In Building Product Guide
Telecommunications

IN-BUILDING PRODUCT GUIDE
TELECOMMUNICATIONS

Rev. 03 Date: 04/06/2013

Table of Contents

Introduction

Rojone designs and manufactures a number of specific products to ideally suit the needs of today's Telecommunications market, in particular we concentrate on in-building applications.

Products found in our range today have been developed over a number of years in direct collaboration with Australian Telecommunications carriers to ensure we meet the industries real needs and future expansion requirements. Today, our products are sold extensively in Australia, with a large majority of installations exclusively using Rojone product. Rojone has also developed excellent export markets, shipping product to a number of countries and developing strategic relationships to help us understand and develop product to meet specific regional needs. We are proud of our achievements and humbled by our customer's support, and promise we will actively continue to provide you with our finest product and service possible

Our Coupler, combiner and power divider range enjoy the highest build standard in both design and fabrication. Products are all Low Intermodulation designs, housings/boxes are machined using high quality Aluminium stock and are silver-plated. Connectors are high quality European manufactured with special Low IM Plating. The internal stripline circuits are all manufactured using high temperature Teflon® printed circuit board material specially fixed to the box to ensure excellent longevity, even in extreme circumstances. We also have a range of products manufactured from Brass stock for outdoor & tunnel applications where oxidization over time is a problem.

You may not be aware that Rojone Designs and manufactures products, and is one of Australia's leading exporters of GPS receivers, Antennas, Smart Antennas with RS232 and USB interfaces as well as OEM and consumer GPS+GSM vehicle tracking devices and remote control modues.

GPS has become popular also in the Telecommuncations environment for monitoring, timing and surveying purposes. We can offer standard product and custom designs including our unique GPS Repeater Kit to bring GPS inside a building.

Contact Us

Rojone Pty Ltd
44 Aero Road, Ingleburn, NSW, 2565
Sydney, Australia

Telephone: +61 (02) 9829 1555
Facsimile: +61 (02) 9605 8812
Email: sales@rojone.com.au

Website: www.rojone.com.au

Interstate: **Email:** warren@rojone.com.au
Tel: +61 (08) 9592 9606
Mob: 0407 426 233
Fax: +61 (08) 9592 6160

ANTENNAS

800-3000 MHz Multiband Microcell Antenna

Standard A-460

ICM version

Features

- **Full 800 to 3000 MHz Operation**
- **Input Power 100 Watts Max**
- **Low Cost – Small & Light Weight, Easy to Install**

The A-460 is the most versatile multi-purpose antenna on the market today. Specifically designed for in-building passive distribution of the all cellular communications signal and covering the full 800 to 3000 MHz bandwidth, this antenna is also capable of operation in the WLAN band. The antenna is constructed from lightweight materials suitable for wall or ceiling mounting (ideal for covert installations).

A-460 Antennas come in various configurations, with a standard connector exit and short cable tails (either bottom or side exit). We have antennas designed for Indoor use (I) which are supplied with matt white textured radomes blending into any in-building application, or Environmental (E) use for mounting outdoors with a high stability UV white smooth finish radome.

Specifications

	Omni Antenna	*Directional Antenna*
Part Number	A-460-O	A-460-D
Frequency Range	800 to 3000 MHz	800 to 3000 MHz
Gain	3~6.5dBi Nominal	6-9 dBi Nominal
VSWR	< 2:1	2:1 Max
Impedance	50 Ohm	50 Ohms
Polarisation	Linear	Linear
Radiation	Omni	Directional
Horizontal 3dB BW	360 Degrees	120-150 Degrees
Vertical 3dB BW	75 Degrees	40 Degrees
Max Input Power	100 Watts Max	100 Watts Max
Colour	White ABS	White ABS
Dimensions	Dia 205 x 96 (H) + Conn.	Same as Drawing
Weight	300 grams Max (ICM 515g)	300 grams Max

Optional Tuning to optimise gain in specific frequencies is available.

Please consult Rojone Pty Ltd for details.

Part Number Options

A-460 - D I - B 30 NF - MH

Accessory or Modification Code	
	(Blank if not required)
MH	Mounting Hardware
RP	Reverse Polarity Connector
RA	Right Angle Connector

Connector Type	
NM	N Type Straight Male Plug
NF	N Type Inline Female Jack
716M	7/16 DIN Straight Male Plug

Connector Exit &/or Cable Tail Length (in cm)	
0	Bottom Connector, no cable tail
30	30cm Cable Tail Tail can be specified in XX cm increments

Cable Tail Exit Style	
S	Side Cable Exit from Antenna
B	Bottom Cable Exit from Antenna

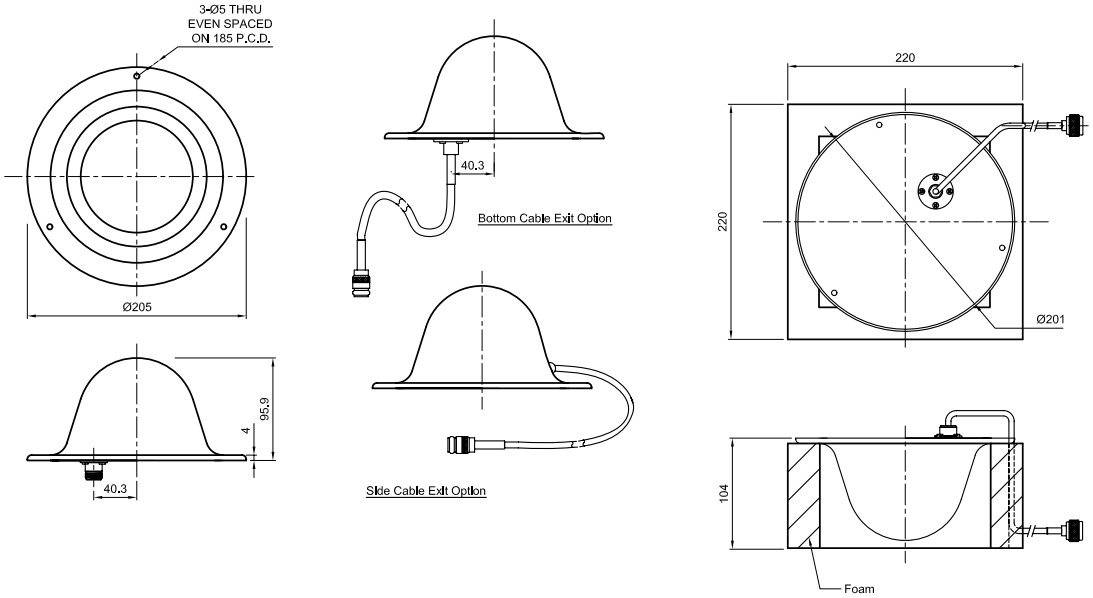
Antenna (Radome) External Finish	
I	Internal Antenna - Matt Textured White
E	External Antenna - Smooth UV White
ICM	Special In-Ceiling Mount Antennas

Antenna Radiation Type	
O	360° Omni Directional Antenna
D	90°(H) and 40°(V) Directional Antenna

Mechanical Outline

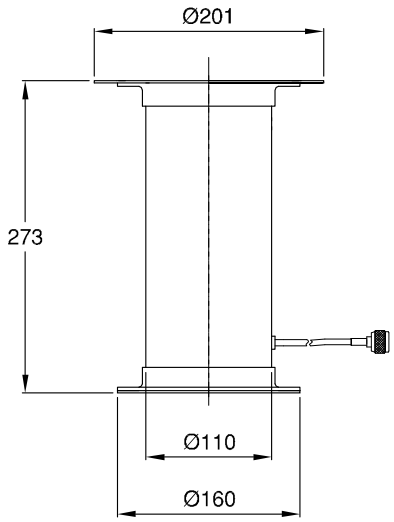
The Omni-Directional & Directional Antenna antennas are housed in the same Radome. Only the internal structure of the antenna differs and is marked accordingly on the base plate of the antenna when delivered.

The -ICM Omnidirectional antenna has a unique lightweight mounting arrangement, allowing the antenna to be placed securely in on a ceiling tile or in a ceiling cavity to efficiently radiate through the ceilling material into a room space (some types of ceiling material and thickness may degrade the performance slightly). Weight 515g.



ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

350-2500 MHz Super Broadband MicroCell Antenna



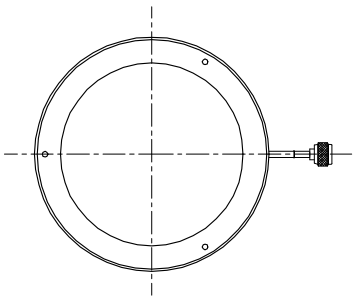
Features

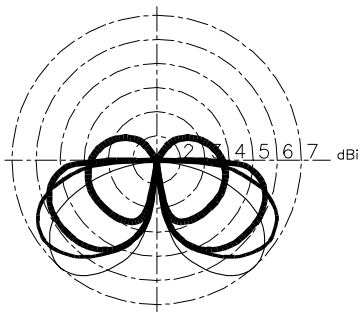
- **Full 350-2500 MHz Operation**
- **Input Power 100 Watts Max**
- **Low Cost – Small & Light Weight, Easy to Install**

The A-470 is the most unique & versatile in-building antenna on the market today. This antenna is specifically designed for in-building passive distribution of a large variety of communications signals from paging, to emergency services frequencies, cellular and WLAN. The antenna is constructed from lightweight materials designed for installation into ceiling cavities and above suspended tile ceiling structures.

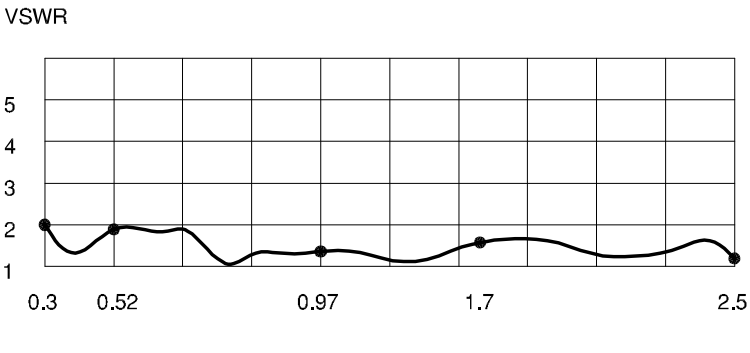
Specifications

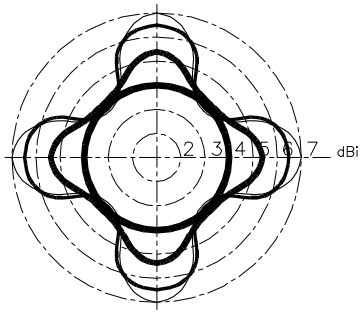
Part Number	A-470-ICM-NF
Frequency Range	350 to 2500 MHz
Gain	3~6.5dBi Nominal
VSWR	< 2:1
Impedance	50 Ohm
Polarisation	Linear
Radiation	Omni Directional
Horizontal 3dB BW	360 Degrees
Vertical 3dB BW	75 – 90 Degrees
Max Input Power	100 Watts Max
Loss thru Ceiling Tile	< 0.1dB over 350 to 2500MHz
Dimensions	256mm Height x 221 x 221mm
Weight	600 Grams Max
Mounting	To be placed in ceiling cavity, or on top of ceiling tile. No mechanical fixing required.





VERTICAL





HORIZONTAL

Vandal Tolerant 838 MHz Next G Antenna

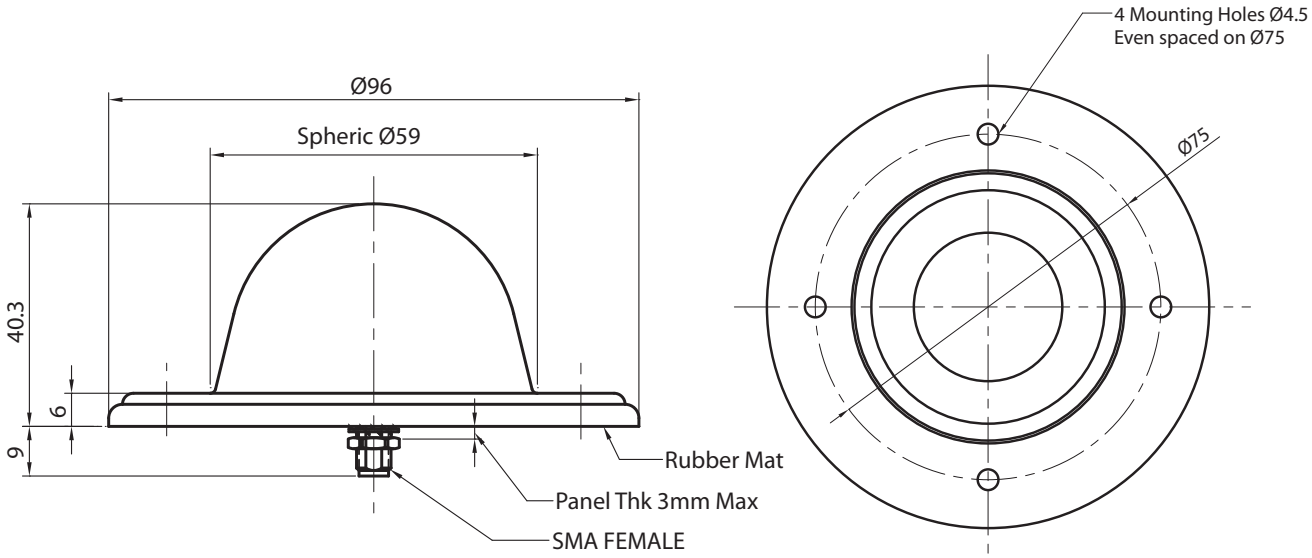
Features

- **50 watts**
- **Robust water proof construction**
- **Low profile 800-900MHz**

The A-490-18GF is designed as a vandal tolerant low profile antenna for telecommunications use. It is a loaded ¼ wave and requires a ground plane of 100x100mm to function at 100% efficiency.

Specifications

Operating Frequency	838MHz
Bandwidth	15MHz@<10dB
Input RF Power	50 watts
Input Return Loss	<-15dB
RF Connectors	SMA Female
Op Temperature	-40° to +100 °C
IP Rating	IP67
Radome Material	As per customer's requirements
Weight	0.1 kg
Size	96mm diameter x 41 mm + connectors



ROJONE Pty. Limited 44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA
TEL +61 02 9829 1555 **FAX** +61 02 9605 8812 **EMAIL** sales@rojone.com.au **www.rojone.com.au**

COMBINERS

High Power 2 Way Combiner

Features

- **High Power 100 Watts per port**
- **Wide Band 800-2500 MHz**
- **Low Intermodulation**

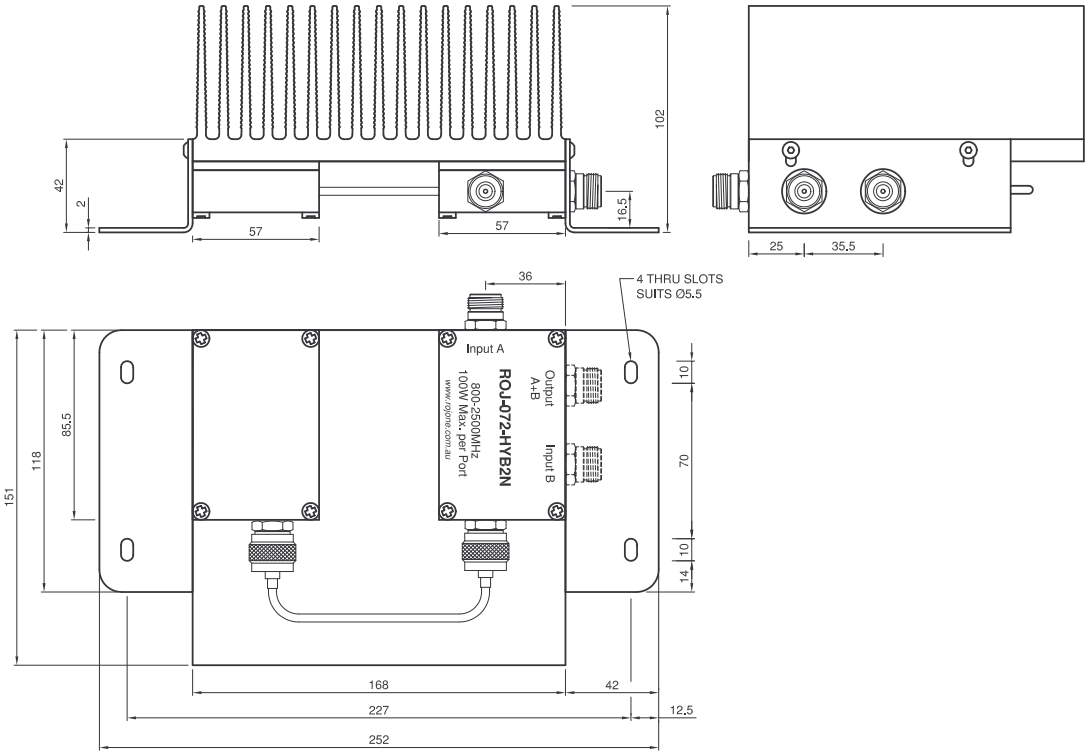
Rojone's ROJ-072-HYB2N is our latest development in wide band 2 Way Combiners. They are specifically designed for the Cellular Telecommunications market to allow service providers the ability to combine two (2) up to 100 watt non-coherent signals into one port. These products are particularly suitable for in-building network distribution.

Specifications

Part Number	ROJ-072-HYB2N ROJ-072-HYB2N-LIM (Low IM Cable Load Version)
Frequency	800 to 2500 MHz
Number of Ports	2 Port
Isolation	> 20dB
VSWR/Return Loss	< 1.22:1 Max / -20dB Typical All Ports
Input RF Power	100 Watts Max CW per input port. Fan cooling is recommended for >50 Watts per port
Impedance	50 Ohms
Connector Type	N Female
Package Size	230 x 170 x 68.55mm. 246 x 150 x 84mm for LIM (Low IM Cable Load Version)
Operating Temperature	-30° to + 65°C

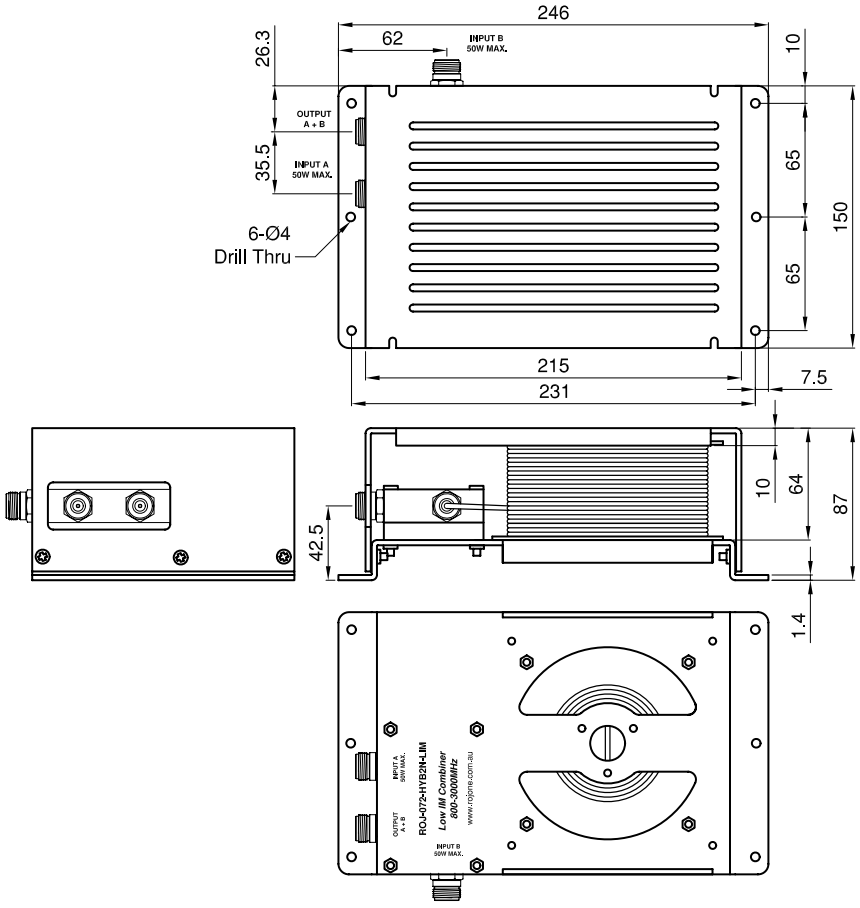
Mechanical Outline – ROJ-072-HYB2N

External Load and Heatshrink version



Mechanical Outline – ROJ-072-HYB2N-LIM

Cable Load, Low IM version <-140 dBc@2x43dBm carriers



ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

High Power 4 Way and 8 Way Combiner

Features

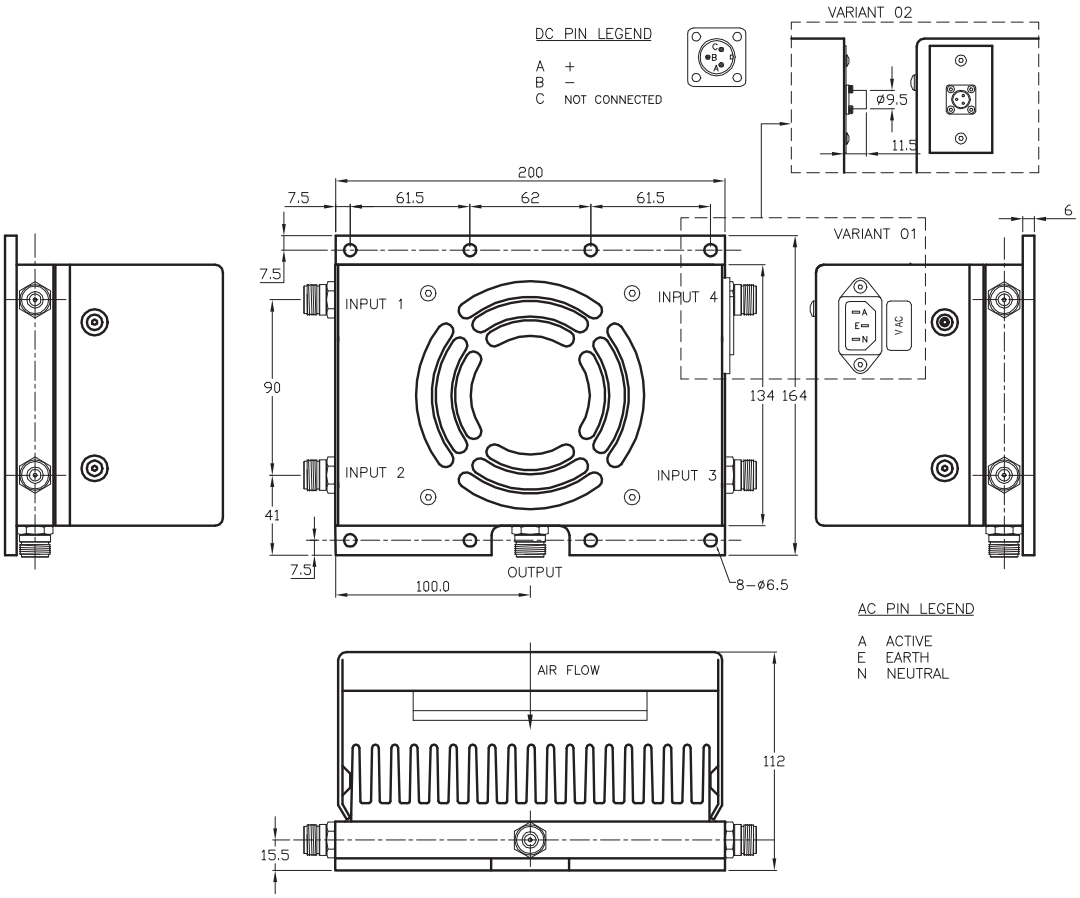
- • High Power 40 Watts per port
- • Wide Band 800-2000 MHz
- • Low Intermodulation

Rojone's AMA-068-4 range of High Power 4 Way Combiners are specifically designed for the Cellular Telecommunications market to allow service providers the ability to combine four (4) 40 watt for non coherent signals into one port. These products are particularly suitable for in-building network distribution.

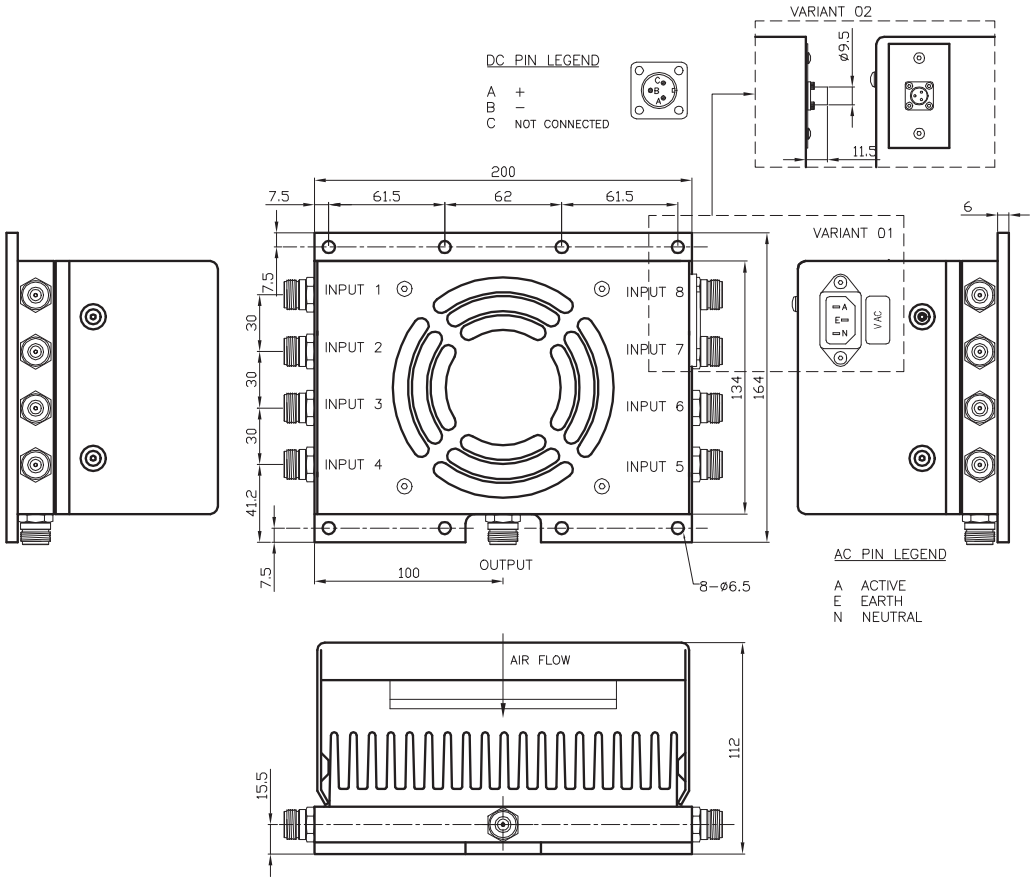
Specifications

Part Number	*AMA-068-4-xxVxx*	*AMA-068-8-xxVxx*
	4 Way Combiner	**8 Way Combiner**
Frequency	800 to 2000 MHz	800 to 2000 MHz
Number of Ports	4 Input Ports	8 Input Ports
Isolation	20dB Min - 40dB Max	45dB Max
Insertion Loss	< 6.5dB	< 10dB
Amplitude Balance	< ± 0.3dB	< + 0.5dB
Phase Balance	< ± 5 Degrees	< + 10 Degrees
VSWR/Return Loss	1.22:1 Max / 20dB	1.22: 1Max / 20dB
Input RF Power	40 Watts CW Max per input port @ -10 to 50°C	10 Watts CW Max per input port @ -10 to 50°C
Impedance	50 Ohms	50 Ohms
Connector Type	N Female	N Female
Pack Size (Excl Connectors)	200 x 164 x 112mm	200 x 164 x 112mm
Fan Cooled	Specify Volt 12, 24, 48, 110, 240 VAC or VDC	12, 24, 48, 110, 240 VAC or VDC
Operating Temp Range	-10° to + 60°C	-10° to + 60°C
Weight	Alum 3.3 Kg Max	Alum 3.4 Kg Max

Mechanical Outline – AMA-068-4



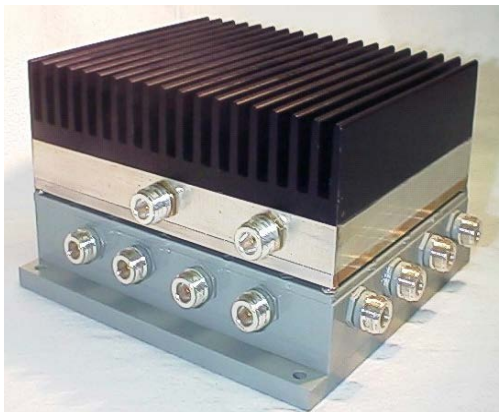
Mechanical Outline – AMA-068-8



ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

High Power Multi-Network Integrated Combiner

Combiner shown with integrated 3 port load without fan assembly



Features

- **Wide 800-2200 MHz Frequency Band**
- **High Power 100 Watts per Port**
- **Small – 189 x 185 x 46mm incl mounting flange, plus High Power 300 Watt Load 150 x 199 x 120mm**
- **No Tuning Required**
- **Rack or Wall Mountable Configuration**
- **Flexible Modular Low Cost Design**
- **Low Insertion Loss**
- **Intermodulation products minimised**

This fully Integrated Multi-Network Combiner Module was designed specifically for in-building applications. This combiner accepts up to 4 networks into a distributed antenna system and offers 4 identical RF output ports.

Particularly within in-building applications where power budget is a limiting factor, this combiner design directs all RF energy into the Distributed Antenna System instead of dissipating power through multiple stage loads. This solution allows multiple sectors to be combined into one single sector for better trunking efficiency and frequency planning.

The module's integrated design is configurable from 1 to 4 inputs and from 1 to 4 outputs. Unused input ports are broadband terminated using low power loads; unused output ports must also be broadband terminated using high power 100 watt loads to assure optimum performance. Installation is easy; the combiner is provided with a robust mounting flange, ideal for wall mounting. All ports are low IM Female N connectorised and are easy to access. Our combiner also features a 30dB monitor ports allowing for on-line hot system testing.

Specifications

Frequency Range	800 to 2200 MHz
Isolation	20dB Min Adjacent ports, 30dB Min Non-Adjacent
Return Loss	20dB Min
Transmission Loss	6.5dB ± 1.0dB Typical
Insertion Loss	< 1dB (included in transmission loss spec)
Power	100 Watts per Port
Impedance	50 Ohms
Connector Type	N Low IM Female connectors 4 Inputs & 4 Outputs
Additional Function 30dB Coupler Monitor Port (connected to Output A) Directivity 15dB Min	
Package Size	189 x 185 x 46mm (7.44 x 7.28 x 1.81") Including Flange
Weight	Combiner Only – 2.6 Kg (5.73lb). With Integrated Load - 5.8 Kg max. (12.8lb)

Part Number Options

ROJ-065 - 1 - 2 - IL 48 V DC

	Indicates integrated Load & Voltage selection for fan power. 24, 48 VDC *or* 110, 240 VAC
Number of Outputs	
x	1, 2, 3, or 4
Number of Inputs	
x	1, 2, 3, or 4

ROJ-065-4-4

Indicates 4 Inputs, 4 Outputs, **No Loads***

This is a 4 Input / 4 Output Combiner Network – ***Any unused ports must be terminated.***

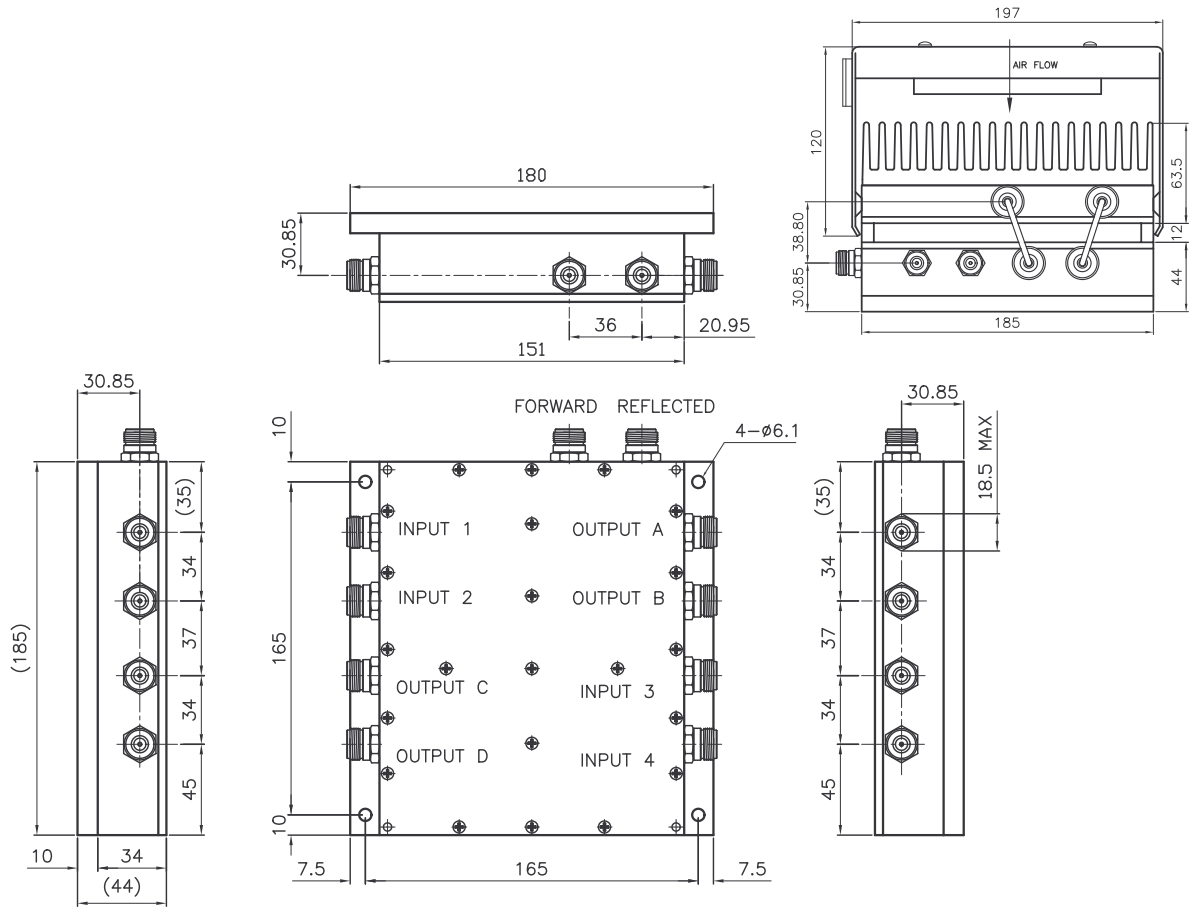
Unused Input Ports will be factory terminated with Medium power Loads.

Unused Output Ports will be factory terminated to our Integrated High Power 3 in 1 Load.

This is our standard configuration. Should you wish to use an Input or Output port later in the product's life, you simply need to remove the loads to add a Telecommunication's carrier to the Input and/or add another antenna to the combiner's output up to a total of 4 input and 4 outputs.

* *Should you choose to either use all 4 inputs and 4 outputs or supply your own loads, the combiners order code would simply be ROJ-065-4-4.*

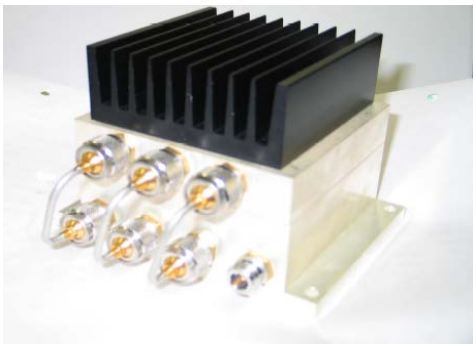
The integrated 3 in 1 high Power Load is supplied complete with a cooling fan. This fan must be operational 100% of the time to ensure that the load does not overheat.



ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Multi-Network Combiner

Features



- **Wide 800-2500 MHz Frequency Band**
- **High Power 100 Watts**
- **Small – 110 x 149 x 61mm incl mounting flange (excluding Heatshrink or optional fans)**
- **No Tuning Required**
- **Rack or Wall Mountable Configuration**
- **Flexible Modular Low Cost Design**
- **Low Insertion Loss**
- **Intermodulation products minimised**

This fully Integrated Multi-Network Combiner Module was designed specifically for in-building applications. This combiner accepts up to 4 networks into a distributed antenna system and offers 4 identical RF output ports.

Particularly within in-building applications where power budget is a limiting factor, this combiner design directs all RF energy into the Distributed Antenna System instead of dissipating power through multiple stage loads. This solution allows multiple sectors to be combined into one single sector for better trunking efficiency and frequency planning.

The module's integrated design is configurable from 1 to 4 inputs and from 1 to 4 outputs. Unused input ports are broadband terminated using low power loads; unused output ports must also be broadband terminated using high power 100 watt loads to ensure optimum performance. Installation is easy; the combiner is provided with a robust mounting flange, ideal for wall mounting. All ports are low IM Female N connectorized and are easy to access.

** 7/16 connector version now available.*

Specifications

Frequency Range	800 to 2500 MHz
Isolation	20dB Min Adjacent ports, 30dB Min Non-Adjacent
Return Loss	20dB Min
Transmission Loss	6.5dB ± 1.0dB Typical
Insertion Loss	1dB (included in transmission loss spec)
Power	100 Watts
Impedance	50 Ohms
Connector Type	N Low IM Female connectors 4 Inputs & 4 Outputs
Weight	2.6Kg combiner module only

Part Number Options

ROJ-073 - 1 - 2 - IL 48 V DC

	Indicates integrated Load & Voltage selection for fan power. 24, 48 VDC *or* 110, 240 VAC
Number of Outputs	
x	1, 2, 3, or 4
Number of Inputs	
x	1, 2, 3, or 4

ROJ-073-4-4

Indicates 4 Inputs, 4 Outputs, **No Loads***

This is a 4 Input / 4 Output Combiner Network – ***Any unused ports must be terminated.***

Unused Input Ports will be factory terminated with Medium power Loads.

Unused Output Ports will be factory terminated to our Integrated High Power 3 in 1 Load.

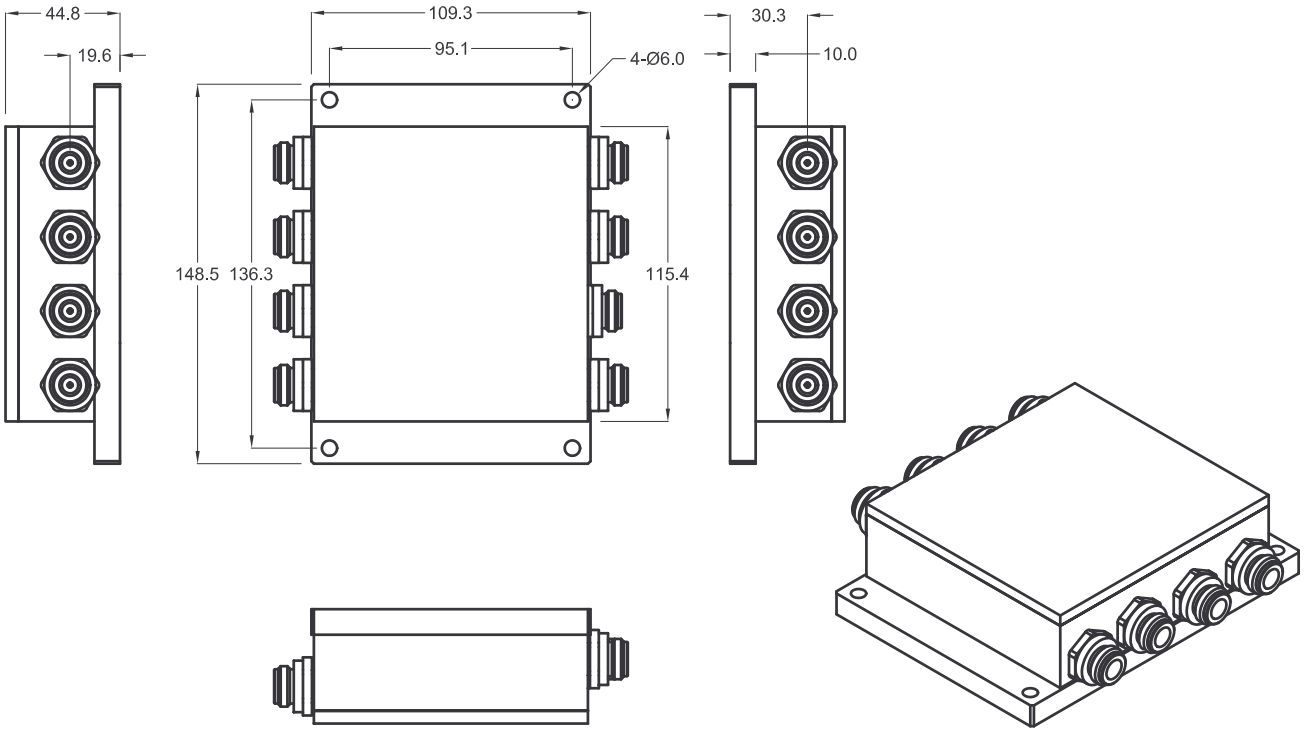
This is our standard configuration. Should you wish to use an Input or Output port later in the product's life, you simply need to remove the loads to add a Telecommunication's carrier to the Input and/or add another antenna to the combiner's output up to a total of 4 input and 4 outputs.

* *Should you choose to either use all 4 inputs and 4 outputs or supply your own loads, the combiners order code would simply be ROJ073-4-4.*

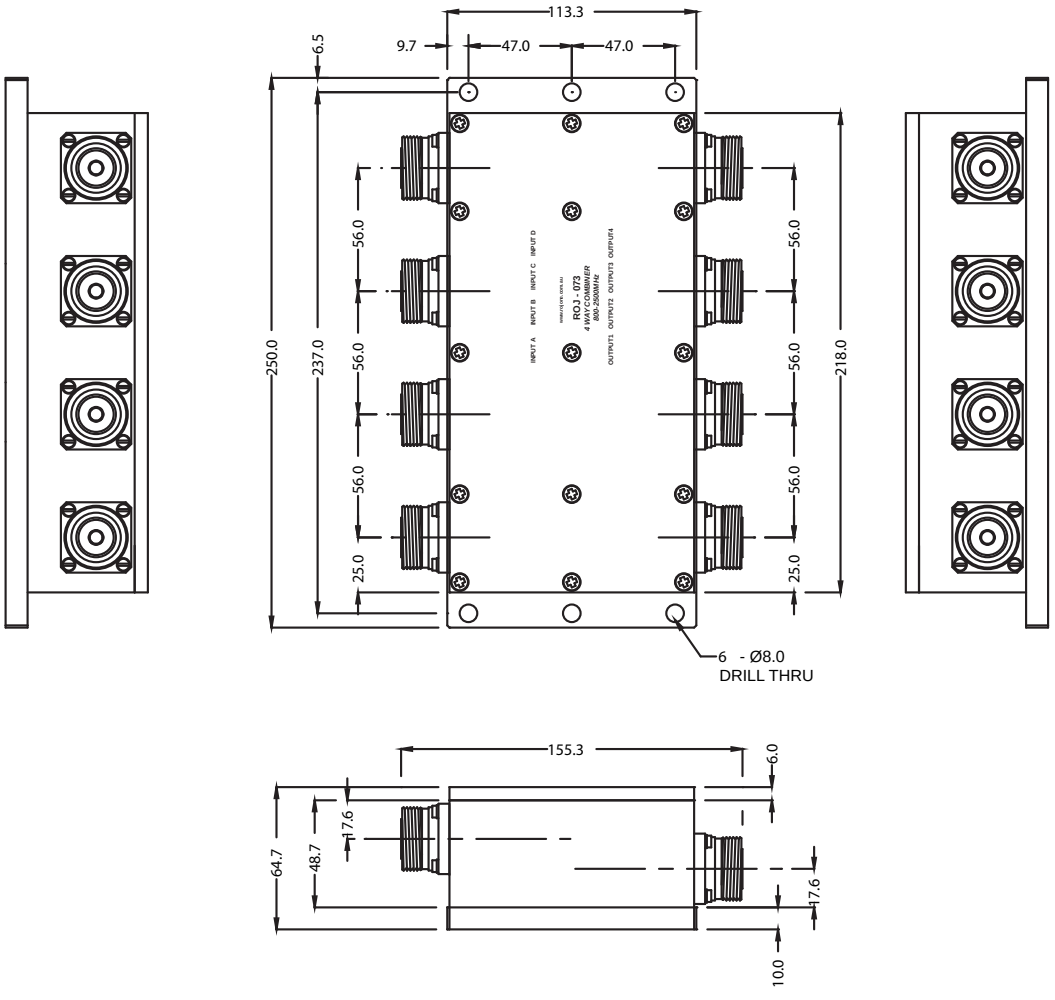
The integrated 3 in 1 high Power Load is supplied complete with a cooling fan. This fan must be operational 100% of the time to ensure that the load does not overheat.

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Mechanical Outline – ROJ-073-4-4-N



Mechanical Outline – ROJ-073-4-4-716



COUPLERS & DIVIDERS

Application

Four (4) Port Directional couplers are typically used to accurately and conveniently measure incident and reflected power so as to determine;

- **VSWR**
- **Loss power splitting & combining**
- **Signal sampling**
- **Signal injection**
- **Power flow monitoring**

These are all very important parameters, particularly in the Telecommunications market today. 3dB Hybrid couplers are now frequently used for combining applications for in-building distribution.

Characteristics

The output signals are unequal in amplitude. The larger signal is at the main-line output port. The smaller signal is in the coupled port (except for the 3 dB coupler).

The Main line insertion loss depends upon the coupled port, coupling value.

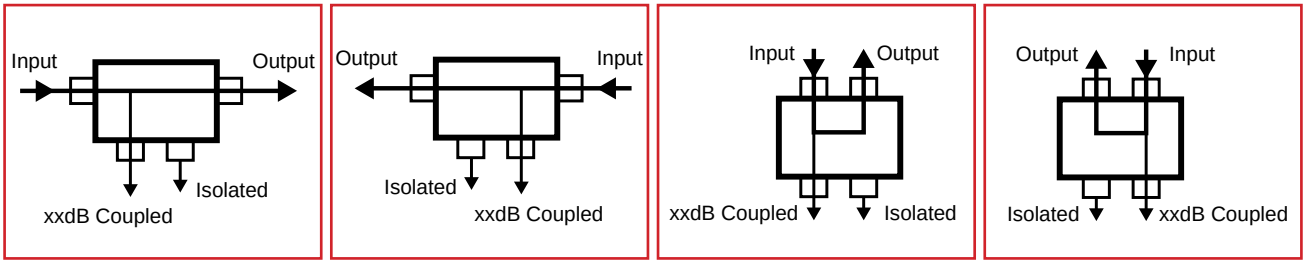
There is high isolation between the coupled port and the output of the main line.

The Key characteristics of a directional coupler include coupling coefficient, coupling flatness, main-line loss and directivity.

Explanation of Terms

Coupling Coefficient –	The nominal coupling is the ratio in dB of the coupled port power relative to the input power level.
Coupling Flatness –	The peak to peak variation of coupling in dB. The average value over the frequency range.
Main-line Insertion Loss –	The net unrecoverable power loss in dB based on one way transmission through the coupler.
Directivity –	The ratio in dB of power at the coupled port when fed in the forward direction to the power at the coupled port when fed in the reverse direction at the same power level.

Commonly used symbols for Directional Couplers & power flow conventions



ROJONE Pty. Limited 44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA
TEL +61 02 9829 1555 **FAX** +61 02 9605 8812 **EMAIL** sales@rojone.com.au **www.rojone.com.au**

Super Broadband 380-2200 MHz 10 dB Coupler

Features

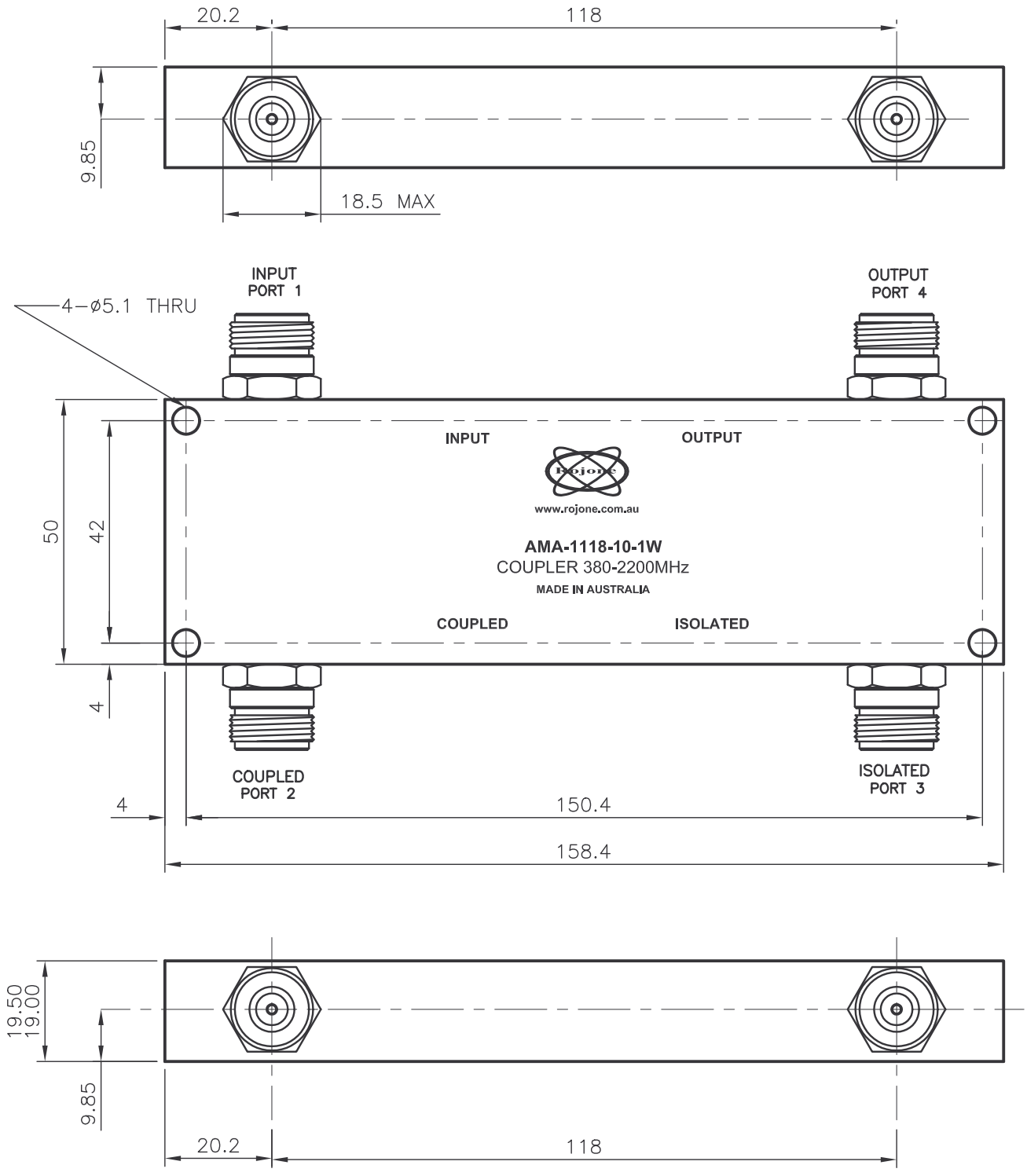
- **Coupler operates over the full 380 – 2200 MHz Bandwidth**
- **High Power 200 Watts Average**

The AMA-1118 is a unique broadband 10dB coupler, specifically designed to cover combined Radio modems, paging, Cellular & GPS applications.

Specifications

Part Number	AMA-1118-10-1W AMA-1118-10-1WE - Enviro Outdoor Version
Coupling Value	10dB ±0.5dB (500 – 2000MHz) 11dB ± 0.9dB (380 – 500 & 2000 - 2200 MHz)
Frequency Range	380 to 2200 MHz
Directivity	> 20dB
Insertion Loss	0.25dB Max + 10dB Coupling Loss
Dissipative Loss	0.25dB Max
Return Loss	<-20dB (0 – 2200MHz)
VSWR	< 1.2 (0 – 2200MHz)
Isolation	> 20dB
Input RF Power	200w (max) CW
Impedance	50 Ohms
Op. Temp. Range	-40 to + 85°C
Humidity	< 95%
RF Connectors	N-F 50 Ohm
IM	< - 130dBc @ 43dBm x 2
Package Size	159 x 50 x 19 mm
Weight	400g Max

Mechanical Outline – AMA-1118



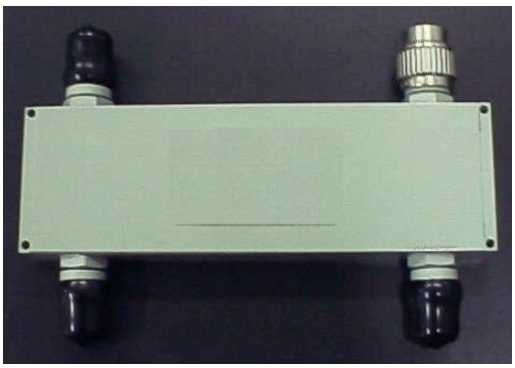
Environmental version are also available; add “E” to Part Number suffix to specify waterproof, brass housing for outdoor applications. Eg. AMA-1118-10-1WE

Note: *Environmental couplers weigh 650g*

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

UHF 4 Port Directional Coupler

Features



- **High Power 200 Watts Average**
- **Flat Response**
- **N Female Connectorised**

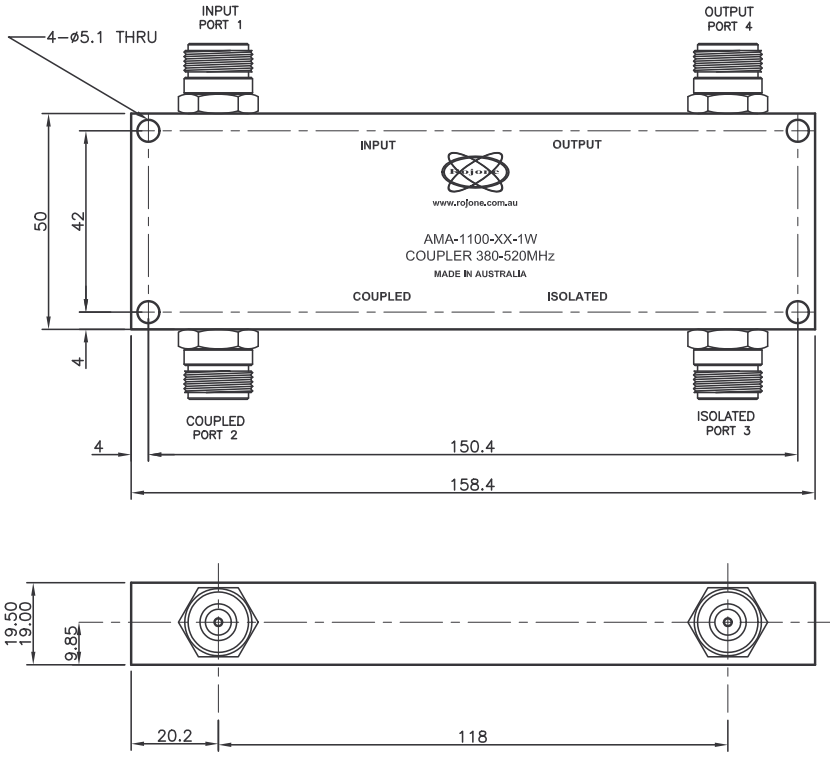
The AMA-1100 Coupler range was specifically designed for UHF 380-520 MHz in-building distribution of paging and two-way networks signals.

Specifications

Part Number	AMA-1100-XX-1W (XX = Coupling value required)
Coupling Value	3, 6, 10, 15, 20 or 30 dB
Frequency Range	380 to 520 MHz
Directivity	20dB minimum
Insertion Loss	0.5 dB typical
VSWR	1.22 : 1 maximum
Impedance	50 Ohms
Peak Power	3 KW @ 1% duty cycles
Temperature Range	0°C to +60°C
Finish	Storm Grey Polyurethane
RF Connectors	N Female
Package Size	158.4 x 50 x 19 mm

NOTE: *Over tightening the connectors may damage the connector.*
To stripline transition internally, please take care.

Recommended coupling torque force for N connector is 40 to 60 Ncm.



800-2500 MHz 4 Port Directional Couplers

Features

- • High Power 200 Watts Average
- • Wide Band 800-2500 MHz
- • Low Intermodulation Design

The AMA-1255 is our updated Coupler range and was specifically designed for Cellular Telecommunications and now also includes the New 3rd Generation frequency & WLAN bandwidth requirements. These couplers are designed for in-building network distribution applications.

NOTE: 3dB Couplers are also ideal for 200 Watt Splitter applications.

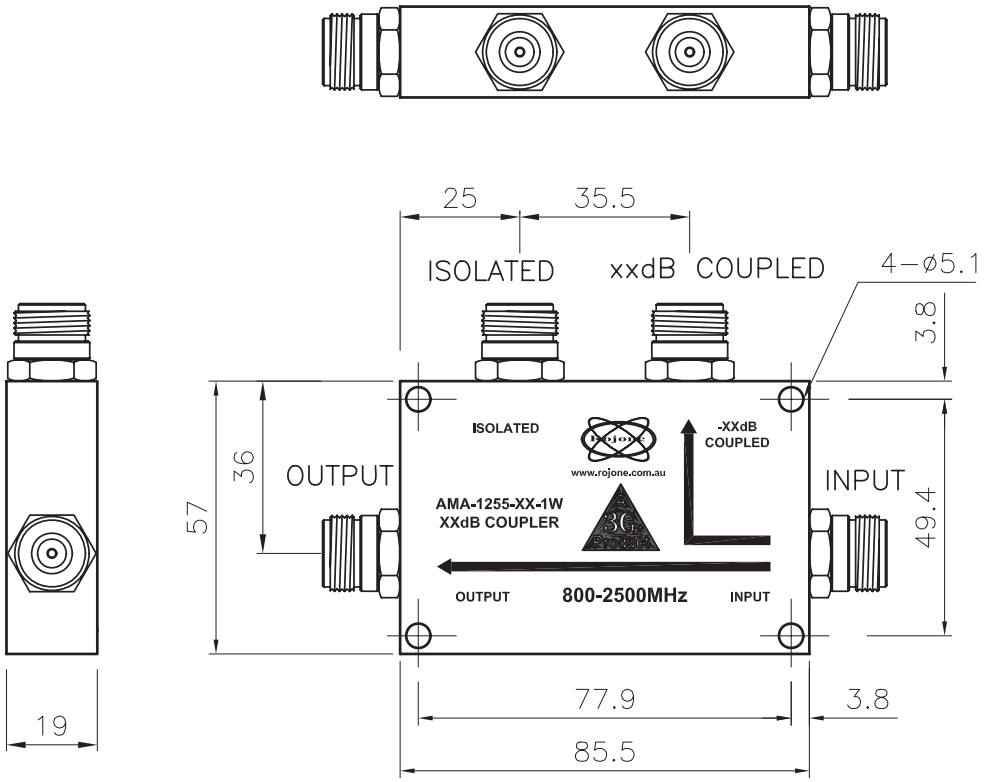
NOTE: 30dB couplers are non-directional with a flatness spec of ±1dB.

Specifications

Part Number	AMA-1255-XX-1W			
	XX = Coupling value required			
Coupling Value	3, 4, 8, 6, 7, 8, 10, 12, 13, 15, 17, 20 & 30dB	**Coupling**	**Ideal Thru Loss**	**Typical Thru Loss**
Frequency Range	800 to 2500 MHz	3dB	3.02dB	3.17dB
Directivity	> 20dB	4.8dB	1.75dB	1.90dB
Insertion Loss	< 0.25dB 0.15dB Typical	6dB	1.26dB	1.41dB
Return Loss	< -20dB All Ports	7dB	0.97dB	1.12dB
Isolation	> 20dB 40dB Typical	8dB	0.75dB	0.90dB
Coupling Flatness	± 0.5dB Typical	9dB	0.58dB	0.73dB
Impedance	50 Ohms	10dB	0.46dB	0.61dB
Connector Type	N Female (Low IM Plated)	12dB	0.28dB	0.43dB
Package Size	86 x 57 x 19mm	13dB	0.22dB	0.37dB
Weight	300g Max	15dB	0.14dB	0.29dB
		18dB	0.07dB	0.22dB
		20dB	0.04dB	0.19dB
		30dB	0.004dB	0.15dB

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

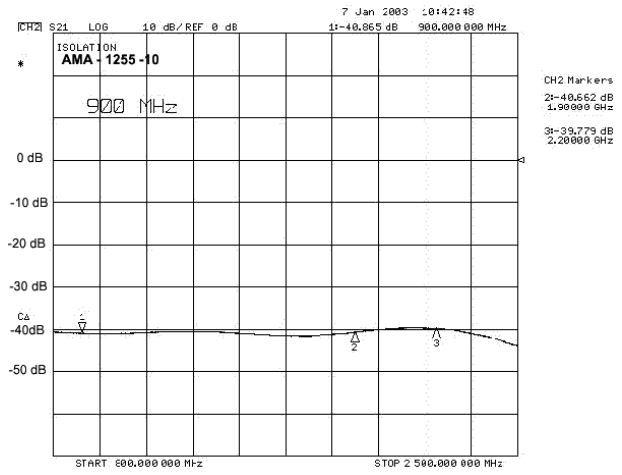
Mechanical Outline – AMA-1255-XX-1W



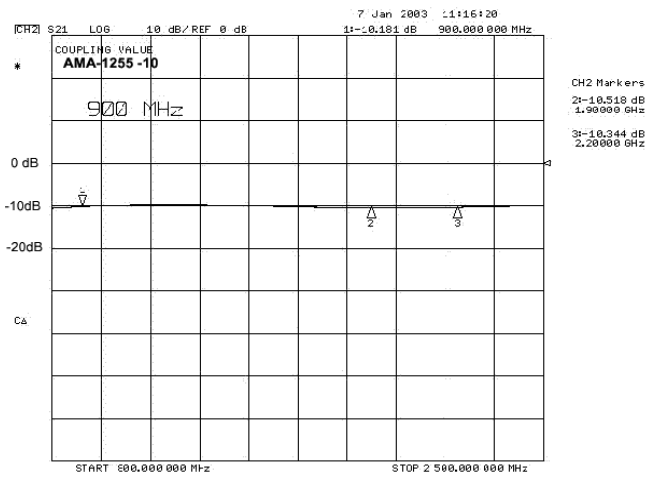
Typical Performance

More detailed performance information is available on our website – www.rojone.com.au.

Isolation Plot



Coupling Value Plot



NOTE: Couplers will pass DC between the Input and Output ports or between Coupled and Isolated Ports.

NOTE: 30dB couplers are non-directional with a flatness spec of ±1dB.

3 dB Hybrid Couplers

Features

- **High Power 200 Watts Average**
- **Wide Band 800-2500 MHz**
- **Low Intermodulation Design**

The AMA-1255-3HYB-N is designed for a number of practical in-building applications. Our 3dB Hybrid can be used as a decoupled splitter (for decoupled combining of two transmitters or two receivers with a narrow frequency spacing), for decoupled combining of two transmitters/receiver modules, whose integrated duplexers are within the same frequency range.

NOTE: 3dB Couplers are also ideal for 100 Watt Splitter applications.

NOTE: 30dB couplers are non-directional with a flatness spec of ± 1dB.

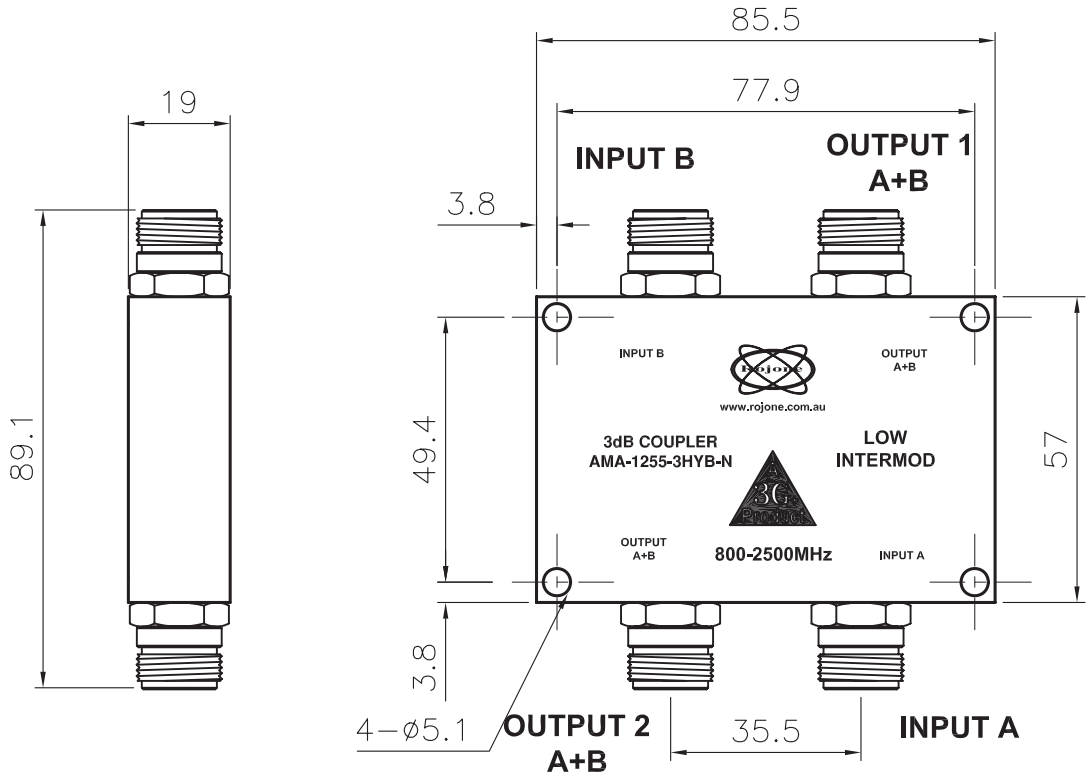
Specifications

Part Number	AMA-1255-3HYB-N	AMA-1255-3HYB-716 *7/16 Connectorised*
Coupling Value	3dB	3dB
Frequency Range	800 to 2500 MHz	800-2200MHz
Directivity	20dB Min	20dB Min
Insertion Loss	< 0.15dB	< 0.1dB
Dissipative Loss	< 0.25dB	< 0.15dB
Return Loss	-20dB	- 20dB
Isolation	> 20dB, 40dB Typical	> 30dB
Max Power	100 Watts	200 Watts
Impedance	50 Ohms	50 Ohms
Connector Type	N Female (Low IM)	N Female (Low IM)
Package Size	Fig 1 Drawing	Fig 2 Drawing
Weight	300g	Max 800g Max

NOTE: Couplers will pass DC between the IP & OP ports or between Coupled & Isolated Ports.

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

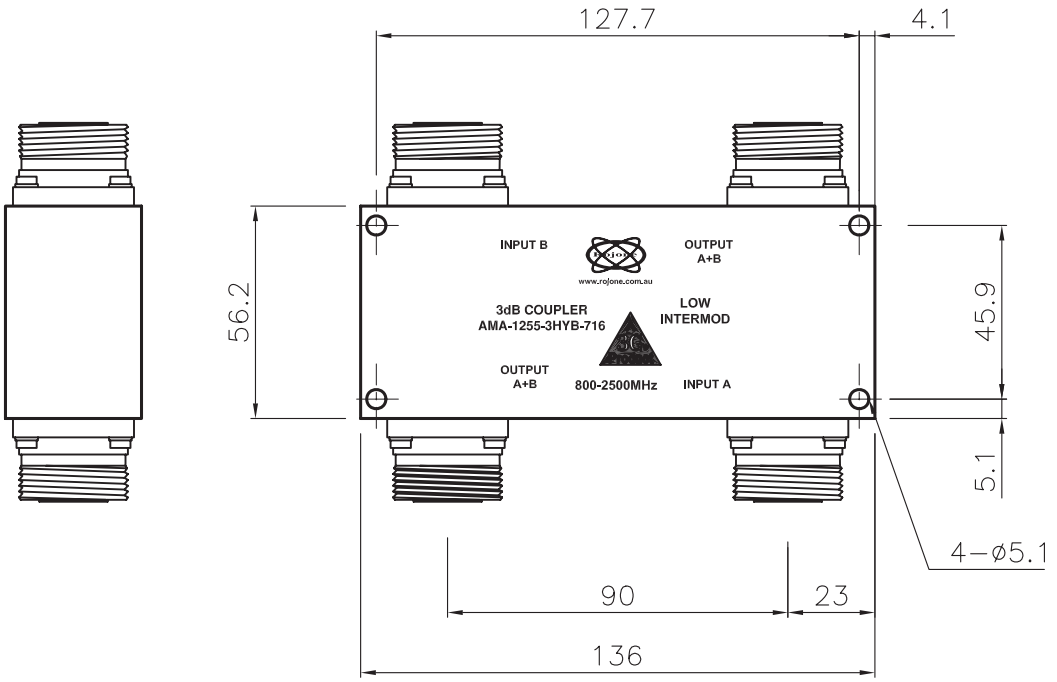
Mechanical Outline – N-Connectorised Hybrid Coupler



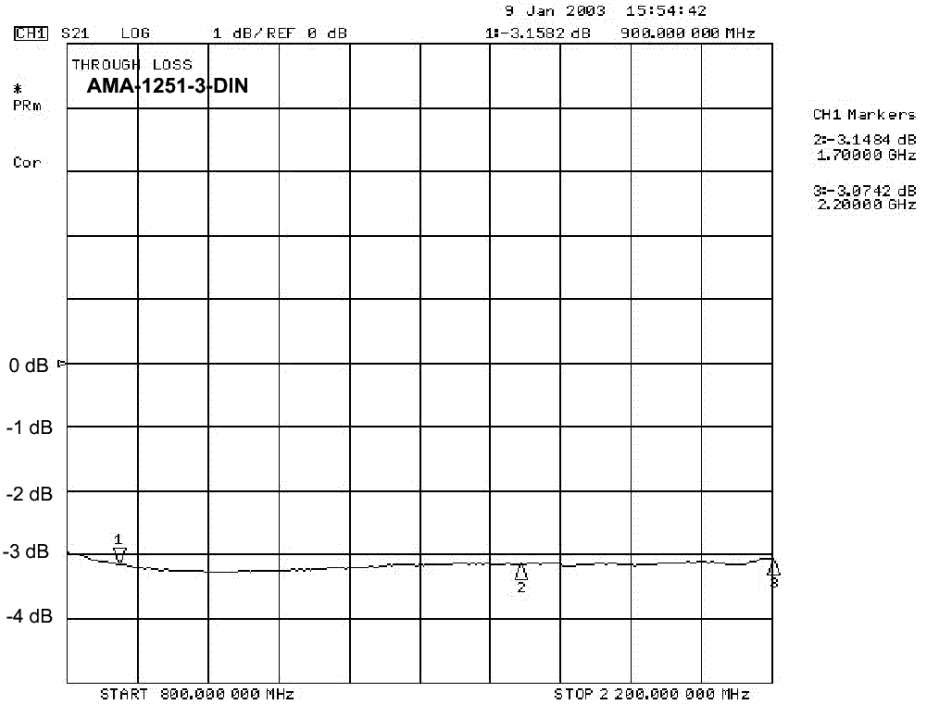
Typical Performance – Through Loss Plot

NOTE: 30dB couplers are non-directional with a flatness spec of +/- 1dB

Mechanical Outline – 7/16-Connectorised Hybrid Coupler



Typical Performance – Through Loss Plot

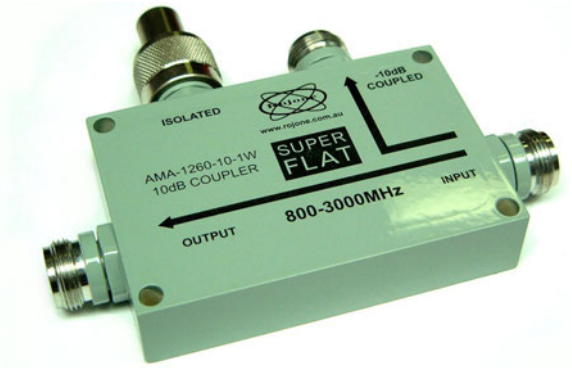


ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

800-3000 MHz Super Flat Wideband Directional Couplers

Features

- **Super Flat Coupling**
- **Super Wide Band 800-3000 MHz**
- **High Power 200 Watts Average**
- **Low Intermodulation Design**

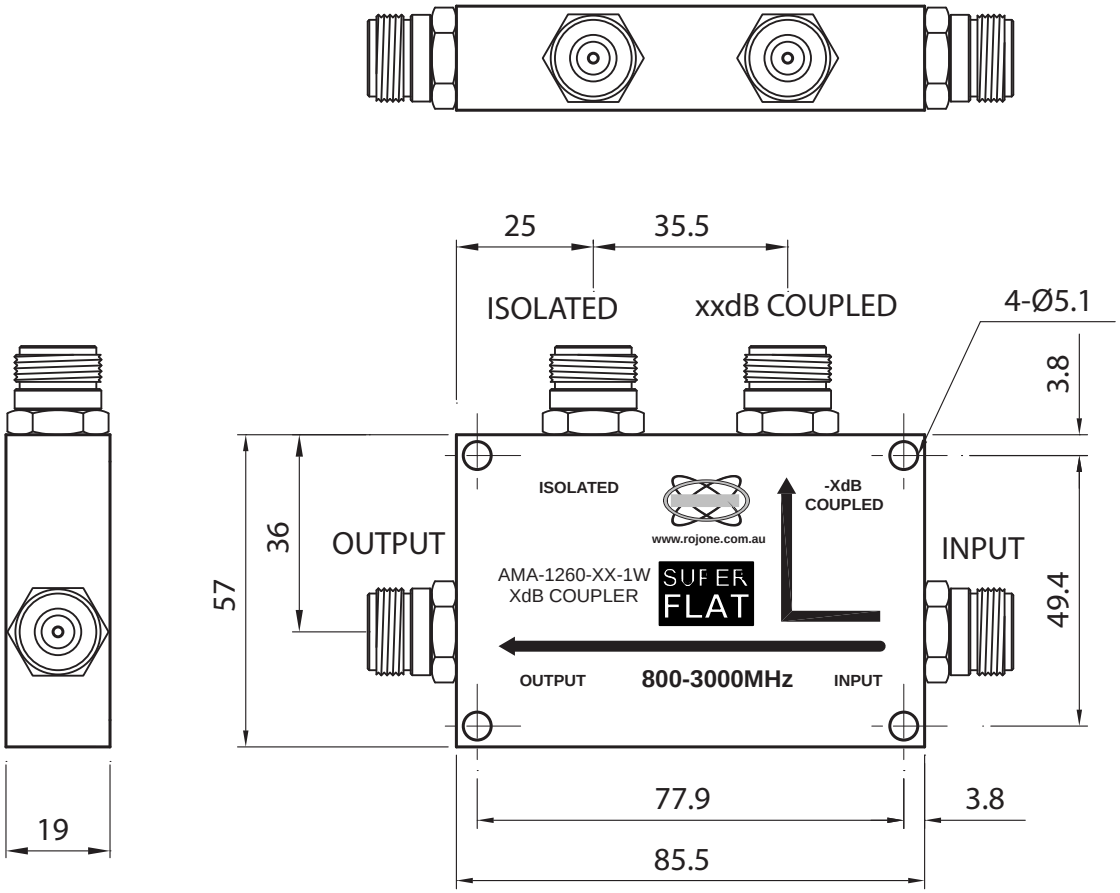


The AMA-1260 is our super wideband, super flat range of couplers designed specifically for broadband in-building Cellular Telecommunications, 3rd Generation & WLAN distribution.

Specifications

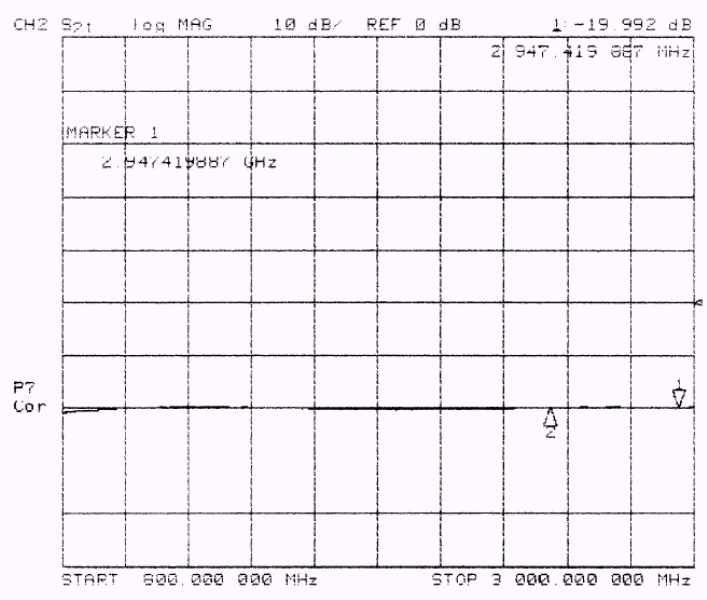
Part Number	AMA-1260-XX-1W XX = Coupling value required			
Coupling Value	3, 6, 8, 10, 13, 15dB	**Coupling**	**Ideal Thru Loss**	**Typical Thru Loss**
Frequency Range	800 to 3000 MHz	3dB	3.02dB	3.17dB
Directivity	> 20dB	4.8dB	1.75dB	1.90dB
Insertion Loss	< 0.25dB 0.15dB Typical	6dB	1.26dB	1.41dB
Return Loss	< -20dB All Ports	7dB	0.97dB	1.12dB
Isolation	> 20dB 40dB Typical	8dB	0.75dB	0.90dB
Coupling Flatness	± 0.5dB Typical	9dB	0.58dB	0.73dB
Impedance	50 Ohms	10dB	0.46dB	0.61dB
IM	<-140 dBc @ 430 dBm x 2	12dB	0.28dB	0.43dB
RF Input Power	200 Watts	13dB	0.22dB	0.37dB
Connector Type	N Female (Low IM Plated)	15dB	0.14dB	0.29dB
Package Size	86 x 57 x 19mm			
Weight	300g Max			

Mechanical Outline – AMA-1260-XX-1W



Environmental versions are also Available - add “E” to Part Number suffix to specify waterproof, brass housing for outdoor applications.
EG: AMA-1260-10-1W-E
Note: Environmental couplers weigh 550g.

Coupling Flatness Plot
Typical plots for 20dB
Coupler 800-3000 MHz



ROJONE Pty. Limited 44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA
TEL +61 02 9829 1555 **FAX** +61 02 9605 8812 **EMAIL** sales@rojone.com.au **www.rojone.com.au**

800-1000 & 1710-2200 MHz Crossband Coupler

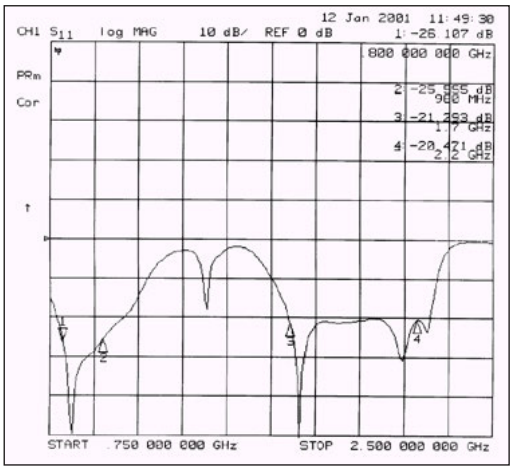
Features

- **High Isolation**
- **Low Loss Diplexer**
- **Medium & High Power Versions**
- **Low Intermodulation design inc N Female connector**

The AMA-4251-N & AMA-4251-N-HP are compact, stripline, Crossband Couplers typically used to diplex 800-900 MHz AMPS / USDC and GSM with 1800 MHz systems, such as PCS / DCS 1800, PCS & 3G Networks, providing an effective solution to coupling the above bands to one feedline.

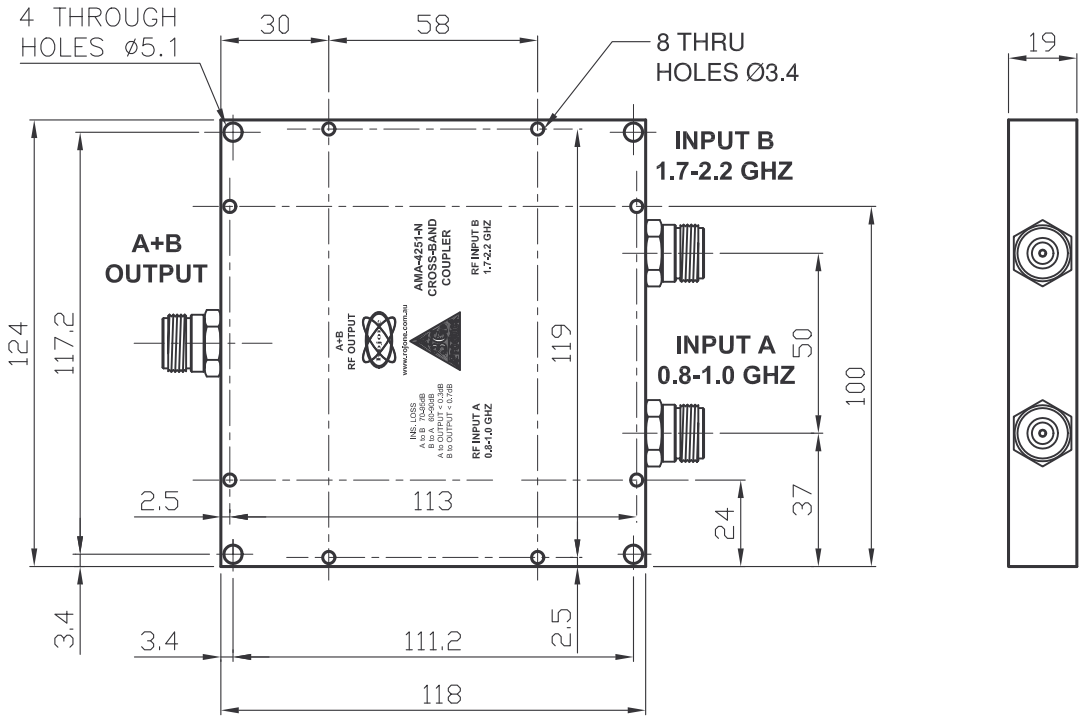
Specifications

Part Number	AMA-4251-N Medium Power	AMA-4251-N-HP High Power
Description	Xband Coupler / Diplexer	Xband Coupler / Diplexer
Frequency Range	800-1000 MHz (Low Band) 1710-2200 MHz (High Band)	800-1000 MHz (LB) 1710-2200 MHz (HB)
Thru Loss	<0.3dB (Low Band) <0.7dB (High Band)	<0.3dB (LB) <0.7dB (HB)
Return Loss	-15dB Max all ports	-15dB Max all ports
Isolation	70-95dB Low Band to High Band 60-90dB High Band to Low Band	70-95dB LB to HB 60-90dB HB to LB
Input Power	10 Watts CW per port	50 Watts CW per port
Impedance	50 Ohms	50 Ohms
Connector Type	N Female (Low IM Plated)	N Female (Low IM)
Temp Range	-30 to +60 °C	-30 to +60 °C
Package Size	124 x 118 x 19mm + Connectors	265 x 120 x 65mm Inc Mtg

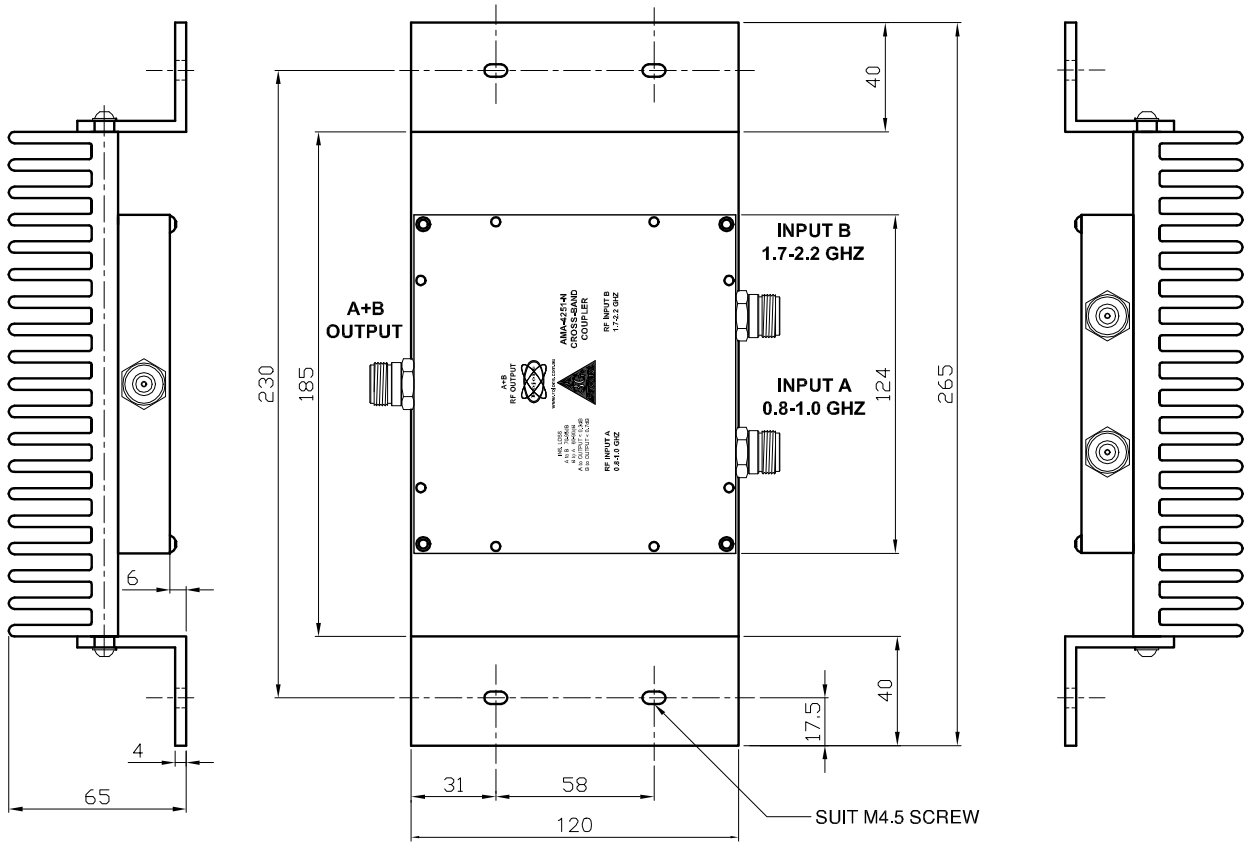


Return Loss Plots showing >20dB Return Loss in both bands

Mechanical Outline – Medium Power Coupler/Diplexer



Mechanical Outline – High Power Xband Coupler/Diplexer



ROJONE Pty. Limited 44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA
TEL +61 02 9829 1555 **FAX** +61 02 9605 8812 **EMAIL** sales@rojone.com.au **www.rojone.com.au**

800-2200 & 2400-2700MHz Xband Coupler/Divider

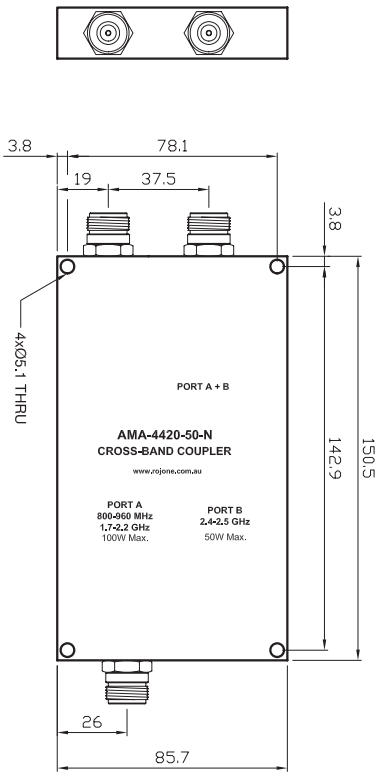
Features

- **High Isolation**
- **Low Loss Crossband Coupler/Diplexer/Combiner**
- **Ideal for Cellular & WLAN Applications**

The New AMA-4420-50-N compact, stripline, Crossband Coupler is typically used to diplex 800-2200 MHz AMPS / USDC, GSM, PCS / DCS 1800, PCS & 3G with Wireless LAN Applications, providing an effective solution to coupling the above bands to one feedline.

Specifications

Part Number	AMA-4420-50-N
Description	Xband Coupler / Diplexer
PORT A	
Frequency	800-1000/1700-2200 MHz
Isolation to port B	50-70dB
Power	100W Max
Return loss	<-15dB
Thru loss	<0.3dB for 800-1000MHz < 1.5dB for 1700 – 2200MHz
PORT B	
Frequency	2400-2700 MHz
Isolation to port A	50-90dB
Power	50W Max
Return loss	<-15dB
Thru loss	<1.7dB
Port A + B Rtn Loss	<-15dB
Operation Temp	-40°C to +65°C
Size	151 x 86 x 19mm
RF Connectors	N-Female 50 Ohm
Weight	800g Max



2 Way Power Divider

FEATURES

- **Power 100 & 200 Watt**
- **Wide Band 800-2500 MHz**
- **Low Intermodulation**
- **Excellent Phase & Amplitude Balance**

Rojone's AMA-225X-2N range of 2 Way power dividers are specifically designed for the Cellular Telecommunications market and now also includes 3rd Generation implementation & WLAN. These products are particularly suitable for in-building network distribution, while an environmental (brass construction) range is also available for outdoor applications.

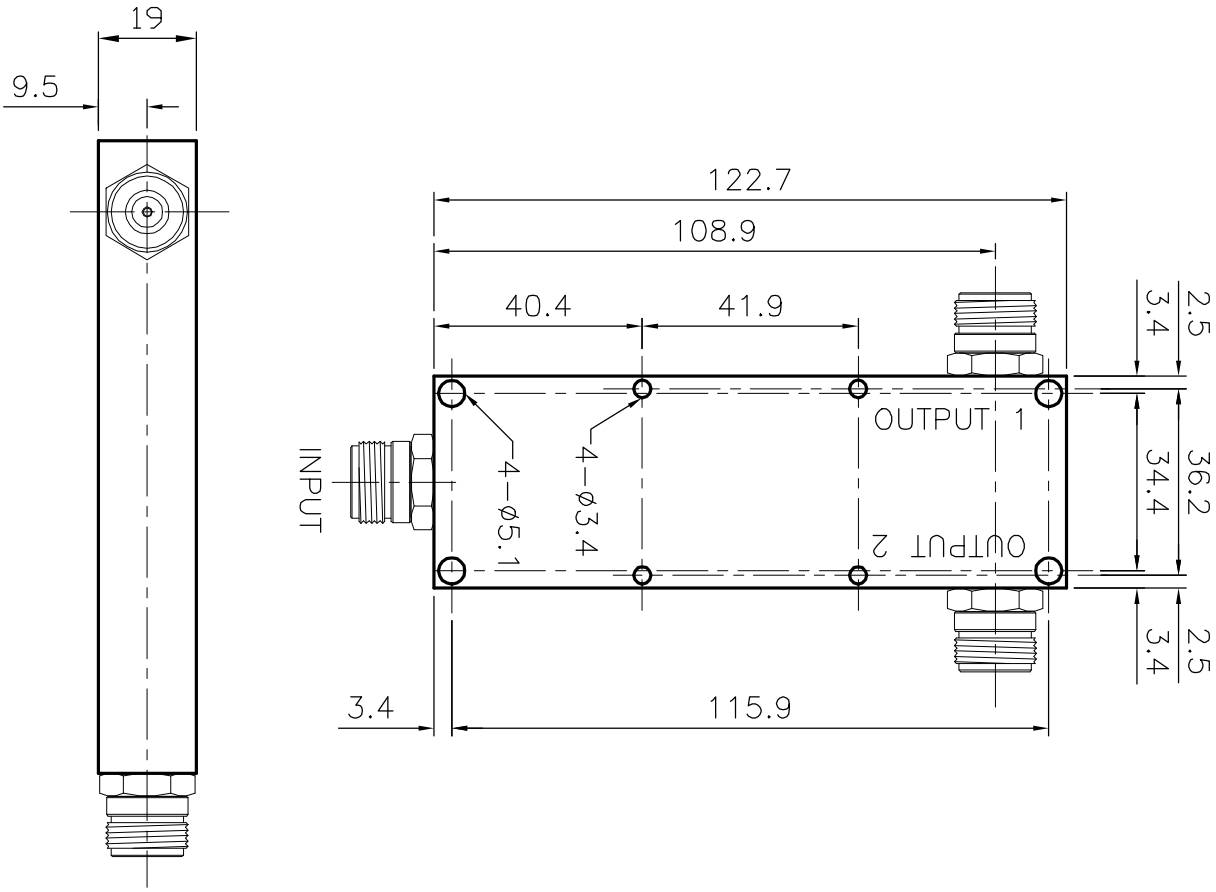
SPECIFICATIONS

Part Number	AMA-2255-2N	AMA-2255-2N-HP
Frequency	800-2500 MHz	800-2500 MHz
Isolation	> 20dB	> 20dB
Insertion Loss	< 0.2dB @ 900 MHz	< 0.2dB @ 900 MHz
@ VSWR < 1.15	< 0.3dB @ 1.9 GHz < 0.4dB @ 2.5 GHz	< 0.3dB @ 1.9 GHz < 0.4dB @ 2.5 GHz
Amplitude Balance	< ± 0.1dB	< ± 0.1dB
Phase Balance	< ± 1, 0.1 Typical	< ± 1, 0.1 Typical
VSWR/Return Loss	1.22:1 Max / -20dB	1.22:1 Max / -20dB
Max Power	100 Watts @ RL < -20dB	200 Watts @ RL < -20dB
Connector Type	N Female	N Female
Impedance	50 Ohms	50 Ohms
Operating Temp	- 30° to + 60°C	- 30° to + 60°C
Package Size	123 x 41 x 19mm	200 x 164 x 65mm + connectors
Weight	Alum 260g / Brass	510g Alum 3.1 KG

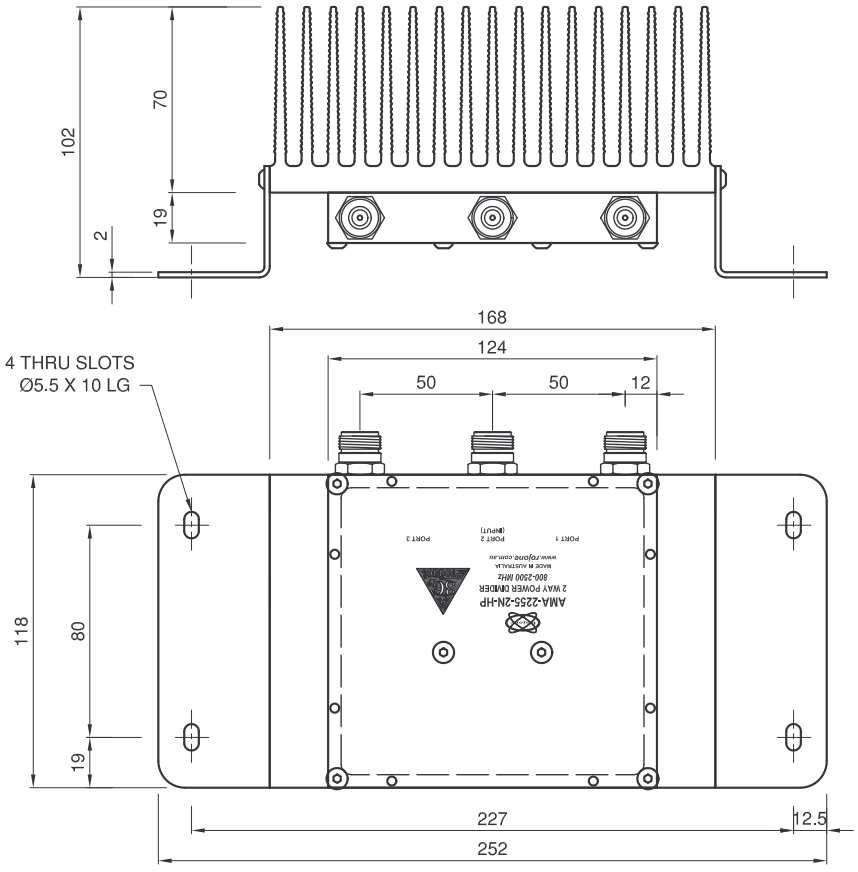
All our dividers will pass DC current unless a DC block is specifically requested. For high power CW application, please see Engineering notes.

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Mechanical Outline – 100 Watt 2 Way Divider



Mechanical Outline – High Power 200 Watt 2 Way Divider

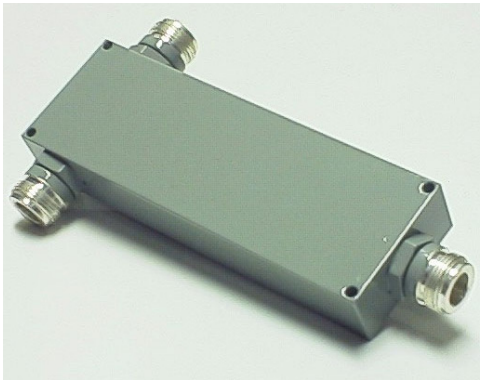


Power Handling – This device has been designed as a power divider. When used as a divider, its power handling capability is 200 Watts maximum input power. If a combiner is required, please see our AMA-072 range of combiners.

UHF 2 Way Power Divider

FEATURES

- **100 Watts Average**
- **Flat Response**
- **N Female Connectorised**



The AMA-2100 2 Way Dividers are specifically designed for UHF 380-520 MHz in-building distribution of paging and two way networks signals.

SPECIFICATIONS

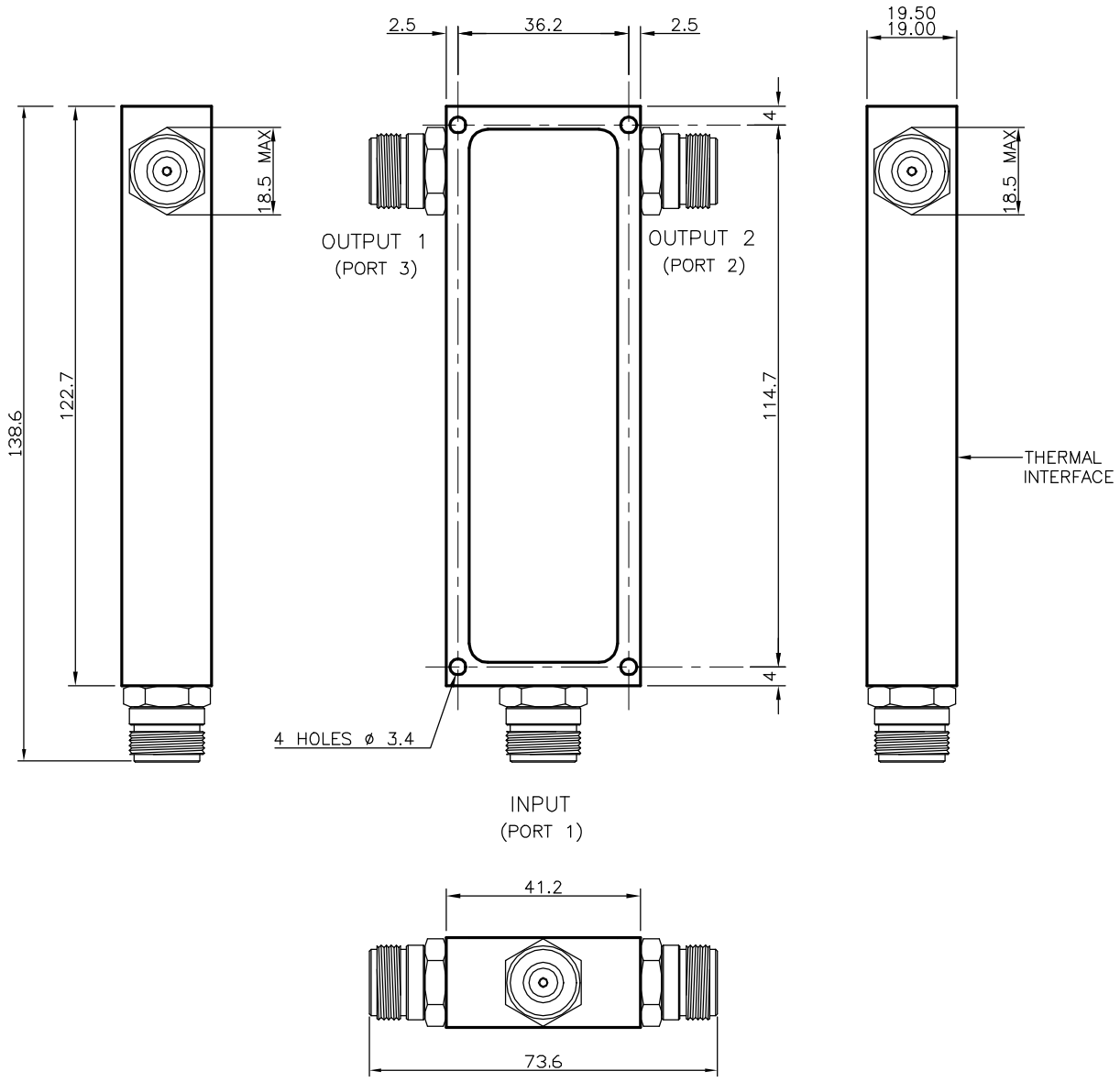
Part Number	AMA-2100-2N	AMA-2100-2N-HP
Power	100 Watts	200 Watts
Frequency Range	380 to 520 MHz	380 to 520 MHz
Number of Ports	2 Ports	2 Ports
Isolation	20 dB minimum	20 dB minimum
Insertion Loss	0.5 dB typical	0.5 dB typical
Amplitude Balance	< 0.2 dB	< 0.2 dB
Phase Balance	< 2°	< 2°
VSWR	1.22 : 1 maximum	1.22 : 1 maximum
Impedance	50 Ohms	50 Ohms
Temperature Range	0°C to +60°C	0°C to +60°C
Peak Power	3KW @ 1% Duty Cycles	3KW @ 1% Duty Cycles
Finish	Storm Grey Polyurethane	Storm Grey Polyurethane
Connector Type	N Female	N Female
Package Size	121 x 40 x 19 mm	121 x 40 x 19 mm
Weight	Alum. 270g or Brass 520g	Alum. 270g or Brass 520g

NOTE: Over tightening the connectors may damage the connector.
To stripline transition internally, please take care.

Recommended coupling torque force for N connector 40 to 60 Ncm.

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Mechanical Outline



3 Way Power Divider

Features

- **Power 100 Watts**
- **Wide Band 800-2500 MHz**
- **Low Intermodulation**

Rojone's AMA-225X-3N range of 3 Way power dividers are specifically designed for the Cellular Telecommunications market and now also includes 3rd Generation implementation & WLAN. These products are particularly suitable for in-building network distribution, while an environmental (brass construction) range is also available for outdoor applications.

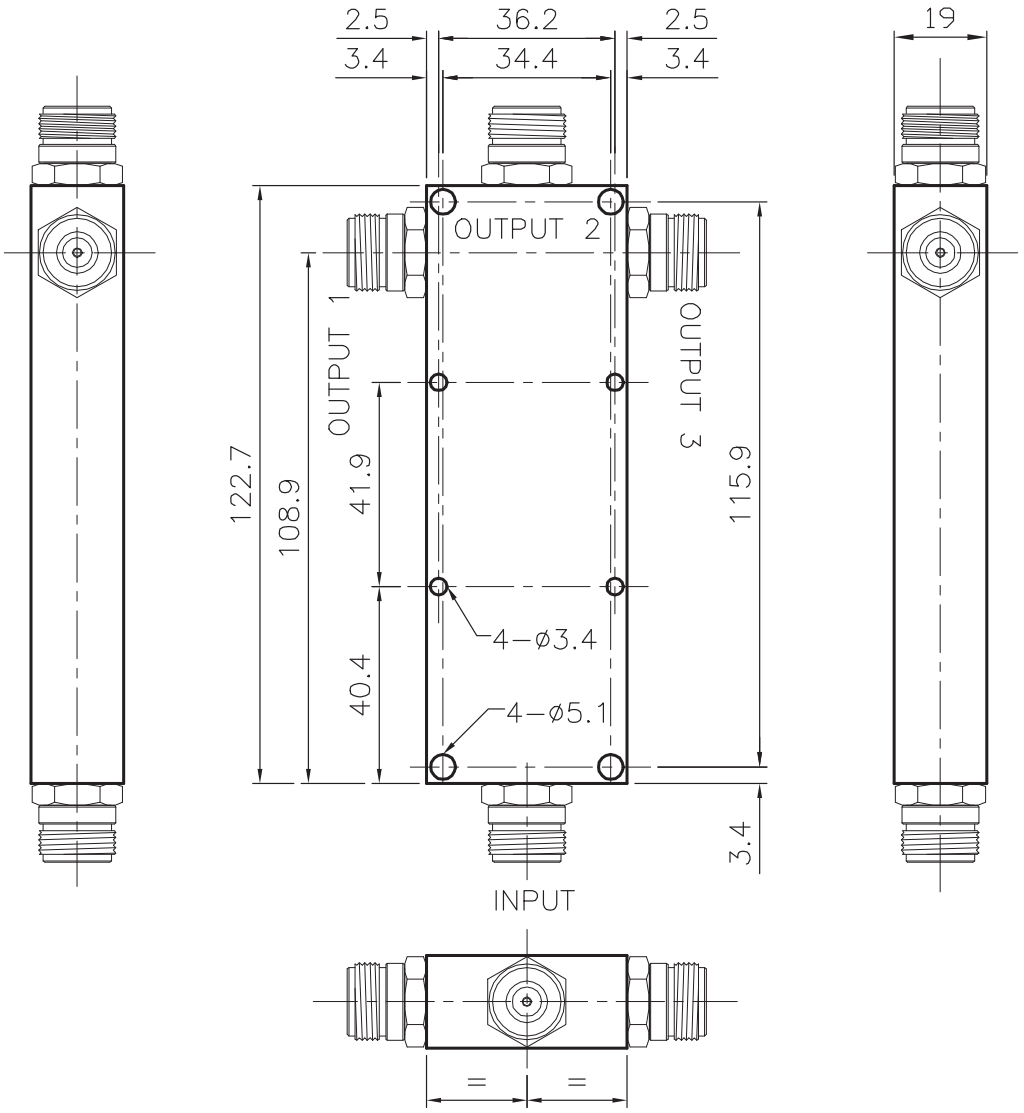
Specifications

PART NUMBER	AMA-2255-3N
Frequency	800-2500 MHz
Isolation	> 20dB
Insertion Loss	< 0.2dB @ 900 MHz
@ VSWR	< 1.15 < 0.4dB @ 1.9 GHz < 0.5dB @ 2.5 GHz
Amplitude Balance	< ± 0.1dB
Phase Balance	< ± 1.5 Degrees
VSWR/Return Loss	1.22:1 Max / -20dB
Max Input Power	100 Watts @ output RL < - 20dB*
Connector Type	N Female
Impedance	50 Ohm
Op Temp	- 30° to + 60°C
Package Size	123 x 41 x 19mm + Conn
Weight	Alum. 280g / Brass 530g

* All our dividers will pass DC current unless a DC block is specifically requested.
For high power CW applications, please see Engineering notes.

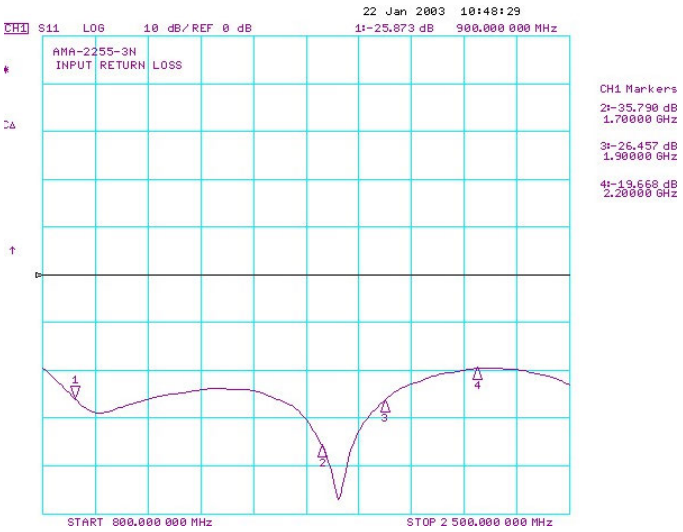
ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Mechanical Outline



TYPICAL PERFORMANCE PLOT
Input Return Loss

More performance plots are available on our website - www.rojone.com.au



UHF 3 Way Power Divider

Features

- **100 Watts Average**
- **Flat Response**
- **N Female Connectorised**

Rojone's AMA-225X-3N range of 3 Way power dividers are specifically designed for the Cellular Telecommunications market which includes 3rd Generation implementation & WLAN.

These products are particularly suitable for in-building network distribution, while an environmental (brass construction) range is also available for outdoor applications.

Specifications

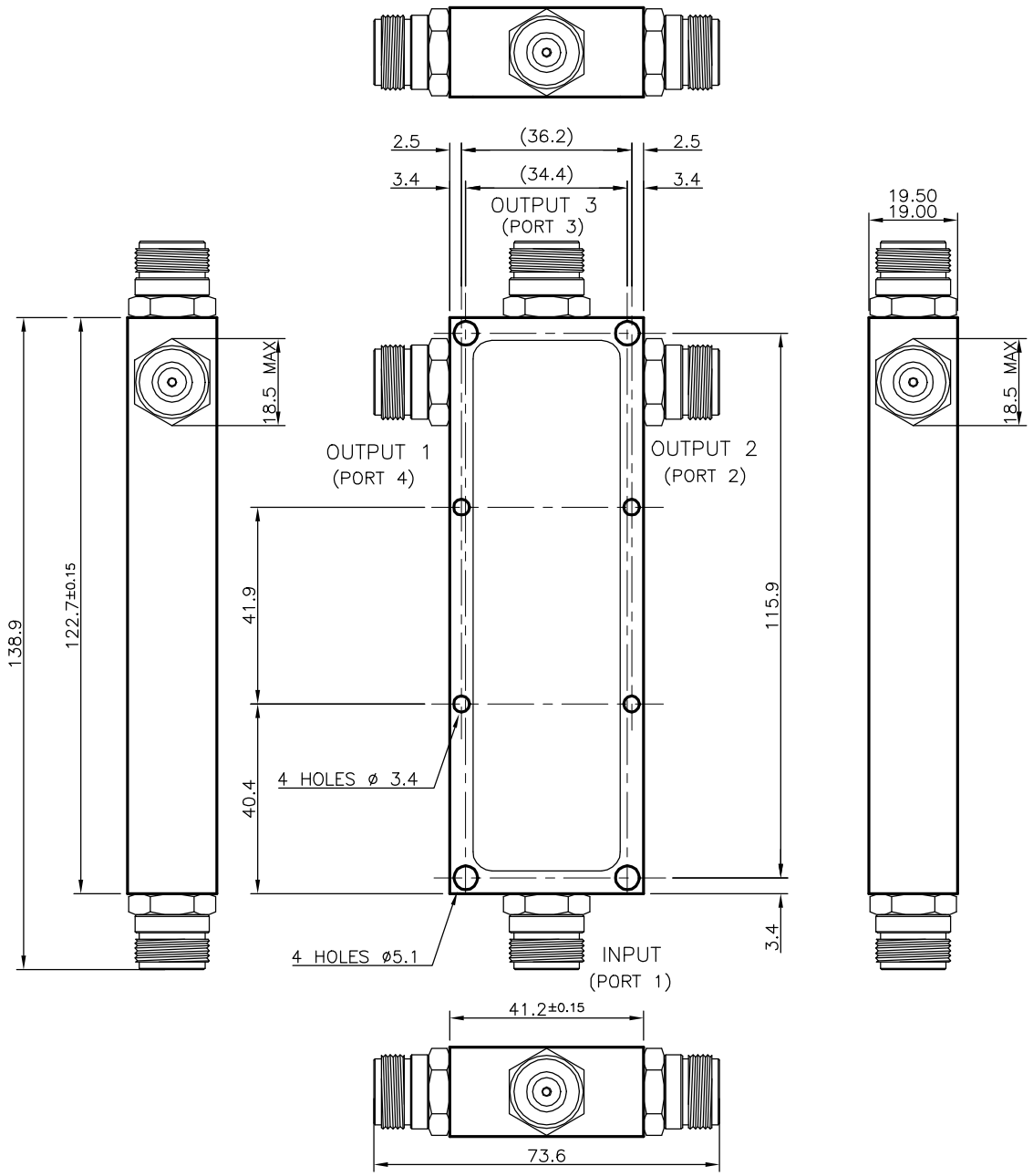
PART NUMBER	AMA-2100-3N
Frequency	380 to 520 MHz
Number of Ports	3 Ports
Isolation	20 dB minimum
Insertion Loss	0.5 dB typical
Amplitude Balance	< 0.2dB
Phase Balance	< 2°
VSWR	1.22:1 maximum
Impedance	50 Ohms
Connector Type	N Female
Temperature Range	0° to +60°C
Operating Temperature	- 30° to + 64°C
Peak Power	3KW @ 1% duty cycles
Finish	Storm Grey Polyurethane
Weight	Alum. 280g / Brass 530g

NOTE: Over tightening the connectors may damage the connector. To stripline transition internally, please take care.

Recommended coupling torque force for N connector 40 to 60 Ncm

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Mechanical Outline



4 Way Power Divider

Features

- **Wide Band 800-2500 MHz**
- **Power 100 & 200 Watts**
- **Low Intermodulation N Female Connectorised**

Rojone's AMA-225X-4N range of 4 Way power dividers are specifically designed for the Cellular Telecommunications market and now also includes 3rd Generation implementation & WLAN. These products are particularly suitable for in-building network distribution, while an environmental (brass construction) range is also available for outdoor applications.

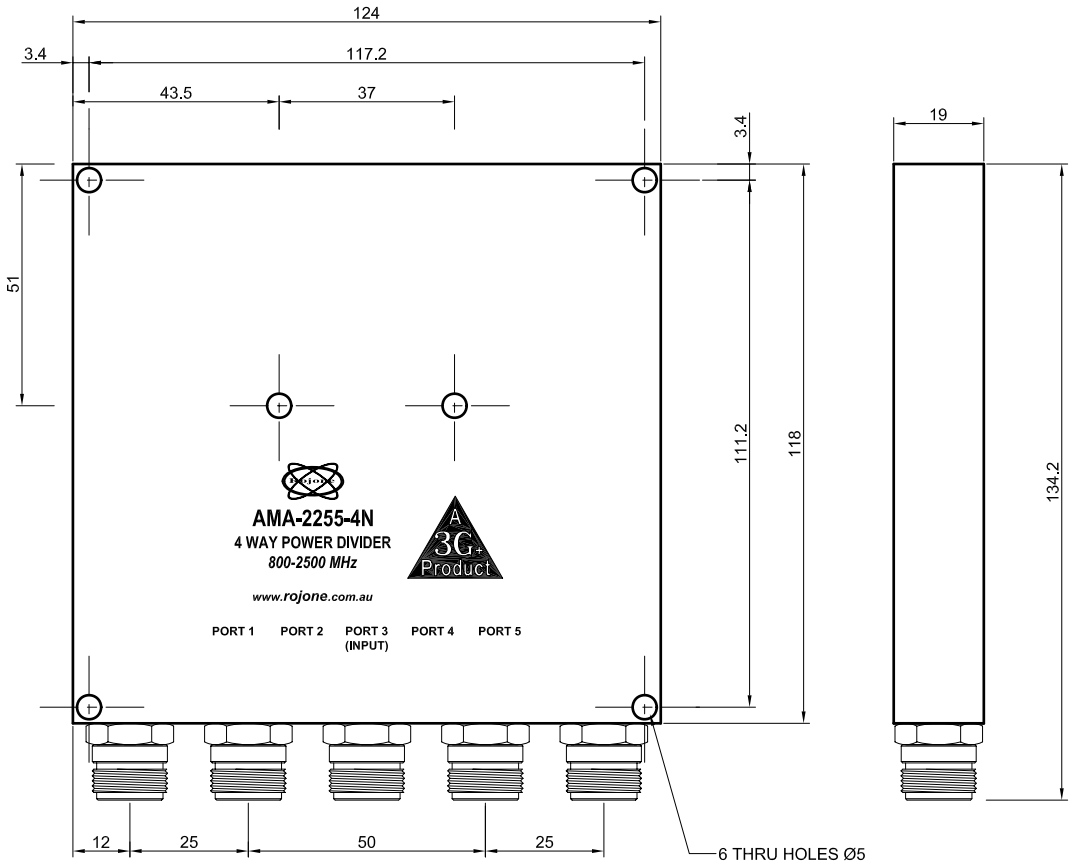
Specifications

Part Number	AMA-2255-4N	AMA-2255-4N-HP
Frequency	800-2500 MHz	800-2500 MHz
Number of Ports	4 Port	4 Port
Isolation	> 20dB	> 20dB
Dissipative/Insertion Loss	< 0.5dB @ 20dB RL	< 0.5dB @ 20dB RL
Amplitude Balance	< ± 0.2dB	< ± 0.2dB
Phase Balance	< ± 5 Degrees	< ± 5 Degrees
VSWR/Return Loss	1.22:1 Max / -20dB	1.22:1 Max / -20dB
Average Power	100 Watts CW @20dB RL	200 Watts CW @20dB RL
Impedance	50 Ohms	50 Ohms
Connector Type	N Female	N Female
Package Size	76 x 118 x 19mm	200 x 1646 x 65mm + Conn
Weight	Alum 650g / Brass 1.3Kg	Alum 3.4Kg Max

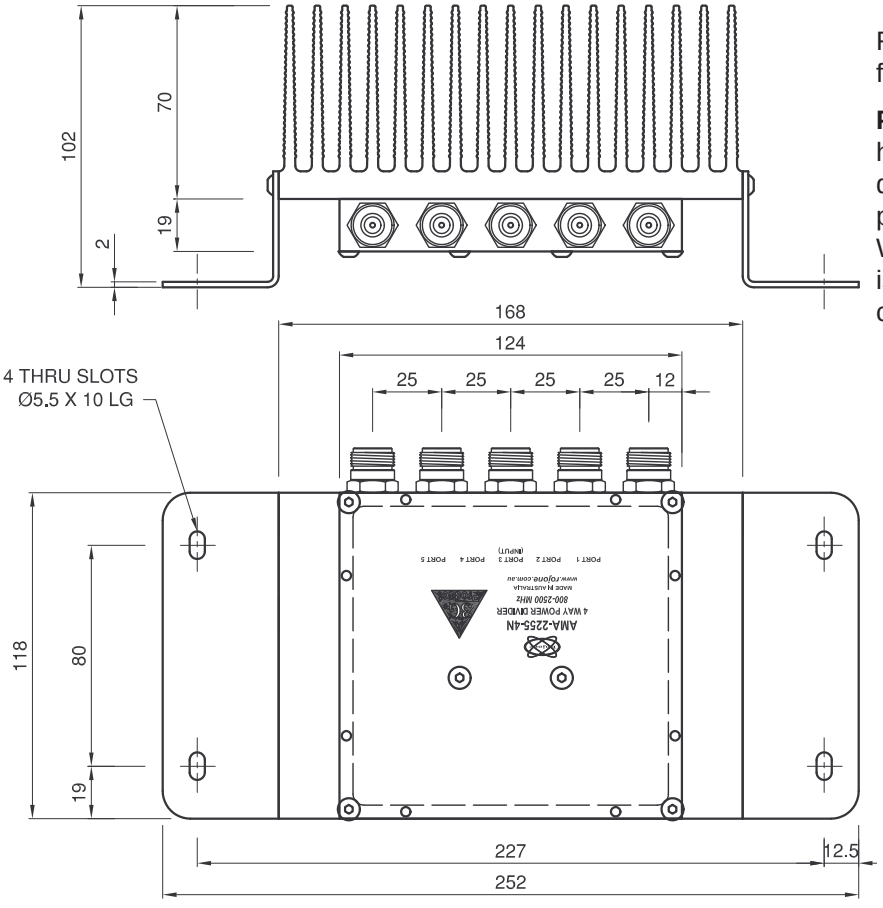
All our dividers will pass DC current unless a DC block is specifically requested.
For high power CW application, please see Engineering notes.

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Mechanical Outline – 4 Way Divider



Mechanical Outline – High Power Divider



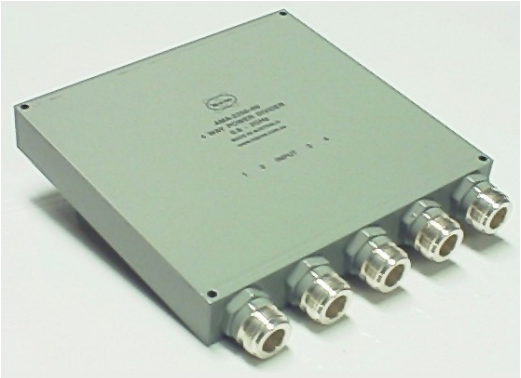
Recommended coupling torque force for N connector 40 to 60 Ncm.

Power Handling Note: This device has been designed as a power divider. When used as a divider, its power handling capability is 10 Watts. When used as a combiner, this unit is only suitable for 1 Watt for non-coherent signals.

UHF 4 Way Power Divider

FEATURES

- **50 Watts Average**
- **Flat Response**
- **N Female Connectorised**



The AMA-2100 4 Way Dividers are specifically designed for UHF 400-520 MHz in-building distribution of paging and two way networks signals.

Specifications

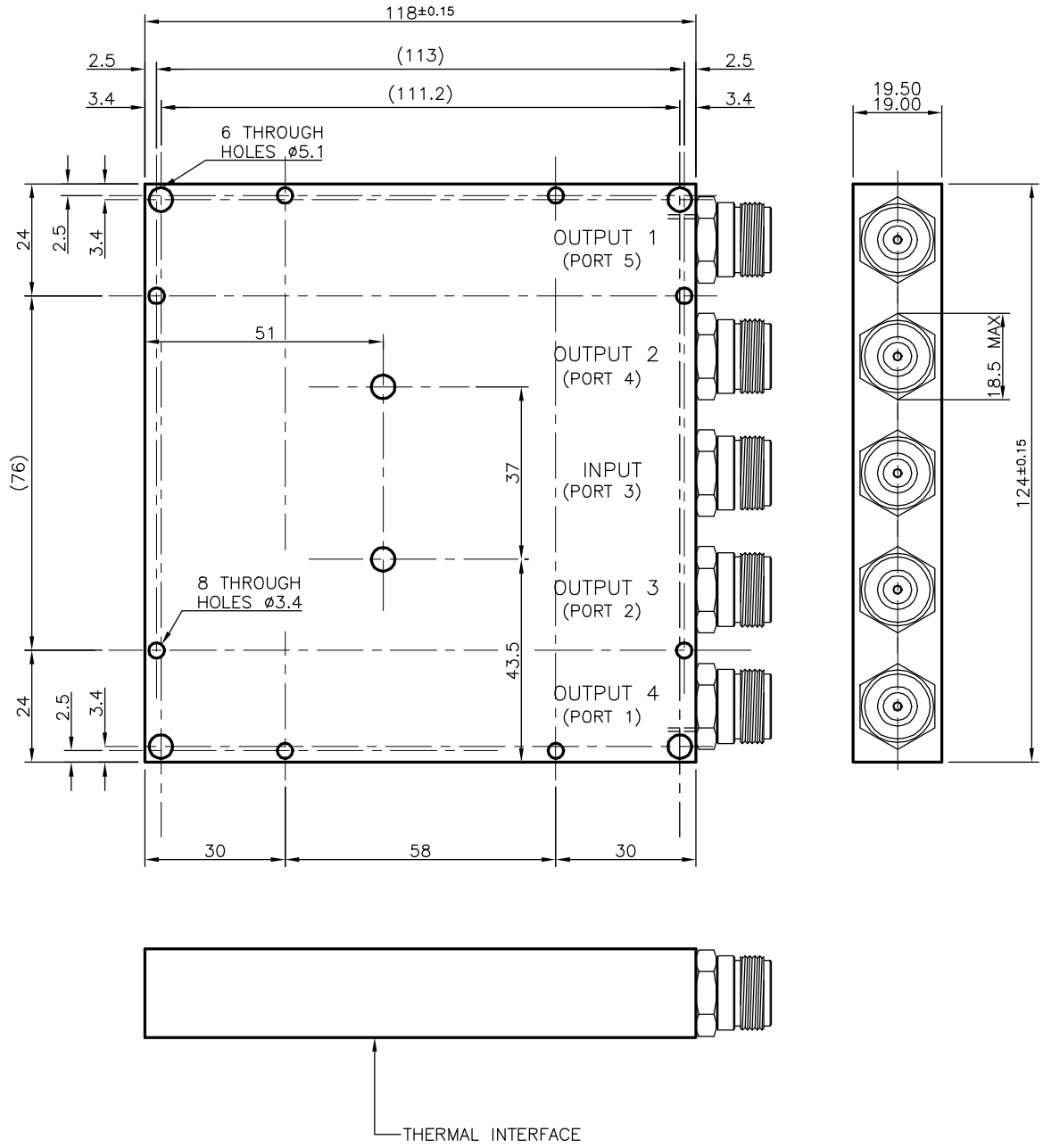
Part Number	AMA-2100-4N	AMA-2100-4N-HP
Power	50 Watts	200 Watts
Frequency Range	380 to 520 MHz	
Number of Ports	4 Port	
Isolation	20dB Minimum	
Insertion Loss	0.5dB Typical	
Amplitude Balance	< 0.2dB	
Phase Balance	< 2 Degrees	
VSWR	1.22:1 Max	
Impedance	50 Ohms	
Temperature Range	0°C to +60°C	
Peak Power	3KW @ 1% Duty Cycles	
Finish	Storm Grey	
Connector Type	N Female	
Package Size	125 x 118 x 19 mm	

NOTE: Over tightening the connectors may damage the connector.
To stripline transition internally, please take care.

Recommended coupling torque force for N connector 40 to 60 Ncm.

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Mechanical Outline Drawing



8 Way Power Divider

FEATURES

- **100 & 200 Watts Average**
- **Wide Band 800-2200 MHz**
- **Low Intermodulation Design**

Rojone's AMA-2251-8N range of 8 Way power dividers are specifically designed for the Cellular Telecommunications market. This product is particularly suitable for in-building network distribution, while an environmental (brass construction) range is also available for outdoor applications.

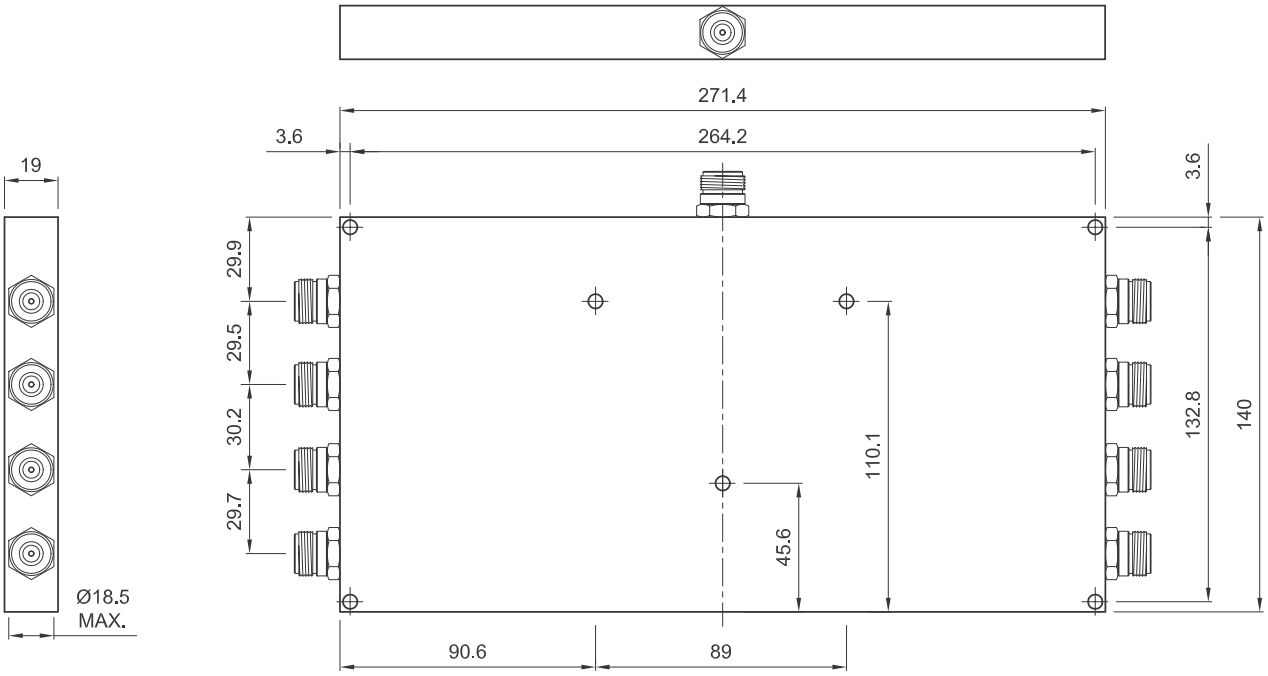
SPECIFICATIONS

Part Number	AMA-2251-8N	AMA-2251-8N-HP
Frequency	800 to 2200 MHz	800 to 2200 MHz
Number of Ports	8 Port	8 Port
Isolation	> 20dB	> 20dB
Dissipative/Insertion Loss (@ VSWR < 1:1.2)	1.5dB / 10.5dB	1.5dB / 10.5dB
Amplitude Balance	< ± 0.5dB	< ± 0.5dB
Phase Balance	< ± 10 Degrees	< ± 10 Degrees
VSWR/Return Loss	1.35:1 Max / -17dB	1.35:1 Max / -17dB
Max RF Power	100 Watts CW	200 Watts CW
Max. Output Mismatch	VSWR 1:2	VSWR ≤ 1:2 @ 200W
Impedance	50 Ohms	50 Ohms
Connector Type	N Female	N Female
Package Size	200 x 134 x 19mm	200 x 164 x 112mm
Weight (Alum)	1.2 Kg Max	3.6 Kg Max
Fan Voltage	Not Applicable	Please specify 24,48,110VDC

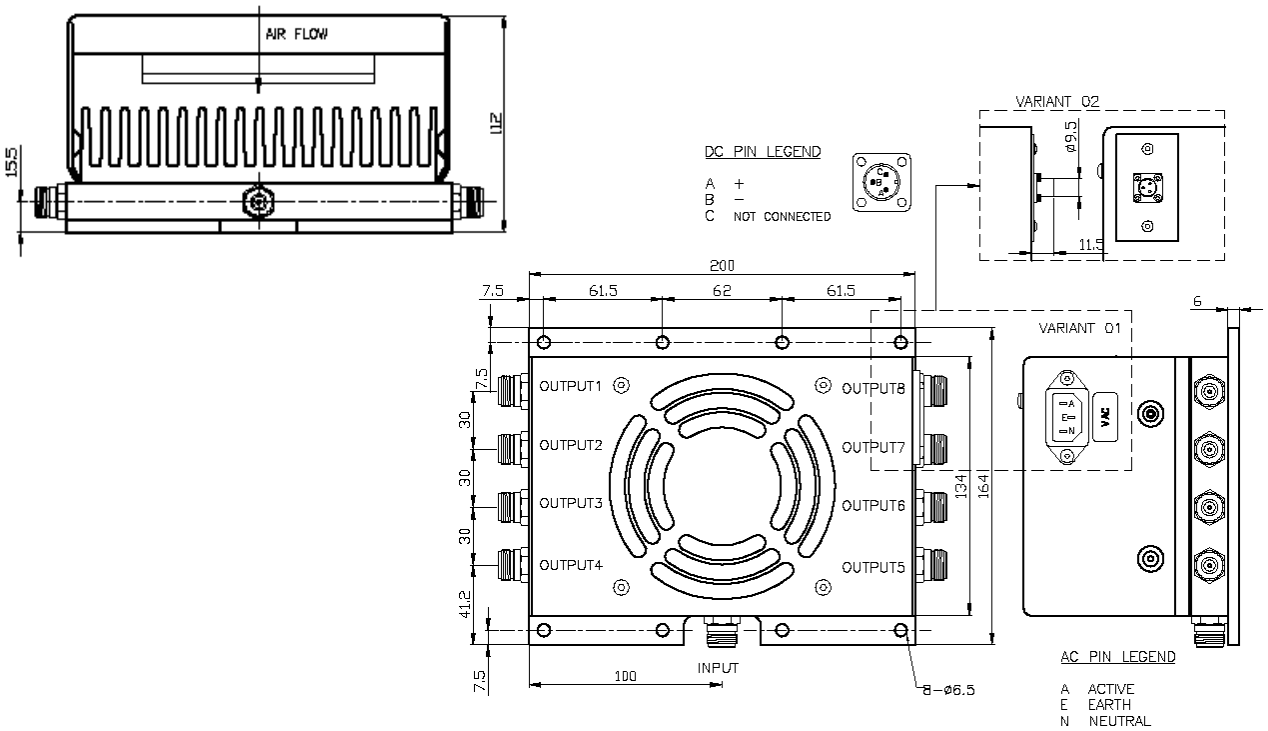
All our dividers will pass DC current unless a DC block is specifically requested.
For high power CW application, please see Engineering notes.

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Mechanical Outline – 8 Way Divider



Mechanical Outline – High Power 8 Way Divider

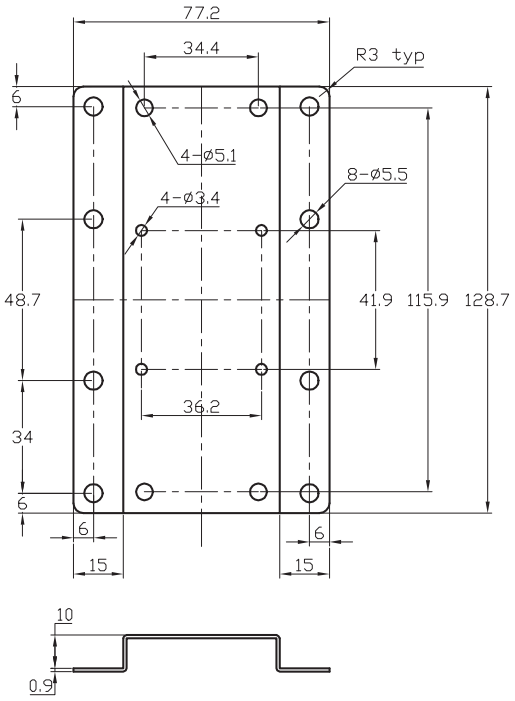


MOUNTING BRACKETS

Part Number: AMA-2-BKT

2 & 3 Way Splitters Mounting Hardware:

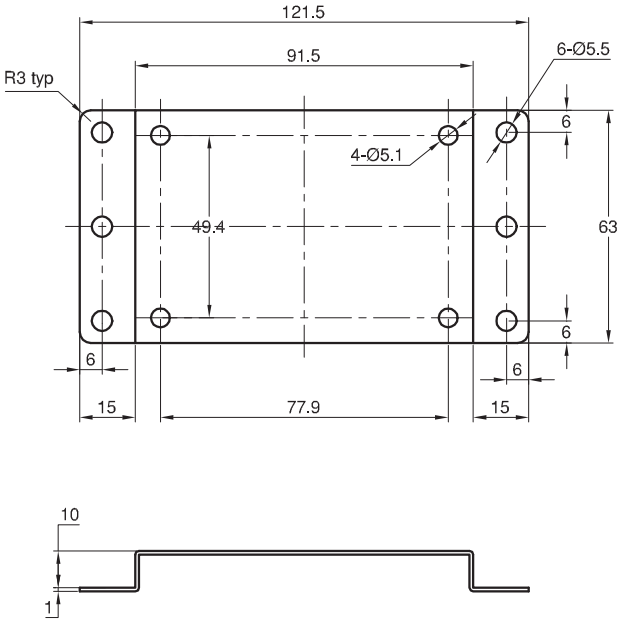
- **AMA-2255-2N**
- **AMA-2255-3N**
- **AMA-2251-3N**
- **AMA-2251-2N**



Part Number: AMA-1255-BKT

Coupler Mounting Hardware:

- **AMA-1251-XX**
- **AMA-1255-XX**
- **AMA-1260-XX**



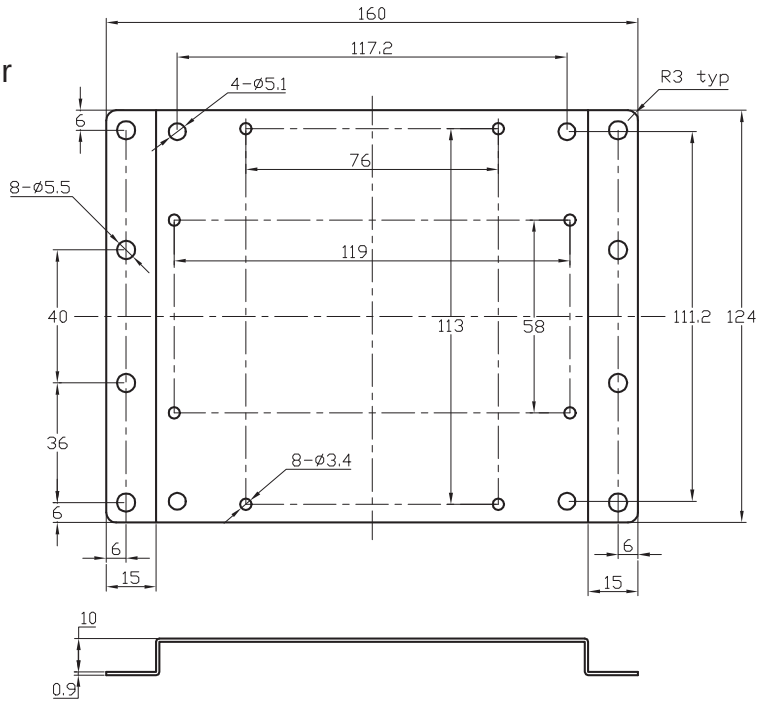
NOTE: 30dB couplers are non-directional with a flatness spec of ± 1dB.

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

Part Number: AMA-4-BKT

Crossband Coupler & 4 Way Splitter Mounting Hardware:

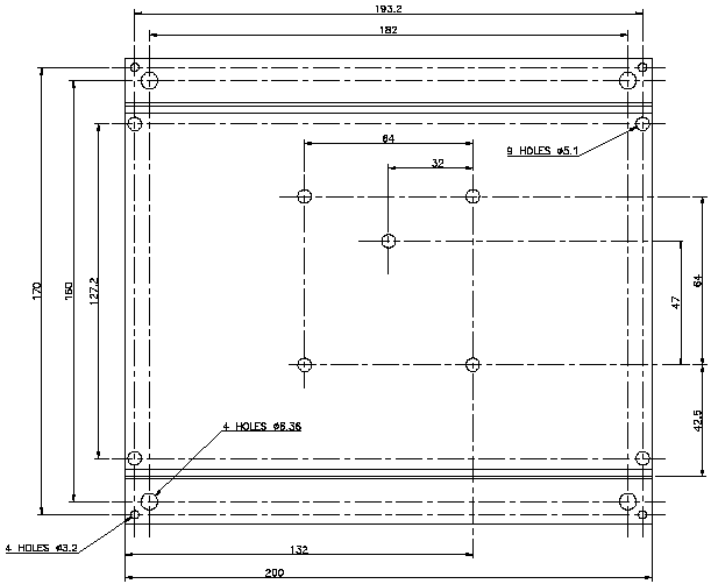
- **AMA-4251-N**
- **AMA-4250-N**
- **AMA-2251-4N**
- **AMA-2255-4N**
- **AMA-2100-4N**

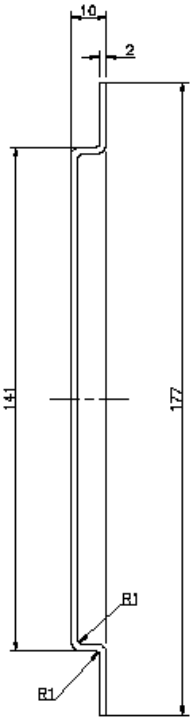


Part Number: AMA-8-BKT

8 Way Splitter Mounting Hardware:

- **• AMA-2251-8N**





ATTENUATORS & TERMINATIONS

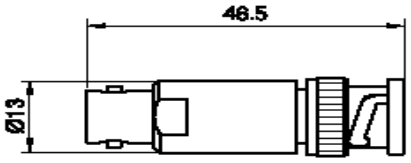
Attenuators

Part Number	Value	Description	Fig/Size
R-412403	3dB	DC-2 GHz, BNC, 2 Watt, Attenuator	1
R-412406	6dB	DC-2 GHz, BNC, 2 Watt, Attenuator	1
R-412410	10dB	DC-2 GHz, BNC, 2 Watt, Attenuator	1
R-412420	20dB	DC-2 GHz, BNC, 2 Watt, Attenuator	1
R-413801	1dB	DC-18 GHz, SMA, 2 Watt, Attenuator	2
R-413803	3dB	DC-18 GHz, SMA, 2 Watt, Attenuator	2
R-413806	6dB	DC-18 GHz, SMA, 2 Watt, Attenuator	2
R-413810	10dB	DC-18 GHz, SMA, 2 Watt, Attenuator	2
R-413820	20dB	DC-18 GHz, SMA, 2 Watt, Attenuator	2
R-414703	3dB	DC-12 GHz, N, 2 Watt, Attenuator	3
R-414706	6dB	DC-12 GHz, N, 2 Watt, Attenuator	3
R-414710	10dB	DC-12 GHz, N, 2 Watt, Attenuator	3
R-414720	20dB	DC-12 GHz, N, 2 Watt, Attenuator	3
R-414730	30dB	DC-12 GHz, N, 2 Watt, Attenuator	3
R-415703	3dB	DC-8 GHz, N, 15 Watt, Attenuator	4
R-415706	6dB	DC-8 GHz, N, 12 Watt, Attenuator	4
R-415710	10dB	DC-8 GHz, N, 10 Watt, Attenuator	4
R-415720	20dB	DC-8 GHz, N, 10 Watt, Attenuator	4
R-417003-110	3dB	DC-3 GHz, N, 50 Watt, Attenuator	5
R-417006-110	6dB	DC-3 GHz, N, 50 Watt, Attenuator	5
R-417010-110	10dB	DC-3 GHz, N, 50 Watt, Attenuator	5
ITC-1190104-1	10dB	DC-2.4 GHz, N, 100 Watt, Attenuator	6
ITC-1190104-02	20dB	DC-2.4 GHz, N, 100 Watt, Attenuator	6
ITC-1190104-03	30dB	DC-2.4 GHz, N, 100 Watt, Attenuator	6

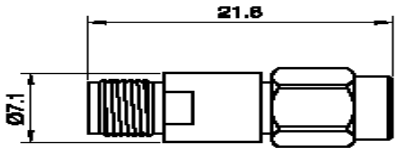
Terminations (Load)

Part Number	AV Power	Product Description	Fig/Size
R-404131-750	2 Watt	DC-3 GHz, N Male, 50 Ohm Term – 34x21mm	
R-404562	12 Watt	DC-8 GHz, N Male, 50 Ohm Term - 50x35mm	
R-404830	30 Watt	DC-4 GHz, N Male, 50 Ohm Terminations	7
R-404840	50 Watt	DC-4 GHz, N Male, 50 Ohm Terminations	9
R-404850	100 Watt	DC-4 GHz, N Male, 50 Ohm Terminations	8

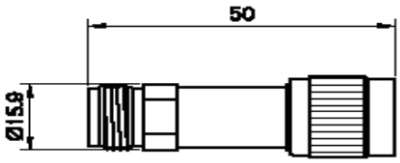
ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***



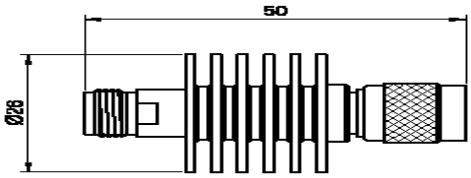
Weight 30g
Fig. 1, BNC Attenuator



Weight 5g
Fig. 2, SMA Attenuator



Weight 70g Max
Fig. 3, N Attenuator



Weight 70g
Fig. 4, N Attenuation

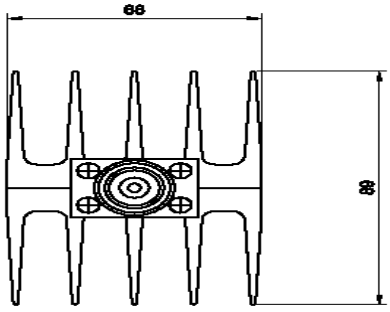
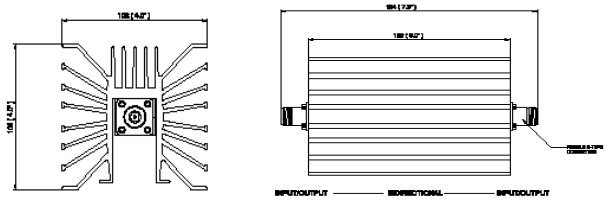
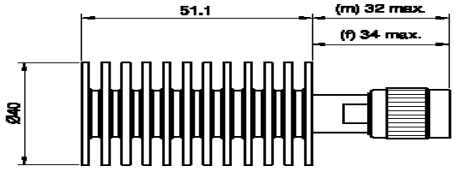


Fig. 5, 50W Attenuator



Weight 1.82Kg Max
Fig. 6, 100W Attenuator



Weight 1000g
Fig. 7, 30W Load

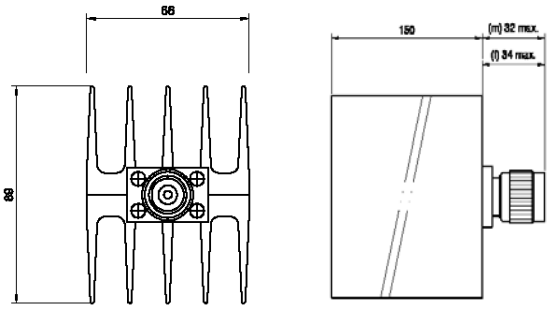
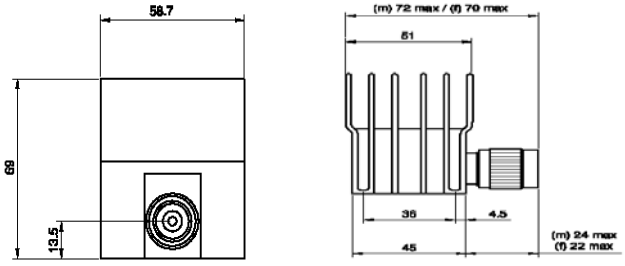


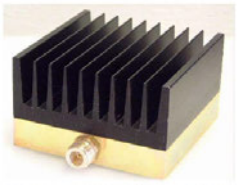
Fig. 8, R-404 100W Load



Weight 1000g
Fig. 9, 50W Load

Power Termination

Features



- **• Power 50 or 100 Watts Average**
- **• Wide Band 800-2200 MHz**
- **• Low Intermodulation N Female Connectorised**

Rojone's AMA-5251 range of Power Terminations was designed for the Cellular Telecommunications market and now also includes 3rd Generation 2.5 GHz Bandwidth.

Specifications

Part Number	AMA-5251-50-NF	AMA-5251-100-NF
Frequency	800-2200 MHz	800-2000 MHz
VSWR/Return Loss	< 1.22:1/-20dB	< 1.22:1/-20dB
Average Power	50 Watts CW	100 Watts CW
Impedance	50 Ohms	50 Ohms
Connector Type	N Female	N Female
Package Size	100 x 100 x 62mm	190 x 150 x 60 mm
Weight	900g Max	2.5 Kg Max
Operating Temp	-30° to +50°C	-30° to +50°C

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

3 x 100 Watt High Power Integrated Load

Features

- **High Power 3 x 100 Watts Average**
- **Compact High Density Load**
- **Wide Band 800-2200 MHz**
- **Low Intermodulation N Female Connectorised**

Rojone's AMA-5250-3x100-NF Power load/terminations were originally designed as part of our Telecommunications Network Combiner. The load was purposely built to suit the high density Network Combiners package and is now also sold separately.

Specifications

Frequency	800-2200 MHz
VSWR/Return Loss	< 1.22:1 Max / -20dB
Average Power	100 Watts
Impedance	50 Ohms
Connector Type	N Female
Temperature range	-20° to +50°C
Package Size	200 x 150 x 125mm + connectors
Weight	3.5 Kg Max

Part Number Options

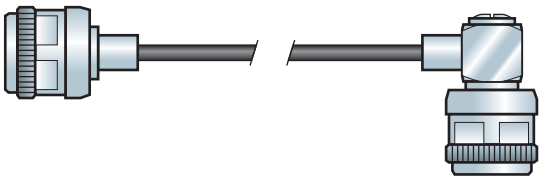
AMA-5251-3X100-NF - XX V XX

xx	AC or DC
Voltage	
xx	24, 48, 110, 240

CABLE ASSEMBLY PART NUMBER CONSTRUCTION

CA 020 13 A 13 B 100 08

- **Standard Prefix**
- **Coax Cable Types – See Table 1**
- **Connector Series – See Table 2**
- **Termination Type – See Table 3**
- **Accessory Code – See Table 4**
- **Cable Length (cm)**
- **Termination Type – See Table 3**
- **Connector Series – See Table 2**



Coaxial Cables Table 1						ATTENUATION dB/100 @ 25 Degrees C						
Code No	Cable Type	Impedance	Shield	Max O/D	Dielectric	100MHz	400MHz	1GHz	3GHz	5GHz	10GHz	18GHz
4	RG58	50 Ohms	TC	0.195"	PE	6	13.5	24	54	83	247	
5	RG59	75 Ohms	BC	0.242"	PE	3.4	7	12	26.5	42		
10	RG142B	50 Ohms	2SPC	0.195"	PE	5.5	11.7	19	35	48	70	
12	RG174A	50 Ohms	TC	0.100"	PTFE	10	25	45	N/A	N/A	N/A	
13	RG178B	50 Ohms	SPC	0.075"	PTFE	13.8	28	46	76	114	170	
14	RG179B	75 Ohms	SPC	0.105"	PTFE	10	16	24	44	64	139	
16	RG196	50 Ohms	SPC	0.072"	PE	16	33	52	94			
18	RG213	50 Ohms	BC	0.405"	PE	2.3	4.8	9	N/A	N/A		
20	RG214	50 Ohms	2SPC	0.425"	PTFE	2.6	6.8	12	25	35	54	
21	RG223	50 Ohms	2SPC	0.216"	PTFE	6.5	12	21	40	55	79	130
23	RG316	50 Ohms	SPC	0.102"	PTFE	10.5	21	38	58	N/A	N/A	
24	RG400	50 Ohms	2SPC	0.195"	PTFE	4.5	10.5	17	38	50	78	
36	FSJ1	50 Ohms	Cor Cop	0.250"	PEF	1.87	3.91	6.5	12.4	17	26.9	
37	LDF1-50	50 Ohms	Cor Cop	0.345"	PEF	1.23	2.54		7.67	10.3	15.7	
38	FSJ4-50B	50 Ohms	Cor Cop	0.500"	PEF	1.05	2.18	3.58	6.74	9.13	15	
037L	LDF4-50	50 Ohms	Cor Cop	0.630"	PEF	0.66	1.36	2.22	4.09	5.49		
39	TZC-500-25	50 Ohms	SPC&F	0.2244"	PE	2.7	5	7.1	14			
						ATTENUATION dB/100 FT @ 25 Degrees C						
						30MHz	50MHz	150MHz	450MHz	900MHz	1.5GHz	2.0GHz
47	LMR100	50 Ohms	TCAL	0.110"	PEF	3.9	5.1	8.9	15.8	22.8	30.1	35.2
49	LMR195	50 Ohms	TCAL	0.195"	PEF	1.9	2.5	4.3	7.5	10.7	13.9	13.9
51	LMR240	50 Ohms	TCAL	0.240"	PEF	1.3	1.7	3	5.3	7.6	9.9	11.6
52	LMR400	50 Ohms	TCAL	0.405"	PEF	0.7	0.9	1.5	2.7	3.9	5.1	6
54	LMR600	50 Ohms	TCAL	0.590"	PEF	0.421	0.547	0.964	1.72	2.5	3.31	3.9
58	LMR240-ULTRA	50 Ohms	TCAL	0.240"	PEF	1.5	1.9	3.5	6.1	9.1	12	13.9
59	LMR400-ULTRA	50 Ohms	TCAL	0.405"	PEF	0.8	1	1.7	3.1	4.7	6.1	7.2
60	LMR600-ULTRA	50 Ohms	TCAL	0.590"	PEF	0.421	0.547	0.964	1.72	2.5	3.31	3.9
70	LMR400-DB	50 Ohms	TCAL	0.405"	PEF	0.7	0.9	1.5	2.7	3.9	5.1	6
72	LMR600-DB	50 Ohms	TCAL	0.590"	PEF	0.421	0.547	0.964	1.72	2.5	3.31	3.9

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

CONNECTOR - Table 2				
Code	**Connector Type/Series**	**Frequency**	**Impedance**	**Mil Spec or Ref**
2	BNC PROFESSIONAL	DC-4 GHz	50/75 Ohms	MIL-C-39012
30	DIN 7/16	DC-735 GHz	50 Ohms	Custom OEM Design
53	Lucent WLAN MC-CARD	DC-3 GHz	50 Ohms	Custom OEM Design
13	N	DC-11 GHz	50/75 Ohms	MIL-C-39012
17	SMA	DC-18 GHz	50 Ohms	MIL-C-39012
19	SMB	DC-4 GHz	50/75 Ohms	
24	TNC	DC-11 GHz	50/75 Ohms	MIL-C-39012

TERMINATION STYLE – Table 3	
Code	**Termination Style & Method**
A	Crimp Straight Male Plug
B	Crimp Right Angle Male Plug
C	Crimp Straight Female Jack
D	Crimp Right Angle Female Jack
E	Crimp Bulkhead Male Plug
F	Crimp Bulkhead Female Jack
G	Crimp Square Flange Jack
H	Crimp Straight Reverse Pin Plug
I	Crimp Straight Reverse Pin Receptacle
M	Solder Straight Male Plug
N	Solder Right Angle Male Plug
O	Solder Straight Female Jack
P	Solder Right Angle Female Jack
Q	Solder Bulkhead Male Plug
R	Solder Bulkhead Female Jack
S	Solder Square Flange Jack

ACCESSORY Code – Table 4	
Code	**Accessory or Special Customer Requirement**
Blank	No Accessories
8	Glue Heatshrink for Excellent Strain Relief & Twist tolerance (Commonly quoted as standard practice)

Coaxial Cable - Cross Reference / Performance Comparison Chart

				Attenuation/Loss dB/100Ft				
Flexible Cables	Flexible LMR	DIA	DIELECTRIC	100 MHZ	400 MHz	1000 MHz	3000MHz	5000 MHz
RG174		0.100"	PE	10	25	45	N/A	N/A
	LMR100	0.105"	PE	8.83	14.88	24.16	44.06	58.84
RG316		0.102"	PTFE	10.5	21	38	58	N/A
	LMR100	0.105"	PE	8.83	14.88	24.16	44.06	58.84
RG58		0.195"	PE	6	13.5	24	54	83
	LMR195	0.195"	Foam PE	3.49	7.05	11.27	19.97	26.17
	LMR200	0.195"	PEF	3.24	6.55	10.48	18.57	24.34
	LMR240	0.240"	Foam PE	2.45	4.97	7.99	14.25	18.77
RG142		0.195"	PTFE	5.5	11.7	19	35	48
	LMR195	0.195"	PEF	3.49	7.05	11.27	19.97	26.17
	LMR200	0.195"	PEF	3.24	6.55	10.48	18.57	24.34
	LMR240	0.240"	PEF	2.45	4.97	7.99	14.25	18.77
RG400		0.195"	PTFE	4.5	10.5	17	38	50
	LMR195	0.195"	PEF	3.49	7.05	11.27	19.97	26.17
	LMR200	0.195"	PEF	3.24	6.55	10.48	18.57	24.34
	LMR240	0.240"	PEF	2.45	4.97	7.99	14.25	18.77
RG213		0.405"	PE	2.3	4.8	9	N/A	N/A
	LMR400	0.405"	PEF	1.25	2.55	4.13	7.48	9.95
RG214		0.425"	PE	2.6	6.8	12	25	35
	LMR400	0.405"	PEF	1.25	2.55	4.13	7.48	9.95
				Attenuation/Loss dB/100Ft				
Corrugated Cables				150 MHz	450 MHz	900 MHz	1500 MHz	3000 MHz
LDF 1/4" LDF1-50		0.345	Foam PE	1.52	2.71	4	5.19	7.9
SUPERLEX 1/4" FSJ1-50		0.30"	Foam PE	2.21	3.91	5.7	7.41	10
	LMR240	0.240"	Foam PE	3	5.3	7.6	9.9	12.9
	LMR300	0.30"	Foam PE	2.4	4.2	6.1	7.9	10.4
LDF 3/8" (LDF2-50)		0.440"	Foam PE	1.29	2.29	3.36	4.4	5.91
LCF 3/8" Cu2Y 50 Ohm		0.476"	Foam PE	1.22	1.98	3.3	4.88	5.64
SUPERFLEX 3/8" FSJ2-50		0.415	Foam PE	1.48	2.64	3.83	5.08	6.77
	LMR400	0.405"	Foam PE	1.5	2.7	3.9	5.1	6.8
SUPERFLEX 1/2" FSJ4-50B		0.520"	Foam PE	1.8	2.31	3.39	4.54	6.12
	LMR500	0.500"	Foam PE	1.22	2.17	3.13	4.13	5.48
	LMR600	0.590"	Foam PE	0.964	1.72	2.5	3.31	4.42
LDF 1/2" LDF4-50B		0.63	Foam PE	0.845	1.51	2.21	2.93	3.91
LCF1/2" Cu2Y 50 Ohm		0.63	Foam PE	0.83	1.5	2.14	2.9	3.91
	LMR600	0.590"	Foam PE	0.964	1.72	2.5	3.31	4.42
	LMR900	0.870"	Foam PE	0.658	1.17	1.7	2.24	2.98
LDF 7/8" LDF5-50B		1.090"	Foam PE	0.458	0.834	1.23	1.66	2.27
LCF 7/8" Cu2Y 50 Ohm		1.10"	Foam PE	0.304	0.67	1.219	1.82	2.438
	LMR1200	1.200"	Foam PE	0.481	0.864	1.27	1.69	2.26
LDF 1 1/4" LDF6-50B		1.550"	Foam PE	0.34	0.617	0.912*	1.22	1.68
LCF 1 1/4" Cu2Y 50 Ohm		1.535"	Foam PE	0.274	0.609	0.884	1.28	1.82
	LMR1700	1.670"	Foam PE	0.347	0.632	0.936	1.26	1.71

ROJONE Pty. Limited *44 Aero Rd, Ingleburn NSW 2565 AUSTRALIA*
TEL *+61 02 9829 1555* ***FAX*** *+61 02 9605 8812* ***EMAIL*** *sales@rojone.com.au* ***www.rojone.com.au***

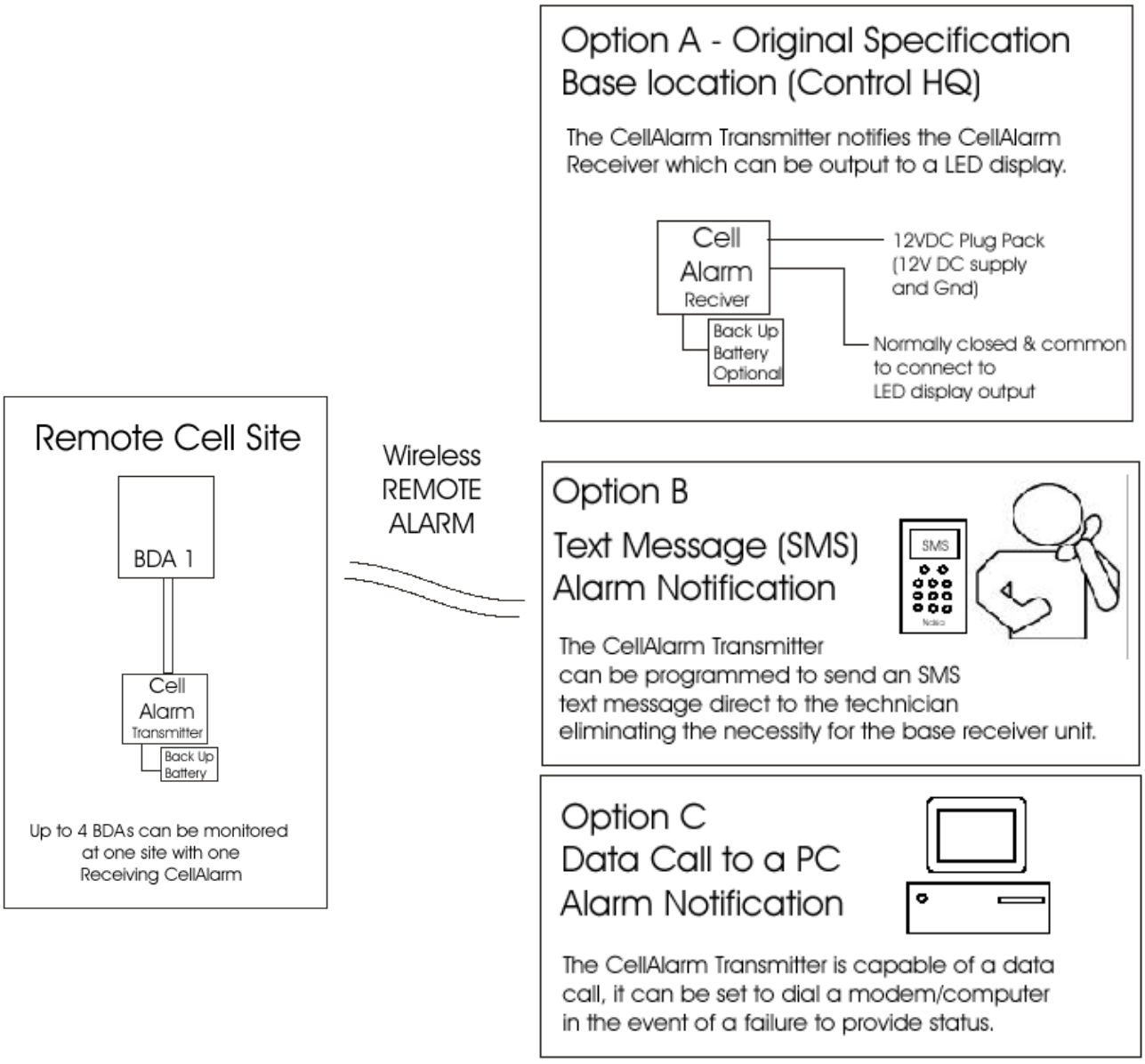
CELLALARM – REMOTE SITE MONITORING

The Cellular Alarm Monitor is a Wireless system used to detect and alarm the failure of a remotely located system such as a BDA.

The system consists of two (2) units. The Transmitter unit that monitors the “Failure Status” of the remote location. When a failure is detected, the monitor sends a message to the receiver unit indicating a failure has occurred. A failure is detected from a dry contact relay input.

Up to four (4) separate sites can be monitored by one receiver unit, which is able to discriminate the source of the alarm.

The system uses the cellular mobile network (GSM in Australia) or TDMA or GSM in the USA).



Please contact Rojone Pty Ltd for further information

ROJONE Pty. Limited

44 Aero Road, Ingleburn NSW 2565, Sydney Australia
Tel: +61 2 9829 1555 **Fax:** +61 2 9605 8812
Email: sales@rojone.com.au **Web:** www.rojone.com.au