       |  |       |  |       |  |       |  |

## SPECIFICATIONS

### Video input

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|                   |           |
|-------------------|-----------|
| Video input       | CVBS      |
| Video input level | 0.5–2 Vpp |
| Video mode        | PAL       |
| Input connector   | RCA       |

### Audio input

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|                   |             |
|-------------------|-------------|
| Audio input       | Stereo      |
| Audio input level | 0.4–2.5 Vpp |
| Input connectors  | RCA L, R    |

### Modulation

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|                   |                         |
|-------------------|-------------------------|
| Video resolution  | PAL 720 x 576 @ 25 fps  |
| Video compression | MPEG2 MP@ML             |
| Audio compression | MPEG1 Layer II          |
| PSI/SI generation | PID, NIT, PDS and TS ID |
| LCN               | Yes                     |
| Standard          | ETSI EN 300 744 V1.5.1  |
| Carrier           | 2K, 8K                  |
| Guard intervals   | 1/4, 1/8, 1/16, 1/32    |
| Code rate         | 1/2, 2/3, 3/4, 5/6, 7/8 |
| Constellations    | 16 QAM, 64 QAM          |

### Output

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|                         |                                       |
|-------------------------|---------------------------------------|
| Frequency range         | 174–820 MHz (Aus)<br>470–862 MHz (NZ) |
| Output level            | 80–95 dB $\mu$ V                      |
| Output impedance        | 75 $\Omega$                           |
| Channel bandwidth       | 7, 8 MHz                              |
| Output level adjustment | up to 15 dB                           |
| MER                     | > 42 dB typ.                          |
| Fine tuning             | +/- 125, 250, 375 kHz                 |
| Connector type          | 'F' Female                            |

### General

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|                   |                            |
|-------------------|----------------------------|
| Power Supply      | 110 – 240 V AC, 50 – 60 Hz |
| Temperature Range | 0 ~ +45°C                  |

## STANDARD COMMUNICATIONS WARRANTY AGAINST DEFECTS

This warranty against defects is given by Standard Communications Pty Ltd ACN 000 346 814 (We, us, our or GME). Our contact details are set out in clause 2.7.

### 1. Consumer guarantees

- 1.1 Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.
- 1.2 To the extent we are able, we exclude all other conditions, warranties and obligations which would otherwise be implied.

### 2. Warranty against defects

- 2.1 This warranty is in addition to and does not limit, exclude or restrict your rights under the Competition and Consumer Act 2010 (Australia) or any other mandatory protection laws that may apply.
- 2.2 We warrant our goods to be free from defects in materials and workmanship for the warranty period (see warranty table) from the date of original sale (or another period we agree to in writing). Subject to our obligations under clause 1.2, we will at our option, either repair or replace goods which we are satisfied are defective. We warrant any replacement parts for the remainder of the period of warranty for the goods into which they are incorporated.
- 2.3 To the extent permitted by law, our sole liability for breach of a condition, warranty or other obligation implied by law is limited.
  - (a) in the case of goods we supply, to any one of the following as we decide –
    - (i) the replacement of the goods or the supply of equivalent goods;
    - (ii) the repair of the goods;
    - (iii) the cost of repairing the goods or of acquiring equivalent goods;
  - (b) in the case of services we supply, to any one of the following as we decide –
    - (i) the supplying of the services again;
    - (ii) the cost of having the services supplied again.
- 2.4 For repairs outside the warranty period, we warrant our repairs to be free from defects in materials and workmanship for three months from the date of the original repair. We agree to re-repair or replace (at our option) any materials or workmanship which we are satisfied are defective.

- 2.5 We warrant that we will perform services with reasonable care and skill and agree to investigate any complaint regarding our services made in good faith. If we are satisfied that the complaint is justified, and as our sole liability to you under this warranty (to the extent permitted at law), we agree to supply those services again at no extra charge to you.
- 2.6 To make a warranty claim you must before the end of the applicable warranty period (see warranty table), at your own cost, return the goods you allege are defective, provide written details of the defect, and give us an original or copy of the sales invoice or some other evidence showing details of the transaction.
- 2.7 Send your claim to:  
Standard Communications Pty Ltd.  
PO Box 96 Winston Hills, NSW 2153, Australia.  
Tel: (02) 8867 6000 Fax: (02) 8867 6199  
Email: servadmin@gme.net.au
- 2.8 If we determine that your goods are defective, we will pay for the cost of returning the repaired or replaced goods to you, and reimburse you for your reasonable expenses of sending your warranty claim to us.

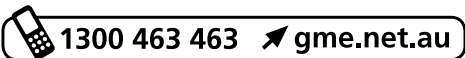
### 3. What this warranty does not cover

- 3.1 This warranty will not apply in relation to:
  - (a) goods modified or altered in any way;
  - (b) defects and damage caused by use with non Standard Communications products;
  - (c) repairs performed other than by our authorised representative;
  - (d) defects or damage resulting from misuse, accident, impact or neglect;
  - (e) goods improperly installed or used in a manner contrary to the relevant instruction manual; or
  - (f) goods where the serial number has been removed or made illegal.

### 4. Warranty period

- 4.1 We provide the following warranty on GME and Kingray products. No repair or replacement during the warranty period will renew or extend the warranty period past the period from original date of purchase.

| Product Type                  | Warranty Period |
|-------------------------------|-----------------|
| Standalone digital modulators | 2 years         |



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All other international enquiries email: [export@gme.net.au](mailto:export@gme.net.au)