$12.00 U.S.

Pilot's Guide
for the

SKYWATCH® HP

Traffic Alert/Advisory System

Model SKY899

GOODRICH

Eyes That Never Blink™

Early Traffic Alert/Advisory Systems

In the early days of flight, pilots were equipped with all they needed for effective collision avoidance–a sharp pair of eyes. But increasing traffic at higher speeds led to the development of TCAS I and II (Traffic Alert and Collision Avoidance Systems) which were too expensive for most regional airlines, business aircraft, and general aviation aircraft.

SKYWATCH®

Goodrich Avionics Systems, Inc. recognized the need for an alternative to expensive TCAS systems and developed the SKYWATCH model SKY497 Traffic Advisory System (TAS) and the SKYWATCH HP model SKY899 TAS/TCAS I.

The SKYWATCH HP can be installed as a TAS to provide most of the capabilities of TCAS I, but at a significantly lower cost, making it practical for small aircraft. The SKYWATCH HP can also be installed as a TCAS I.

In addition to its TCAS I capability, SKYWATCH HP improves upon the SKY497 by adding a larger display range (15 nmi), a higher maximum closure rate (1200 kn), and built-in hardware and software that makes the SKYWATCH HP Automatic Dependent Surveillance-Broadcast (ADS-B)-ready for the future when the technology becomes standardized.

Proven Experience

Goodrich Avionics Systems, Inc. has been involved in the development of collision warning programs since the early 1980's. In 1985, Goodrich Avionics Systems began development of an enhanced collision warning system for the Navy's T-34C training aircraft.

Based largely on the success of the Navy project, Goodrich Avionics Systems was selected to validate the specifications for TCAS I. As a result, Goodrich Avionics Systems' original TCAS I unit, the TCAS791 was the first TCAS I to be granted a Technical Standard Order (TSO), first to receive a full, unrestricted Supplemental Type Certificate (STC), first to fly, and first to be delivered.

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Pilot's Guide
for the
SKYWATCH® HP
Traffic Alert/Advisory System
Model SKY899

Designed and manufactured in the United States of America by

GOODRICH

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Safety Summary

These warnings and cautions appear later in this guide and are repeated here for emphasis:

CAUTION
page 3-1

To avoid power surges that could damage the SKY899 and the optional WX-1000, start your engines before turning on the SKY899.

WARNING
page 3-5

If the SKY899 is in SKYWATCH mode, the display will not automatically switch into Stormscope mode to display thunderstorms or Stormscope errors. Use the remote SKYWATCH/Stormscope mode switch to periodically check for thunderstorms or Stormscope errors.

WARNING
page 3-6

The SKY899 relies on information obtained from transponders in nearby aircraft. The SKY899 does not detect or track aircraft which are not equipped with an operating Air Traffic Control Radar Beacon System (ATCRBS) transponder.

WARNING
page 3-6

The SKY899 does not track intruder aircraft approaching at a closure rate greater than 1200 knots.

WARNING
page 3-6

Some traffic within the chosen display range may not be displayed due to traffic prioritizing, antenna shielding, or ground intruder filtering.

CAUTION
page 3-6

Optimum SKY899 performance is realized when intruder aircraft are reporting their altitude (via a mode C or other altitude reporting transponder).

WARNING
page 3-6

Do not attempt evasive maneuvers based solely on traffic information on the display. Information on the display is provided to the flight crew as an aid in visually acquiring traffic; it is not a replacement for Air Traffic Control (ATC) and See & Avoid techniques.

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Abbreviations & Acronyms

ABV	Above
Ack	Acknowledge
ADS-B	Automatic Dependent Surveillance-Broadcast
AFS	Flight Standards Service
AGL	Above Ground Level
AHRS	Attitude and Heading Reference System
Alt	Altitude
ARINC	Aeronautical Radio, Inc.
ATC	Air Traffic Control
ATCRBS	Air Traffic Control Radar Beacon System
ATI	Air Transport Indicator
ATM	Air Traffic Management
BLW	Below
Comm	Communication
CPA	Closest Point of Approach
CRT	Cathode Ray Tube
EFIS	Electronic Flight Instrument System
EGPWS	Enhanced Ground Proximity Warning System
FAA	Federal Aviation Administration
fpm	Feet Per Minute
FSAW	Flight Standards Information Bulletin for Airworthiness
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
Grnd	Ground
HP	High Performance
I/O	Input/Output
IVSI	Instantaneous Vertical Speed Indicator
kn	Knots
MFD	Multi-Function Display
Mod	Modification
MSG	Message
Nav	Navigation
nm	Nautical Miles (on the display)

Abbreviations & Acronyms (continued)

nmi	Nautical Miles (in the text)
NRM	Normal
OPR	Operate
OT	Other Traffic
PA	Proximity Advisory
P/N	Part Number
Rev	Revision
RGC	Radar Graphics Computer
RTCA	Requirements & Technical Concepts for Aviation
SLA	Sensitivity Level A
SLB	Sensitivity Level B
SSR	Secondary Surveillance Radar
STB	Standby
STC	Supplemental Type Certificate
TA	Traffic Advisory
TAS	Traffic Advisory System
TAWS	Terrain Awareness and Warning System
TCAS	Traffic Alert and Collision Avoidance System
TRC	Transmitter Receiver Computer
TSO	Technical Standard Order
UNR	Unrestricted

Chapter 1

System Description

General Description

The SKYWATCH® HP Traffic Alert/Advisory System, model SKY899, from Goodrich Avionics Systems, Inc. can be installed as a Traffic Alert and Collision Avoidance System I (TCAS I) or as a Traffic Advisory System (TAS). In either configuration, the SKY899 monitors the airspace around your aircraft and advises the flight crew where to look for transponder-equipped aircraft that may pose a collision threat. Traffic information on the display generally includes the range, relative bearing, and relative altitude of intruder aircraft. The SKY899 also makes aural announcements such as traffic advisories on the cockpit audio system. The SKY899 is intended for use by high performance corporate and general aviation aircraft. Figure 1-1 shows the major components of the SKY899.

Figure 1-1. SKY899 Major Components

When installed as a TAS, the SKY899 can share a Goodrich Avionics Systems model WX-1000/SKY497 monochrome display (P/N 78-8060-5900-8 or -9) with a Goodrich Avionics Systems *Stormscope*® model WX-1000 using a remote SKYWATCH/*Stormscope* mode switch. As a TAS, the SKY899 can also display traffic on a growing number of Multi-Function Displays (MFDs) and Electronic Flight Instrument System (EFIS) displays from companies such as Avidyne, Garmin, and Collins, or on select Instantaneous Vertical Speed Indicators (IVSIs) from Honeywell or Sextant, or on a compatible weather radar indicator via the Goodrich Avionics Systems Radar Graphics Computer, model RGC250. Check with your dealer or with Goodrich Avionics Systems for a current list of approved alternate displays.

When installed as a TCAS I, the SKY899 displays its traffic information on a TCAS I-compatible alternate display as described above, but *not* on the WX-1000/SKY497 display.

Hereafter the word *display* refers to the WX-1000/SKY497 display unless otherwise indicated. For any other display, refer to that display's manual for a description of how it displays SKY899 traffic information.

Transmitter Receiver Computer (TRC)

The TRC is the primary unit of the SKY899. It converts signals from the directional antenna and from other aircraft systems into an on-screen picture of intruder aircraft locations, and if necessary, aural traffic advisories. The TRC can track up to 35 intruder aircraft simultaneously, but to reduce clutter, the SKY899 only displays the 8 most threatening intruders being tracked (8 on the WX-1000/SKY497 display and the Sextant IVSI, but 12 on most other alternate displays). The TRC also has built-in test equipment to detect faults and to verify proper operation.

Directional Antenna

The directional antenna transmits omnidirectional mode C interrogations and receives directional replies from other transponder-equipped aircraft in the vicinity. The antenna will also be able to receive ADS-B mode S extended squitter broadcasts from intruder aircraft in the future when ADS-B becomes standardized.

Display

The display is a 3-inch Air Transport Indicator (3-ATI) unit with a high resolution, green monochrome Cathode Ray Tube (CRT) display. The bezel contains four momentary contact push-button switches and an on/off/brightness knob. The display provides control and display functions for the SKY899 (installed as a TAS) and for a WX-1000 *Stormscope* (if installed).

The display does not display traffic and storm information simultaneously. The position of a remote SKYWATCH/ *Stormscope* mode switch determines whether the display shows traffic or storm information; however, if you're in *Stormscope* mode and the SKY899 detects traffic that may pose an immediate threat to your aircraft, the display temporarily switches to SKYWATCH mode. Figure 1-2 shows the display with a typical SKYWATCH HP screen. Figure 1-3 shows the display with a typical *Stormscope* screen.

Figure 1-2. Display with Typical SKYWATCH HP Screen

Figure 1-3. Display with Typical Stormscope Screen (Optional)

Interaction of Major Components

Figure 1-4 shows how the major components of the SKY899 connect to each other and to other aircraft systems.

Notes on Figure 1-4:

1. The optional radio altitude input affects the SKY899 audio inhibit feature, the ground intruder filtering feature, and the sensitivity levels feature. (See chapter 4 for details.)
2. GPS navigation (nav) data is required if you plan on using SKY899's ADS-B feature in the future (when ADS-B becomes standardized) for intruder location enhancement. It's also used in certain sensitivity level calculations. (See chapter 4 for details.)
3. The SKY899 works *without* a heading input, but experiences degraded performance during high-rate-of-turn maneuvers.
4. Having a weight-on-wheels input allows the SKY899 to automatically switch out of standby when you take off, and into standby when you land.
5. The SKY899 may be installed on aircraft with fixed landing gear. The optional landing gear position input affects the sensitivity levels feature. (See chapter 4 for details.)
6. The RGC250/radar indicator or alternate display can be in place of, or in addition to the WX-1000/SKY497 display for TAS installations, but one of the two must be used for TCAS I installations in place of the WX-1000/SKY497 display.
7. Only required when using an alternate display that doesn't display vertical display mode indications.

Functional Description

The SKY899 is an active system that operates as an aircraft-to-aircraft interrogation device. The SKY899 interrogates aircraft transponders in the surrounding airspace (within a 35 nmi horizontal radius) similar to the way ground-based radar interrogates aircraft transponders. When the SKY899 receives replies to its interrogations, it computes the responding aircraft's range, relative bearing, relative altitude, and closure rate. (In the future, when ADS-B becomes standardized, the

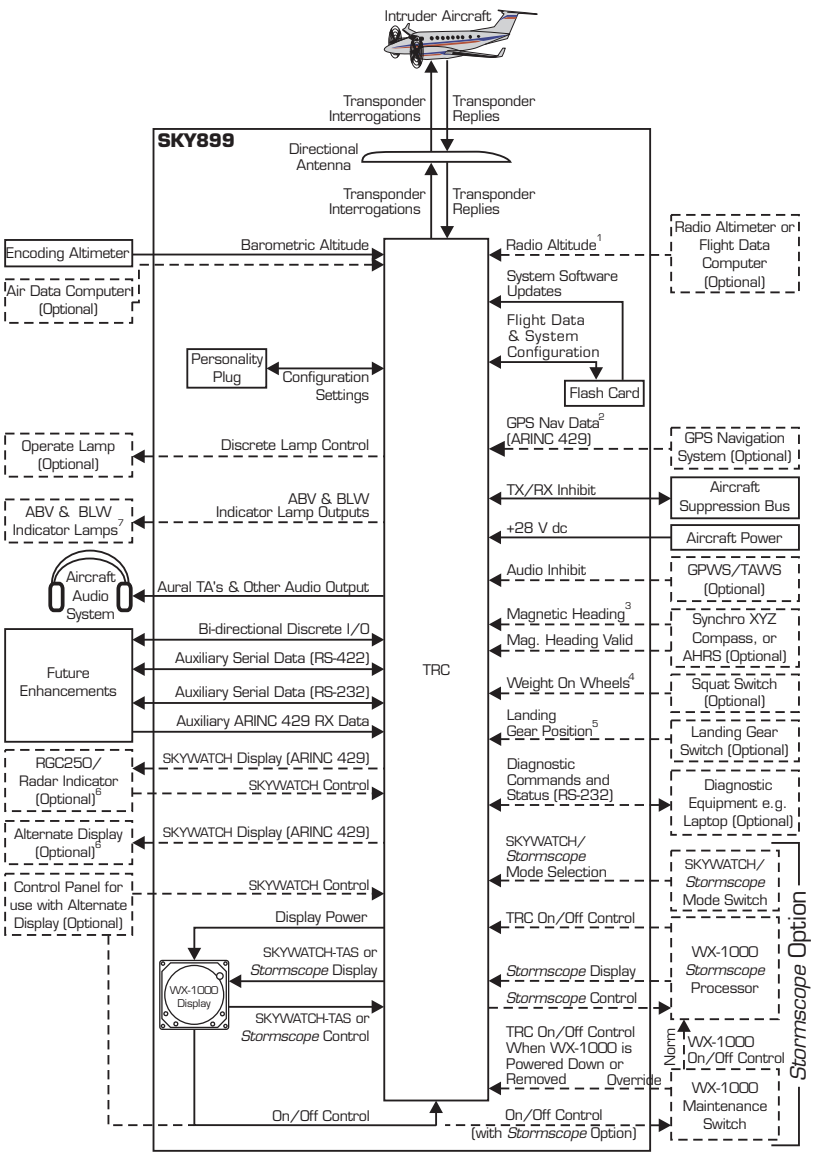


Figure 1-4. System Block Diagram

SKY899 will also be able to receive any ADS-B broadcasts from the responding aircraft and use that information along with your own aircraft Global Positioning System [GPS] nav data to enhance the computed relative position of the responding aircraft.) The SKY899 then predicts collision threats and plots the eight most threatening aircraft locations on the display.

Figure 1-5 shows the SKY899 vertical display modes (look up, look down, normal, and unrestricted). The figure also shows the traffic zones around your aircraft and the traffic symbols that appear on the display when intruding aircraft enter one of those zones.

A solid circle is the visual part of the Traffic Advisory (TA) that the SKY899 generates when it predicts that an intruder aircraft may pose a collision threat. The aural part of the TA, "traffic, traffic," is annunciated over a cockpit speaker or headset. An open diamond represents Other Traffic (OT) that does not pose an immediate collision threat. A solid diamond (Proximity Advisory, PA) only appears on TCAS installations.

The SKY899 uses either Sensitivity Level A (SLA) or Sensitivity Level B (SLB) to determine when to display a TA. In general, SLB is used during the in-flight phase and SLA is used during takeoff and landing. Sensitivity levels and other factors affecting the display of traffic symbols are discussed in detail in chapter 4.

Features

- Tracks up to 35 intruder aircraft (displays the 8 most threatening)
- Tracks intruder aircraft approaching at closure rates up to 1200 knots
- Installs as a TAS or as a TCAS I
- Costs only a fraction of the price of a traditional TCAS I or II
- Requires no mode S transponder
- Displays traffic information in three horizontal display ranges: 15, 6, and 2 nmi

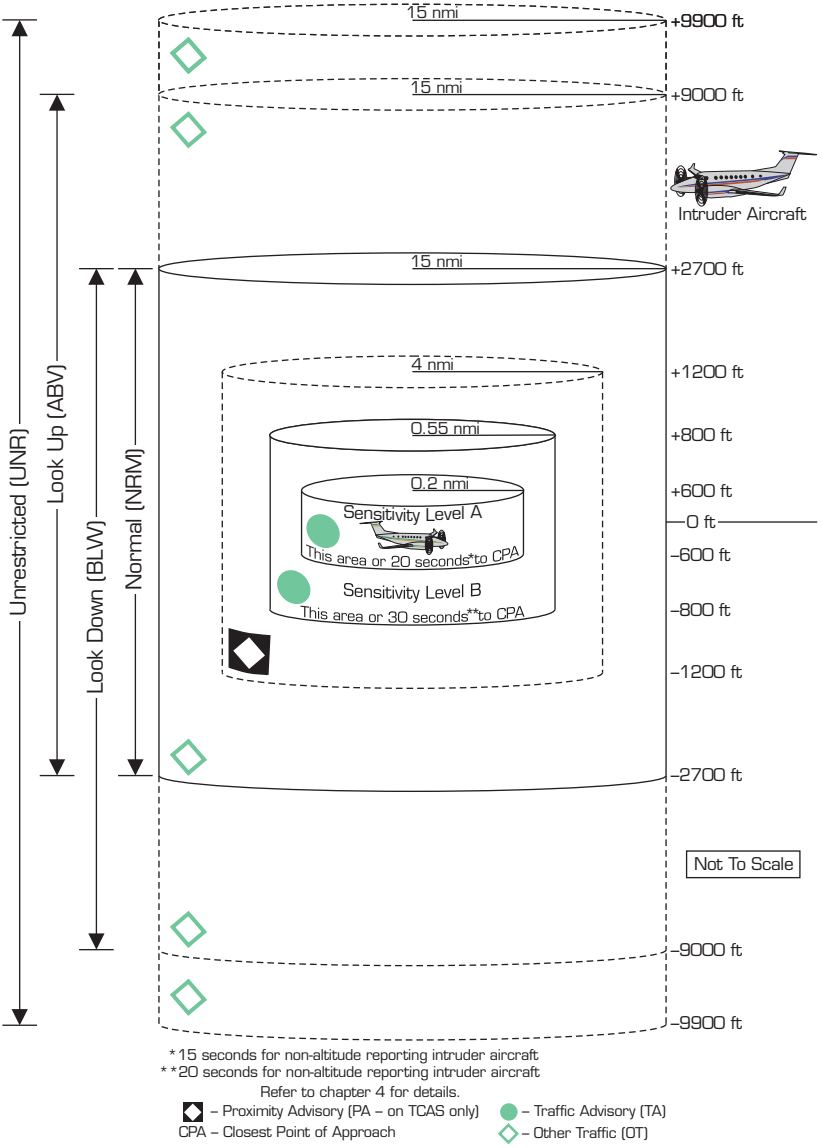


Figure 1-5. Vertical Display Modes and Traffic Zones

Features – Continued

- Displays traffic information in four vertical display modes: normal (±2,700 ft), look up (+9,000 ft to –2,700 ft), look down (+2,700 ft to –9,000 ft), and unrestricted (±9,900 ft)
- Generates visual *and* aural advisories of aircraft that may pose a collision threat
- Performs automatic and operator-initiated self tests
- Offers a high-resolution, green monochrome, CRT display for TAS installations
- Transmits interrogations from the ground (if desired) as well as from the air
- Shares a display with the *Stormscope* WX-1000 (if desired) when the SKY899 is installed as a TAS
- Switches to the SKYWATCH screen from the optional *Stormscope* screen automatically when a TA occurs
- Uses only one antenna
- Eases installation since the standard TAS display fits in a 3-ATI cutout in the cockpit panel
- Displays traffic on a variety of displays
- Anticipates the future ADS-B-based Free Flight environment by being ADS-B-ready, i.e., it will be able to use information from ADS-B broadcasts (if available) along with own aircraft GPS nav data to enhance intruder location computation. ADS-B surveillance will not be active in the SKY899 until ADS-B is standardized by the aviation community and the FAA, at which time you will be able to get a software upgrade from Goodrich Avionics Systems to activate all of SKY899's ADS-B features.

Chapter 2
Controls & Indicators

Introduction

This chapter describes the SKY899 controls and indicators including the controls, indicators, and symbols on the display, discrete controls and indicators, and aural announcements.

Controls, Indicators, & Symbols

Figures 2-1 and 2-2 and the following paragraphs describe the SKY899 controls, indicators, and symbols.

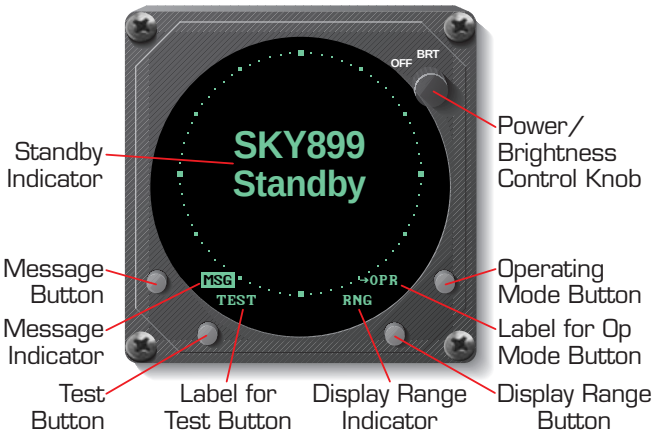


Figure 2-1. Controls & Screen Elements in Standby

Power/Brightness Control Knob (OFF/BRT)
This knob controls power to the SKY899 and WX-1000 (if installed) and adjusts display brightness.

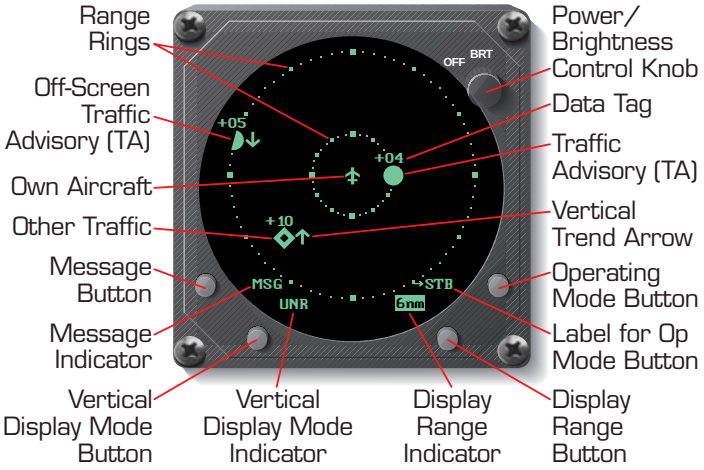


Figure 2-2. Controls & Screen Elements in Operating Mode

Data Tag These two digits indicate, in hundreds of feet, the relative altitude of the intruder aircraft. In this case, +04 means the intruder aircraft is 400 feet above you. A positive data tag is displayed above the traffic symbol to emphasize that the intruder aircraft is above your aircraft. Similarly, a negative data tag is displayed below the traffic symbol. If the intruder is at the same altitude as your aircraft, 00 is displayed above the traffic symbol.

The data tag for a vertically out of range TA stays at the maximum or minimum relative altitude number of the current vertical display mode until the intruder aircraft comes within the relative altitude limits of the vertical display mode. The SKY899 only displays data tags for altitude reporting aircraft. Non-altitude-reporting aircraft are considered to be at the same altitude as your own aircraft.

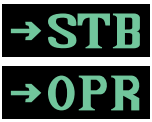
Traffic Advisory (TA) A TA consists of a symbol on-screen and a "traffic, traffic" message on the cockpit speakers or headset. When an intruder aircraft that meets the TA criteria described in chapter 4 is within the displayed range (inside or outside of the selected vertical display mode), the corresponding symbol is this circle

located at a position on the screen that indicates the relative bearing and range of the intruder aircraft.

In general, the SKY899 issues a TA when it detects an intruder aircraft within 30 seconds of a possible collision, or within a 0.55 nmi horizontal radius and a ±800 ft relative altitude range of your aircraft. (See chapter 4 for details.)

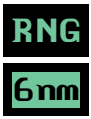
Vertical Trend Arrow A vertical trend arrow indicates that the intruder aircraft is ascending (up arrow) or descending (down arrow) faster than 500 fpm. No arrow is shown for intruder aircraft in level flight, or for those moving vertically slower than 500 fpm, or for non-altitude-reporting intruder aircraft.

Operating Mode Button Pressing this button when it's labeled →STB switches the SKY899 out of operating mode and into standby. Pressing the button when it's labeled →OPR switches the SKY899 out of standby and into operating mode.



Label for Operating Mode Button This on-screen label identifies the function of the adjacent button. The →STB label appears on the traffic screen and means *go to standby*. The →OPR label appears on the standby screen and means *go to operating mode*. If your aircraft has a squat switch, the →STB label only appears when your aircraft is on the ground.

Display Range Button Pressing this button when the SKY899 is in standby has no effect. Pressing the button when the SKY899 is in operating mode toggles the SKY899 display range between 15, 6, and 2 nmi as reflected in the on-screen display range indicator.



Display Range Indicator The RNG version of the indicator (present only on the standby screen) simply reminds you that the adjacent button can be used to select the display range once you switch into operating mode. The 6 nm version of the indicator (present only in operating mode) identifies the currently selected display range (15, 6, or 2 nmi).

Vertical Display Mode Indicator This indicator displays the name of the currently selected vertical display mode: ABV (above/look up), BLW (below/look down), NRM (normal), or UNR (unrestricted). (See figure 1-5.) The indicator does not appear when the SKY899 is in standby.

Vertical Display Mode Button/Test Button In operating mode, this button changes the SKY899 vertical display mode between above, normal, below, and unrestricted as reflected in the on-screen vertical display mode indicator. In standby, this button starts a self test.

Label for Test Button This on-screen label only appears when the SKY899 is in standby or in failed mode. It identifies the function of the adjacent button which is to start the operator-initiated self test.

Message Indicator The highlighted version of this indicator appears when there is a new message. The indicator switches to the unhighlighted version when all the messages have been read. In operating and failed modes, the unhighlighted version disappears when the messages disappear, but in standby, the unhighlighted version remains on the screen even if there are no messages.

Message Button When the message indicator is present, pressing this button displays the message screen.

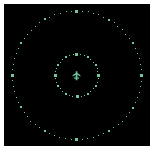
Other Traffic (OT) On the WX-1000/SKY497 display, this symbol represents an intruder aircraft that has been detected within the selected display range and vertical display mode, but which has not generated a TA. On alternate displays, this symbol represents an intruder aircraft that has been detected within the selected display range and vertical display mode, but which has not generated a TA or a PA.

Proximity Advisory (PA) (not shown) This symbol only appears on TCAS installations. A PA

represents an intruder aircraft that has not generated a TA, but which is within a horizontal range of 4 nmi and a relative altitude of ±1200 ft.

Own Aircraft This symbol represents your aircraft's relative position and heading.

Off-Screen Traffic Advisory (TA) This symbol represents a TA that has been detected beyond the current display range. The symbol is displayed at a position along the outer range ring that indicates the relative bearing of the intruder aircraft.



Range Rings The outer range ring represents a distance of 15, 6, or 2 nmi from your aircraft corresponding to the selected display range as indicated in the display range indicator. The inner range ring on the 15 nmi range represents a distance of 6 nmi. The inner range ring on the 6 nmi range represents a distance of 2 nmi. There is no inner range ring on the 2 nmi range.

Standby Indicator This indicator is displayed as long as the SKY899 is in standby except when the test screen is displayed during an operator-initiated self test. In standby, the SKY899 does not interrogate, process, or display traffic.

Operate Lamp (optional, not supplied) This panel-mounted indicator light is lit whenever the SKY899 is sending out interrogations. The light is not lit in standby or when the unit is in failed mode.

Controls Required for the *Stormscope* Option

SKYWATCH/*Stormscope* Mode Switch (not supplied) This panel-mounted toggle switch determines whether traffic information or thunderstorm information is displayed.

The SKY899 and the WX-1000 continue tracking even if the switch is in the other position. If the SKY899 detects a TA or generates an error message when the switch is in the *Stormscope* position, the display switches to the traffic screen to display the TA or the error message.

WX-1000 Maintenance Switch (not supplied) This remote toggle switch (normally installed in the avionics bay near the WX-1000 processor) has a Normal position and an Override (WX-1000 maintenance) position. It should only be moved to the Override position when the WX-1000 processor is removed or powered down at the circuit breaker, and you still want to use the SKY899.

Controls & Indicators for an Alternate Display

Control Panel (not supplied) A discrete control panel provides the functions normally provided by the buttons and knob on the WX-1000/SKY497 display. These functions include controlling power to the SKY899, selecting the display range, selecting the vertical display mode, selecting the operating mode, and starting the self test.

Vertical Display Mode Indicator Lamps (not supplied) Some alternate displays do not display a vertical display mode indicator on-screen. For those displays, two discrete indicator lamps similar to those shown in figure 2-3 indicate the current vertical display mode.

Figure 2-3. Vertical Display Mode Indicator Lamps

Aural Announcements

"Traffic, Traffic" This aural component of a traffic advisory is announced once over the cockpit speakers or headset when a TA is first detected.

"SKYWATCH System Test Passed" This message is announced once over the cockpit speakers or headset after the SKY899 has passed an operator-initiated self test.

"SKYWATCH System Test Failed" This message is announced once over the cockpit speakers or headset after the SKY899 has failed an operator-initiated self test.

Chapter 3
Operating Instructions

Introduction

This chapter lists the SKY899 operating instructions and describes its fault modes.

Turn On the SKY899

CAUTION *To avoid power surges that could damage the SKY899 and the optional WX-1000, start your engines before turning on the SKY899.*

1. **Turn the OFF/BRT knob clockwise to the desired display brightness.**

   The Goodrich screen (figure 3-1) appears and stays on the display until the power-on self test is complete.

   If the SKY899 passes the test, and your aircraft has a squat switch, and your aircraft is on the ground, the standby screen appears (figure 3-2).

   If the SKY899 passes the test, and your aircraft has a squat switch, and your aircraft is in the air, the traffic screen appears set on the 6 nmi display range and the *normal* vertical display mode (figure 3-3).

Figure 3-1. Goodrich Screen

Figure 3-2. Standby Screen

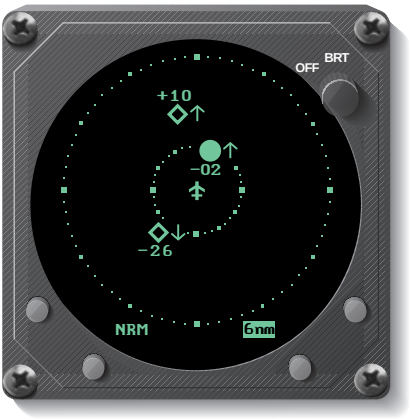


Figure 3-3. In-Flight Traffic Screen

If the SKY899 passes the test and your aircraft does not have a squat switch, the standby screen (figure 3-2) appears.

In standby, the SKY899 waits 5 minutes for critical sensors such as the barometric altimeter to warm up and come on line before it displays a failed screen or MSG due to the lack of the sensor input; however, if you switch into operating mode, the SKY899 only waits 2 seconds for the sensor inputs before it displays the failed screen or MSG.

If a failed screen similar to figure 3-4 appears, or if you see MSG, refer to the Message Response section on page 3-7. For installations with an ARINC 429 barometric altitude input, turning on the SKY899 during flight causes a temporary Error 20 message while the system is syncing up to the 429 data source.

Figure 3-4. Failed Screen

Run the Operator-Initiated Self Test

It is recommended, but not required that you run the operator-initiated self test before the first flight of the day and whenever you get a failed screen.

1. **With the SKY899 in standby or failed mode, press the TEST button.**

   The SKY899 begins its self test and the test screen (figure 3-5) appears. Upon *successful* completion of the self test, you will hear "SKY-WATCH system test passed" and the display will revert to the previous standby or traffic screen.

Figure 3-5. Test Screen

2. **If you hear "SKY-WATCH system test failed" or see a SKY899 failed screen, push the TEST button again. If it fails again, refer to the Message Response section on page 3-7.**

3. **If you hear "SKYWATCH system test passed" without seeing the test screen, and the OFF/BRT knob is turned to BRT, turn off the SKY899 and contact your authorized Goodrich Avionics Systems dealer for troubleshooting help.**

Switch Between Standby & Operating Mode

When you're on the ground, you must manually switch out of standby if you want the SKY899 to display traffic information. The ability to switch out of standby on the ground in conjunction with the *above* display mode is especially useful for scanning the airspace around the airport before takeoff.

1. **To manually switch into operating mode from the standby screen (figure 3-2), press the button labeled ➡OPR.**

The SKY899 switches out of standby into the *above* display mode and 6 nmi range (figure 3-6).

If your aircraft has a squat switch and you don't *manually* switch out of standby, the SKY899 *automatically* switches out of standby 8 to 10 seconds after takeoff.

Figure 3-6. Traffic Screen on the Ground

2. To manually switch into standby from the traffic screen, press the button labeled ➡STB.

The SKY899 goes into standby and the display switches back to the standby screen. (If your aircraft has a squat switch, the ➡STB button label is not displayed while airborne, and the SKY899 will not go into standby while airborne.)

If your aircraft has a squat switch, the SKY899 also goes into standby automatically, 24 seconds after landing. This delay allows the SKY899 to remain out of standby during a touch-and-go maneuver.

Change the Display Range

You can change the display range when the SKY899 is in operating mode.

1. Press the display range button to toggle the display range between 15, 6, and 2 nmi (figure 3-7).

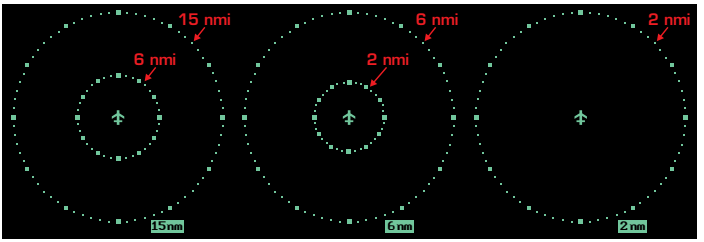


Figure 3-7. Display Ranges

With each press of the button, the screen changes to display the traffic detected within the chosen display range. The numerical value of the chosen display range (2, 6, or 15 nm) is displayed next to the button.

The SKY899 continues to track up to 35 intruder aircraft within its maximum horizontal surveillance range (35 nmi radius) regardless of the display range selected.

Change the Vertical Display Mode

You can change the vertical display mode when the SKY899 is in operating mode.

1. **Press the vertical display mode button to toggle between above, normal, below, and unrestricted.**

   With each press of the button, the screen changes to display the traffic detected within the chosen vertical display mode (figure 1-5). The name of the chosen vertical display mode (ABV, NRM, BLW, or UNR) is displayed next to the button.

   The SKY899 continues to track up to 35 intruder aircraft within its maximum vertical surveillance range (±10,000 ft) regardless of the vertical display mode selected.

Switch Between SKYWATCH & *Stormscope*

If you have a *Stormscope* WX-1000 installed with the SKY899, you can switch between SKYWATCH and *Stormscope* screens (figures 1-2 and 1-3) using the remote SKYWATCH/*Stormscope* mode switch. Once in *Stormscope* mode, you can use the buttons on the display bezel to control *Stormscope* functions.

WARNING *If the SKY899 is in SKYWATCH mode, the display will not automatically switch into Stormscope mode to display thunderstorms or Stormscope errors. Use the remote SKYWATCH/Stormscope mode switch to periodically check for thunderstorms or Stormscope errors.*

The SKY899 does not superimpose SKYWATCH data on top of *Stormscope* data or vice versa; however, if the SKY899 is in *Stormscope* mode and the SKY899 detects a TA, the display automatically switches to SKYWATCH mode until the TA goes away. Also, if the SKY899 is in *Stormscope* mode and the SKY899 detects a failure, a special SKY899 failed screen appears that doesn't have a TEST button label, but does display the message

"Press Any Key to Ack." Pressing any button or waiting 10 seconds switches the SKY899 back to *Stormscope* mode.

Observe the Display

WARNING *The SKY899 relies on information obtained from transponders in nearby aircraft. The SKY899 does not detect or track aircraft which are not equipped with an operating Air Traffic Control Radar Beacon System (ATCRBS) transponder.*

WARNING *The SKY899 does not track intruder aircraft approaching at a closure rate greater than 1200 knots.*

WARNING *Some traffic within the chosen display range may not be displayed due to traffic prioritizing, antenna shielding, or ground intruder filtering.*

CAUTION *Optimum SKY899 performance is realized when intruder aircraft are reporting their altitude (via a mode C or other altitude reporting transponder).*

Monitor the activity of any traffic displayed. Keep in mind the following points when watching traffic on the display:

- Traffic Prioritizing – The SKY899 tracks up to 35 intruder aircraft simultaneously, but to reduce clutter, it displays only the 8 most threatening aircraft of those tracked.
- Ground Intruder Filtering – If a radio altimeter is connected to the SKY899, no traffic symbols are displayed for traffic detected under 380 ft Above Ground Level (AGL) when your aircraft is below 1,700 ft AGL.
- Refer to chapter 4 for a description of the TA criteria and other factors that affect the display of traffic symbols.

Respond to Traffic Advisories

WARNING *Do not attempt evasive maneuvers based solely on traffic information on the display. Information on the display is provided to the flight crew as an aid in visually acquiring traffic; it is not a replacement for Air Traffic Control (ATC) and See & Avoid techniques.*

When the SKY899 issues a TA, look outside for the intruder aircraft. When you spot an intruder aircraft, use normal right-of-way procedures to maintain separation.

Turn Off the SKY899 and the Optional WX-1000

Rotate the OFF/BRT knob on the display bezel counterclockwise until the switch turns off.

Operate the WX-1000 Without the SKY899

After removing the SKY899 for maintenance, maintenance personnel must install a jumper plug if you want to continue using the WX-1000.

Operate the SKY899 Without the WX-1000

After removing the WX-1000 for maintenance, maintenance personnel will move the WX-1000 maintenance switch to the OVERRIDE (WX-1000 maintenance) position to allow continued operation of the SKY899.

Message Response

When the SKY899 detects a fault, it determines whether the system has failed or is just degraded. A failed system can not perform any collision warning functions. A degraded system can perform some collision warning functions but may not be able to provide some features. For example, in the future, when ADS-B becomes standardized, intruder position enhancement via ADS-B would not be available if there's a loss of GPS communications.

Respond to a Failed System

In the case of a failed system, the SKY899 displays a failed screen (figure 3-4). All errors indicated by a failed screen prevent continued operation of the SKY899 in SKYWATCH mode; however, error #20, Barometric Altitude Input, is a recoverable error. For example, if you turn on and try to operate the SKY899 before you turn on the barometric altitude source or before it comes on line, a SKY899 failed screen appears with error #20 and continued operation of the SKY899 in SKYWATCH mode is not possible; but when you eventually

turn on the barometric altitude source and it comes on line, the failed screen disappears and operation returns to normal.

If you see a SKY899 Failed screen, respond as follows:

1. **If the Barometric Input Error (#20) occurs, make sure the barometric altitude source has been turned on and given enough time to warm up.**

   Most #20 errors are due to the failure of equipment external to the SKY899.

2. **If any other error occurs, or if error #20 remains after 5 minutes, write down the error number and description; then, if you don't have a *Stormscope* WX-1000, skip to step 4.**

3. **If the SKYWATCH/*Stormscope* mode switch is in the *Stormscope* position, switch it into the SKYWATCH position.**

4. **Press the TEST button.**

   The resulting self test may provide another error code to write down.

5. **If you see MSG or MSG on the failed screen, press the message button and write down the degraded items you see listed on the message screen.**

6. **Press the EXIT button to return to the failed screen.**

7. **Remove power from the SKY899 at the circuit breaker.**

   If you have a WX-1000 *Stormscope*, the display automatically switches into *Stormscope* mode once you disconnect power from the SKY899 regardless of the position of the SKYWATCH/*Stormscope* mode switch.

8. **Contact your authorized Goodrich Avionics Systems dealer for troubleshooting help. Be sure to give the troubleshooting personnel the error numbers and descriptions that you wrote down.**

Respond to a Degraded System

In the case of a degraded system, the SKY899 displays MSG on the traffic screen and on the standby screen (figure 2-1).

If you see MSG, respond as follows:

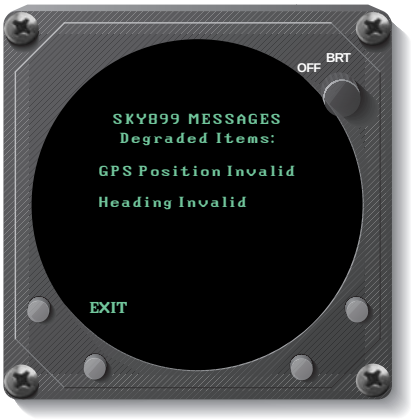


Figure 3-8. Message Screen With Two Messages

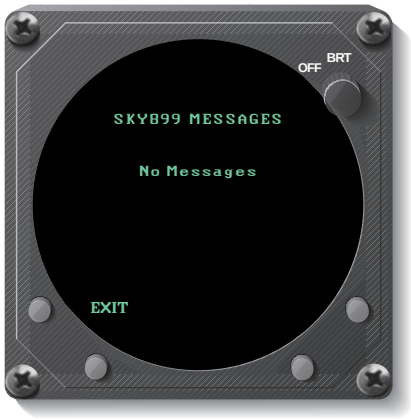


Figure 3-9. Message Screen With No Messages

1. **Press the button next to MSG to display the message screen (figure 3-8).**

   The message screen lists the faults that are causing the degraded operation. If there are more faults than can fit on one screen, press the NEXT button to go to the next screen of messages.

2. **Write down the faults then press the EXIT button to return to the previous screen.**

   Once you've read the message screen, MSG on the traffic screen or standby screen changes to MSG (with no highlighting box). With MSG displayed, you can press the adjacent button to see the message screen again. Once the faults responsible for the degraded condition are corrected, MSG disappears from the traffic screen, but remains on the standby screen. Pressing the message button in this case on the standby screen displays the message screen with no messages (figure 3-9).

3. **Contact your authorized Goodrich Avionics Systems dealer for troubleshooting help. Be sure to tell the troubleshooting personnel about the faults that you wrote down.**

Chapter 4

Principles of Operation

Introduction

This chapter describes, lists, and illustrates Traffic Advisory (TA) criteria and other factors that affect the display of traffic symbols including ADS-B (which will affect the display in the future once the technology is standardized). Table 4-1 on the next page summarizes the criteria necessary for the SKY899 to display a TA.

Sensitivity Levels

The SKY899 uses one of two sensitivity levels, A or B, to determine when to display a TA. Having two sensitivity levels allows the SKY899 to reduce the number of nuisance TAs during takeoff and landing (sensitivity level A), and to maximize the detection of TAs during the cruise phase of flight (sensitivity level B).

Sensitivity Level A

Sensitivity level A consists of two criteria for displaying a TA:

1. The intruder aircraft enters into a cylinder of airspace surrounding your aircraft defined by a 0.2 nmi horizontal radius and a height of ±600 ft from your aircraft. (See figures 4-1 through 4-3.)

   OR…

2. The intruder aircraft approaches your aircraft on a course that will intercept your aircraft within 15 or 20 seconds (within 15 seconds for a non-altitude reporting intruder aircraft; within 20 seconds for an altitude reporting intruder aircraft).

Table 4-1. Fourteen Situations in Which a Traffic Advisory Will Occur

No.	The SKY899 Will Issue a Traffic Advisory...				
	If Your Aircraft...	And Your Aircraft's Altitude Is...	And Your Landing Gear Is...	And Your Ground Speed Is...	And An Intruder Aircraft Is Detected...
1	has a radio altimeter*	below 2000 ft AGL			within a 0.2 nmi horizontal radius and a ±600 ft relative altitude
2					within 15–20 sec. of CPA**
3		above 2000 ft AGL			within a 0.55 nmi horizontal radius and a ±800 ft relative altitude
4					within 20–30 sec. of CPA**
5	does not have a radio altimeter*		down		within a 0.2 nmi horizontal radius and a ±600 ft relative altitude
6					within 15–20 sec. of CPA**
7			up		within a 0.55 nmi horizontal radius and a ±800 ft relative altitude
8					within 20–30 sec. of CPA**
9			fixed	not available***	within a 0.55 nmi horizontal radius and a ±800 ft relative altitude
10					within 20–30 sec. of CPA**
11				available and greater than or equal to 120 knots	within a 0.55 nmi horizontal radius and a ±800 ft relative altitude
12					within 20–30 sec. of CPA**
13				available and less than 120 knots	within a 0.2 nmi horizontal radius and a ±600 ft relative altitude
14					within 15–20 sec. of CPA**

Sensitivity Level A | Sensitivity Level B

* Having a radio altimeter means having a compatible radio altimeter wired to the SKY899 and providing valid altitude information.

** CPA means Closest Point of Approach.

*** Ground speed is not available whenever your GPS navigation information is not available.

The SKY899 uses sensitivity level A in the following situations (corresponds to numbers 1, 2, 5, 6, 13, and 14 in table 4-1):

1. Your aircraft has a radio altimeter and is below 2,000 ft AGL.
2. Your aircraft has no radio altimeter but its retractable landing gear is down.
3. Your aircraft has no radio altimeter, a fixed landing gear, and your ground speed is available and is less than 120 knots.

Sensitivity Level B

Sensitivity level B consists of two criteria for displaying a TA:

1. The intruder aircraft enters into a cylinder of airspace surrounding your aircraft defined by a 0.55 nmi horizontal radius and a height of ±800 ft from your aircraft. (See figures 4-1 through 4-3.)

   OR…

2. The intruder aircraft approaches your aircraft on a course that will intercept your aircraft within 20 or 30 seconds (within 20 seconds for a non-altitude reporting intruder aircraft; within 30 seconds for an altitude reporting intruder aircraft).

The SKY899 uses sensitivity level B in the following situations (corresponds to numbers 3, 4, 7, 8, 9, 10, 11, and 12 in table 4-1):

1. Your aircraft has a radio altimeter and is above 2,000 ft AGL.
2. Your aircraft has no radio altimeter but its retractable landing gear is up.
3. Your aircraft has no radio altimeter, a fixed landing gear, and your ground speed is not available.
4. Your aircraft has no radio altimeter, a fixed landing gear, and your ground speed is available but is greater than or equal to 120 knots.

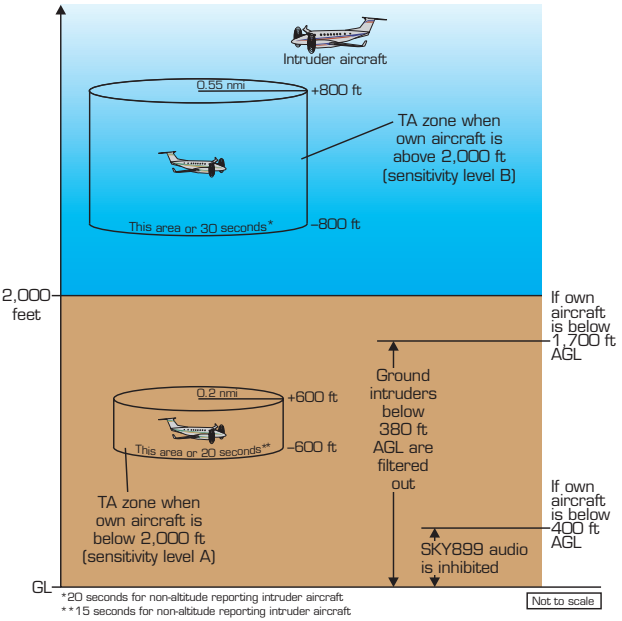


Figure 4-1. TA Zones If Your Aircraft Has a Radio Altimeter

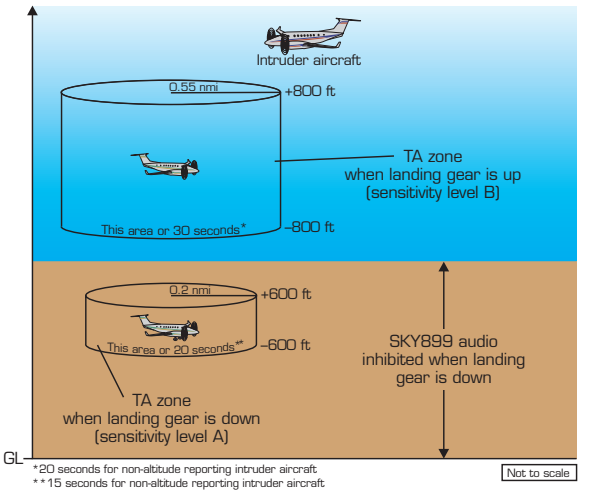


Figure 4-2. TA Zones If Your Aircraft Has No Radio Altimeter, But Does Have a Retractable Landing Gear

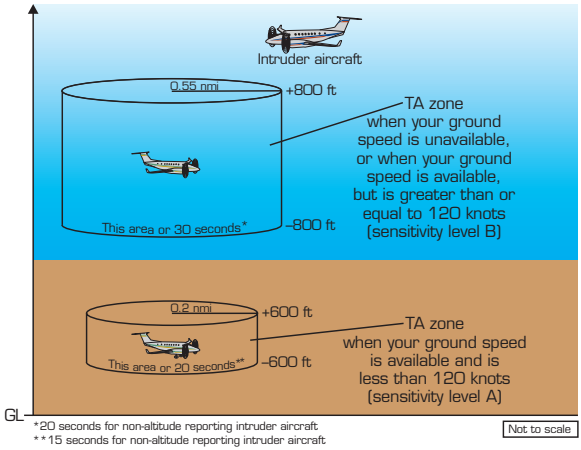


Figure 4-3. TA Zones If Your Aircraft Has No Radio Altimeter and a Fixed Landing Gear

Audio Inhibit, SKY899

This audio inhibit feature prevents the aural part of TAs, "traffic, traffic," from being announced during takeoff and landing in order to minimize pilot distraction. The corresponding TA symbols are still displayed.

The SKY899 uses this audio inhibit feature in the following situations:

1. Your aircraft has a radio altimeter and you're below 400 ft AGL. (See figure 4-1.)
2. Your aircraft has no radio altimeter but its retractable landing gear is down. (See figure 4-2.) (Audio is not inhibited if you have fixed landing gear and no radio altimeter.)

Audio Inhibit, GPWS, EGPWS, or TAWS

If your aircraft has a Ground Proximity Warning System (GPWS), Enhanced GPWS (EGPWS), or Terrain Awareness and Warning System (TAWS) interfaced with the SKY899 and an alarm from one of those systems occurs, the SKY899 senses the alarm and delays the aural "traffic, traffic" component of any TAs issued until the alarm clears.

TA Symbol Duration

A TA symbol remains on the screen for at least 8 seconds, even if the intruder aircraft no longer meets the TA criteria, as long as the SKY899 continues to track the aircraft.

Ground Intruder Filtering

Ground intruder filtering reduces the clutter of visual symbols and aural announcements that would otherwise be generated for intruder aircraft typically present on or near the ground near airports.

For intruder aircraft determined to be below 380 ft AGL, ground intruder filtering prevents the issuing of TAs and PAs, and prevents the display of OT symbols. (See figure 4-1.)

The SKY899 uses ground intruder filtering only if your aircraft has a radio altimeter and you're below 1,700 ft AGL.

ADS-B

Unlike the current ATC system of ground-based Secondary Surveillance Radar (SSR) interrogations and aircraft transponder replies, the ADS-B-based Free Flight Air Traffic Management (ATM) system of the future will depend more on aircraft-to-aircraft exchange of aircraft state information (figure 4-4).

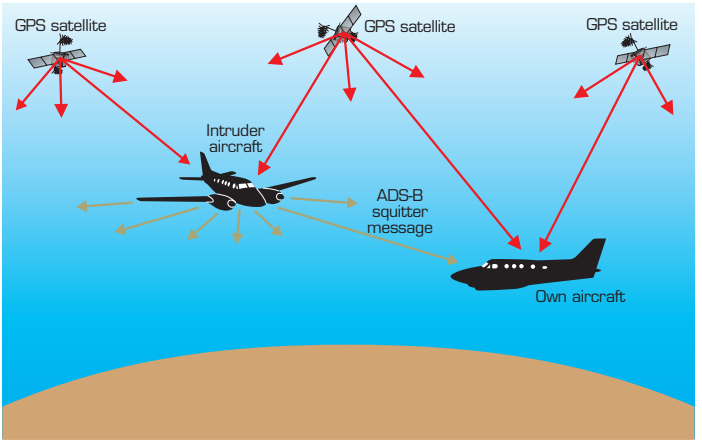


Figure 4-4. Future ADS-B-Based Free Flight Environment

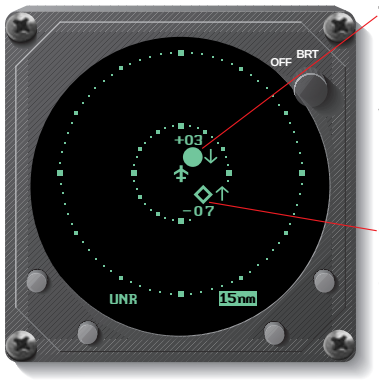
The SKY899 anticipates the future Free Flight environment by including hardware and software that will continuously monitor the dedicated data link frequency (1090 MHz) for ADS-B mode S extended squitter messages within 50 nmi when ADS-B becomes standardized. These messages will be broadcast, without interrogation, from aircraft with ADS-B-capable mode S transponders. The SKY899 will not require a mode S transponder, ADS-B-capable or otherwise, to perform its ADS-B surveillance.

An ADS-B message will contain nav data for the intruder aircraft including GPS position, ident, ground speed, and intent. The SKY899 will use this nav data along with its own aircraft GPS nav data to calculate the relative position of the intruder to enhance its active ATCRBS surveillance of the intruder when ADS-B becomes standardized.

Chapter 5
Display Interpretation

Introduction

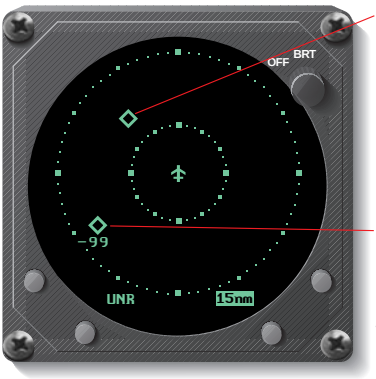
This chapter explains the meaning of several sample screens. The abbreviation CPA used in some of the figures means closest point of approach.



Traffic Advisory
Intruder aircraft at 1 o'clock, 2 nmi away, 300 ft above you, descending at a rate greater than 500 fpm. CPA within 20 to 30 seconds.

Other Traffic
Intruder aircraft at 4:30, 4 nmi away, 700 ft below you, ascending at a rate greater than 500 fpm. No immediate threat. Displays as a PA (solid diamond) on TCAS installations.

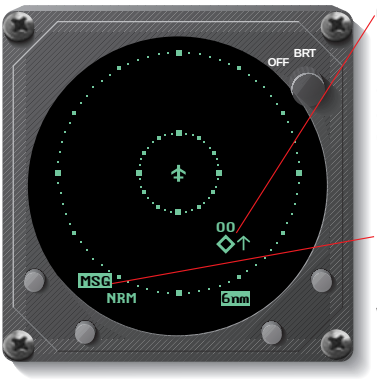
Figure 5-1. TA & OT on 15 nmi Range, UNR Mode



Other Traffic
Non-altitude-reporting intruder aircraft at 10:30, 9 nmi away. No immediate threat.

Other Traffic
Intruder aircraft at 8 o'clock, 11 nmi away, 9,900 ft below you in level flight. No immediate threat.

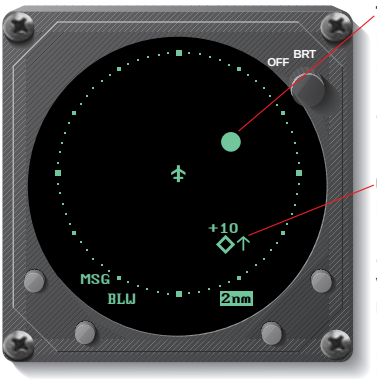
Figure 5-2. Other Traffic on 15 nmi Range, UNR Mode



Other Traffic
Intruder aircraft at 5 o'clock, 4.5 nmi away, at your altitude, ascending at a rate greater than 500 fpm. No immediate threat.

New Messages
Indicates one or more new messages are waiting to be read.

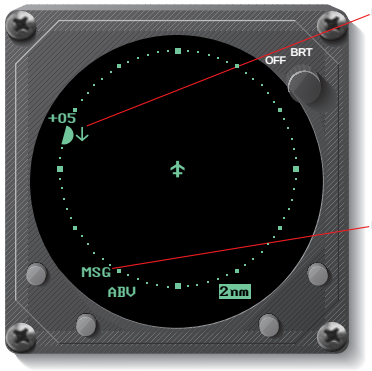
Figure 5-3. Other Traffic on 6 nmi Range, NRM Mode



Traffic Advisory
Non-altitude-reporting intruder aircraft at 2 o'clock, 1 nmi away. CPA within 15 to 20 seconds.

Other Traffic
Intruder aircraft at 5 o'clock, 1.5 nmi away, 1,000 ft above you, ascending at a rate greater than 500 fpm. No immediate threat. Displays as a PA (solid diamond) on TCAS installations.

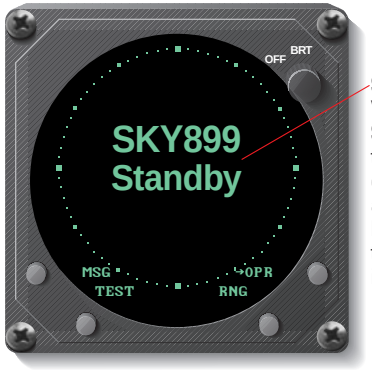
Figure 5-4. TA & OT on 2 nmi Range, BLW Mode



Off-Screen TA
Intruder aircraft at 9:30, more than 2 nmi away. 500 ft above you, descending at a rate greater than 500 fpm. CPA within 20 to 30 seconds.

Old Messages
Indicates there are one or more old messages that are still valid, but no new messages.

Figure 5-5. Off-Screen TA on 2 nmi Range, ABV Mode



Standby
When in standby, the SKY899 does not transmit interrogations or track intruder aircraft. Press the button labeled ➡OPR to begin tracking intruder aircraft.

Figure 5-6. Standby Screen

SKY899 Failed
Occurs any time the SKY899 detects an error that prohibits further operation of the SKY899 in SKYWATCH mode as long as the message remains on the screen.

Error 20
Indicates that the barometric input is missing or invalid. Once the valid barometric input returns, this screen goes away and normal operation resumes.

Figure 5-7. Failed Screen

Chapter 6
Specifications

*Table 6-1. TRC899 Specifications**

Part Number Definition:
805-11900-001

Size:
Not including mounting tray:
7.62 in (19.36 cm) high
3.56 in (9.04 cm) wide
12.52 in (31.90 cm) deep

Weight:
Not including mounting tray:
9.00 lb (4.08 kg)
Including standard mounting tray:
9.88 lb (4.48 kg)
Including ruggedized mounting tray:
11.01 lb (4.99 kg)

Tracking Capability:
Up to 35 intruder aircraft (displays only the 8 highest priority aircraft)

Surveillance Range:
Horizontal tracking radius:
35 nmi maximum for ATCRBS surveillance
50 nmi maximum for ADS-B surveillance (ADS-B surveillance will not be active in the SKY899 until ADS-B is standardized by the aviation community and the FAA, at which time you will be able to get a software upgrade from Goodrich Avionics Systems to activate all of SKY899's ADS-B features.)
Relative altitude tracking range:
±10,000 ft maximum

(Continues on next page)

*Specifications subject to change without notice.

Table 6-1. TRC899 Specifications (Continued)*

Display Ranges:
Horizontal display ranges:
2, 6, and 15 nmi
Vertical display modes:
±2,700 ft (normal mode)
+9,000 ft to -2,700 ft (above mode/look up)
+2,700 ft to -9,000 ft (below mode/look down)
±9,900 ft (unrestricted mode)

Range Accuracy:
0.05 nmi typical

Bearing Accuracy:
5° RMS typical with NY156 antenna
7° RMS typical with NY164 antenna

Altitude Accuracy:
±200 ft

Maximum Closure Rate:
1200 knots

Power Input Requirements:
18 to 32 V dc, 2 A maximum at +28 V dc

Transmitter Power Output:
Peak 1030 MHz RF output power of 52 dBm (158.5 W) ±1dB

Operating Temperature:
-55 to +70 °C (-67 to +158 °F)

Storage Temperature:
-55 to +85 °C (-67 to +185 °F)

Operating Altitude:
55,000 ft maximum

Cooling:
Conduction and forced air convection (internal fan)

Certification Compliance:
U.S. FAA TSO C118 and C147 Class A. Contact Goodrich Avionics Systems for the latest foreign country certifications. Refer to the latest revision of FSAW 98-04 for Flight Standards Service (AFS) policy concerning follow-on field approvals.

RTCA Compliance:
Environmental:
DO-160D Category
[F2X]BAB[SBM]XXXXXXZBABA[RR]L[XXXX]XXA
Software:
DO-178B Level D

*Specifications subject to change without notice.

*Table 6-2. WX-1000/SKY497 Display Specifications**

Part Number Definition:
78-8060-5900-8 – Black Bezel
78-8060-5900-9 – Gray Bezel

Size:
3.37 in (8.56 cm) high
3.37 in (8.56 cm) wide
8.24 in (20.92 cm) deep

Weight:
2.3 lb (1.0 kg)

Power Input Requirements:
+15/-15 V dc, 0.7 A maximum (provided by the TRC899)

Operating Temperature:
-20 to +55 °C (-4 to +131 °F)

Storage Temperature:
-55 to +70 °C (-67 to +158 °F)

Operating Altitude:
55,000 ft maximum

TSO Compliance:
C110a and C113

RTCA Compliance:
DO-160C F1-CA(NBM)XXXXXXZXXXZUAXXXXXX

*Specifications subject to change without notice.

*Table 6-3. NY164 Directional Antenna Specifications (for TAS installations only)**

Part Number:
805-10890-001

Size:
1.30 in (3.25 cm) high
6.23 in (15.82 cm) wide
11.12 in (28.24 cm) deep

Weight:
2.3 lb (1.04 kg)

Speed:
Rated to 600 knots (0.9 Mach) @ 25,000 ft

Frequency:
1,030-1,090 MHz

TSO Category:
C118

Environmental Category:
DO-160C F2-AC(CLM)XSFDFSXXXXXXXL(2A)X

Finish:
Gloss white Skydrol resistant polyurethane paint

*Specifications subject to change without notice.

*Table 6-4. NY156 Directional Antenna Specifications (required for TCAS I installations, optional for TAS)**

Part Number:
805-10003-001

Size:
1.30 in (3.25 cm) high
6.25 in (15.88 cm) wide
11.12 in (28.24 cm) deep

Weight:
2.3 lb (1.04 kg)

Speed:
Rated to 600 knots (0.9 Mach) @ 25,000 ft

Frequency:
1,030-1,090 MHz

TSO Category:
C118

Environmental Category:
DO-160C F2-AC(CLM)XSFDFSXXXXXXXL(2A)X

Finish:
Gloss white Skydrol resistant polyurethane paint

*Specifications subject to change without notice.

Chapter 7

Warranty Information

Introduction

The SKY899 is warranted for 2 years from the date of installation (not to exceed 30 months from the date of shipment from Goodrich Avionics Systems, Inc.) subject to the following limitations.

Warranty Statement

Goodrich Avionics Systems, Inc. (hereinafter called Goodrich Avionics Systems) warrants each item of new equipment manufactured or sold by Goodrich Avionics Systems to be free from defects in material and workmanship, under normal use as intended, for a period of 30 months from date of shipment by Goodrich Avionics Systems to an authorized facility, or 24 months from date of installation by an authorized facility, whichever occurs first. No claim for breach of warranties will be allowed unless Goodrich Avionics Systems is notified thereof, in writing, within thirty (30) days after the material or workmanship defect is found.

The obligation of Goodrich Avionics Systems shall be limited to replacing or repairing at its factory the equipment found defective under terms of this warranty certificate; providing that such equipment is returned in an approved shipping container, transportation charges prepaid, to Goodrich Avionics Systems, Grand Rapids, Michigan, or such other location as Goodrich Avionics Systems may authorize. Goodrich Avionics Systems reserves the right to have necessary repairs performed by an authorized agency.

This warranty shall not apply to any unit or part thereof which has not been installed or maintained in accordance with Goodrich Avionics Systems instructions, or has been repaired or altered in any way so as to adversely affect its performance or reliability, or which has been subjected to misuse, negligence or accident.

This warranty is exclusive and is accepted by buyer in lieu of all other guaranties or warranties express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose. Buyer agrees that in no event will Goodrich Avionics Systems liability for all losses from any cause, whether based in contract, negligence, strict liability, other tort or otherwise, exceed buyer's net purchase price, nor will Goodrich Avionics Systems be liable for any special, incidental, consequential, or exemplary damages.

Goodrich Avionics Systems reserves the right to make changes in design or additions to or improvements in its equipment without the obligation to install such additions or improvement in equipment theretofore manufactured.

A Subsidiary of Goodrich Corporation

Related Policies and Procedures

a. If the original registered owner of a SKY899 sells the aircraft in which the SKY899 is installed during the warranty period, the remaining warranty may be transferred. Written notification of the transaction must be submitted by the initial recipient of the warranty to:

ATTENTION: WARRANTY ADMINISTRATOR
Goodrich Avionics Systems, Inc.
5353 52nd Street, S.E.
Grand Rapids, MI 49512 USA

Telephone: (800)253-9525 or (616)949-6600

b. Equipment must be installed by a Goodrich Avionics Systems authorized dealer or installer. Installation of equipment by facilities not specifically authorized will void the equipment warranty.

c. Notice of a claimed product defect must be given to Goodrich Avionics Systems or a designated Goodrich Avionics Systems service agency within the specified warranty period.

d. A product which is defective in workmanship and/or material shall be returned to Goodrich Avionics Systems via any authorized dealer with transportation charges prepaid. After correction of such defects, the equipment will be returned to the dealer, transportation prepaid by Goodrich Avionics Systems via surface transportation. Any other means of transportation must be paid by the customer.

   The risk of loss or damage to all products in transit shall be assumed by the party initiating the transportation of such products. All items repaired or replaced hereunder shall be warranted for the unexpired portion of the original warranty.

e. Goodrich Avionics Systems is in no way obligated or responsible for supporting or participating in the costs of the installation warranty. The entire responsibility lies with the Goodrich Avionics Systems authorized dealer making the installation. Goodrich Avionics Systems is only responsible for the product warranties outlined in the warranty statement.

f. Goodrich Avionics Systems cannot authorize warranty credit for troubleshooting of other systems in the aircraft in order to reduce noise interference with the SKY899.

Record of Important Information

Dealer Information

Name _____

Address _____

City, State, Zip _____

Telephone _____

Equipment Information

Date of Purchase _____

Installation Date _____

TRC:

- Model Number _____
- Part Number _____
- Serial Number _____
- Mod Letter _____
- Software Version _____

Antenna:

- Model Number _____
- Part Number _____
- Serial Number _____
- Mod Letter _____

Display:

- Model Number _____
- Part Number _____
- Serial Number _____
- Mod Letter _____

NOTE *To ensure that a new or repaired SKY899 meets the TSO, meets foreign government certification requirements, and meets Goodrich Avionics Systems performance standards, your SKY899 must be installed and tested by a Goodrich Avionics Systems authorized SKY899 dealer.*

GOODRICH

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SKYWATCH® HP

SKY899