IFF SYSTEM
GR-8450
Integration of IFF (Identification Friend or Foe) System
The GR-8453 IFF Interrogator is an advanced long-range IFF interrogator system for the next generation air-defense early warning system. It is designed for mobile applications specially, but it can be installed on shipborne or stationary early warning systems also.

Key features
- AIMS certified
- Advanced processing capability
- Provides a plug-and-play upgrade on almost platforms
- Advanced target processing and mechanical packaging
- Growth to Mode 5 with encryption device

Advantages
- Operates simultaneously in Modes 1, 2, 3/A, C, 4, 5: provides IDENT and emergency reply codes
- National Secure Mode (NSM) operation via integrated crypto module
- Mode S compatible
- Mono-pulse target processing
- Single-box solution for Tx/Rx and reply evaluator
- MTBF 4,000 hours.

GR-8453 IFF Integrator operates in conjunction with the primary radar. The system is suitable for all AEW, ASW, and SAR applications and can be integrated with a variety of radar systems.

GR-8453 IFF Interrogator represents the most technically advanced, compact and lightweight interrogator available for airborne, long-range and shipboard IFF. Designed as a replacement for the old version of airborne interrogator, the GR-8453 has been selected by many international Air Forces as part of their platforms.

It provides the advanced processing capability to rapidly identify friendly targets. The system is designed with a DSP and FPGA technology that enables maximum system flexibility and supports practical upgrades.

Extensive use of these technologies allow configuration of system interfaces to a variety of platform applications.
### General Specifications

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<td>Dimensions</td>
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### GR-8453 IFF Interrogator Set

- **IFF Interrogator**: GR-8453 1pc
- **4 Way Power Cable**: A8453-PC04 1pc
- **5 Way Control and Data Cable**: A8453-DC05 1pc
- **9 Way Data Cable**: A8453-DC09 1pc
- **12 Way Data Cable**: A8453-DC12 1pc
- **Interrogator Antenna**: A8453-ANT 1pc
- **Antenna Cable (SUM)**: A8453-AC01 1pc
- **Antenna Cable (DIFF)**: A8453-AC02 1pc
- **User Manual**: A8453-UM01 1copy

#### OPTION

- **Rugged PC for Programming**: CF-19 1pc
- **320W Power Supply Unit**: GA-34A 1pc
- **Installation Kit**: A8453-IK01 1pc

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**Interrogator Antenna**

A8453-ANT

**IFF Interrogator**

GR-8453

**J1**: (A8453-PC04)

**J2**: (A8453-DC05)

**J3**: (A8453-DC09)

**J4**: (A8453-DC12)

**J5**: (A8453-AC01)

**J6**: (A8453-AC02)

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**Rugged PC**

**300W Power Supply Unit**

GA-34A

**ARP**: Azimuth Reference Pulse

**ACP**: Azimuth Clock Pulse

**Sync**: Synchronization with LRSR(RS-422 Input)

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**Mobile IFF Interrogator System Configuration**

- J1(4way) Power(DC28V) Input
- J2(5way) Control and Data: RS-422 In/Output or Ethernet
- J3(9way) ARP, ACP, Sync
- J5(TNC) SUM
- J6(TNC) DIFF
A8453-ANT Interrogator Antenna
Is installed on top of long range radar antenna of air-defense system. There are SUM and DIFF channels to measure azimuth and support side lobe suppression (SLS).

A8453-PC04 4 Way Power Cable
Is a power cable to supply DC27V to IFF interrogator. The cable connects to IFF interrogator with 4 way MS class connector (J1) which is very strong in rough environments.

A8453-DC05 5 Way Control and Data Cable
Is a rugged flexible cable with 5 way MS class connector/2m length used to control the IFF interrogator by controller. It is connected between GR-8453 J4 connector and controllers like computers.

A8453-DC09 9 Way Data Cable
Is an rugged flexible cable with 9 way MS class connector/2m length used to transmit ARP, ACP, Sync signals. It is connected between GR-8453 J3 connector and data sources like long range surveillance radars.

A8453-DC12 12 Way Data Cable
Is the rugged flexible cable with 12 way MS class connector/2m length used for reservation to connect GR-8453 IFF interrogator J4. It can be used to reserve the control and data for future operation.

A8453-AC01 Antenna Cable (SUM)
Is RF cable with TNC type connectors which will be used to connect SUM channel of GR-8453 IFF Interrogator and SUM channel of A8453-ANT Interrogator antenna.

A8453-AC02 Antenna Cable (DIFF)
Is RF cable with TNC type connectors which will be used to connect DIFF channel of GR-8453 IFF Interrogator and DIFF channel of A8453-ANT Interrogator antenna.

CF-53 Panasonic rugged PC
13” LED display, sun-light viewable, multi-touch, magnesium alloy case, drop and spill resistant, Intel CPU, LAN/232C/USB/Bluetooth

A8453-UM01 User Manual
Is a field reference user manual for GR-8453 IFF Interrogator system.

A8453-IK01 Installation Kit
Is the installation kit to install GR-8453 IFF interrogator on mobile station. Its function is fixing, sock-absorb, anti-vibration etc. It is very easy to install on any mobile station.

A8453-DC01 Installation Kit
Is the installation kit to install GR-8453 IFF interrogator on mobile station. Its function is fixing, sock-absorb, anti-vibration etc. It is very easy to install on any mobile station.

GA-34A Power Supply Unit
It is 320W AC-DC/DC-DC converter to supply power into GR-series mobile system. It supports very high efficiency, over-voltage protection, polarity protection.
IFF Transponder
GR-8454

The GR-8454 IFF Transponder is the military standard transponder for all retrofit and new product applications. It is designed for any type of airplanes like fixed-wing and rotary-wing fighters.

Key features
- Integrated IFF/Mode 1, 2, 3/A, C, 4, 5
- Cost effective
- Ensures Flight Safety
- Secure ID
- Compact System
- Optional Compact Control Panel

GR-8454 IFF Transponder operates in conjunction with the all kinds of aircraft. In addition to single antenna configuration system, the system uses two antenna system operation. One antenna will be installed on top of aircraft and another one is under the aircraft, so all signals can be received in any direction. The system is suitable for all new and legacy aircrafts and can be integrated with a variety of aircraft systems.

GR-8454 IFF Transponder represents the most technically advanced, compact and lightweight transponder available for airborne, long-range and shipboard IFF. Designed as a replacement for the old version of airborne transponder, the GR-8454 has been selected by many international Air Forces as part of their platforms.

It provides the advanced processing capability to rapidly identify friendly targets. The system is designed with a DSP and FPGA technology that enables maximum system flexibility and supports practical upgrades.

Extensive use of these technologies allow configuration of system interfaces to a variety of platform applications.

Advantages
- Operates simultaneously in Modes 1, 2, 3/A, C, 4, 5; provides IDENT and emergency reply codes
- National Secure Mode (NSM) operation via integrated crypto module
- Mode S compatible
- Single-box solution for Tx/Rx and reply evaluator
- MTBF 4,000 hours.
### General Specifications

**Operation mode**
- Mode: 1, 2, 3/A, C, 4, 5

**Transmitter frequency**
- 1090±0.1MHz

**Transmit duty cycle**
- Max. 1%

**RF Power**
- Peak power 500W±2dB

**Receiver frequency**
- 1030±0.5MHz

**Receiver sensitivity**
- < -74dBm (measured at front panel)

**Dynamic range**
- > 60dB

**Dimensions**
- 236 x 152 x 207mm

**Weight**
- < 8Kg

**Current consumption**
- DV27V/40W

**Remote control**
- RS-232/422/485, Ethernet

### GR-8454 IFF Transponder Set

- **IFF Transponder**
  - GR-8454
  - 1pc

- **Transponder Antenna**
  - A8454-ANT
  - 2pcs

- **Antenna Cable (Top)**
  - A8454-AC01
  - 1pc

- **Antenna Cable (Bottom)**
  - A8454-AC02
  - 1pc

- **Remote Control Unit**
  - A8454-RCU
  - 1pc

- **5 Way Control Cable (RCU)**
  - A8454-DC05
  - 1pc

- **4 Way Power Cable**
  - A8454-PC04
  - 1pc

- **9 Way Data Cable (GPS, Altitude)**
  - A8454-DC09
  - 1pc

- **12 Way Data Cable (Reserve)**
  - A8454-DC12
  - 1pc

- **User Manual**
  - A8454-UM01
  - 1copy

### OPTION

- **Rugged PC for Programming**
  - CF-19
  - 1pc

- **Barometer**
  - 1pc

- **GPS Receiver**
  - 1pc

- **320W Power Supply Unit**
  - GA-34A
  - 1pc

- **Installation Kit**
  - A8453-ITK01
  - 1pc

### IFF Transponder System Configuration

- Transponder Antenna
  - A8454-ANT

- **Barometer**

- **GPS Receiver**

- **RCU**
  - A8454-RCU

- **Power (DC28V) Input**

- **Remote Control Unit (RS-232)**

- **GPS (RS-422 Input), Altitude (RS-422 Input)**

- **RS-422, RS-485 or Ethernet**

- **Top Antenna**

- **Bottom Antenna**

**Rugged PC**

**300W Power Supply Unit**
- GA-34A
**A8454-ANT Transponder Antenna**
Is the transponder antenna to install on top/bottom of the aircrafts. Totally 2 antennas will be installed on the aircraft body (One is on top of aircraft, another on bottom of aircraft to support full communication with Interrogator.

**A8454-AC01 Antenna Cable(Top)**
Is RF cable with TNC type connectors which will be connected with GR-8454 IFF Transponder and top transponder antenna A8454-ANT.

**A8454-AC02 Antenna Cable(Bottom)**
Is RF cable with TNC type connectors which will be connected with GR-8454 IFF Transponder and bottom transponder antenna A8454-ANT.

**A8454-RCU Remote Control Unit(RCU)**
Is an active extension of the front panel controls of the GR-8454 IFF Transponder. It will be installed in cockpit of aircraft. It is connected with GR-8454 IFF Transponder with A8454-DC05 5 way control cable (RCU).

**A8454-DC05 5 Way Control Cable(RCU)**
Is an rugged flexible cable with 5 way MS class connector/2m length used to control the IFF Transponder by controller. It is connected between GR-8454 J2 connector and controllers like computers.

**A8454-AC02 Antenna Cable(Bottom)**
Is RF cable with TNC type connectors which will be connected with GR-8454 IFF Transponder and bottom transponder antenna A8454-ANT.

**A8454-DC09 9 Way Data Cable(GPS/Altitude)**
Is an rugged flexible cable with 9 way MS class connector/2m length used to transmit ARP, ACP, Sync signals. It is connected between GR-8454 J3 connector and data sources like long range surveillance radars.

**A8454-DC12 12 Way Data Cable(Reserve)**
Is the rugged flexible cable with 12 way MS class connector/2m length used for reservation to connect GR-8454 IFF transponder J4. It can be used to reserve the control and data for future operation.

**A8454-PC04 4 Way Power Cable**
Is a power cable to supply DC27V to IFF Transponder. The cable connects to IFF Transponder with 4 way MS class connector (J1) which is very strong in rough environments.

**A8454-RCU Remote Control Unit(RCU)**
Is an active extension of the front panel controls of the GR-8454 IFF Transponder. It will be installed in cockpit of aircraft. It is connected with GR-8454 IFF Transponder with A8454-DC05 5 way control cable (RCU).

**A8454-RCU Remote Control Unit(RCU)**
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**A8454-DC05 5 Way Control Cable(RCU)**
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**CF-53 Panasonic rugged PC**
13" LED display, sun-light viewable, multi-touch, magnesium alloy case, drop and spill resistant, Intel CPU, LAN/232C/USB/Bluetooth

**Barometer**
Is an instrument measuring atmospheric pressure, used especially in forecasting and determine altitude in aircraft. Normally IFF transponder uses the installed barometer in aircraft, but it will be used for testing purpose.

**GPS Receiver**
Is a GPS navigation device which is capable to receiving information from GPS satellites, then to calculate the device’s geographical position. Normally IFF transponder will use the position information from aircrafts, but this will be used for testing.
<table>
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<tr>
<th>GA-34A Power Supply Unit</th>
<th>A8454-IK01 Installation Kit</th>
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<td>Is the installation kit to install GR-8454 IFF responder on aircraft. Its function is fixing, shock absorb, anti-vibration, etc. It is very easy to install on any aircrafts.</td>
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IFF System Concept

IFF
Identification Friend or Foe

IFF is a radar-based identification system designed for command and control. It uses a transponder that listens for an interrogation signal and then sends a response consisting of a unique signal that identifies the broadcaster. It enables military and civilian air traffic control interrogation systems to identify aircraft, vehicles or forces as friendly and to determine their bearing and range from the interrogator. IFF may be used by both military and civilian aircraft.

GR-8453 IFF Interrogator

GR-8454 IFF Transponder

IFF Transponder

The GR-8454 IFF Transponder is the military standard transponder for all retrofit and new product applications. It is designed for any type of airplanes like fixed-wing and rotary-wing fighters.

GR-8520 HCDR

Identify Information (Distance, Height, Code...)

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Communications solutions for anywhere, anytime in battlefield

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