



**Rockwell  
International**

## **instruction book**

*Part 1*

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# **851S-1 Receiver**

## **Intermediate and Depot Maintenance**

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*Part 1 of this instruction book includes:*

|                                  |             |                                      |             |
|----------------------------------|-------------|--------------------------------------|-------------|
| <i>Description</i>               | 523-0769211 | <i>AC-8013 External Standard Kit</i> | 523-0768672 |
| <i>-010 Series Supplement</i>    | 523-0769556 | <i>AC-8090 Remote Control Kit</i>    | 523-0768675 |
| <i>Installation</i>              | 523-0769212 | <i>AC-85100 ISB Kit</i>              | 523-0769222 |
| <i>Operation</i>                 | 523-0769213 | <i>AC-85101 DVBFO Kit</i>            | 523-0769223 |
| <i>Theory</i>                    | 523-0769214 | <i>AC-85102 Decade Expansion Kit</i> | 523-0769224 |
| <i>Maintenance</i>               | 523-0769215 | <i>AC-85104 AFC Kit</i>              | 523-0771078 |
| <i>Parts List</i>                | 523-0769216 | <i>AC-85105 Optional Filters Kit</i> | 523-0769226 |
| <i>Diagrams</i>                  | 523-0769217 | <i>AC-85106 RF Translator Kit</i>    | 523-0769227 |
| <i>Options</i>                   |             | <i>AC-85108 Channel A IF Kit</i>     | 523-0769225 |
| <i>AC-8012 Oven Standard Kit</i> | 523-0768671 | <i>TS-8010 Card Extender Kit</i>     | 523-0767968 |

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Rockwell International  
Cedar Rapids, Iowa 52498**

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**Caution**

The material in this manual is subject to change. Before attempting any maintenance operation on the equipment covered in this manual, verify that you have a complete and up-to-date publication applicable to your equipment.

Please be advised that completion and return of the enclosed Customer Service Information sheet to Rockwell International ensures you of manual revisions and service bulletin modifications to your equipment. Without the return of this sheet, Rockwell International bears no responsibility to forward this information to you.

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We welcome your comments concerning this instruction book. Although every effort has been made to keep it free of errors, some may occur. When reporting a specific problem, please describe it briefly and include the instruction book part number, the paragraph or figure number, and the page number.

Send your comments to: Logistics  
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ATTN: Quality Control-Technical Publications 120-153

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## introduction

### DESIGN FEATURES

The 851S-1 Receiver is designed to be a low-cost, highly reliable hf SSB/ISB receiver. The 851S-1 Receiver has a frequency range of 250.00 kHz to 29.999 99 MHz tunable in 100-Hz steps over its entire range. In its basic configuration, it includes the following modes of operation: USB (A3J), CW (A1), and AM (A3/A3H).

- The 851S-1 Receiver makes an excellent manually controlled receiver for either a receive-only site or a full communications station.
- The 851S-1 Receiver may have preset capabilities with up to 16-preset channels set in the receiver.
- The 851S-1 Receiver makes an excellent remotely controlled receiver, and using an HF-8095 Receiver Control, it can be remotely controlled up to 8 km (5

mi) over field wire or for unlimited distances over standard telephone circuits or radio links.

• Multiple 851S-1 Receiver installations can be controlled from one HF-8095 Receiver Control or one processor.

• The 851S-1 Receiver is very flexible and is available with many options. Some available options are as follows:

• **Over standard:** (AC-8012) added to provide an accurate temperature stabilized frequency standard.

• **External frequency standard:** (AC-8013) used with a 100-kHz, 1-MHz, or 5-MHz external frequency standard.

• **Remote control:** (AC-8090) added to allow receiver control from a remote site either by an HF-8095 Receiver Control or a processor control.

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ISB and LSB: (AC-85100) added to provide LSB operation and 2-channel reception in ISB mode.

Various bandwidth if filters and LSB: (AC-85100, AC-85105, AC-85108) added to meet specific customer requirements. Any of the eight selectable bandwidth if filters can be changed to meet a specific requirement.

DVBFO (digital variable beat frequency oscillator): (AC-85101) added to provide additional flexibility in reception of CW and single sideband signals.

AFC (automatic frequency control): (AC-85104) added to provide automatic lock-on to the received frequency.

10-Hz Tuning: (AC-85102) added to allow tuning in 10-Hz increments across the frequency band.

Various bandwidth rf filters: (AC-85106) added to meet specific customer requirements. Half-octave or broadband rf filtering can be selected as well as narrowband or broadband 10.35-MHz if filtering.

- The 851S-1 Receiver makes an excellent building block for an expanding system with no changes required to the receiver when expanding from a single receiver to a multiple receiver station and/or a complete duplex system. All system interconnections are made from the rear of the receiver and all local controls are on the front panel.
- The 851S-1 Receiver is designed for ease in maintenance with front panel fault indicators and a meter to monitor specific outputs. Faults can be isolated and the unit can be placed on line with a minimum downtime using plug-in circuit cards and modules.
- The 851S-1 Receiver can be rack mounted in a standard 483-mm (19-inch) rack or in a small desk-top cabinet. Provisions are made for optional slide mounting in rack/cabinet installations.

**INSTRUCTION BOOK**

The 851S-1 Receiver instruction book is divided into two parts.

Part 1 includes all instructions on the basic unit and supports repair of the basic unit to card/module replacement and/or replacement of components at the unit level. Included also in part 1 are any supplements necessary to define and support different configurations of the 851S-1 Receiver.

Part 2 includes card, module, and options instructions sheets necessary to support repair to component parts of the cards and modules.

**SERVICE BULLETINS/SERVICE INFORMATION LETTERS**

The following listed service bulletins (SB) and service information letters (SIL) are those that are applicable to the 851S-1 Receiver and are included in the text of this instruction book. Other applicable SB/SIL released before the instruction book was shipped to you are included in the front of the instruction book.

**Note**

Service bulletins are numbered in sequence for the life of the equipments. Service information letters are numbered in sequence starting at 1 for each calendar year.

| <u>SB/<br/>SIL</u> | <u>DESCRIPTION</u>   | <u>ISSUE<br/>DATE</u>   |
|--------------------|--|-------------------------|
| AC-80( ),<br>SB 1  | (AC-8060, AC-8072, AC-8074, AC-8091, AC-8130, AC-8140, AC-8150) Prevent connector interference on remote controlled units with preselector connector. Replaces connector shells with new connector shells. | 11-15-78                |
| SIL 1-80           | New 851S-1 configurations: -023, -024, -025, -026  | 2-15-80                 |
| SB 1               | Modification of coax wiring to allow future expansion to AFC option.   | 2-15-80                 |
| SB 3               | Modification of sideboard to disconnect J10-3 from J9-3.   | 2-15-80                 |
| SB 2               | Modification of FSK demodulator circuit on Serial Interface Card 635-0742-001.   | 3-1-80<br>Rev<br>6-1-80 |
| SIL<br>2-80        | Changed specification limits on power supply from 47-63 to 47-420 Hz (no equipment change).  | 3-15-80                 |
| SIL<br>3-80        | New 851S-1 configurations: -027, -028  | 5-1-80                  |
| SIL<br>4-80        | New 851S-1 configurations: -029, -030, -031, -032, -033.   | 9-15-80                 |
| SB 4               | Modification of low-frequency power line filtering circuit on Synthesizer Output Module 635-4930-002.  | 10-1-80                 |