IFF-7300S Series

Automated Test System for military transponders, interrogators, cryptos and TACAN transceivers
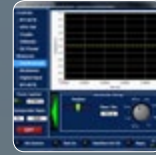
COBHAM

The most important thing we build is trust

LRU Automatically
Put Into Test Mode

Automated Testing
Per OEM Procedures

Manual Test Mode
Available

Improving your operational efficiency with faster on-site test solutions

Cobham AvComm offers a wide range of avionics test solutions supporting engineering, factory, flightline, and return-to-service test requirements. Working closely with avionic OEM's and users, we strive to develop a comprehensive and user friendly solution utilizing modern technology to meet the long term needs of the aviation industry.

Cobham AvComm

IFF-7300S Series Automated Test System

Powerful multi-mode tester in one compact system

The IFF-7300S Series is a powerful computer based system designed for the test and diagnosis of military avionics, including IFF transponders, interrogators, cryptos, and TACAN transceivers.

Aircraft emulation and test setup

The IFF-7300S contains all required resources and emulates all necessary signals that the aircraft exerts on the unit under test (UUT)

- No need for an external power supply
- The radio is completely set up and ready for full testing

Test modes

- Automated return-to-service testing (Level 1 / O-Level)
- Automated module level diagnostics (Level 2 / I-Level)
- Manual mode testing using Cobham AvComm's proprietary VirtualPanel™ application software

Automated testing per OEM procedures

- Significant time is saved over manual testing
- Automated "test scripts" eliminate possibility of inconsistent testing
- Test reports are automatically stored electronically for future reference
- Traceability of results available for audits

Other benefits

- Ease of use - navigating between test modes is as easy as pushing a button
- Affordable – no need for purchasing multiple stations that take up valuable lab space; purchase only the Test Program Sets (TPS) you need today
- Expandable - to add test capability, simply purchase additional TPS's
- In-house test/repair capability eliminates long delays and reduces number of spares needed
- Save money on return-to-service testing, maintenance, repair, No-fault-found (NFF), and shipping

Cobham AvComm

IFF-7300S Series Automated Test System

System Configurations

IFF-7300S-01/02/03/04 *(NSN 6625-01-612-8238)* **-** The IFF-7300S-01/02 Test Systems are designed to test IFF Mode 4 UUTs and TACAN receiver-transmitters. The IFF-7300S-03/04 Test Systems are designed to test IFF Mode 5 UUTs and TACAN receiver-transmitters. The 01 and 03 versions have the DC power supply, needed for testing the majority of UUTs, and the 02 and 04 versions have the AC/DC power supply, which is needed only for the small number of UUTs that require AC power (i.e. APX-72). All versions (01/02/03/04) can be expanded to test crypto appliqués by adding an external IFF-45TS.

IFF-7300S-01/02/03/04

IFF-7300S-50 *(NSN 6625-01-624-7151)* **-** This system configuration includes the test system with two each IFF-45TS's. Optional external UUT power supply is available to add IFF and TACAN UUT test capability.

The IFF-7300S-50 is a dedicated cryptographic appliqué tester. Automatic UUT control guides the operator through the key load process. All status flags are displayed simultaneously with red/green indication. Automated back-to-back testing offers significant time savings over manual testing.

The system can be expanded to test military IFF and TACAN radios by adding an external power supply to the system. The power supply is located externally (outside the rack).

IFF-7300S-50

System Architecture

The IFF-7300S Series is comprised of a combination of three major components: ATB-7300S-100, IFF-45TS and Power Supply.

IFF-7300S-01/02/03/04

- ATB-7300S-100 Control/Interface Unit
- IFF-45TS (or IFF-45TS-A) IFF/TACAN Test Set
- Power Supply (DC or AC/DC)
- Optional external IFF-45TS IFF/TACAN Test Set for adding crypto appliqué test capability

IFF-7300S-50

- ATB-7300S-100 Control/Interface Unit
- IFF-45TS IFF/TACAN Test Set (qty 2)
- Optional external DC or AC/DC power supply for adding IFF and TACAN test capability

ATB-7300S-100

The ATB-7300S-100 provides control/monitor of the IFF-45TS and the UUT via a color touch screen display. The ATB-7300S-100 internal architecture is modular and PXI based. Data bus emulation and test are provided, in addition to synchro/ resolver, analog and digital I/O, a high performance front panel oscilloscope and Digital Multi-Meter (DMM). Functional characteristics are as follows:

- ARINC 429 - 6 Channels (transmit/receive)
- ARINC 561/568 – 1 Channel (transmit/receive)
- MIL-STD Standard 1553B Data Card (IFF-7300S OPT1)
- 35 SPST Electromechanical Relays
- 32x4 Electro-Mechanical Matrix Switch
- 32 Digital Input Channels
- 19 Digital Output Channels

Automated control is facilitated via THORsi, a powerful, time-tested, reliable and industry leading test executive software package. The UUT control interface is provided via a Test Unit Adapter (TUA) cable set. Individual Test Program Sets (TPS) are available for each UUT. TPS test sequences provide return-to-service, depot-level repair, calibration and verification capability. Automatic and manual test modes are supported.

IFF-45TS

The IFF-45TS is an AIMS certified RF signal generator for development, manufacturing and depot testing of transponders/interrogators and DME/TACAN radios.

Transponder - 1, 2, 3/A, C, S, 4, 5
Interrogator - 1, 2, 3/A, C, S, 4, 5
DME/TACAN

Crypto Support
- KIT-1C/KIR-1C
- KIT-1A/KIR-1A
- KIV-78 & QRTK6 NG (Option A)
- KIV-6
- KIV-77 & SIT-2010 (Option B)

DC and AC/DC Power Supplies

Depending on the version, the IFF-7300S may include either a DC power supply or an AC/DC power supply to provide power to the UUT. Most UUTs require only a DC power supply. However, some UUTs require a 400 Hz AC power supply (for example: APX-72).
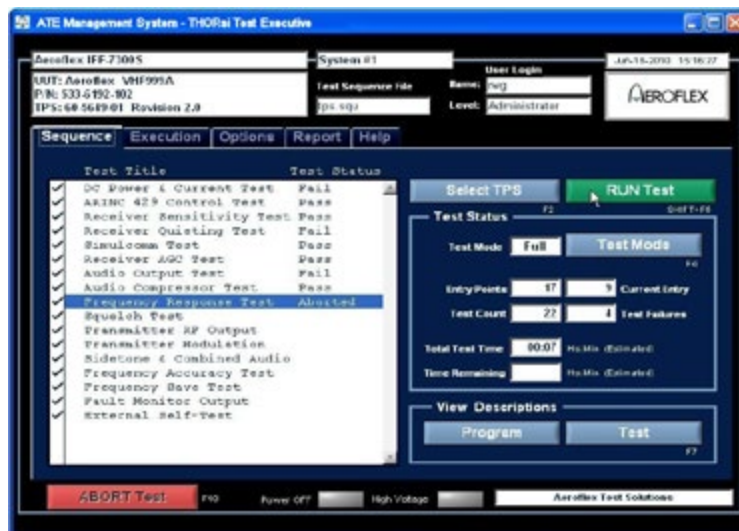
System Software

Cobham AvComm Proprietary Test Executive Software

THORsi was developed and tailored specifically for aerospace applications, allowing for efficient scalability. It runs on Windows® OS and has an intuitive operator interface which reduces training time.

Unique THORsi Test Executive Features:

- Most structured and documented test executive in the industry which allows for efficiently adding new test capability – highly scalable
- Instrument driver and utility software updates without recompiling test programs
- Time-proven reliability in the aerospace industry
- Assigned operating authority by user level with password protection
- Easy retrieval of user test programs (by OEM, model, part number or category)
- All test programs provide the operator with UUT setup instructions prior to a test run
- Test mode selection options include full or partial testing which allows for:
    - Test module looping
    - Ability to pause on test steps

- Test results stored in ODBC compliant database which is compatible with many third party test data analysis programs
- Report printing capability (USB printer or network connection)
- Powerful capability for managing test results (concise summary reports, utilization records, etc.)
- Software development training available for the user that wants to develop TPS's

User Interface - A typical test script

Cobham AvComm

IFF-7300S Series Automated Test System

Test Program Sets

AN/ARN-153(V) Advanced Digital TACAN TPS

The ARN-153 Test Program Sets (TPS) were designed to interface with the IFF-7300S Automated Test System. The ARN-153 TPS's are the only Rockwell Collins licensed O-Level and I-Level test solutions for the ARN-153 TACAN LRU.

- The O-Level TPS provides performance and return-to-service test capability and includes:
    - Return-to-service software
    - The test unit adapter (TUA)

- The O-Level plus I-Level TPS provides performance testing, intermediate level troubleshooting, disassembly, assembly and calibration of the 374E-1 TACAN Receiver-Transmitter. The TPS includes:
    - Return-to-service software
    - The test unit adapter (TUA)
    - Module-level test and diagnostic software
    - Cobham AvComm proprietary VirtualPanel™ software that emulates functions of the traditional hardware interface panels

Order Information

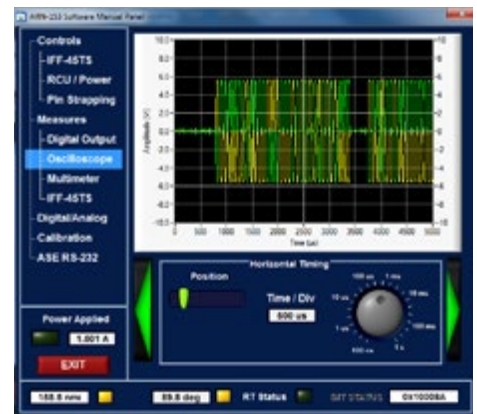| Part Number	Description
90981	AN/ARN-153(V) O-Level TPS (w/ TUA) (contact Rockwell Collins for quote)
138521	AN/ARN-153(V) O-Level plus I-Level TPS (w/ TUA) (contact Rockwell Collins for quote)

Source Document(s)

Cobham AvComm certifies that these Test Program Sets, when used with the IFF-7300S TACAN/IFF Automated Test System, will comply with the limitations, parameters, reliability and specification requirements found in the following Rockwell Collins document(s):

AN/ARN-153(V) Intermediate Maintenance Manual: 523-0774760-20511A
AN/ARN-153(V) Organization Maintenance Manual: 523-0778321-004111

VirtualPanel™ software example for manual control of LRU

VirtualPanel™ software example for manual control of scope

KIV-77 Crypto Appliqué Operational TPS

The KIV-77 Test Program Set (TPS) was specifically developed to be used with an IFF-7300S Automated Test System for the purpose of accomplishing performance testing and diagnostic screening (looking at all signals and status words) on the KIV-77 Crypto Appliqué.

- The IFF-7300S, with the KIV-77 TPS, emulates the entire airspace system from the crypto's perspective (ground-based interrogator, aircraft, transponders and interrogators)

- Testing is performed without utilizing expensive resources such as aircraft, transponders or interrogators, which results in huge savings for the user

- Each test run proves that the crypto is fully functional in both transponder and interrogator modes

- Status of the crypto appliqué is quickly determined and displayed on the screen using red and green light indicators

- Battery change feature maintains power to the crypto, enabling safe battery replacement, avoiding costly crypto service (tamper events)

Order Information

Part Number	Description
92031	KIV-77 TPS

KIV-78 Crypto Appliqué Operational TPS

The KIV-78 Test Program Set (TPS) was specifically developed to be used with an IFF-7300S Automated Test System for the purpose of accomplishing performance testing and diagnostic screening (looking at all signals and status words) on the KIV-78 Crypto Appliqué.

- The IFF-7300S, with the KIV-78 TPS, emulates the entire airspace system from the crypto's perspective (ground-based interrogator, aircraft, transponders and interrogators)

- Testing is performed without utilizing expensive resources such as aircraft, transponders or interrogators, which results in huge savings for the user

- Each test run proves that the crypto is fully functional in both transponder and interrogator modes

- Status of the crypto appliqué is quickly determined and displayed on the screen using red and green light indicators

- Battery change feature maintains power to the crypto, enabling safe battery replacement, avoiding costly crypto service (tamper events)

Order Information

Part Number	Description
92716	KIV-78 TPS

APX-100 Panel Mount Variants, Level 1 and Level 2 Testing

The APX-100 Panel Mount Test Program Sets (TPS) were designed by Cobham AvComm to interface with the IFF-7300S Automated Test System to provide LRU return-to-service test capability (Level 1) and module-level test and diagnostics capability (Level 2).

- The Level 1 TPS provides return-to-service test capability and includes:
  - Return-to-service software
  - The test unit adapter (TUA)
  - A test pod to interface to the internal connector for open box tests
- The Level 2 TPS includes:
  - Module-level test and diagnostic software
  - Cobham AvComm proprietary VirtualPanel™ software that emulates functions of the traditional hardware interface panels

  Note: Customer must have Level 1 TPS to order Level 2 TPS (the TUA cable comes with Level 1 TPS)

The APX-100 Panel Mount TPS will operate on all versions of the IFF-7300S. We will help you determine the right version of the IFF-7300S and other required equipment, options and accessories to fit your testing needs.

Order Information

Part Number	Description
88518	APX-100 Level 1 Panel Mount TPS
92014	APX-100 Level 2 Panel Mount TPS

Source Document(s)

Cobham AvComm certifies that this Test Program Set, when used with the IFF-7300S TACAN/IFF Automated Test System, will comply with the limitations, parameters, reliability and specification requirements found in the following document(s):

Technical Manual, Intermediate Maintenance with Illustrated Parts Breakdown
Transponder Set, AN/APX-100(V)
TM11-5895-1037-30&P
15 August 1998
Change 4 - 15 June 2007

Variants (RT-):
1284A, 1284B, 1285A, 1285B, 1286A, 286B,1296A, 1296B, 1557, 1557A,1558, 1558A, 1666, 1666A, 1667, 1667A

VirtualPanel™ software example for manual control of LRU

VirtualPanel™ software example for manual control of scope

Test Program Sets

APX-100 Remote Mount RT-1157(A/B) and RT-1471 (MIL_STD-1553)

The APX-100 Remote Mount Test Program Sets (TPSs) were designed by Cobham AvComm to interface with the IFF-7300S Automated Test System to provide LRU return-to-service test capability (Level 1) and module-level test and diagnostics capability (Level 2).

- The Level 1 TPS provides return-to-service test capability and includes:
    – Return-to-service software
    – The test unit adapter (TUA)
    – A test pod to interface to the internal connector for open box tests

- The Level 2 TPS includes:
    – Module-level test and diagnostic software
    – Cobham AvComm proprietary VirtualPanel™ software that emulates functions of the traditional hardware interface panels

Note: Customer must have Level 1 TPS to order Level 2 TPS (the TUA cable comes with Level 1 TPS)

Order Information

Part Number	Description
90768	APX-100 RT-1157(A/B) Level 1 (Remote Mount) Open/Closed Box TPS
92015	APX-100 RT-1157(A/B) Level 2 (Remote Mount) TPS
90997	APX-100 RT-1471 Level 1 (MIL-STD-1553) Open/Closed Box TPS
92891	APX-100 RT-1471 Level 2 (MIL-STD-1553) TPS

Source Document(s)
Cobham AvComm certifies that these Test Program Sets, when used with the IFF-7300S TACAN/IFF Automated Test System, will comply with the limitations, parameters, reliability and specification requirements found in the following document(s):

Technical Manual, Intermediate Maintenance with Illustrated Parts Breakdown
Transponder Set, AN/APX-100(V)
TM11-5895-1037-30&P
15 August 1998
Change 4 - 15 June 2007

VirtualPanel™ software example for manual control of LRU

VirtualPanel™ software example for manual control of scope

APX-100 C-( ) Control Head

The APX-100 Control Head Test Program Sets (TPSs) were designed by Cobham AvComm to interface with the IFF-7300S Automated Test System to provide LRU return-to-service test capability (Level 1).

- The Level 1 TPS provides return-to-service test capability and includes:
  - Return-to-service software
  - The test unit adapter (TUA)
  - A test pod to interface to the internal connector for open box tests

The APX-100 Control Head TPS will operate on all versions of the IFF-7300S. We will help you determine the right version of the IFF-7300S and other required equipment, options and accessories to fit your testing needs.

Order Information

Part Number	Description
91604	APX-100 Level 1 Control Head TPS

Source Document(s)

Cobham AvComm certifies that this Test Program Set, when used with the IFF-7300S TACAN/IFF Automated Test System, will comply with the limitations, parameters, reliability and specification requirements found in the following document(s):

Technical Manual, Intermediate Maintenance with Illustrated Parts Breakdown
Transponder Set, AN/APX-100(V)
TM11-5895-1037-30&P
15 August 1998
Change 4 - 15 June 2007

Variants (C-):
10009, 10532, 10533, 10534, 12039, 12040, 12197

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IFF-7300S Series Automated Test System

Test Program Sets

APX-72 Transponders, Level 1 Testing

The APX-72 Test Program Set (TPS) was designed to interface with the IFF-7300S Automated Test System to provide an Automated Test System for the AN/APX-72 IFF Transponder System.

- The Level 1 TPS provides return-to-service test capability and includes:
  – Return-to-service software
  – The test unit adapter (TUA)

Order Information

Part Number	Description
90977	AN/APX-72 (RT-859A) Level 1 TPS

Source Document(s)

Cobham AvComm certifies that these Test Program Sets, when used with the IFF-7300S TACAN/IFF Automated Test System, will comply with the limitations, parameters, reliability and specification requirements found in the following document(s):

AN/APX-72 Technical Maintenance Manual: TM11-5895-490-35

C-6280 Control Head (for APX-72 and APX-101)

The C-6280 Control Head Test Program Set (TPS) was designed by Cobham AvComm to interface with the IFF-7300S Automated Test System to provide LRU return-to-service test capability (Level 1).

- The Level 1 TPS provides return-to-service test capability and includes:
  – Return-to-service software
  – The test unit adapter (TUA)

The C-6280 Control Head TPS will operate on all versions of the IFF-7300S. We will help you determine the right version of the IFF-7300S and other required equipment, options and accessories to fit your testing needs.
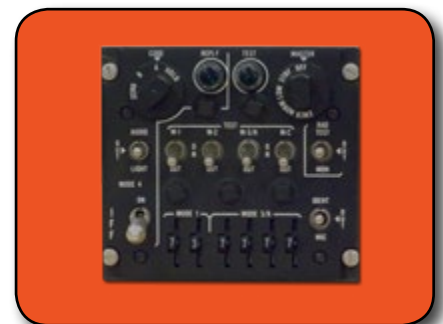
Order Information

Part Number	Description
91605	C-6280 Level 1 Control Head TPS

Source Document(s)

Cobham AvComm certifies that these Test Program Sets, when used with the IFF-7300S TACAN/IFF Automated Test System, will comply with the limitations, parameters, reliability and specification requirements found in the following document(s):

Technical Manual, Intermediate Maintenance with Illustrated Parts Breakdown
TM11-5841-268-25
1 November 1969

Variants tested:
C-6280(P)/APX
C-6280A(P)/APX
C-6717/APX
C-7483/APX

Test Program Sets

Check the list below to see if your radio is included in our *TPS's Currently Available* list or our *TPS's Coming Soon* list. If not, please call us because we can develop it for you; that's what we do. Our engineers have over 60 years of combined experience successfully developing TPS's for avionics!
Call for a quote today.

TPS's and Accessories Currently Available	Part Number	Source Document
IFF-7300S System Self-Test (included with base unit)	90982	
AN/ARN-153(V) O-Level TPS (w/TUA)	90981 (contact Rockwell Collins for quote)	523-0778321-004111
AN/ARN-153(V) O-Level plus I-Level TPS (w/TUA) (includes VirtualPanel™)	138521 (contact Rockwell Collins for quote)	523-0778321-004111 523-0774760-20511A
KIV-77 Crypto (P/N 0N696419)		
Level 1 TPS	92031	
KIV-78 Crypto (P/N 0N706722)		
Level 1 TPS	92716	
APX-100 Panel Mount		
Variants (RT-): 1284A, 1284B, 1285A, 1285B, 1286A, 1286B, 1296A, 1296B, 1557, 1558, 1558A, 1666, 1666A, 1667, 1667A, 1557A		
Level 1 TPS	88518	TM11-5895-1037-30&P
Level 2 TPS (includes VirtualPanel™)	92014	TM11-5895-1037-30&P
APX-100 Remote Mount		
Variants (RT-): 1157A, 1157B		
Level 1 TPS	90768	TM11-5895-1037-30&P
Level 2 TPS (includes VirtualPanel™)	92015	TM11-5895-1037-30&P
APX-100 1553 Bus		
Variants (RT-): 1471		
Level 1 TPS	90997	TM11-5895-1037-30&P
Level 2 TPS (includes VirtualPanel™)	92891	TM11-5895-1037-30&P
APX-100 Control Head		
Variants: (C-): 10009, 10532, 10533, 10534, 12039, 12040, 12197		
Level 1 TPS	91604	TM11-5895-1037-30&P
APX-72, Level 1 TPS	90977	TM11-5895-490-35
C-6280 Control Head , Level 1 TPS	91605	TM11-5841-268-25

TPS's Coming Soon	Part Number	Source Document
APX-101, Level 1 TPS	90978	TO12P4-2APX101-7

Each TPS includes all software and cabling needed to test the radio. TPS's may be selected as Level 1, which provides return-to-service capability, or Level 2, which supports return-to-service capability plus full unit calibration and other diagnosis to the full extent supported by the OEM procedures.

Cobham AvComm

IFF-7300S Series Automated Test System

General Specifications

Agency Approvals

The IFF-7300S conforms to UL / CE safety and EMC requirements.

Input Power

The instrument is designed for user configurable 115V or 230V, single phase, 50/60 Hz AC power.

Physical Characteristics

Enclosure weight and dimensions are approximate.

Height	17.5 in. (44.5 cm)
Width	19.25 in. (49.5 cm)
Depth	24.5 in. (62.2 cm)
Weight	120 lb. (54.4 kg), with DC power supply
	150 lb. (68.0 kg), with AC/DC power supply

Environmental

Warm-up	45 minutes to meet specifications
Operating Temp	0˚ to +40˚ C
Storage Temp	-20˚ C to +70˚ C
Cooling Requirements	No additional cooling required
Water Resistance	Standard indoor lab environment
Altitude	3,000 meters
EMI	MIL-STD-461E

Versions and Options

Base Systems

Order Number	Version
90973	IFF-7300S-01 Test System with IFF-45TS-A (Modes 1, 2, 3/A, 4, C, S) and DC UUT power supply
90974	IFF-7300S-02 Test System with IFF-45TS-A (Modes 1, 2, 3/A, 4, C, S) and AC/DC UUT power supply
90975	IFF-7300S-03 Test System with IFF-45TS (Modes 1, 2, 3/A, 4, 5, C, S) and DC UUT power supply. For NATO countries requiring Mode 5.
139626*	IFF-7300S-03 Test System with DC UUT power supply. For NATO countries requiring Mode 5. *Note: IFF-45TS (Modes 1, 2, 3/A, 4, 5, C, S) not included - customer must supply.*
90976	IFF-7300S-04 Test System with IFF-45TS (Modes 1, 2, 3/A, 4, 5, C, S) and AC/DC UUT power supply. For NATO countries requiring Mode 5.
112402*	IFF-7300S-04 Test System with AC/DC UUT power supply. For NATO countries requiring Mode 5. *Note: IFF-45TS (Modes 1, 2, 3/A, 4, 5, C, S) not included - customer must supply.*

Order Number	Version
112285	IFF-7300S-50 Test System with 2 IFF-45TS's (Modes 1,2,3/A, 4, 5, C, S). For NATO countries requiring Mode 5.
92717*	IFF-7300S-50 Test System with 1 IFF-45TS (Modes 1,2,3/A, 4, 5, C, S). For NATO countries requiring Mode 5. *Note: 2nd IFF-45TS (Modes 1, 2, 3/A, 4, 5, C, S) not included - customer must supply.*

*Note: This configuration requires customer supplied IFF-45TS

Options

83404	45TSOPT1 IFF Xndr Mode 5 option
83407	45TSOPT4 DME/TACAN option
88631	45TSOPT6 KIV-77 adapter
89879	45TSOPT8 KIT/KIR adapter
86075	45TSOPT9 KIV-78/KIV 6 adapter
90983	IFF7300S-OPT01 MIL-STD-1553 bus control

Order Number	Version
90986	IFF7300S-OPT04 Synchro/Resolver Receiver (Required for TACAN testing)
90987	IFF7300S-OPT05 Synchro/Resolver Transmitter (Required for TACAN and indicator testing)
91074	IFF7300S-OPT08 THORsi TPS Developer Training Program
72438	IFF-45TS Transponder Modes 1,2,3/A,4 (Internal Crypto),C,S (Mode 5 capable)
83405	45TSOPT2 Interrogator Modes 1,2,3/A,C,S,4
83406	45TSOPT3 IFF Interrogator Mode 5 (requires Option 2)

IFF-7300S Configurator Table (based upon TPS needs)

TPS	Compatible IFF-7300S Models								Required ATB-7300S-100 Options			Required IFF-45TS Options					
	7300S-01 90973	7300S-02 90974	7300S-03 90975	7300S-03 139626	7300S-04 90976	7300S-04 112402	7300S-50 92717	7300S-50 112285	OPT-01	OPT-04	OPT-05	OPT1	OPT2	OPT3	OPT4	OPT6	OPT9
APX-72 RT Lvl 1		X			X	X											
C-6280() Control Head	X	X	X	X	X	X											
APX-100 Panel Lvl 1	X	X	X	X	X	X											
APX-100 Panel Lvl 2	X	X	X	X	X	X											
APX-100 Remote Lvl 1	X	X	X	X	X	X											
APX-100 Remote Lvl 2	X	X	X	X	X	X											
APX-100 MIL 1553 Lvl 1	X	X	X	X	X	X			X								
APX-100 MIL 1553 Lvl 2	X	X	X	X	X	X			X								
APX-100 Control Head	X	X	X	X	X	X											
APX-101 Lvl 1	X	X	X	X	X	X											
APX-101 Lvl 2	X	X	X	X	X	X											
ARN-153	X	X	X	X	X	X			X	X	X				X		
KIV-77							X	X				X	X	X		X	X
KIV-78							X	X				X	X	X		X	X

Model Configurations

Order Numbers	Included Hardware			
	IFF-45TS-A (72439)	IFF-45TS (72438)	AC/DC PS (88783)	DC PS (89321)
IFF7300S-01 (90973)	X			X
IFF7300S-02 (90974)	X		X	
IFF7300S-03 (90975)		X		X
IFF7300S-03 (139626)*				X
IFF7300S-04 (90976)		X	X	
IFF7300S-04 (112402)*			X	
IFF7300S-50 (92717)*		X		
IFF7300S-50 (112285)		X (2)		

*This configuration requires customer supplied IFF-45TS

COBHAM

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