PRELIMINARY SYSTEM INTERFACE CONTROL DOCUMENT

FOR THE

INTERCONNECTION OF ACC CENTERS OF THE CARSAM REGION

PREFACE

This document defines the external interfaces and messages of the ATC Systems in the countries from the CARSAM Region. It includes those interfaces that are external to the ATC Automation System. It is based on source material obtained from a Survey coordinated by ICAO Office in Lima. This document was prepared for the purpose of registering the current interfaces between the ATC Automation Systems and the external sensors and Centers. This document is subject to change based on continuing review by ICAO Office and the countries members.

REVISION HISTORY

Revision/Date	Description of Change	Change Pages

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1.0 Scope

The purpose of this document is to provide details of the external interfaces existing in each ATC System installed on countries of the CARSAM Region. The Air Traffic Control Automation System (ATCS) is part of the ACC that is responsible for the FIR control.

1.1 Identification

This document is identified as the System Interface Control Document (SICD) for the ATC Systems in the CAR/SAM region. The following diagram shows the hierarchical structure of the documents and identifies the relative position of this document.

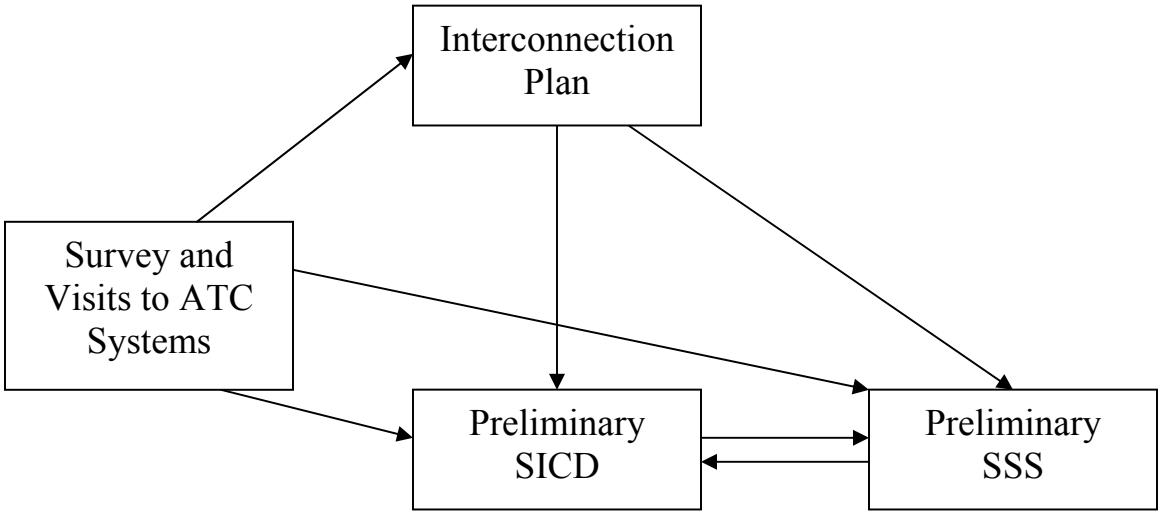


Figure 1.1-1 Document hierarchy

1.2 System Overview

The Interconnection Plan is a strategy to interconnect the ATC System in the CAR/SAM Region involving analysis of the infrastructure to provide the better flight coordination and flow control between adjacent control centers, promoting improvements in safety as well.

ATC Systems are composed of a great quantity of sensors and flight plan interfaces connected to Data Processing Servers by a telecommunications network (REDDIG). These data-processing centers are known variously as Data Treatment and Visualization centers (STVs) which include necessary local telecommunications equipments.

Various sensors provide the data concerned to the Air Traffic and meteorological information. The supporting subsystems include:

- Primary and secondary air traffic control radars,
- Weather radars,
- Air navigation aids,
- Radio and telephone communications.

These sensors collect data that are transmitted through one integrated telecommunications network to the STVs. A local network of computer workstations provides the necessary ambient for the processing, exploitation and analysis of collected data; the development and use of application software and program development tools; the management and use of databases from varied sources and for the training of system users.

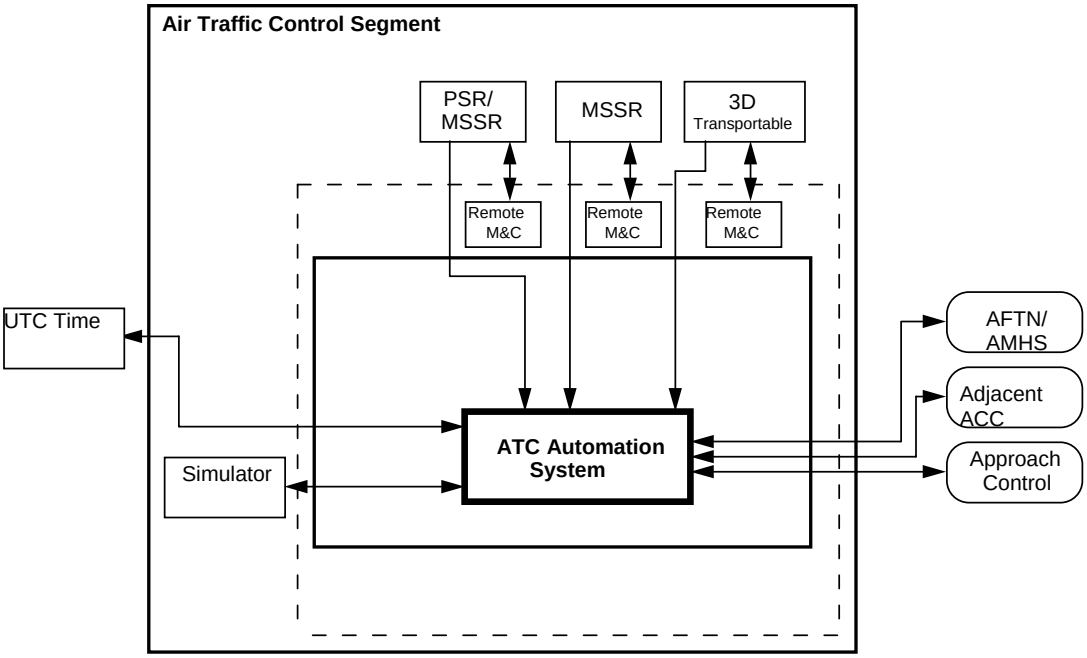


Figure 1.2-1 System Architecture

SEGMENT	DESIGNATOR	SUBSYSTEM NAME
Air Traffic Control	ATC System	
	RDP System	Radar Data Processor
	FDP	Flight Data Processor
	AIS	Aeronautical Information System
	AFTN	Aeronautical Fixed Telecommunication Network
	AMHS	Aeronautical Message Handling System

Table 1.2-1 ATC Systems

1.3 Document Overview

This document defines the external interfaces that connect to the Air Traffic Control Automation System. Messages that are internal to the ATCS should be detailed in the Interface Design Document (IDD) from each System Supplier.
The method of describing each of the external interfaces follows the same pattern. Each sub-section addresses one interface. The objective is to identify all the parameters of the interface including the point of connection. This is defined as a point between two areas of responsibility. Each side of the interface will agree on this line of demarcation and the interface definition presented.

2.0 Referenced Documents

The documents listed below form a part of this System Interface Document (SICD) to the extent specified herein.

2.1 ICAO Documents

ICAO Annex 10 Aeronautical Communications

Doc 4444-RAC/501 Air Traffic Management - Procedures for Air Navigation Services ICAO 14th Edition 01/ 11/ 2001

2.2 EUROCONTROL Documents

Ref. 005-1-93 Eurocontrol Standard Document for Radar Data Exchange – All Purpose Structured Eurocontrol Radar Information Exchange (ASTERIX), 31 January 1995

DPS.ET1.ST06-STD-01-01 Eurocontrol Standard Document for On-Line Data Interchange (OLDI) Edition 2.3 December 2001

SUR.ET1.ST05.2000-STD-09-01 Eurocontrol Standard Document For Surveillance Data Exchange Part 9: Category 062 SDPS Track Messages Edition: 1.3 Edition Date : April 2005

SUR.ET1.ST05.2000-STD-10-01 Eurocontrol Standard Document For Surveillance Data Exchange Part 10: Category 63 Sensor Status Messages

2.3 Other Documents

ISO 3309 Data Communications High-Level Data Link Control (HDLC) Procedures, Frame Structure

WMO Manual on Codes

Publication #306 World Meteorological Organization Manual on Codes

Vol. I International Codes

Vol. II National and Regional Codes

G630621 INTERFACE CONTROL DOCUMENT BETWEEN THE SIVAM 3-D TRANSPORTABLE RADAR AND THE AUTOMATION SYSTEM

G535530 INTERFACE CONTROL DOCUMENT BETWEEN THE ASR23SS AND THE AUTOMATION SYSTEM INTERFACE CONTROL DOCUMENT

IC808466/801 FOR THE CONDOR MK2D ASTERIX RADAR DATA OUTPUT SIVAM - FREE-STANDING INSTALLATIONS

E-277-01-2132 SSDD - USER APPLICATION PROFILE (UAP) FOR TRANSMISSION OF MONORADAR TARGET REPORT (ASTERIX CATEGORY 34 & 48) FROM ALENIA

CD2 FPS-117 Specification

TVT2 Inter-facility Radar Message Formats. “Procedure De Transmission TVT2”

C.A.006.13.D.TV.710.AT.T02.DK.001.03 - ESPECIFICAÇÃO DAS INTERFACES EXTERNAS (SICD) – ACC CINDACTA I

Formato de Mensajes Radar ASTERIX con UAPs de Alenia. COCESNA

ESPECIFICACIÓN DEL INTERFACE DE SALIDA DE DATOS EN FORMATO DDE DEL RADAR IRS-20MP/L, Ceselsa, 15/11/95

ESPECIFICACIÓN DEL INTERFACE DE SALIDA DE DATOS EN FORMATO ASTERIX DEL RADAR IRS-20MP/L, Ceselsa, 15/11/95

ESPECIFICACIÓN DEL INTERFAZ SDC-2000/AIRCON2000 INDRA, 25/10/01

TymServeTM 2100L Network Time Server User's Guide Datum Inc, Rev B, May 1999

3.0 External Interfaces

Each external interface is identified and listed in Table 3.0-1 below. Where multiple instances of the same interface type occurs, they are indicated in the list by the letter 'M'. Interfaces used with ATC Automation Systems are usually duplicated to provide increased availability, especially, where telecommunications channels used are maintained by a third party. Dual data links provide identical information simultaneously, when fully operational. These links are indicated in the list by the letter 'D'.

Number	Name of External Interface	Dual Links/Multiple Occurrence
R001,R005 ,R011	3D PSR/MSSR	D, M
R002-R004 R006-R010 R012-R016	2D PSR/MSSR	D, M
R017-R024	MSSR	D, M
R025-R027	ATCS to ATCS (for Radar Track Updates)	M
F028-F032	ATCS to ATCS (for Flight Plan Data)	
F034	AFTN Server (to/from AIS)	
033	RCMS	M
032	AFTN Server (to/from FDPS)	
T035	Time Server to ATCS (for Time Synchronization)	

Table 3.0-1 List of External Interfaces

The following tables indicate the allocation of the various interfaces to the ATC Operational Centers. All ATCs have direct access to the international AFTN network via the AFTN Server, and hence links to all other AFTN Subscribers.

Radar Type	Radar	Interface ID	Argentina	Brazil	Chile	COCESNA	Colombia	Ecuador	Panamá	Peru	Uruguay	Venezuela
3D PSR + MSSR	TPS-B-4 Lockheed Martin	R001		√								
2D PSR + MSSR	LP-23 + RSM 870 THALES	R002	√				√				√	
2D PSR + MSSR	ASR9 + MMSSR	R003							√			
2D PSR + SSR	LP-23 + RSM 970 THALES	R004		√	√							
3D PSR + MSSR	TRS2230 + RSM 970 THALES	R005		√								
2D PSR + MSSR	Tracker 2000 + RSM 970 THALES	R006			√							
2D PSR + MSSR	ATCR33M/S + SIR-M (7) ALENIA	R007	√				√					
2D PSR + MSSR	ATCR33DPC + SIR-S ALENIA	R008					√	√				
2D PSR + MSSR	ATCR22M + SIR-M ALENIA	R009					√					
2D PSR + MSSR	SKYTRACKER + IRS20MPL	R010					√					
3D PSR + MSSR	TPS70	R011					√					
2D PSR + MSSR	STAR2000 + RSM 970 THALES	R012		√	√			√				
2D PSR + MSSR	TA-10 + RSM 970 THALES	R013		√							√	
2D PSR + SSR	TA-10 + RSM770 THALES	R014					√					
2D PSR + MSSR	ASR 23 SS/16 + MSSR Condor MK2 RAYTHEON	R015		√								√
2D PSR+ MSSR	ASR12SS + MSSR (CD-2)	R016								√		

Radar Type	Radar	Interface ID	Argentina	Brazil	Chile	COCESNA	Colombia	Ecuador	Panamá	Peru	Uruguay	Venezuela
MSSR	RSMA INVAP	R017	√									
MSSR	CARDION	R018			√							
MSSR	SIR-7 Alenia	R019		√								
MSSR	SIR-S SELEX	R020										√
MSSR	CONDOR	R021		√								
MSSR	ISIR-M ALENIA	R022				√						
MSSR	IRS-20MP/L INDRA	R023				√		*				
MSSR	RSM 970 THALES	R024					√					

√* - Not installed yet

Table 3.0-2 Radar Types Allocation Table

Surveillance Interface to Adjacent Centers	Interface ID	Argentina	Brazil	Chile	COCESNA	Colombia	Ecuador	Panamá	Peru	Uruguay	Venezuela
AMS Interface	**IR025**					√	√				
Inter-CINDACTA	**IR026**		√								√*
INDRA Interface	**IR027**	√**								√**	

√* - With minor software changes used in the Essay Brazil-Venezuela
√- As verified in the SSS, but this requirement was not tested yet**

Table 3.0-3 Radar Interface to Adjacent Centers Allocation Table

Flight Plan Interface	Interface ID	Argentina	Brazil	Chile	COCESNA	Colombia	Ecuador	Panamá	Peru	Uruguay	Venezuela
ICAO 4444 & Hand-off Coordination	IF028 IF032		√								√*
ICAO 4444 without Hand-off Coordination	IF029			√	√	√	√	√	√	√	
OLDI	IF030	√*		√**	√*	√*	√*	√*		√*	
AIDC	IF031	√***									

√* - Not configured
√** - Only for APP and ACC interconnection
√*** - To be implemented

Table 3.0-4 Flight Plan interface with Adjacent Centers

ATCS Automation System Supplier	Version	Argentina	Brazil	Chile	COCESNA	Colombia	Ecuador	Panamá	Peru	Uruguay	Venezuela
ATECH	X-4000		√								√
ATECH/ RAYTHEON	SCO		√								
THOMSON	MITRA		√*								
THALES	EUROCAT1000			√							
INDRA	AIRCON2000				√	√		√			
INDRA	AIRCON2010									√	
INDRA	AIRCON2100	√									
ALENIA/ MARCONI	CMS					√	√				
NORTHROP GRUMMAN	AMS2000								√		

√* - To be changed to ATECH X-4000 this year

Table 3.0-5 ACC ATCS Automation Systems

3.1 3D-PSR/MSSR TPS-B34 3D Transportable Radar Interface

3.1.1 General

The 3D-PSR/MSSR sensor is a transportable primary radar (TPS-B34) system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.1.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX messages types ***001 Radar target report*** ***002 Radar service message*** ***008 Mono-radar derived weather information***
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference	G630621 - INTERFACE CONTROL DOCUMENT BETWEEN THE SIVAM 3-D TRANSPORTABLE RADAR AND THE AUTOMATION SYSTEM

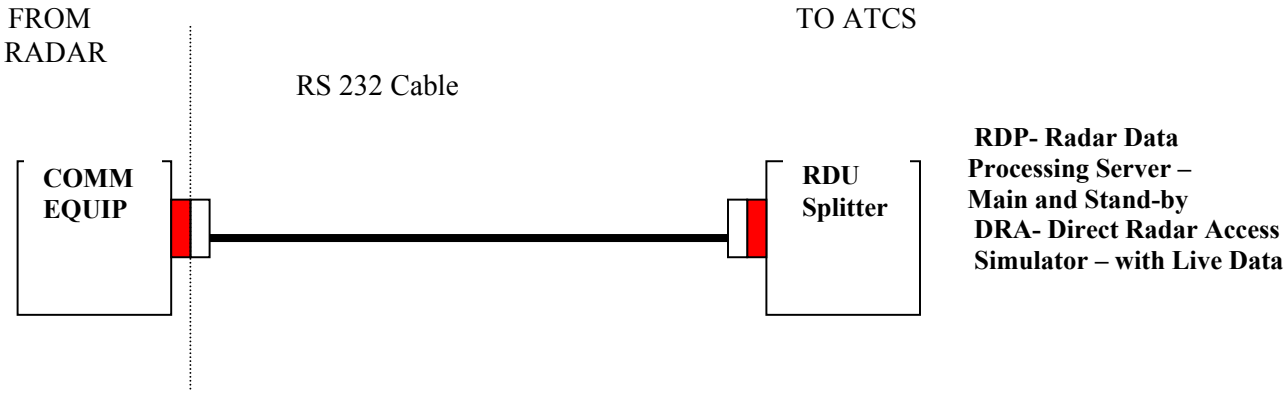
3.1.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

These radar systems are transportable and may be relocated to meet the needs for required radar coverage. In addition, the host radar (PSR) can operate in either of two turning modes (rpm of antenna) which needs a separate re-configuration for each radar (PSR and MSSR).

3.1.4 Typical Interface Connection for HDLC

The following diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.



SATCOM Equipment
Connector 25 pin 'D' type (F) DCE
Pin Configuration
1 Protective Ground (Frame)
3 Receive data
7 Signal Ground (Common Return)
17 Receive Clock

ATC Equipment
Connector 25 pin 'D' type (F) DTE
Pin Configuration
1 Protective Ground (Frame)
3 Receive data
7 Signal Ground (Common Return)
17 Receive Clock

3.1.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.1.5-1 HDLC Frame Structure

3.2 PSR/SSR LP23M + RSM870 Thomson Interface

3.2.1 General

The PSR/SSR sensor is a co-mounted primary (LP 23M) and secondary radar system with plot extraction facilities and remote control and monitoring capability. These radar sites are existing radar facilities. Each site provides radar track data in a standard format to the ATCS. Information provided by the radar supports ATC Operations. Communications is provided between the ATCS and the radar site by telephone channels, using landline and microwave links.

3.2.2 Interface Definition

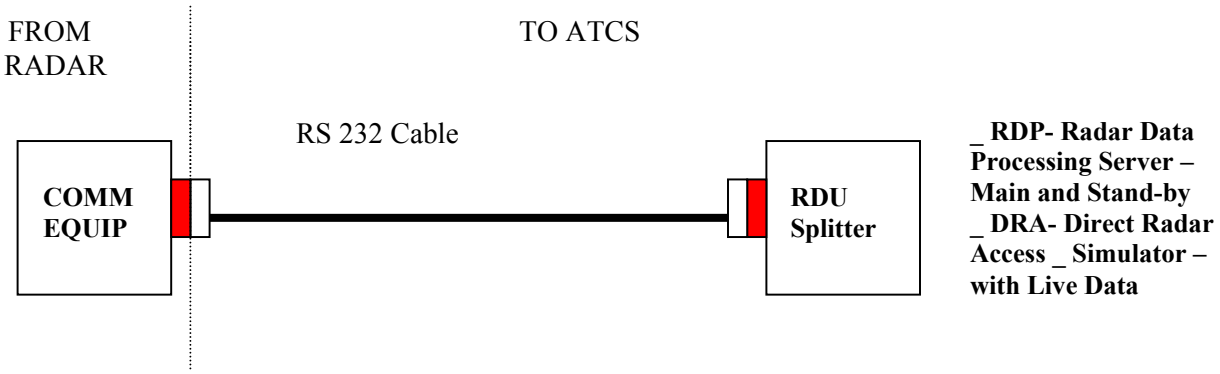
Type:	Serial – binary-synchronous
Description	Simplex (TVT2)
Data Type:	Radar data
Format:	PR 800
Message Definition:	TVT2 messages types – Ref. 'Procedure de Transmission TVT2' Message 'Status' (Sector Message) Message 'Piste' (Track Report) Message 'Correspondance Horloge' (North Mark) Message 'Suppression Piste' (Track Drop)
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232
Physical Connection:	´D' type 25 pin at input to Radar Distribution Units
Reference	SICD ACC-BS

3.2.3 Special Features

These radars use a common format (TVT2) for data transmission between the radar site and the existing ATC centers.

3.2.4 Typical Interface Connection for BI-SYNC Protocol

The following diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.



SATCOM Equipment
Connector 25 pin 'D' type (F) DCE
Pin Configuration
1 Protective Ground (Frame)
2 Transmit data
3 Receive data
7 Signal Ground (Common Return)
17 Receive Clock
24 Transmit Clock

ATC Equipment
Connector 25 pin 'D' type (F) DTE
Pin Configuration
1 Protective Ground (Frame)
2 Transmit data
3 Receive data
7 Signal Ground (Common Return)
17 Receive Clock
24 Transmit Clock

3.2.5 Interface Connection

The data provided by the radar site is formatted into a BISYNC data block as shown below. Order of transmission is LSB sent first.

SYN	SYN	SOH	HEADER	STX	TEXT	ETX/ETB	BCC

Table 3.2.5-1 Binary Synchronous Frame Structure

3.3 PSR/MSSR ASR-9 Interface

3.3.1 General

The PSR/MSSR sensor is a co-mounted dual primary (ASR 9) and dual secondary MMSSR radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track and weather data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.3.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	TBD

3.3.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.3.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.3.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.3.5-1 HDLC Frame Structure

3.4 PSR/SSR LP23M + RSM 970 Thomson Interface

3.4.1 General

The 3D-PSR/MSSR sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.4.2 Interface Definition

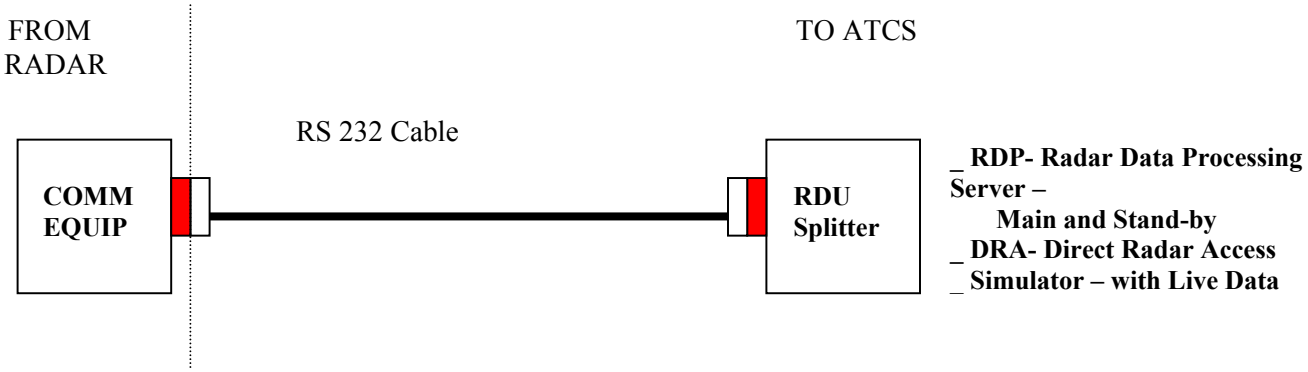
Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX messages types 034 Radar target report 048 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference	THALES SICD

3.4.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.4.4 Typical Interface Connection for HDLC

The following diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.



SATCOM Equipment
Connector 25 pin 'D' type (F) DCE
Pin Configuration
1 Protective Ground (Frame)
3 Receive data
7 Signal Ground (Common Return)
17 Receive Clock

ATC Equipment
Connector 25 pin 'D' type (F) DTE
Pin Configuration
1 Protective Ground (Frame)
3 Receive data
7 Signal Ground (Common Return)
17 Receive Clock

3.4.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.4.5-1 HDLC Frame Structure

3.5 3D-PSR/MSSR TRS2230 + RSM 970 Interface

3.5.1 General

The 3D TRS2230 sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.5.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX

Message Definition:	ASTERIX messages types 048 Radar target report 034 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference	SICD TRS2230 from THALES

3.5.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.5.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.5.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.5.5-1 HDLC Frame Structure

3.6 2D-PSR/MSSR TRACKER 2000 + RSM 970 Interface

3.6.1 General

The 2D PSR sensor is a co-mounted primary (TRACKER 2000) and secondary radar system with plot extraction facilities and remote control and monitoring capability. These radar sites are existing radar facilities. Each site provides radar track data in a standard format to the ATCS. Information provided by the radar supports ATC Operations. Communications is provided between the ATCS and the radar site by telephone channels, using landline and microwave links.

3.6.2 Interface Definition

Type:	Serial – binary-synchronous
Description	Simplex (AIRCAT500)
Data Type:	Radar data
Format:	PR 800

Message Definition:	AIRCAT 500 messages types Message ‘Status’ (Sector Message) Message ‘Piste’ (Track Report) Message ‘Correspondance Horloge’ (North Mark) Message ‘Suppression Piste’ (Track Drop)
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232
Physical Connection:	´D’ type 25 pin at input to Radar Distribution Units
Reference	AIRCAT 500 Specification

3.6.3 Special Features

These radars use a common format (AIRCAT500) for data transmission between the radar site and the existing ATC centers.

3.6.4 Interface Connection

The 3.2.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.6.5 Interface Protocol

The data provided by the radar site is formatted into a BISYNC data block as shown below. Order of transmission is LSB sent first.

SYN	SYN	SOH	HEADER	STX	TEXT	ETX/ETB	BCC

Table 3.6.5-1 Binary Synchronous Frame Structure

3.7 2D-PSR/MSSR ATCR33M/S + SIR-M(S) Interface

3.7.1 General

The 2D PSR/MSSR sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.7.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX

Message Definition:	ASTERIX messages types 001 Radar target report 002 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference:	TBD

3.7.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.7.4 Interface Connection

The 3.1.4 defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.7.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.7.5-1 HDLC Frame Structure

3.8 ATCR33DPC + SIR-S ALENIA

3.8.1 General

The 2D PSR/MSSR sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.8.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX

Message Definition:	ASTERIX messages types 048 Radar target report 034 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference	E-277-01-2132SSDD - USER APPLICATION PROFILE (UAP) FOR TRANSMISSION OF MONORADAR TARGET REPORT (ASTERIX CATEGORY 34 & 48)

3.8.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.8.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.8.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.8.5-1 HDLC Frame Structure

3.9 2D PSR + MSSR ATCR22M+ SIR-M

3.9.1 General

The 2D PSR/MSSR sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.9.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data

Format:	ASTERIX
Message Definition:	ASTERIX messages types 001 Radar target report 002 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference	TBD

3.9.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.9.4 Interface Connection

The following diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.9.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.9.5-1 HDLC Frame Structure

3.10 2D PSR SKYTRACKER + IRS20MPL

3.10.1 General

The 2D PSR/MSSR sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.10.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX

Message Definition:	ASTERIX messages types 001 Radar target report 002 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference:	TBD

3.10.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.10.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.10.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.10.5-1 HDLC Frame Structure

3.11 3D PSR/MSSR TPS-70

3.11.1 General

The 3D PSR sensor is a co-mounted primary (TPS-70) and secondary radar system with plot extraction facilities and remote control and monitoring capability. These radar sites are existing radar facilities. Each site provides radar track data in a standard format to the ATCS. Information provided by the radar supports ATC Operations. Communications is provided between the ATCS and the radar site by telephone channels, using landline and microwave links.

3.11.2 Interface Definition

Type:	Serial – binary-synchronous
Description	Simplex
Data Type:	Radar data
Format:	BiSYNC
Message Definition:	CD-2 messages types
Data Rate:	9.6 kbps

Electrical Characteristics:	RS 232
Physical Connection:	'D' type 25 pin at input to Radar Distribution Units
Reference	CD2 (FPS-117) Specification

3.11.3 Special Features

These radars use a common format (CD2) for data transmission between the radar site and the existing ATC centers. CD2 stands for Common Digitizer Protocol - enables the transmission and reception of synchronous radar data.

3.11.4 Interface Connection

The following diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.11.5 Interface Protocol

The data provided by the radar site is formatted into a BISYNC data block as shown below. Order of transmission is LSB sent first.

SYN	SYN	SOH	HEADER	STX	TEXT	ETX/ETB	BCC

Table 3.11.5-1 Binary Synchronous Frame Structure

3.12 2D SSR STAR2000 + RSM 970

3.12.1 General

The 2D PSR STAR2000 sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.12.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX messages types 001 Radar target report 002 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference	SICD STAR2000 from THALES

3.12.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.12.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.12.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.12.5-1 HDLC Frame Structure

3.13 2D TA-10 + RSM 970

3.13.1 General

The 2D PSR TA-10 sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.13.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX messages types 001 Radar target report 002 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	SICD TA-10 from THALES

3.13.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.13.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.13.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.13.5-1 HDLC Frame Structure

3.14 2D TA-10 + RSM 770

3.14.1 General

The 2D PSR TA-10 sensor is a primary radar system with a co-mounted secondary radar. Each system contains plot extraction facilities and remote control and monitoring capability. Each radar site provides radar plot and track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site and does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communication between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.14.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX messages types 001 Radar target report 002 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	SICD TA-10 from THALES

3.14.3 Special Features

Radar data links are organized as Simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.14.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.14.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.14.5-1 HDLC Frame Structure

3.15 2D PSR ASR23SS + MSSR

3.15.1 General

The PSR/MSSR sensor is a co-mounted dual primary (ASR 23 SS/16) and dual secondary (Condor Mk 2) radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track and weather data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.15.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message 008 Mono-radar derived weather information
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	G535530 - INTERFACE CONTROL DOCUMENT BETWEEN THE ASR23SS AND THE AUTOMATION SYSTEM

3.15.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.15.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.15.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.15.5-1 HDLC Frame Structure

3.16 ASR12SS + MSSR

3.16.1 General

The 2D PSR sensor is a co-mounted primary and secondary radar system with plot extraction facilities and remote control and monitoring capability. These radar sites are existing radar facilities. Each site provides radar track data in a standard format to the ATCS. Information provided by the radar supports ATC Operations. Communications is provided between the ATCS and the radar site by telephone channels, using landline and microwave links.

3.16.2 Interface Definition

Type:	Serial – binary-synchronous
Description	Simplex
Data Type:	Radar data
Format:	BiSYNC
Message Definition:	CD-2 messages types
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Units
Reference	CD2 (FPS-117) Specification

3.16.3 Special Features

These radars use a common format (CD2) for data transmission between the radar site and the existing ATC centers. CD2 stands for Common Digitizer Protocol - enables the transmission and reception of synchronous radar data.

3.16.4 Interface Connection

The 3.2.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.16.5 Interface Protocol

The data provided by the radar site is formatted into a BISYNC data block as shown below. Order of transmission is LSB sent first.

SYN	SYN	SOH	HEADER	STX	TEXT	ETX/ETB	BCC

Table 3.16.5-1 Binary Synchronous Frame Structure

3.17 MSSR RSMA INVAP

3.17.1 General

The MSSR INVAP sensor is dual secondary radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.17.2 Interface Definition

Type:	Serial - synchronous
Description	ASTERIX over TCP/IP, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message
Data Rate:	128 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	TBD

3.17.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames. The data is sent to the Center using a TCP/IP Wrapper.

3.17.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.17.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.17.5-1 HDLC Frame Structure

3.18 MSSR CARDION

3.18.1 General

The MSSR CARDION sensor is a dual secondary radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.18.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	TBD

3.18.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.18.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.18.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.18.5-1 HDLC Frame Structure

3.19 MSSR SIR-7 ALENIA

3.19.1 General

The MSSR sensor is dual secondary radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.19.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	TBD

3.19.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.19.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.19.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.19.5-1 HDLC Frame Structure

3.20 MSSR SIR-S SELEX

3.20.1 General

The MSSR sensor is dual secondary radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.20.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	D' type 25 pin at input to Radar Distribution Unit (RDU)
Reference	TBD

3.20.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.20.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.20.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.20.5-1 HDLC Frame Structure

3.21 MSSR CONDOR MK2D

3.21.1 General

The MSSR sensor is a dual secondary radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.21.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	IC808466/801 FOR THE CONDOR MK2D ASTERIX RADAR DATA OUTPUT SIVAM - FREE- STANDING INSTALLATIONS

3.21.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.21.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.21.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.21.5-1 HDLC Frame Structure

3.22 MSSR ISIR-M ALENIA

3.22.1 General

The MSSR sensor is a dual secondary radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.22.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	Mensajes Radar ASTERIX con UAPs de Alenia. COCESNA

3.22.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.22.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.22.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.22.5-1 HDLC Frame Structure

3.23 MSSR IRS-20MP/L INDRA

3.23.1 General

The MSSR sensor is a dual secondary radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.23.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	Specification IRS-20MP/L INDRA COCESNA

3.23.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.23.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.23.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.23.5-1 HDLC Frame Structure

3.24 MSSR RSM 970 THALES

3.24.1 General

The MSSR sensor is a dual secondary radar system with plot extraction facilities and remote control and monitoring capability. Each site provides radar plot, track data in a standard format to the ATCS. A remote monitoring and control (M&C) terminal is located at the ATCS site but does not directly connect to the ATCS. Information provided by the radar supports ATC Operations. Communications between the ATCS and the radar site is provided by telephone channels, using satellite links and land-lines.

3.24.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Simplex – one way transmission
Data Type:	Radar data
Format:	ASTERIX
Message Definition:	ASTERIX message types 001 Radar target report 002 Radar service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	TBD

3.24.3 Special Features

Radar data links are organized as simplex transmission from Radar to ATCS. The serial data stream is synchronous with the clock provided by the source (radar site). Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.24.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.24.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.24.5-1 HDLC Frame Structure

3.25 AMS (Alenia Marconi Systems) Interface (Intercenter System Radar Track)

3.25.1 General

This interface allows to send and receive system track data, resulting of the fusion of the information from several PSR/MSSR and MSSR sensors, the coordinate are sent in latitude, longitude. The track is sent with the flight Plan information associated to the track. The cycle update is generated by the center, usually 4, 5 or 10 sec. Communications is provided between the ATCS and the radar site by telephone channels, using landline and microwave links.

3.25.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Full-duplex
Data Type:	System Track data
Format:	ASTERIX
Message Definition:	ASTERIX message types 062 Radar target report 063 Sensor status service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	EUROCONTROL Surveillance Data Exchange

3.25.3 Special Features

System Track Radar data links are organized as full-duplex transmission from ATCS to an adjacent ATCS. The serial data stream is synchronous with the clock provided by the source ATCS. Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.25.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.25.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.25.5-1 HDLC Frame Structure

3.26 Inter-CINDACTA (Intercenter System Radar Track)

3.26.1 General

This interface allows to send and receive system track data, resulting of the fusion of the information from several PSR/MSSR and MSSR sensors, the coordinate are sent in stereographical projection referenced to the Center. The track is sent with the CALLSIGN associated to the track. The cycle update is generated by the center, usually 4, 5 or 10 sec. Communications is provided between the ATCS and the radar site by telephone channels, using landline and microwave links.

3.26.2 Interface Definition

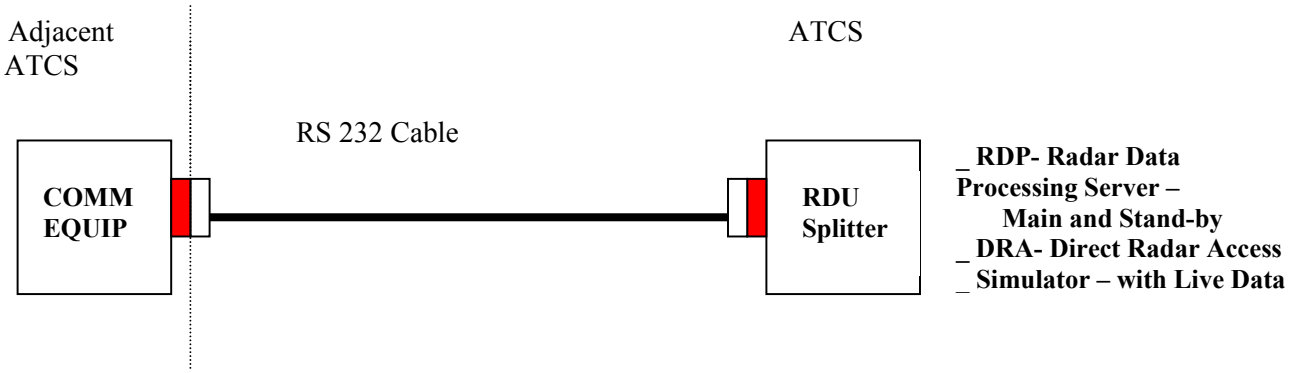
Type:	Serial – binary-synchronous
Description	Full-duplex (TVT2)
Data Type:	Radar data
Format:	System Radar Data
Message Definition:	TVT2 messages types – Ref. ‘Procedure de Transmission TVT2’
	Message ‘Status’ (Sector Message)
	Message ‘Piste’ (Track Report)
	Message ‘Correspondance Horloge’ (North Mark)
	Message ‘Suppression Piste’ (Track Drop)
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Units
Reference	SICD ACC-BS

3.26.3 Special Features

These interface use a common format (TVT2) for data transmission between the ATCS Site from/to an adjacent ATCS center.

3.26.4 Typical Interface Connection for BI-SYNC Protocol

The following diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.



SATCOM Equipment
Connector 25 pin 'D' type (F) DCE
Pin Configuration

1 Protective Ground (Frame)
2 Transmit data
3 Receive data
7 Signal Ground (Common Return)
17 Receive Clock
24 Transmit Clock

ATC Equipment
Connector 25 pin 'D' type (F) DTE
Pin Configuration

1 Protective Ground (Frame)
2 Transmit data
3 Receive data
7 Signal Ground (Common Return)
17 Receive Clock
24 Transmit Cloc

3.26.5 Interface Protocol

The data provided by the radar site is formatted into a BISYNC data block as shown below. Order of transmission is LSB sent first.

SYN	SYN	SOH	HEADER	STX	TEXT	ETX/ETB	BCC

Table 3.26.5-1 Binary Synchronous Frame Structure

3.27 INDRA Interface (Intercenter System Radar Track)

3.27.1 General

This interface allows to send and receive system track data, resulting of the fusion of the information from several PSR/MSSR and MSSR sensors, the coordinate are sent in latitude, longitude. The track is sent with the flight Plan information associated to the track. The cycle update is generated by the center, usually 4, 5 or 10 sec. Communications is provided between the ATCS and the radar site by telephone channels, using landline and microwave links.

3.27.2 Interface Definition

Type:	Serial - synchronous
Description	HDLC, Full-duplex
Data Type:	System Track data
Format:	ASTERIX
Message Definition:	ASTERIX message types 062 Radar target report 063 Sensor status service message
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Radar Distribution Unit (RDU)
Reference	EUROCONTROL Surveillance Data Exchange

3.27.3 Special Features

System Track Radar data links are organized as full-duplex transmission from ATCS to ATCS. The serial data stream is synchronous with the clock provided by the source ATCS. Each physical communications link consists of two signals, data and clock, from the radar site. The HDLC procedure is defined in accordance with ISO 3309 for one way transmission with no acknowledgement of received frames.

3.27.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the radar serial interface. See also Figure 3.1-1 for details of the Radar Distribution Unit.

3.27.5 Interface Protocol

The data provided by the radar site is formatted into an HDLC frame structure as shown in below. Order of transmission is LSB sent first.

FLAG	ADDRESS	CONTROL	ASTERIX MESSAGE BLOCK	FCS	FLAG
01111110	8 bits	8 bits	Variable length (bytes)	16 bits	01111110

Table 3.27.5-1 HDLC Frame Structure

3.28 Flight Plan interface with Hand-off Coordination ICAO

3.28.1 General

The Aeronautical Fixed Telecommunications Network (AFTN) is a Worldwide network specifically for the transmission of Flight Plans and related information (aeronautical and meteorological) between Airports, ATC Centers, Meteorological centers and Air Traffic Services. The network is essentially a low speed data network designed for use over low-grade telephone lines. Data rates can be as low as 75 baud (telex rates) or may be as high as 9.6 kbps as output from modern Automatic Message Switch System (AMSS). These AMSS usually form a hub at many centers to provide local distribution and also allow direct access to the network. Communications between the ATCS and the AMSS is provided by point-to-point serial digital links. The AMSS is also referred to as a AFTN Server in this document.

3.28.2 Interface Definition

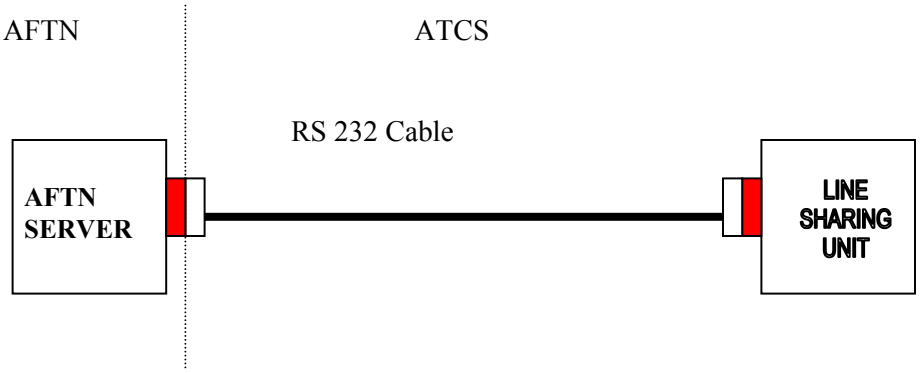
Type:	Serial - asynchronous
Description	FULL DUPLEX
Data Type:	AFTN messages
Format:	ICAO
Message Identity:	FPL, CHG, CNL, DLA, DEP, CPL, EST, ARR, including also CDN, LAM and ACP for Hand-off
Message Definition:	Refer to ICAO Annex 10 and Doc 4444
Data Rate:	2.4 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	´D' type 25 pin at input to Flight Data Processors
Reference	ICAO Doc 4444

3.28.3 Special Features

A line-sharing unit is employed at the input to the FDPs to allow for un-interrupted connection should one of the FDPs fail and a switch over occurs.

3.28.4 Interface Connection

The following diagram defines the interface connection point for the AFTN serial interface. See also Figure 3.1-4 for details of the connection to the FDP processors.



Connector 25 pin 'D' type (F) DCE
Pin Configuration

1	Protective Ground (Frame)
2	Transmit data
3	Receive data
4	Request to Send
5	Clear to Send
7	Signal Ground (Common Return)

ATC Equipment
Connector 25 pin 'D' type (F) DTE
Pin Configuration

1	Protective Ground (Frame)
2	Transmit data
3	Receive data
4	Request to Send
5	Clear to Send
7	Signal Ground (Common Return)

3.29 Flight Plan interface without Hand-off Coordination ICAO

3.29.1 General

The Aeronautical Fixed Telecommunications Network (AFTN) is a Worldwide network specifically for the transmission of Flight Plans and related information (aeronautical and meteorological) between Airports, ATC Centers, Meteorological centers and Air Traffic Services. The network is essentially a low speed data network designed for use over low-grade telephone lines. Data rates can be as low as 75 baud (telex rates) or may be as high as 9.6 kbps as output from modern Automatic Message Switch System (AMSS). These AMSS usually form a hub at many centers to provide local distribution and also allow direct access to the network. Communications between the ATCS and the AMSS is provided by point-to-point serial digital links. The AMSS is also referred to as a AFTN Server in this document.

3.29.2 Interface Definition

Type:	Serial - asynchronous
Description	FULL DUPLEX
Data Type:	AFTN messages
Format:	ICAO
Message Identity:	FPL, CHG, CNL, DLA, DEP, CPL, EST, ARR
Message Definition:	Refer to ICAO Annex 10 and Doc 4444
Data Rate:	2.4 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to Flight Data Processors
Reference:	ICAO Doc 4444

3.29.3 Special Features

A line-sharing unit is employed at the input to the FDPs to allow for un-interrupted connection should one of the FDPs fail and a switch over occurs.

3.29.4 Interface Connection

The 3.26.4 diagram defines the interface connection point for the AFTN serial interface. See also Figure 3.1-4 for details of the connection to the FDP processors.

3.30 OLDI Interface

3.30.1 General

This interface is used to coordinate Flight Plans (Hand-Off) between Adjacent ATC Centers. This protocol is used for Entry Coordination and Exit Coordination, using a specific set of messages to transfer a flight Plan from/to a Adjacent Center, with specific signalization on the Human-Machine Interface to the Controller.

3.30.2 Interface Definition

Type:	Serial - synchronous
Description	X.25, HDLC, FULL DUPLEX
Data Type:	Flight Plan Coordination
Format:	OLDI
Message Identity:	ABI, ACT, REV, PAC, MAC e LAM
Message Definition:	Refer to OLDI EUROCONTROL doc
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to Flight Data Processors
Reference	Estándar de Eurocontrol de intercambio de datos en línea (OLDI, On-Line Interchange) Eurocontrol Edición 2.3 diciembre de 2001

3.30.3 Special Features

A line-sharing unit is employed at the input to the FDPs to allow for un-interrupted connection should one of the FDPs fail and a switch over occurs.

3.30.4 Interface Connection

The 3.1.4 diagram defines the interface connection point for the OLDI serial interface.

3.30.5 Interface Protocol

The data provided by the radar site is formatted into a BISYNC data block as shown below. Order of transmission is LSB sent first.

SYN	SYN	SOH	HEADER	STX	TEXT	ETX/ETB	BCC

Table 3.30.5-1 Binary Synchronous Frame Structure

3.31 AIDC interface

3.31.1 General

This interface is used to coordinate Flight Plans (Hand-Off) between Adjacent ATC Centers. This protocol is used for Entry Coordination and Exit Coordination, using a specific set of messages to transfer a flight Plan from/to a Adjacent Center, with specific signalization on the Human-Machine Interface to the Controller.

3.31.2 Interface Definition

Type:	Serial - synchronous
Description	X.25, HDLC, FULL DUPLEX (and future ATN)
Data Type:	AIDC messages
Format:	ICAO
Message Identity:	ABI, CPL, EST, PAC, ACP, MAC, LAM, LRM, TOC, AOC
Message Definition:	Refer to ICAO Doc

Data Rate:	2.4 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to Flight Data Processors
Reference	APANPIRG ICD

3.31.3 Special Features

A line-sharing unit is employed at the input to the FDPs to allow for un-interrupted connection should one of the FDPs fail and a switch over occurs.

3.31.4 Interface Connection

The 3.26.4 diagram defines the interface connection point for the HDLC (X.25) serial interface. See also Figure 3.1-4 for details of the connection to the FDP processors.

3.31.5 Interface Protocol

The data provided by the radar site is formatted into a BISYNC data block as shown below. Order of transmission is LSB sent first.

SYN	SYN	SOH	HEADER	STX	TEXT	ETX/ETB	BCC

Table 3.31.5-1 Binary Synchronous Frame Structure

3.32 ATCS to ATCS (CINDACTA) Interface Flight Plan Data Message

3.32.1 General

Flight plan data will be exchanged between the ATCS and adjacent ATCS (CINDACTA). The primary communication path for this exchange is via the digital comms infrastructure. Digital comms nodes are available at the major sites and are interconnected using digital data links. The links are supported by landline, microwave or satellite links. The information that is provided by these links supports ATC Operations. The communication path between the SCO and a CINDACTA is a point to point data circuit.

3.32.2 Interface Definition

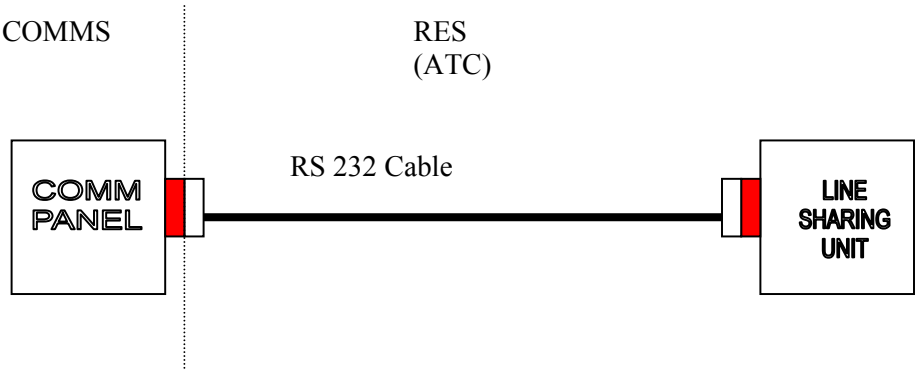
Type:	Serial – binary-synchronous
Description	FULL DUPLEX (TVT2)
Data Type:	Flight Plan Data
Format:	ICAO in TVT2 wrapper
Message Identity:	CDN, LAM, ACP
Message Definition:	Refer to Doc 4444
Data Rate:	9.6 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	'D' type 25 pin at input to FDPS
Reference	SICD ACC-BS

3.32.3 Special Features

The Line Sharing Units allow connection between the active Flight Plan Data Processor of the ATCS and the equivalent units in the adjacent CINDACTA. The active FDP will exchange messages for flights in a defined region on each side of the FIR boundary, controlled by the respective ATC centers. Messages will be received and transmitted using NOS to implement the network communications function.

3.32.4 Interface Connections

The following diagram defines the interface connection point for the SCO to CINDACTA serial interface. See also Figure 3.1-4 for details of the connection to the FDP processors.



COMM PANEL
Connector 25 pin 'D' type (F) DCE
Pin Configuration

1	Protective Ground (Frame)
2	Transmit data
3	Receive data
7	Signal Ground (Common Return)
17	Receive Clock
24	Transmit Clock

ATC Equipment
Connector 25 pin 'D' type (F) DTE
Pin Configuration

1	Protective Ground (Frame)
2	Transmit data
3	Receive data
7	Signal Ground (Common Return)
17	Receive Clock
24	Transmit Clock

3.32.5 Interface Protocol

The data provided by the SCO is formatted into a BISYNC data block as shown in below. Order of transmission is LSB sent first.

SYN	SYN	SOH	HEADER	STX	TEXT	ETX/ETB	BCC

Table 3.32.5-1 Binary Synchronous Frame Structure

3.33 RCMS (Radar Sensors) Interface

3.33.1 General

For each of the PSR/MSSR sensors, MSSR sensors and the 3-D radars, Remote Control and Monitoring facilities are provided. The Remote monitoring and control (M&C) terminals which can be situated both at the radar head (site) and in the ATCS are used to control (configure) and monitor the status of the radars. The data links used with the remote monitoring and control (M&C) terminals are the same type as used for the radar data except the links are full-duplex in operation. These remote monitoring and control (M&C) terminals which are situated in the ATCS do not directly connect to the ATCS. Communications between the ATCS and the radar site is provided by telephone channels, satellite links and land-lines.

3.33.2 Interface Definition

Part of the Radar system. Refer to the specific Radar ICD such as: G630621, G628715 and IC808136/802

3.33.3 Special Features

One remote terminal will be provided for each radar site.

3.34 AFTN AMSS (to/from AIS) Interface

3.34.1 General

The Aeronautical Fixed Telecommunications Network (AFTN) is a Worldwide network specifically for the transmission of Flight Plans and related information (aeronautical and meteorological) between Airports, ATC Centers, Meteorological centers and Air Traffic Services. The network is essentially a low speed data network designed for use over low-grade telephone lines. Data rates can be as low as 75 baud (telex rates) or may be as high as 9.6 kbps as output from modern Automatic Message Switch System (AMSS). These AMSS usually form a hub at many centers to provide local distribution and also allow direct access to the network. Communications between the ATCS and the AMSS is provided by point-to-point serial digital links. The AMSS is also referred to as a Text Server in this document.

3.34.2 Interface Definition

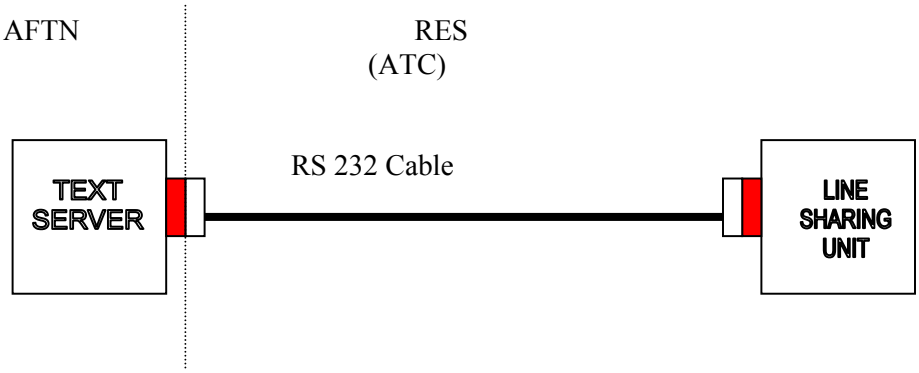
Type:	Serial - asynchronous
Description	FULL DUPLEX
Data Type:	AFTN messages
Format:	ICAO
Message Identity:	AFTN Messages
Message Definition:	Refer to ICAO Annex 10 Wind Data ICAO_Meteorological Data
Data Rate:	2.4 kbps
Electrical Characteristics:	RS 232c V24/V28
Physical Connection:	‘D’ type 25 pin at input to AIS Processors

3.34.3 Special Features

A line sharing unit is employed at the input to the AIS servers to allow for un-interrupted connection should one of the AIS fail and a switch over occurs.

3.34.5 Interface Connection

The following diagram defines the interface connection point for the AFTN serial interface. See also Figure 3.1-4 for details of the connections to the FDP and AIS processors.



Text Server
Connector 25 pin 'D' type (F) DTE
Pin Configuration

1	Protective Ground (Frame)
2	Transmit data
3	Receive data
4	Request to Send
5	Clear to Send
7	Signal Ground (Common Return)

ATC Equipment
Connector 25 pin 'D' type (F) DTE
Pin Configuration

1	Protective Ground (Frame)
2	Transmit data
3	Receive data
4	Request to Send
5	Clear to Send
7	Signal Ground (Common Return)

3.35 Time Server to ATCS Interface (Time Synchronization Message)

3.35.1 General

The Time server sent Time synchronization Messages to the ATCS dual LAN, using nntp service in the RDP to synchronize all the workstations. This will provide the System Time.

3.35.2 Interface Definition

Type:	LAN
Description	Ethernet
Data Type:	Time synchronization Message
Format:	TCP/IP, Internal LAN Message structure
Message Identity:	ATCS TimeSynchronization
Message Definition:	LAN Message Time synchronization
Source Mail Box:	(TBD)
Source IP Address:	(TBD)
Destination Mail Box:	(TBD)
Destination IP Address:	(TBD)
Data Rate:	100 Mbps
Electrical Characteristics:	ISO3309 and ISO7776
Physical Connection:	RJ45

3.35.3 Special Features

A time synchronization message will be generated at regular intervals (every 10 seconds) to ensure that the ATCS has the same time, which is synchronized to the GPS Universal Time Coordinated (UTC). The message will be sent to a unique node address in the ATCS using a Mail box number scheme.

3.35.4 Interface Protocol

The data provided by the Time server is formatted into a Message data block. Order of transmission is LSB sent first.

Figure 3.1-1 Typical Radar Data Interface – dual links from each radar (A+B)

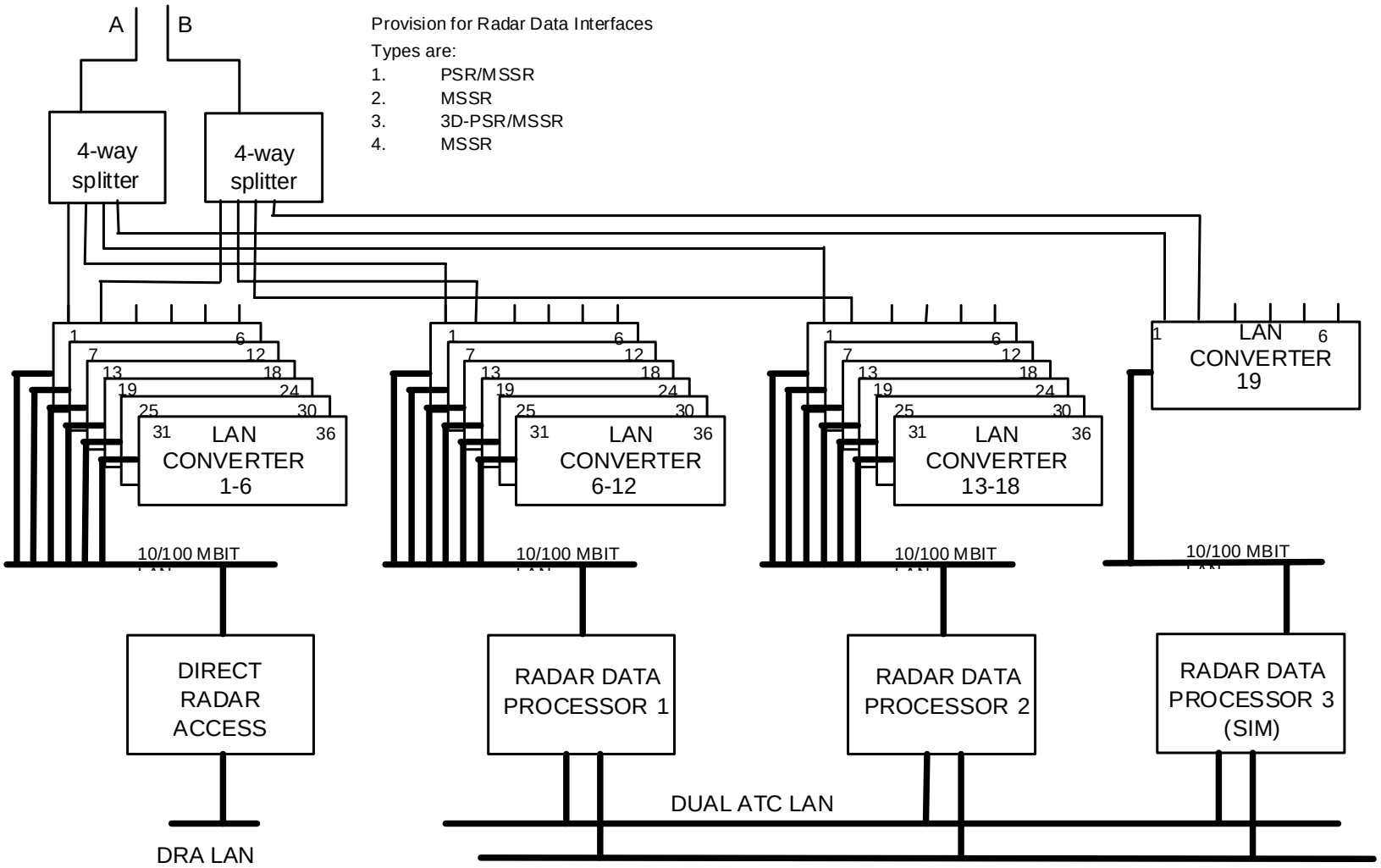


Figure 3.1-2 Typical Interface to the AGP for Future ADS Data Reception

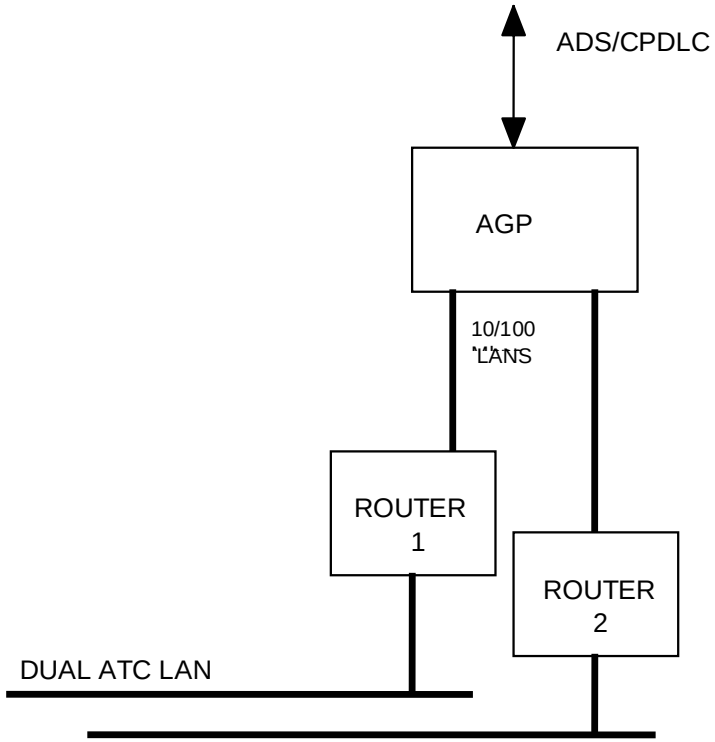


Figure 3.1-3 Typical ATCS Configuration

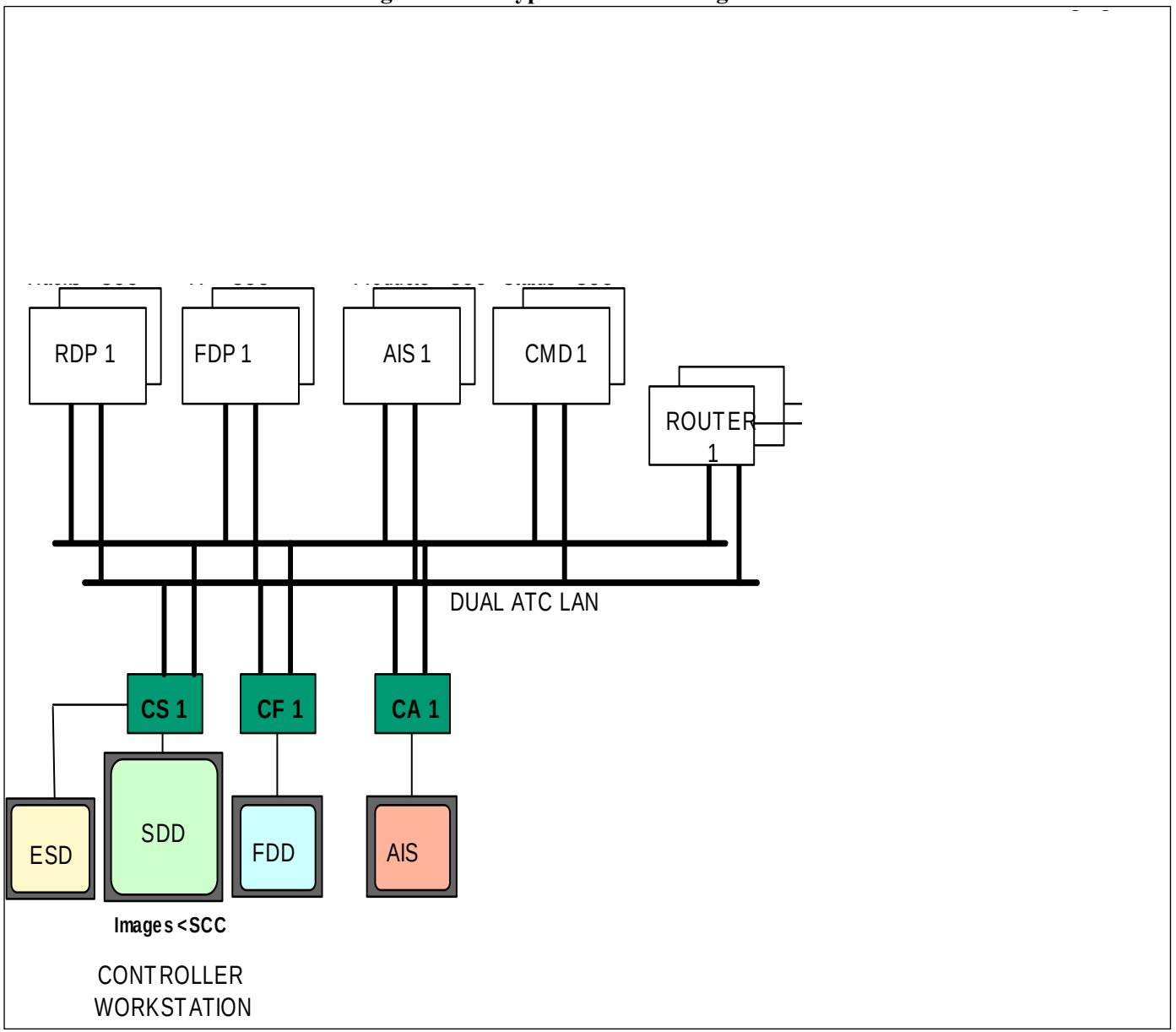
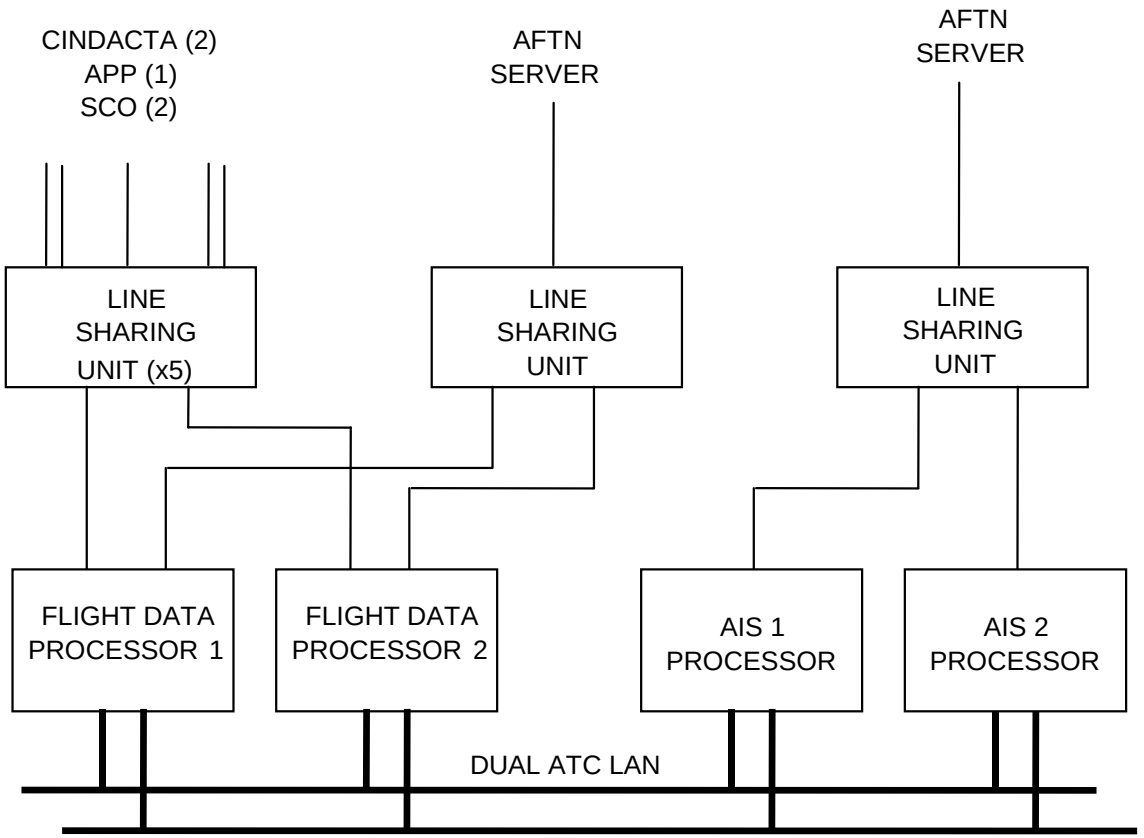


Figure 3.1-4 Interface to ATC Centers and AFTN for Flight data exchange



4.0 Recommended interfaces

The recommend interfaces are:

_ Surveillance: as defined in the Item 3.25 – Intercenter ASTERIX Radar Data category 62 and 63.

_ Flight Plan: as defined in the item 3.31 – AIDC Messages over ATN.

5.0 Notes

5.1 Glossary

This section contains a list of abbreviation used in this document.

AFTN	Aeronautical Fixed Telecommunications Network
AGDLIC	Air/Ground Data Link Interface Controller
AIS	Aeronautical Information Services
AMS	Alenia Marconi Systems
AMSS	Automatic Message Switch System
APP	Approach Control
ASTERIX	All purpose structure Eurocontrol radar information exchange
ATC	Air Traffic Control
ATCS	Air Traffic Control System
CFE	Customer Furnished Equipment
CINDACTA	Centro Integrado de Defesa Aerea e Controle de Trafego Aereo
DCE	Data Circuit-Terminating Equipment
DTE	Data Terminal Equipment
EMA	Altitude Weather Station
EMS	Surface Meteorological Station
FCS	Frame Check Sequence
FDDI	Fibre (optic) Distributed Data Interface
FDP	Flight Data Processor
FIR	Flight Information Region
FP	Flight Plan
GPS	Global Positioning Satellite
HDLC	High-level data link control
HF	High Frequency
HTTP	Hyper-text Transfer Protocol
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
IDD	Interface Design Document
IRS	Interface Requirements Specification
LAB	Laboratory
LAN	Local Area Network
M&C	Monitor and Control
MSSR	Monopulse Secondary Surveillance Radar
NOTAM	Notice to Airmen
OUE	User Organization Equipment
PSR	Primary Surveillance Radar
RDP	Radar Data Processor

RDSS	Radio Determination Sub-system
RDU	Radar Distribution Unit
RES	Raytheon Electronic Systems
RF	Radio Frequency (normally rf)
RM	Regional Monitoring
RPL	Repetitive Flight Plan
RS	Remote Sensing
SCD	Brazilian low Earth orbiting satellite
SCO	Operations Sub-center
SICD	System Interface Control Document
SIVAM	System for the Vigilance of the Amazon
STV	Data Treatment and Visualization Center
TBD	To be determined
TCP/IP	Transmission Control Protocol/Internet Protocol
TEL	Telecommunications
TIROS	Television and infra-red observation satellite
UDP	User Datagram Protocol
UTC	Universal Time Coordinated
VCCS	Voice Communications Control System
WAN	Wide Area Network
WMO	World Meteorological Organization

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