



# **INSTRUCTION MANUAL P102 TOWER TOP EQUIPMENT ENCLOSURE**

Designed and Manufactured by  
**ARGUS TECHNOLOGIES**

## REVISION STATUS

<b>Rev</b>	<b>Changes</b>	<b>Date</b>
A	Draft Release	29-Nov-2006
B	Added Lanyard Information	25-Jun-2008
C	Updated Specifications	17-Oct-2008
D	Update Argus Address	31-July-2009

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION</b>	<b>4</b>
<b>2</b>	<b>SPECIFICATIONS</b>	<b>4</b>
2.1	Mechanical Specifications	4
2.2	Mechanical Interface	4
	Figure 2.3.1 - Interface plate required for mounting the headframe.	4
<b>3</b>	<b>COMPONENTS</b>	<b>5</b>
3.1	Internal Layout	5
	Figure 3.1.1 - Internal layout for component interface.	5
3.2	TMA Interface Plate	6
	Figure 3.2.1 - Interface plate for TMA unit (symmetrical about centreline)	6
	Figure 3.2.2 – P102 with mounted ARGUS TMAs (left) and with covers (right)	6
3.3	ASB-3 Unit	7
3.4	Cables	7
<b>4</b>	<b>INSTALLATION</b>	<b>7</b>
4.1	Removal of Covers	7
4.2	Frame Installation	7
	Figure 4.2.1 Coronet washer must be placed between flat washer and flange	8
4.3	Cover Installation	8
	Figure 4.3.1 Ensure washers are between the cover and the head of the screw	8
4.4	Suggestions	8
<b>5</b>	<b>STACKING</b>	<b>9</b>
<b>6</b>	<b>WARRANTY AND REPAIR</b>	<b>9</b>
	<b>APPENDIX 1 - UNIT DIMENSIONS AND SPECIFICATIONS</b>	<b>10</b>
	<b>APPENDIX 2 - ITEMS SUPPLIED WITH KIT</b>	<b>11</b>

# 1 Introduction

The P102 Tower Top Equipment Enclosure is a housing designed to contain and protect the equipment required for the control and operation of the HC/HCN System(s) mounted above the P102 on a tower. It consists of three sectors of storage, each with sufficient room to carry up to two TMA's (Tower Mounted Amplifiers). There is also room for one Argus ASB-3 antenna control unit (not included). The P102 is designed with sufficient structural strength to allow the mounting of up to two HC/HCN Systems above it, while retaining the same external profile and diameter of those systems for improved aesthetics.

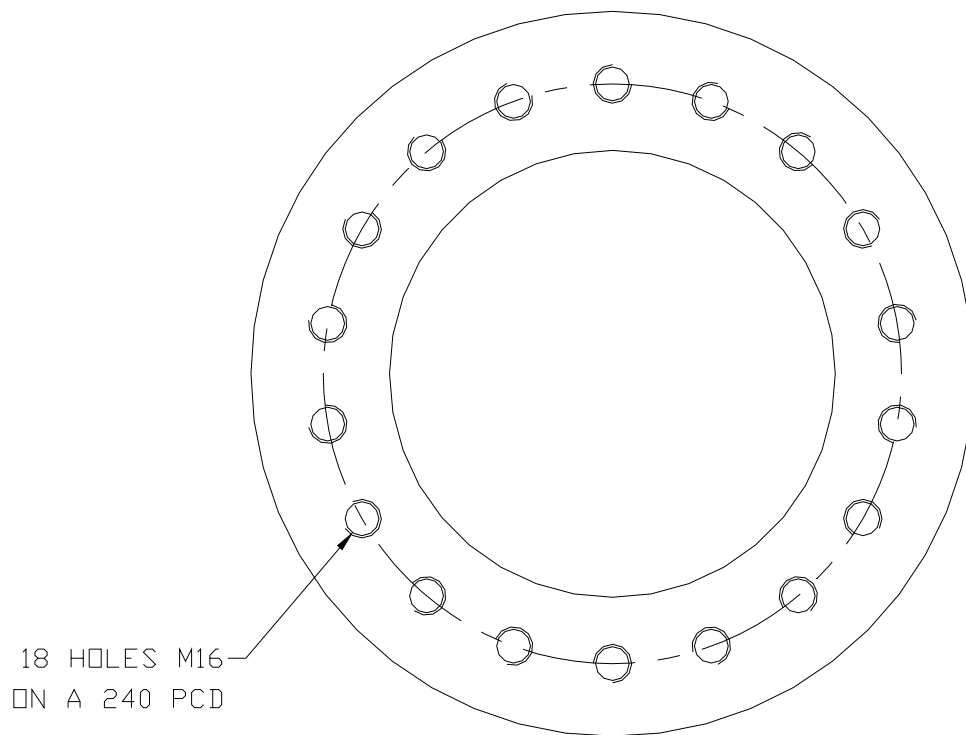
## 2 Specifications

### 2.1 Mechanical Specifications

The technical data and mechanical specifications of the unit are set out in Appendix 1 of this Manual.

### 2.2 Mechanical Interface

The P102 has been designed to be interface to a standard 240 P.C.D. flange with 9 M16 bolts. A set of M16 Grade 10.9 galvanised structural bolts, coronet washers and flat washers are supplied with the unit for the installation.

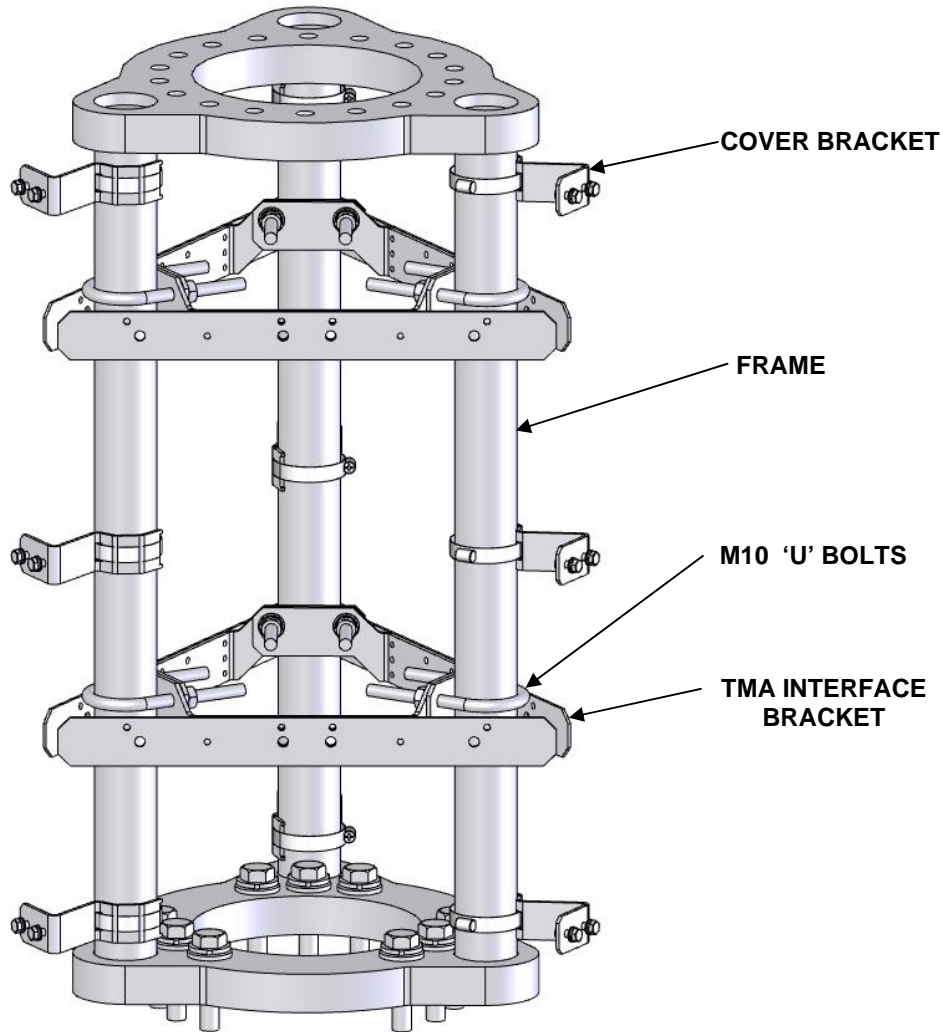


**Figure 2.2.1 - Interface plate required for mounting the headframe.**

### 3 Components

#### 3.1 Internal Layout

The layout of components inside the unit is subjected to the size and installation method of the TMA's. Figure 3.1.1 shows the internal layout of the unit and the TMA component interface.



**Figure 3.1.1 - Internal layout for component interface.**

### 3.2 TMA Interface Plate

Each interface plate is designed to hold two Argus tower top low noise amplifiers (TMA), or a similar amplifier of approximate maximum dimensions of 137 mm wide by 100 mm thick in cross section and having a mounting configuration matching the plate as shown in Figure 3.2.1. Note that only the holes for one TMA are dimensioned. A customised adapter plate can be attached to the interface plate for mounting alternate TMA's of similar size.

A sufficient quantity of M8 nuts bolts and washers have been supplied with each P102 system for installing 6 Argus TMA's. The position and spread of the interface plates can be adjusted by loosening the 6 'U' bolts clamping the mounting brackets to the vertical legs and sliding the two brackets up or down the legs.

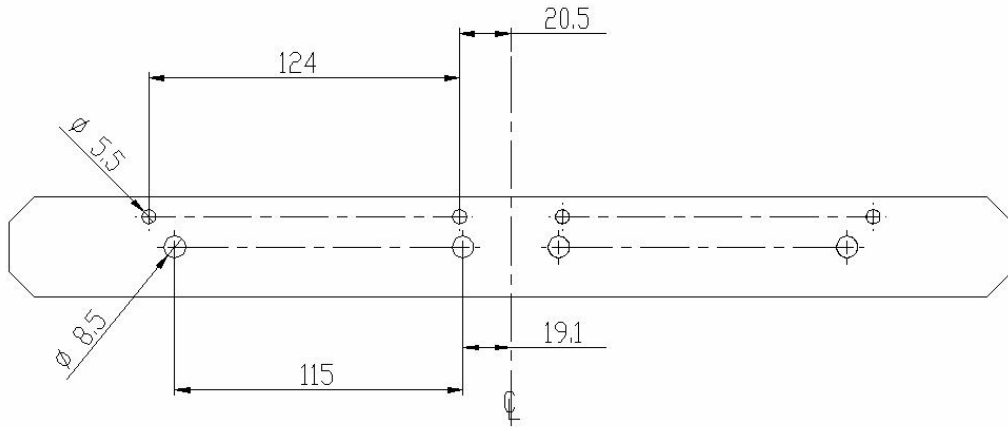


Figure 3.2.1 - Interface plate for TMA unit (symmetrical about centreline)

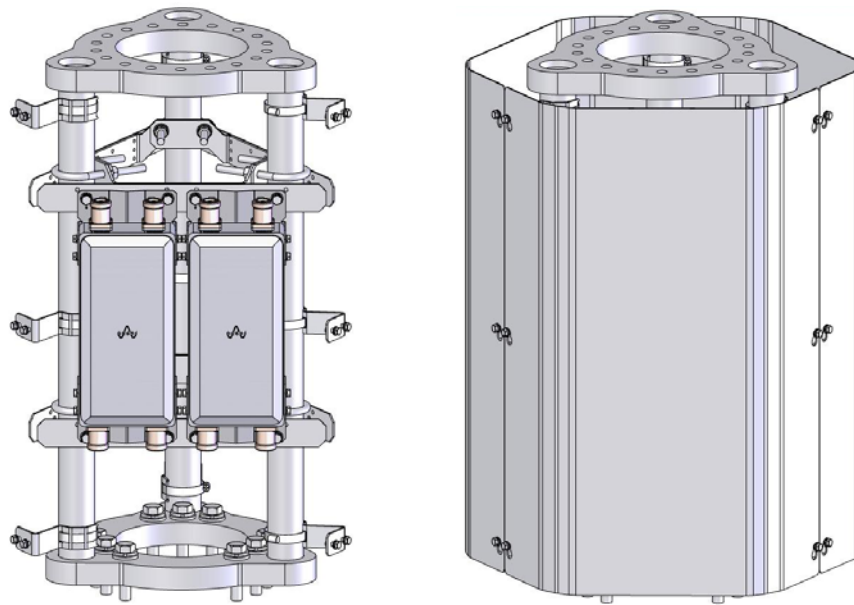


Figure 3.2.2 – P102 with mounted ARGUS TMAs (left) and with covers (right)

### **3.3 ASB-3 Unit**

Where required, the ASB-3 unit (ordered separately) can also be installed into the P102 system. It can be mounted to the mounting bracket supplied with the P102. Depending on the positioning of the TMAs, the ASB-3 can also be mounted to the 50mm vertical bars above or below the TMAs using the hose clamps provided with the ASB-3.

### **3.4 Cables**

The maximum number of cables that can be fed into the P102 unit from the antennas above is 12 of ½" cables per sector. There is adequate space for 4 cables per sector of 1¼" diameter and 2 AISG cables per sector to be fed from the equipment below. Straight through cables (via a tail) are fed through the centre section of the unit, behind the other components.

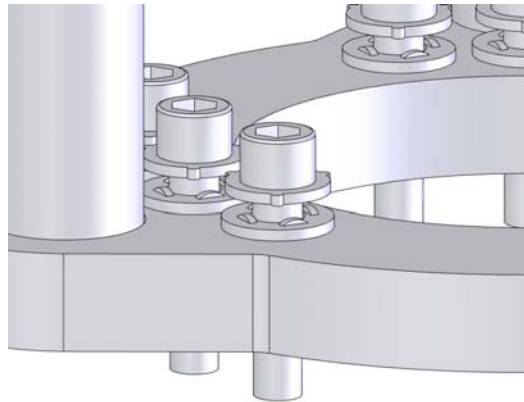
## **4 Installation**

### **4.1 Removal of Covers**

- Ensure covers are securely attached to the steel lanyards.
- Loosen the M6 screws on each panel. Due to the keyhole shaped cut-outs in the covers, the screws do not have to be completely removed. Align the screws with the large cut-outs in the keyholes and remove the panels.
- The panels can now be lowered to hang from the steel lanyards or if desired, they can be detached from the lanyards and removed entirely.
- Once the covers have been removed, tighten the screws again so as not to lose them. Again, there is no need to remove the screws.

### **4.2 Frame Installation**

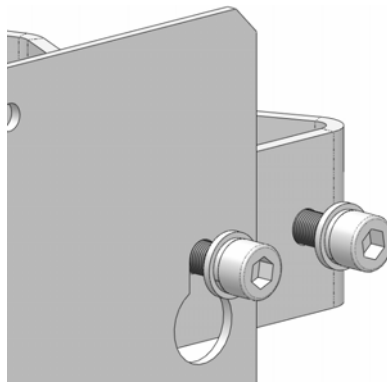
- All M16 bolts and nuts should be used in conjunction with their washers.
- The coronet washer must be placed between the flange and the flat washer as shown in figure 4.2.1.
- Tighten all the M16 x 70 bolts (Min Grade 10.9) to 100kN. This is achieved by tightening the bolts until the coronet washer load indicator gap is 0.25mm. That is, the gap between the head of the bolt and the flat of the coronet washer is 0.25mm. A feeler gauge must be used to confirm the correct gap size. When the gap is not uniform, the average gap distance should be used.  
Note: Once a coronet washer has been fully compressed it can *not* be re-used. It must be disposed of and replaced.
- Use longer bolts if the ones supplied are too short.
- A minimum of 3 evenly spaced bolts (one in each sector) are required to secure the unit to the pole during component installation. However, all 9 bolts *must* be installed for the operation of the unit.



**Figure 4.2.1 Coronet washer must be placed between flat washer and flange**

### **4.3 Cover Installation**

- Ensure covers are securely attached to the steel lanyards.
- Once all TMAs and associated cables have been fitted, partially unscrew the 18 M6 screws so that each screw is still engaged by several turns.
- Hold the cover with the narrow of the ‘key holes’ pointing upwards.
- Push one side of the cover onto the 3 M6 screws, ensuring all captive washers remain between the head of the screw and the cover (see figure 4.3.1).
- Repeat with the remaining 3 M6 screws.
- Lower the cover so that all the screws are sitting in the narrow slot of the keyholes (see figure 4.3.1).
- Tighten the screws to 7Nm.



**Figure 4.3.1 Ensure washers are between the cover and the head of the screw**

### **4.4 Suggestions**

- Depending on the installation procedure, it may offer more room for working by temporarily sliding the mounting brackets to another location along the vertical bars. Removal of those components is *not* recommended as reinstalling them in confined spaces may be difficult.
- If the cover brackets have to be moved, mark their positions accurately to make relocating them easier.
- When re-installing the covers, replace them into the same sector they were removed from.
- Install the HC/HCN antenna directly above their sector corresponding equipment for easier cable identification and routing.

## 5 Stacking

A maximum of **only two** HC/HCN antenna systems may be stacked above the P102 unit due to wind loading on the interface flanges. The maximum loading on a P102 is one HCN-08-S on one HCN-10-S in wind Region B. The top of the P102 headframe includes the required interface for the mounting of all HC/HCN-xx-S systems. Follow the instructions found in the HC/HCN System Manual for installation procedures.

## 6 Warranty and Repair

Argus Technologies warrants all the antenna products that it manufactures. To invoke this warranty, initial contact should be made with:

### Argus Technologies (Australia) Pty Ltd

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## Appendix 1 - Unit Dimensions and Specifications

Diameter, maximum	548 mm
Height	740 mm
Weight (excl TMAs & cables)	92 kg
Interface to pole	9 × 18.0mm holes on a 240mm PCD
Interface to headframe	18 × M16 holes on a 240 mm PCD
Number of Sectors	3
Stacking	2 HCN/HC-xx-S Systems may be stacked above (see section 5 for stacking limitations)
Wind Speed, ultimate	65 m/s (234 km/h)
Wind Loading, lateral	0.4 kN for $V_z = 44.44$ m/s
Humidity, operating	100%*
Lightning Protection	Direct ground of all metal parts (excluding covers)

\* Operating conditions subject to installed components.

## Appendix 2 - Items Supplied with Kit

Item	Location	Qty	Description/Purpose
P102 Frame	Pre-installed	1	
Covers	Pre-installed	3	
TMA Brackets	Pre-installed	3	Mounting TMAs
Cover Brackets	Pre-installed	9	Mounting Covers
Screw M8x25 Hex Head SS	Pre-installed	24	Mounting TMAs
Washer M8 Flat SS	Pre-installed	50	Mounting TMAs
Washer M8 Spring SS	Pre-installed	26	Mounting TMAs
Nut M8 Hex SS	Pre-installed	26	Mounting TMAs
Screw Socket Head Cap M6x16 SS (Captive washers)	Pre-installed	18	Mounting Covers
Nut M10 Hex Galvanised	Pre-installed	12	Fixing TMA Brackets
Washer M10 Flat Galvanised	Pre-installed	12	Fixing TMA Brackets
Washer M10 Lock Spring Galvanised	Pre-installed	12	Fixing TMA Brackets
'U' Bolt M10 Galvanised	Pre-installed	6	Fixing TMA Brackets
Socket Head Cap Screw M16x70 Galvanised G12.9	In Mounting Kit	9	Fixing Frame to Pole
Washer M16 Flat Structural Galvanised	In Mounting Kit	9	Fixing Frame to Pole
Washer Coronet Load Indicator M16 Galvanised	In Mounting Kit	9	Fixing Frame to Pole
Hose Clamps	Pre-installed	9	Fixing Cover Brackets
Steel Lanyard	Pre-installed	3	Retaining Covers
'D' Shackle M4 SS	Pre-installed	6	Fixing Lanyard
Instruction Manual for P102	In Mounting Kit	1	This manual