

# 851S-1 Receiver



Rockwell  
International

**description**

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# description

## **1. GENERAL**

The 851S-1 Receiver provides reception of AM, SSB, and CW signals over the frequency range of 250.0 kHz to 29.9999 MHz in 100-Hz steps. In some available configurations and with options, the receiver can provide 10-Hz tuning, ISB operation, additional bandwidth filter selection, 1/2 octave rf input filters, digitally synthesized vbfo, remote control, internal high-stability frequency reference (oven standard), and an external frequency standard adapter.

Receive audio and receive if output signals are available as well as a headphone jack and a built-in speaker for monitoring received signals.

Optional remote control of the 851S-1 Receiver is provided by FSK, RS-232C, or MIL-STD-188C data signals. The signaling method is changed by changing strapping clips on serial interface card A13. A remote control kit is available to convert the receiver to remote-control operation. As many as 16 851S-1 Receivers can operate in parallel when using the HF-8095 Receiver Control or a processor. For multiple receiver operation from one control or processor, RS-232C or MIL-STD-188C data signaling must be used.

The receiver can be mounted in a standard 483-mm (19-in) rack using an optional slide-mounting kit. It can also be mounted in a desk-top enclosure or in a console style equipment cabinet.

The receiver can be operated from a 100/115- or 215/230-V ac power source.

## **2. EQUIPMENT SUPPLIED/CONFIGURATION**

Equipment supplied in the 851S-1 Receiver and its configuration are listed in table 1.

## **3. ASSOCIATED EQUIPMENT**

Associated equipment required for operation of the 851S-1 Receiver, but not supplied as a part of the receiver, is listed in table 2.

## **4. ACCESSORIES**

Accessories available for use with the 851S-1 Receiver are listed in table 3.

## **5. OPTIONS**

Options available for the 851S-1 Receiver are listed in table 4.

## **6. EQUIPMENT SPECIFICATIONS**

Specifications for the 851S-1 Receiver are listed in table 5.

Table 1. Equipment Supplied/Configuration.

SUBASSEMBLY/CIRCUIT CARD		851S-1 RECEIVER 622-4272-010	DESCRIPTION/FUNCTION
TITLE	COLLINS PART NUMBER		
Receiver assembly	622-4272-008		Includes front panel and wiring required for preset option.
	622-4272-009	X	Does not include required wiring or front panel for presets.
Main chassis	635-9652-001	X	
Bottom cover	635-9658-001	X	
Top cover	635-9678-001	X	
Rear panel	637-3754-001	X	
Cable assembly, receiver	635-4932-001	X	Ribbon cable, interconnects J12-P3-P5-P4-P6, J11-J13-P2, and P7-J46.
Cable assembly, speaker	637-3759-001	X	Interconnects TB3 and J1J47 (internal speaker).
Rf cable assembly W3	637-1525-002	X	Interconnects J40 and J20 (CH B IF OUT).
Rf cable assembly W4	637-1525-002	X	Interconnects J35 and J19 (CH A IF OUT).
Rf cable assembly W5	637-1526-002	X	Interconnects J37 and J33 (450-kHz if from channel B if).
Rf cable assembly W6	637-1526-002	X	Interconnects J31 and J25 (9.45-MHz receive if).
Rf cable assembly, AFC	637-1526-005	X	Interconnects J48 and J32 (AFC output).
Rf cable assembly, vbfo	637-1526-005	X	Interconnects J47 and J34 (vbfo output).
Rf cable assembly, receive antenna	637-1525-001	X	Interconnects J29 and J21 (RCV ANT).
Rf cable assembly, J30/J38	637-1526-001		Interconnects J30 and J38 (450-kHz if to channel B if).
Rf cable assembly, AFC	637-3798-001	X	Interconnects J30, J38, and J50 (450-kHz if to channel B if/AFC).
Sideboard assembly	637-3760-001		Not wired for dvbfo or presets.
	637-3760-002	X	Wired for dvbfo.
	637-3760-003		Wired for dvbfo and presets.
Sideboard	638-6071-001	X	
Cable, vbfo display	637-3761-001	X	
Cable, special purpose	637-1524-001	X	
	637-1524-002		

Table 1. Equipment Supplied/Configuration (Cont).

SUBASSEMBLY/CIRCUIT CARD		851S-1 RECEIVER 622-4272-010	DESCRIPTION/FUNCTION
TITLE	COLLINS PART NUMBER		
Cable, special purpose	637-3762-001	X	
Cable, special purpose	637-9636-002		
Rfi filter	637-2712-004	X	
Power supply A1	635-9649-001	X	Input can be switched for 100, 115, 215, or 230 V ac.
Front panel assembly A2	637-3758-001		100 Hz tuning, no vbfo, no AFC.
	637-3758-002		10 Hz tuning, vbfo, no AFC.
	637-3758-004	X	10 Hz tuning, vbfo, AFC.
	637-3758-005		Includes channel select assembly A2S20 (CHAN selector), PRESET control switch A2S19, and CONT switch A2S8 for control of presets.
LED status display A2A1	635-0825-008		No AFC LOCK indicator.
	635-0825-010	X	Has AFC LOCK and BUSY indicators.
Mounting board A2A2	638-6060-001	X	
Count/store assembly A2A4	638-6063-001	X	
Frequency display A2A5	637-1781-003		10 Hz and vbfo displays.
	637-1781-005		100 Hz and no vbfo display.
	637-1781-009	X	1 Hz and vbfo displays.
Optical tuning switch assembly A2S13	610-2150-001	X	
Channel select assembly A2S20	635-0900-001		Selects preset channels.
AFC A3	642-3224-001		Part of AC-85104 AFC Kit (622-4610-002).
(AFC A3) Bracket assembly, jumper	637-3796-001	X	Part of AC-85104 AFC Kit (622-4610-001). (No AFC).
Vbfo A4	638-6067-001		Part of AC-85101 DVBFO Kit (622-4607-001).
(Vbfo A4) Bracket assembly, jumper	637-3796-001	X	Part of AC-85101 DVBFO Kit (622-4607-002). (No vbfo.)
Receive audio A6	635-0748-001	X	

Table 1. Equipment Supplied/Configuration (Cont).

SUBASSEMBLY/CIRCUIT CARD		851S-1 RECEIVER 622-4272-010	DESCRIPTION/FUNCTION
TITLE	COLLINS PART NUMBER		
Channel B if A7	637-2647-001		Standard channel B if. Part of AC-85100 ISB (Channel B IF) Kit (622-4606-001). Includes 2.75-kHz LSB if filter and ISB audio detector.
	637-2647-002		Part of AC-85100 ISB (Channel B IF) Kit (622-4606-003). Includes 3.05-kHz LSB if filter and ISB audio detector.
	637-2647-003		Part of AC-85100 ISB (Channel B IF) Kit (622-4606-002). Includes 3.10-kHz LSB if filter and ISB audio detector.
	637-2647-004		Includes 5.80-kHz LSB if filter and ISB audio detector.
	637-2647-005		Includes 3.10-kHz (between upper 2 dB and lower 3 dB points) LSB if filter and ISB audio detector.
Channel A if A8	637-2650-001	X	Standard channel A if. Part of AC-85108 Channel A IF Kit (622-4614-003). Includes 2.75-kHz USB if filter, 16-kHz AM pad, and SSB and AM audio detectors.
	637-2650-002		Part of AC-85108 Channel A IF Kit (622-4614-002). Includes 3.05-kHz USB if filters, 16-kHz AM pad, and SSB and AM audio detectors.
	637-2650-003		Part of AC-85108 Channel A IF Kit (622-4614-001). Includes 3.10-kHz USB if filter, 16-kHz AM pad, and SSB and AM audio detectors.
	637-2650-004		Includes 3.10-kHz USB and 16-kHz AM if filters and SSB and AM audio detectors.
	637-2650-005		Includes 5.80-kHz USB and 16-kHz AM if filters and SSB and AM audio detectors.
	637-2650-006		Includes 3.10-kHz (between lower 2 dB and upper 3 dB points) USB and 16-kHz AM if filters and SSB and AM audio detectors.
Filter A8A2  (Cont)	637-2515-001		Part of AC-85105 Optional Filters Kit (622-4611-001). No FL2, includes FL3 (6.0-kHz AM), FL4 (3.0-kHz AM), FL5 (1.0-kHz AM), FL6 (0.5-kHz AM), and FL7 (0.2-kHz AM).
	637-2515-004		Part of AC-85105 Optional Filters Kit (622-4611-002). Includes FL2 (2.75-kHz LSB) only.

Table 1. Equipment Supplied/Configuration (Cont).

SUBASSEMBLY/CIRCUIT CARD		851S-1 RECEIVER 622-4272-010	DESCRIPTION/FUNCTION
TITLE	COLLINS PART NUMBER		
Filter A8A2 (Cont)	637-2515-005		Part of AC-85105 Optional Filters Kit (622-4611-003). Includes FL2 (2.75-kHz LSB), FL3 (6.0-kHz AM), FL4 (3.0-kHz AM), FL5 (1.0-kHz AM), FL6 (0.5-kHz AM), and FL7 (0.2-kHz AM).
	637-2515-006		Part of AC-85105 Optional Filters Kit (622-4611-004). No FL2, includes FL3 (6.0-kHz AM), FL4 (3.0-kHz AM), FL5 (1.0-kHz AM), FL6 (0.5-kHz AM), and FL7 (0.1-kHz AM).
	637-2515-008		Part of AC-85105 Optional Filters Kit (622-4611-005). Includes FL7 (0.37-kHz USB) only. Special application filter used to receive rtty signals.
	637-2515-009		Part of AC-85105 Optional Filters Kit (622-4611-006). Includes FL2 (2.75-kHz LSB), FL5 (1.0-kHz AM), and FL7 (0.2-kHz AM). No FL3, FL4, or FL6. (non-ISB radio)
	637-2515-012		Part of AC-85105 Optional Filters Kit (622-4611-007). Includes FL2 (2.75-kHz LSB), FL3 (3.0-kHz AM), FL4 (1.0-kHz AM), FL5 (0.5-kHz AM), FL6 (0.3-kHz AM), and FL7 (0.2-kHz AM). (non-ISB radio)
	637-2515-014		Part of AC-85105 Optional Filters Kit (622-4611-008). No FL2, FL4, or FL7. Includes FL3 (6.0-kHz AM), FL5 (0.37-kHz USB), and FL6 (0.2-kHz AM).
Rf translator A9	637-1767-001	X	Standard rf translator. Part of AC-85106 RF Translator Kit (622-4612-003). Includes three broadband rf filters: 250 to 529.9 kHz, 530 kHz to 1.5999 MHz, and 1.6 to 29.9999 MHz; and a narrowband 109.35-MHz if filter ( $\pm 7.50$ kHz at 3 dB points).
	637-1767-002		Part of AC-85106 RF Translator Kit (622-4612-002). Same as 637-1767-001 except has a broadband 109.35-MHz if filter ( $\pm 6.10$ kHz at 0.5 dB points).
	637-3757-001		Part of AC-85106 RF Translator Kit (622-4612-001). Includes 10 half-octave rf filters: 0 to 559.9 kHz, 560 kHz to 1.9999 MHz, 2.0 to 2.9999 MHz, 3.0 to 3.9999 MHz, 4.0 to 5.9999 MHz, 6.0 to 7.9999 MHz, 8.0 to 11.9999 MHz, 12.0 to 15.9999 MHz, 16.0 to 23.9999 MHz, 24.0 to 29.9999 MHz.

Table 1. Equipment Supplied/Configuration (Cont).

SUBASSEMBLY/CIRCUIT CARD		851S-1 RECEIVER 622-4272-010	DESCRIPTION/FUNCTION
TITLE	COLLINS PART NUMBER		
Control A10	638-6065-001	X	Strapped for standard or half-octave filter control, whichever is used. Strapped for 100-Hz or 10-Hz tuning, whichever is used.
Parallel input A11	635-0751-002		Used with parallel output 635-0752-002 and serial interface 635-0742-001 only.
	642-3135-001		Used with parallel output 642-3137-001 and serial interface 638-6896-001 only. Part of AC-8090 Remote Control Kit (622-3462-002).
Parallel output A12	635-0752-002		Used with parallel input 635-0751-002 and serial interface 635-0742-001 only.
	642-3137-001		Used with parallel input 642-3135-001 and serial interface 638-6896-001 only. Part of AC-8090 Remote Control Kit (622-3462-002).
Serial interface A13	635-0742-001		Used with parallel input 635-0751-002 and parallel output 635-0752-002 only. Can be strapped for various serial controls: FSK, EIA RS-232C (CCITT V.24), or MIL-STD-188C. Can be strapped for various baud rates: 75, 150, 300, 600, 1200, 2400, 4800, 9600, or 19 200 bauds.
	638-6896-001		Used with parallel input 642-3135-001 and parallel output 642-3137-001 only. Part of AC-8090 Remote Control Kit (622-3462-002). Can be switched for 8-bit character or 7-bit ASCII data format. Can be switched for various serial controls: FSK; EIA RS-232C (CCITT V.24); or MIL-STD-188C. Can be switched for various baud rates: 75, 109, 150, 300, 600, 1200, 2400, 4800, 9600, or 19 200 bauds.
Synthesizer voltage regulator A14	635-0656-001	X	
Synthesizer reference A15	623-2085-001	X	Can be strapped for an internal (INT) or external (EXT) frequency standard. If strapped EXT, external phase-lock must be installed.
External phase-lock	635-0655-001		Part of AC-8012 Oven Standard Kit (622-3460-001) and AC-8013 External Standard Kit (622-3461-001). Strapped for 100-kHz, 1-MHz, or 5-MHz frequency standard, whichever is used.
Synthesizer end decade	635-0657-001	A18	Installed as A18 provides 100-Hz tuning. With appropriate decade added, installed as A17 provides 10-Hz tuning.

Table 1. Equipment Supplied/Configuration (Cont).

SUBASSEMBLY/CIRCUIT CARD		851S-1 RECEIVER 622-4272-010	DESCRIPTION/FUNCTION
TITLE	COLLINS PART NUMBER		
Synthesizer 100/10 Hz decade	623-2080-004		Part of AC-85102 Decade Expansion Kit (622-4608-001). Not installed for 100-Hz tuning. Installed as A18 for 10-Hz tuning.
Synthesizer 1-kHz decade A19	623-2080-003	X	
Synthesizer 10-kHz decade A20	623-2080-002	X	
Synthesizer 100-kHz decade A21	623-2080-001	X	
Synthesizer output A22	635-4930-001		Lag network not installed
	635-4930-002	X	Lag network installed
Synthesizer chassis assembly A23	635-9697-001	X	
Synthesizer sideboard A23A1	635-0696-001	X	
Rf cable assembly, J43/J24	637-1526-003	X	Interconnects J43 and J24 (118.8 MHz injection).
Rf cable assembly, J45/J28	637-1526-003	X	Interconnects J45 and J28 (109.35 to 79.35 MHz variable injection).
Rf cable assembly, J44/J32	637-1526-004		Interconnects J44 and J32 (9.9 MHz injection).
or Rf cable assembly, J44/J49	637-1526-004	X	Interconnects J44 and J49 (9.9 MHz injection).
Rf cable assembly, channel A if	637-1529-001		Interconnects A23-E1 and J34 (450-kHz injection).
or Rf cable assembly, vbfo	637-1529-001	X	Interconnects A23-E1 and J46 (450-kHz injection, vbfo).
Rf cable assembly, channel B if	637-1529-001	X	Interconnects A23-E1 and J39 (450-kHz injection).
Synthesizer top cover	635-4777-001	X	
Oven standard, oscillator assembly	637-9135-001		Part of AC-8012 Oven Standard Kit (622-3460-001). 1-MHz oven standard.
Power cable	426-1034-010	X	

Table 1. Equipment Supplied/Configuration (Cont).

SUBASSEMBLY/CIRCUIT CARD		851S-1 RECEIVER 622-4272-010	DESCRIPTION/FUNCTION
TITLE	COLLINS PART NUMBER		
Maintenance Kit Includes: Wrench, hex, 0.050 inch (1 ea) Wrench, hex, 0.062 inch (1 ea) Lamps (2 ea) Fuse, 1A (5 ea) Fuse, 2A (5 ea) Instruction sheet	637-1769-001 024-0057-000 024-0058-000 262-1106-000 264-4280-000 264-0305-000 637-1777-001	X	2-A fuse installed for 100- or 115-V ac operation. 1-A fuse installed for 215- or 230-V ac operation.

Table 2. Associated Equipment.

EQUIPMENT	TYPE	FUNCTION	CHARACTERISTIC
Headphones	Any	Provide headphone monitoring of the 851S-1 Receiver audio	Standard 600-ohm headphones
Receiver control	HF-8095 or equivalent	Provides serial data control signals to the 851S-1 Receiver in remote applications	Provides serial data control signals using FSK signals, EIA RS-232C (CCITT V.24) signals, or MIL-STD-188C signals. Selectable data rates: 75, 150, 300, or 600 bauds using FSK signals; 75, 150, 300, 600, 1200, 2400, 4800, 9600, or 19 200 bauds using RS-232C or MIL-STD-188C signals.
Antenna	Any	Provides 50-ohm unbalanced antenna load	Standard 50-ohm receive antenna

Table 3. Accessories.

EQUIPMENT	COLLINS PART NUMBER	FUNCTION	CHARACTERISTIC
AC-8050 Standard Headphones	622-3412-001	Provide headphone monitoring of the 851S-1 Receiver audio.	Standard 600-ohm headphones with sound blocking ear muffs
AC-8051 Lightweight Headphones	622-3413-001	Provide headphone monitoring of the 851S-1 Receiver audio.	Lightweight 500-ohm headphones with comfort designed ear pieces
HF-8095 Receiver Control	622-3489-001	Provides control signals to the 851S-1 Receiver in remote applications.	Provides control signals using FSK signals, EIA RS-232C (CCITT V.24) signals, or MIL-STD-188C signals. Selectable data rates: 75, 150, 300, or 600 bauds using FSK signals.  RS-232C or MIL-STD-188C using control: 75, 150, 300, 600, or 1200 bauds; RS-232 or MIL-STD-188C using processor: 1200, 2400, 4800, 9600, or 19 200 bauds
AC-8091 Remote Control Interconnect Cable	622-3449-001	Interconnect 851S-1 J14 and HF-8095 J14	6.1 m (20 ft) preassembled control cable for interconnect 851S-1 Receiver and HF-8095 Receiver Control
CA-8010 Desk-Top Cabinet	622-3416-001	Desk-top enclosure for 851S-1 Receiver	Standard EIA mounting characteristics and includes fold-down tilt stand. Gray color and weighs 6.8 kg (15 lb).

Table 3. Accessories (Cont).

EQUIPMENT	COLLINS PART NUMBER	FUNCTION	CHARACTERISTIC
CA-8020 Equipment Cabinet	622-3417-001	Rack-mounting cabinet enclosure for 851S-1 Receiver	Standard EIA mounting characteristics  Size: 1397 mm (55 in) high, 635 mm (25 in) wide, and 787 mm (31 in) deep. Gray color and weighs 93 kg (205 lb).
CA-8020A Equipment Cabinet	622-3437-001	Rack-mounting cabinet enclosure for 851S-1 Receiver	Standard EIA mounting characteristics  Size: 1753 mm (69 in) high, 635 mm (25 in) wide, and 787 mm (31 in) deep. Gray in color and weighs 112 kg (245 lb).
CA-8026 Equipment Desk Cabinet	622-3388-001	Mounting enclosure with a desk-top work space for 851S-1 and associated HF-80 equipments	Standard EIA mounting characteristics  Size: 762 mm (30 in) high, 1524 mm (60 in) wide, and 914 mm (36 in) deep. Gray color and weighs 90.6 kg (200 lb).
CA-8030 Slide Mounting Kit	622-3418-001	Slide mounting kit for 851S-1 when installed in CA-8020 or CA-8026 cabinets	Mounting support with slides for 483-mm (19-in) rack-mounted 851S-1 Receivers
CA-8011 Cable Retractor	622-3420-001	Provides automatic retraction of interconnecting cabling for slide-mounted 851S-1 Receivers	Cable retractors
TS-8010 Card Extender Kit	622-3431-001	Provides adapters to extend 851S-1 cards and modules beyond the chassis for power on troubleshooting	Includes: 130-pin edge-on connector extender (635-0913-001), 56-pin edge-on connector extender (635-0915-001), rf module extender (635-0915-002), synthesizer extender (637-2843-001), seven submini coaxial extenders (635-9686-001), submini-to-BNC coaxial extender (635-9686-002)

Table 4. Options.

OPTION	COLLINS PART NUMBER	FUNCTION
AC-8012 Oven Standard Kit	622-3460-001	Internal oven frequency standard with a stability of $1 \times 10^{-8}$ over the specified operating temperature range. Implemented by adding oven oscillator assembly 637-9135-001, a 2-wire cable harness, and an External Phase-Lock 635-0655-001.
AC-8013 External Standard Kit	622-3461-001	Permits operation from an external frequency of 100 kHz, 1 MHz, or 5 MHz as desired. Implemented by adding a coaxial cable harness with rf connector mounted on rear panel and installing an External Phase-Lock 635-0655-001.
AC-8090 Remote Control Kit	622-3462-001	Provides remote control using the appropriate 8-bit character format serial control and FSK, EIA RS-232C (CCITT V.24), or MIL-STD-188C. Implemented by installing A11 Parallel Input 635-0751-002, A12 Parallel Output 635-0752-002, and A13 Serial Interface 635-0742-001.
	622-3462-002	Provides remote control using the appropriate 8-bit character or ASCII character format serial control and FSK, EIA RS-232C (CCITT V.24), or MIL-STD-188C. Implemented by installing A11 Parallel Input, A12 Parallel Output, and A13 Serial Interface.
AC-85100 LSB (Channel B IF) Kit	622-4606-001	Provides LSB/ISB operation with a 2.75-kHz LSB filter. Implemented by installing A7 Channel B IF 637-2647-001. Normally used with AC-85108 Channel A IF Kit (622-4614-003).
	622-4606-002	Provides LSB/ISB operation with a 3.10-kHz LSB filter. Implemented by installing A7 Channel B IF 637-2647-003. Normally used with AC-85108 Channel A IF Kit (622-4614-001).
	622-4606-003	Provides LSB/ISB operation with a 5.8-kHz LSB filter. Implemented by installing A7 Channel B IF 637-2647-004. Normally used with AC-85108 Channel A IF Kit (622-4614-002).
AC-85101 DVBFO Kit	622-4607-001	Permits vbfo operation in CW mode. Implemented by adding VBFO 638-6067-001 in slot A4.
	622-4607-002	Provides a jumper bracket assembly 637-3796-001 to permit receiver operation when A4 VBFO is not installed.
AC-85102 Decade Expansion Kit	622-4608-001	Provides tuning in 10-Hz increments over entire receiver range. Implemented by moving Synthesizer End Decade 635-0657-001 from slot A18 to slot A17 and installing Synthesizer 100/10-Hz Decade 623-2080-004 in slot A18.
AC-85104 AFC Kit	622-4610-001	Provides a jumper bracket assembly 637-3796-001 to permit receiver operation when A3 AFC is not installed.
	622-4610-002	Provides AFC operation. Implemented by adding AFC 642-3224-001 in slot A3.
AC-85105 Optional Filters Kit	622-4611-001	Provides optional 6.0-kHz AM, 3.0-kHz AM, 1.0-kHz AM, 0.5-kHz AM, and 0.2-kHz AM filters. Implemented by adding Filter 637-2515-001 piggyback on channel A if A8.
(Cont)		

Table 4. Options (Cont).

OPTION	COLLINS PART NUMBER	FUNCTION
AC-85105 Optional Filters Kit (Cont)	622-4611-002	Provides 2.75-kHz LSB filter to permit LSB operation in SSB (non-USB radio). Implemented by adding Filter 637-2515-004 piggyback on channel A if A8.
	622-4611-003	Provides 2.75-kHz LSB filter and optional 6.0-kHz AM, 3.0-kHz AM, 1.0-kHz AM, 0.5-kHz AM, and 0.2-kHz AM filters (non-USB radio). Implemented by adding Filter 637-2515-005 piggyback on channel A if A8.
	622-4611-004	Provides optional 6.0-kHz AM, 3.0-kHz AM, 1.0-kHz AM, 0.5-kHz AM, and 0.1-kHz AM filters. Implemented by adding Filter 637-2515-006 piggyback on channel A if A8.
	622-4611-005	Provides optional 0.37-kHz USB filter (offset by 1.7 kHz). Implemented by adding Filter 637-2515-008 piggyback on channel A if A8.
	622-4611-006	Provides 2.75-kHz LSB filter and optional 1.0-kHz AM and 0.2-kHz AM filters (non-USB radio). Implemented by adding Filter 637-2515-009 piggyback on channel A if A8.
	622-4611-007	Provides 2.75-kHz LSB filter and optional 3.0-kHz AM, 1.0-kHz AM, 0.5-kHz AM, 0.3-kHz AM, and 0.2 kHz AM filters (non-USB radio). Implemented by adding Filter 637-2515-012 piggyback on channel A if A8.
	622-4611-008	Provides optional 6.0-kHz AM, 0.37-kHz USB (offset by 1.7 kHz) and 0.2-kHz AM filters. Implemented by adding Filter 637-2515-014 piggyback on channel A if A8.
AC-85106 RF Translator Kit	622-4612-001	Provides half-octave rf filtering in rf translator. Implemented by installing RF Translator 637-3757-001; and by strapping control A10 bands 1, 2, and 3 for half-octave filtering.
	622-4612-002	Provides broadband filtering of the 109.35-MHz if. Implemented by installing RF Translator 637-1767-002; and by strapping control A10 bands 1, 2, and 3 for standard filtering.
	622-4612-003	Provides narrow-band filtering of the 109.35-MHz if (standard rf translator). Implemented by installing RF Translator 637-1767-001; and by strapping control A10 bands 1, 2, and 3 for standard filtering.
	622-4612-004	Provides narrow-band filtering of the 109.35-MHz if and special sensitivity performance. Implemented by installing RF Translator 637-1767-005; and by strapping control A10 bands 1, 2, and 3 for standard filtering.
AC-85108 Channel A IF Kit	622-4614-001	Provides USB/ISB operation with a 3.10-kHz USB filter. Implemented by installing A8 Channel A IF 637-2650-003.
	622-4614-002	Provides USB/ISB operation with a 5.8-kHz USB filter. Implemented by installing A8 Channel A IF 637-2650-005.
	622-4614-003	Provides USB/ISB operation with a 2.75-kHz USB filter. Implemented by installing A8 Channel A IF 637-2650-001.

Table 5. Equipment Specifications.

CHARACTERISTIC	SPECIFICATION
Electrical (Signal levels are open circuit from 50-ohm source.)	
Modes of operation	A3J (USB), A3/A3H (AME), and A1 (CW). Optional A3B/A9B (LSB), and A3J (LSB).
Frequency range	250,000 kHz to 29,999,999 MHz; 15,000 to 249,999 kHz with reduced sensitivity.
Tuning increments	100-Hz; optional 10 Hz
Frequency stability	Not less than $5 \times 10^{-7}$ over specified temperature range. Drift rate of not more than $3 \times 10^{-8}$ per week.  Optional oven standard provides not less than $1 \times 10^{-8}$ over specified temperature range.  Optional external standard provides stability equal to the stability of the 100-kHz, 1-MHz, or 5-MHz external standard used.
Channeling speed	5 ms max; 2 ms nom
Sensitivity (SSB)	250 kHz to 1.6 MHz: 2 $\mu$ V hard for 10 dB (s+n) n  1.6 to 29.9 MHz: 0.7 $\mu$ V hard for 10 dB (s+n) n
Intermodulation distortion	In band: -40 dB below either of two input tones at 0.1 volt per tone  Out of band: third order distortion products -80 dB from either of two input signals of -25 dB mW per tone, 50 kHz or more off center frequency, second order distortion products -70 dB from either of two input signals of -25 dB mW per tone, 50 kHz or more off center frequency.
Spurious responses to external signals	If rejection: 90 dB min Image rejection: 90 dB min Other spurious signals: -80 dB min at 20 kHz or more off center frequency
Audio outputs	Line: 600 $\Omega$ , 10%, balanced; 0 dB mW, nom; adjustable from -20 to 0 dB mW for 3 $\mu$ V input in USB.  Headphone: 600 $\Omega$ nom, +10 dB mW min  Speaker: 8 $\Omega$ nom, 2 W peak, 0.5 W average, for 3 $\mu$ V input in USB.
Audio hum and noise	-40 dB on-line audio output
AGC threshold	3 $\mu$ V max
AGC control	4-dB rise in audio out for signal increase from 3 $\mu$ V to 0.3 V in USB.
AGC time constants	Attack time: 5 ms nom Fast decay time: 0.2 s nom Slow decay time: 1.0 s nom
(Cont)	

Table 5. Equipment Specifications (Cont).

CHARACTERISTIC	SPECIFICATION
Electrical (Cont)	
Squelch	Operates on audio snr; applicable to speaker output only
If output	20 mV nom at 450 kHz into 50 $\Omega$ for 3- $\Omega$ V input signal
Bandwidths	2.75-kHz USB and 16-kHz bandpass filters. LSB and up to five additional filters may be added as options.
Antenna input impedance	50 $\Omega$ nom, unbalanced
Rf overload protection	Up to 100-V rf input, power on or off
Duty cycle	Continuous
Keep-alive voltage	Internal: supplied on control and vbfo cards to save frequency and vbfo offset information during short term (30 minutes nominal) power interruptions.  External: external terminals (TB3-4, 5) provided for this. Voltage limits for keep-alive NLT +6 V dc, NMT +15 V dc.
Power requirements	90 to 127 V or 193 to 253 V, 47 to 420 Hz, single phase ac; 80 W max
Serial control and monitor interface characteristics	
Output data levels	FSK: -10 to +5 dB mW into 600 ohms  RS-232C/MIL-STD-188C: $\pm 6$ V dc $\pm 1$ V dc into 3 to 6 k $\Omega$
Input data levels	FSK: -25 to +5 dB mW (15 dB snr min)  RS-232C/MIL-STD-188C: $\pm 6$ V dc $\pm 1$ V dc
Line output impedance	FSK: 600 ohms nom  RS-232/MIL-STD-188C 300 $\Omega$ max when transmitting, 50 k $\Omega$ min when not transmitting
Line input impedance	FSK: 600 $\Omega$ nom  RS-232C/MIL-STD-188C 47 k $\Omega$ nom
FSK tone frequencies	Mark: 1280 Hz  Space: 2133 Hz
Data rates	FSK: 75, 150, 300, 600 bauds  RS-232C/MIL-STD-188C: 75, 150, 300, 600, 1200, 2400, 4800, 9600, 19 200 bauds
Line characteristics	FSK: 600 $\Omega$ balanced  RS-232C/MIL-STD-188C: unbalanced, line to ground

Table 5. Equipment Specifications (Cont).

CHARACTERISTIC	SPECIFICATION
Environmental	
Temperature	Full performance: 0 to +50 °C (+32 to +122 °F) Reduced performance: -20 to 0 °C (-4 to +32 °F) Nonoperating: -57 to +71 °C (-71 to +160 °F)
Humidity	0 to 95% relative humidity
Altitude	Operating: 0 to 3050 m (10 000 ft), full temperature range. 0 to 4570 m (15 000 ft), up to +25 °C. Nonoperating: 0 to 12 190 m (40 000 ft)
Shock	Bench handling (MIL-STD-810C, procedure V, method 516.2)
Vibration	1.5 g, 5.5 to 55 Hz (MIL-STD-810C, procedure X, method 514.2)
Physical	
Size	178 mm (7 in) high x 483 mm (19 in) wide x 531 mm (20.9 in) deep with handles
Weight	19.2 kg (42 lb) max
Mounting	Desk-top cabinet or standard 483-mm (19-in EIA) rack with optional slide mounting kit for rack