



HF / HF + 50MHz TRANSCEIVER

JST-145

JST-245

JST-145 for HF-Band Operation
JST-245 for HF + 50MHz-Band Operation



Japan Radio Co., Ltd.

HF / HF + 50MHz TRANSCEIVER

JST-145 / 245

The JST-145/245 HF/HF + 50MHz transceiver is remarkably improved in its transmitting performance by using a power MOSFET SEPP system in its power amplifier. Its superior performance is also demonstrated in the JRL-2000F HF linear amplifier.

The JST-145/245 is a compact model of 350mm × 130mm × 305mm, including a switching AC power supply and an automatic antenna tuner (option for JST-145). The new JST-series has other full-scale functions including variable tuning, multiple antenna selection, dual IF filters, variable bandwidth control (optional IF filter CFL-318 for JST-145), and notch tracking.

Its man-machine interface is also designed to ensure high performance. The front panel has a easy-to-read large LCD display and an ergonomic control and switch arrangement to ensure comfortable QSO.

GENERAL FEATURES

HF Band Plus 50MHz Band (JST-245)

The JST-245 covers the 1.9-MHz to 28-MHz band plus the 50-MHz band, and operates in all the modes including SSB, CW, AM (A3H), AFSK and FM.

Large Color LCD Display

The front panel features ergonomic design with thoughtful placement of controls for ease of operation and with an easy-to-read, large color LCD display with a high-resolution 41-dot digital bar meter.

Built-In AC Power Supply

The built-in AC power supply is of switching type designed for continuous transmission at maximum output. It is switchable between 85-132V and 170-264V.



AC Power Supply

Multiple Antenna Selection

Three antenna connections are selectable from the front panel. Antenna selection and frequency band information can be stored in memory.

Stable Frequency Control

All local reference frequencies are generated by a single crystal oscillator and stable frequency control in the minimum 2-Hz increments is made by a JRC's unique Direct Digital Synthesizer (DDS IC) at a high speed with very low phase noise, ensuring superior frequency stability.



DDS IC

Band Memory

Each band memory can store frequency, mode, IF bandwidth, AGC and antennas in use, ensuring swift reset to the final operational status in each band in QSY.

200-Channel Memory

A memory capacity of 200 channels is provided to store frequency, mode, filter, AGC, antenna in use, split, shift, tone SQ, RF AMP ON/OFF and so on.

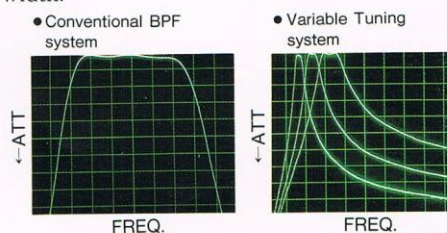
Other Standard Functions

A variety of standard functions are provided including VFO with equalizer, full break-in, electronics keyer, all-mode squelch, VOX and RF speech compressor.

Receiver

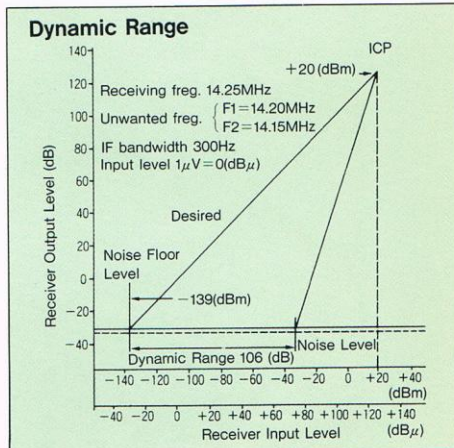
Variable Tuning

The RF front end uses an improved variable tuning system to limit the input band and to control the center frequency for received frequencies. This system can effectively attenuate undesired signals and enhance selectivity, compared with the wide-band BPF system with a fixed bandwidth.



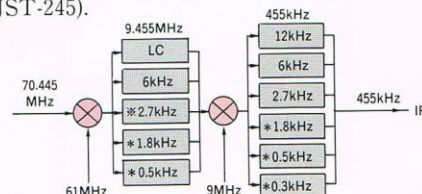
Dynamic Range of 106dB

The FET RF amplifier can be switched off so that the RF input bypasses it, and the RF attenuator can be switched over in three steps, in order to suppress intermodulation product distortion (IMD) and to obtain the signal linearity at the FET double balance mixer.



Sharp Selectivity by Flexible Combinations of Filters

Flexible combinations are selectable from two stages of cascade filter connections in order to secure absolute attenuations and sharp selectivity. (*Option: *Standard for JST-245).



The Global Communicator with Ultimate

Excellent Receiving Performance and Various Interference Rejections

Overall bandwidths for each mode (with full options) are shown below:

Mode	NARROW	INTER	WIDE
USB/LSB	1.7kHz(1.8+1.8)	2.4kHz(2.7+2.7)	2.7kHz(2.7+6)
CW	0.25kHz(0.5+0.3)	0.4kHz(0.5+0.5)	2.4kHz(2.7+2.7)
AFSK	0.4kHz(0.5+0.5)	1.7kHz(1.8+1.8)	2.4kHz(2.7+2.7)
FM	5kHz(6+6)	12kHz(LC+12)

Note: Blue figure for optional filter.

Red figure for standard for the JST-245.

Various Interference Rejections

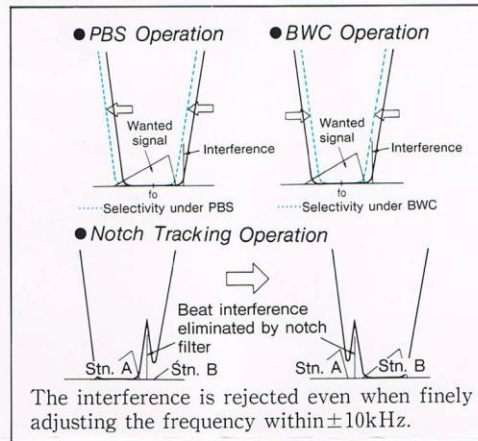
The JST-series incorporates various interference rejection functions such as pass-band shift (PBS), bandwidth control (BWC), notch filter and notch tracking.

PBS - The equivalent center frequency of the IF filter is shifted up and down to reject adjacent interferences.

BWC - The pass bandwidth of the IF filter is narrowed to reject interferences on both sides or in case of low S/N ratio(optional IF filter CFL-318 for JST-145).

NOTCH - Beat interference close to the desired signal is effectively rejected.

NOTCH TRACKING - Once tuned, the IF notch filter will track the interference frequency if the VFO frequency is finely adjusted.



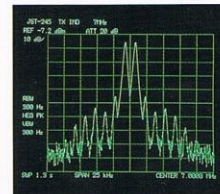
Transmitter — Use of MOSFET

Use of MOSFET Power Amplifier

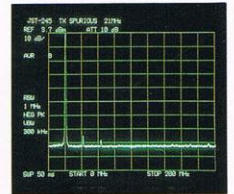
Power MOSFETs are used in the single-ended push-pull (SEPP) circuits of the power amplifier to achieve excellent linearity, low distortion and quality transmission.



MOSFET SEPP PA and heat sink



IM at rated power output



High-order harmonics at rated power output

OPERATING CONTROL PANEL

- 1 LCD Color Display
- 2 A VFO Key
- 3 B VFO Key
- 4 A=B Key
- 5 SPLIT Key
- 6 Down Key
- 7 1MHz Key
- 8 TF/RF Key
- 9 M-VFO Key
- 10 Main Tuning Control
- 11 Up Key
- 12 MEMORY Key
- 13 SCAN Key
- 14 STEP Changeover Key
- 15 BAND/Numerical Keys
- 16 FUNCTION Key
- 17 CLEAR Key
- 18 MHz Key
- 19 ENTER/kHz Key
- 20 RIT Key
- 21 CLEAR Key
- 22 XIT Key
- 23 RIT/XIT Control
- 24 AF/RF Gain Control
- 25 PBS/BWC Control
- 26 MEMORY Control
- 27 SQUELCH-SELECT Key
- 28 LOCK Key
- 29 TUNER THRU Key
- 30 TUNER TUNE Key
- 31 USB/LSB Key
- 32 CW/FSK Key
- 33 FM/AM Key
- 34 MIC Gain/Power Control
- 35 COMPRESSOR/TONE Control
- 36 COMPRESSOR Switch
- 37 NOTCH TRACKING/SQUELCH Control
- 38 VOX/DELAY Control
- 39 NOTCH TRACKING Key
- 40 VOX Key
- 41 Noise Blanker/PITCH Control
- 42 MONITOR/SPEED Control
- 43 Noise Blanker Key
- 44 MONITOR Key
- 45 SHIFT/REVERSE Key
- 46 AGC Key
- 47 Full Break-In/PAGER Key
- 48 Headphones Jack
- 49 MIC Connector
- 50 Speaker (Upper)
- 51 METER Changeover Key
- 52 RF Attenuator Switch
- 53 RF AMP On/Off Key
- 54 FILTER Changeover Keys
- 55 POWER Key
- 56 TRANSMIT Key
- 57 ANTENNA Changeover Keys
- 58 Carrying Handle



Actual size

Performance and Full-Scale Functions

Power Amplifier for Improved Performance

Heavy Duty Design

The FET PA designed to withstand high overload, the very highly efficient power supply and the effective cooling system ensure the equipment's long-time heavy duty operation.

Built-In Automatic Antenna Tuner (1.9 - 28MHz Band)

The JST-145/245 is designed to incorporate an automatic antenna tuner (option for JST-145). The antenna tuner is of electronic type with preset memory. Tuner settings are automatically stored in memory for fast QSY.



Automatic Antenna Tuner

System Options

JRL-2000F Linear Amplifier

The linear amplifier enables high-power transmission, in which the transceiver is used as an exciter. Preset tuning and auto tuning is remote-controlled from the transceiver.



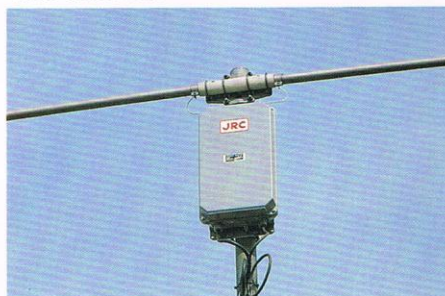
JRL-2000F Linear Amplifier

NFG-230 Automatic Antenna Tuner

The NFG-230 Automatic Antenna Tuner can be connected to the JST-145/245 to

For Enhanced Performance

cover a wide matching range for use of wire antennas.



Wide-band antenna with dipole antenna elements combined with the NFG-230 Auto-Antenna Tuner

Personal Computer Interface

The built-in RS-232C interface enables remote control of the major functions of the JST-145/245 except for the power switch from a personal computer. The setting status can also be transferred to the PC, ensuring expanded range of operations.



O P T I O N S

NFG-230 Automatic Antenna Tuner

Frequency range: 1.8 - 30MHz
 Max. input power: 200W PEP
 Matching range: Resistance 5 ohms - 1k ohms
 Capacitance 150 pF or more
 Input SWR: 1 : 1.5 or less (depending on antenna)
 Tuning time: 2 - 4 sec. typical
 (max. 50 ms or less from memory)
 Dimensions: 230W × 380H × 90D mm
 Weight: Approx. 3.5kg



NVT-56 Desk Microphone

Sensitivity: -69 ± 4dB
 Impedance: 600 ohms nominal
 Directivity: Non-directional
 Weight: Approx. 350g



ST-3 Headphones

Weight: Approx. 300g



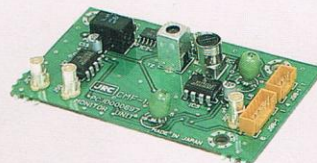
NVT-58 Hand Microphone with Up/Down Switch

Sensitivity: -70 ± 4dB
 Impedance: 600 ohms nominal
 Directivity: Non-directional
 Weight: Approx. 150g



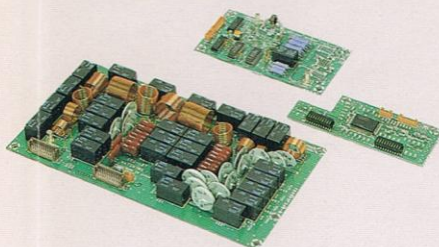
CMF-144 Monitor Unit

An optional board to monitor the transmitted signal by looping it back from the 9.455MHz IF stage except FM.



NFG-183 Built-IN Antenna Tuner Kit (for JST-145)

The NFG-183 built-in in the JST-145 supports the same automatic tuner functions as in the JST-245.



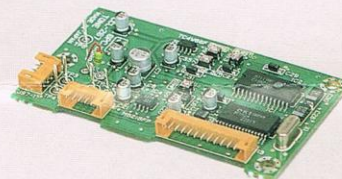
NVT-57 Hand Microphone

Sensitivity: -70 ± 4dB
 Impedance: 600 ohms nominal
 Directivity: Non-directional
 Weight: Approx. 150g



CCL-267 Tone Unit

An optional board for DTMF and CTCSS operation.



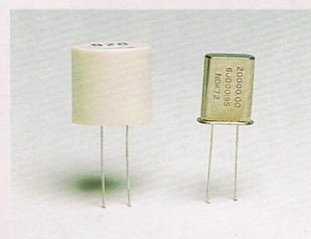
NVA-319 External Speaker with Filters

Input impedance: 8 ohms nominal
 Max. input power: 3W
 High-cut filters: Two stages
 Low-cut filter: One stage
 Filter switching: Provided
 Dimensions: 180W × 130H × 280D mm
 Weight: Approx. 3kg



CGD-135 Highly Stable Crystal Kit

With the CGD-135, the frequency stability can be enhanced to 0.5 ppm so as to be suited for RTTY and packet communications.



JRL-2000F HF Linear Amplifier

Frequency range: 1.8 - 30MHz
 Rated output power: SBB 1kWPEP
 CW/FSK/FM 1kW
 Drive power: 100W max.
 Input impedance: 50 ohms (unbalanced)
 Output impedance: 50 ohms (unbalanced) VSWR < 3.0
 (16.7 - 150 ohms)
 Frequency switching time: 0.1 sec. or less
 Power supply: 85-264VAC, single-phase
 Power consumption: 2.5kVA or less
 Dimensions: 430W × 300H × 402D mm
 Weight: Approx. 28kg



NVA-88 External Speaker

Input impedance: 4 ohms nominal
 Max. input power: 3W
 Dimensions: 180W × 130H × 273D mm
 Weight: Approx. 2.3kg



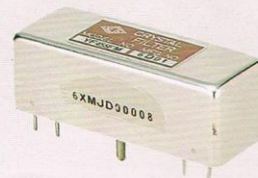
9.455MHz IF Filters

CFL-316 (500Hz)
 CFL-317 (1.8kHz)
 CFL-318 (2.7kHz)



455kHz IF Filters

CFL-231 (300Hz)
 CFL-232 (500Hz)
 CFL-218A (1.8kHz)



SPECIFICATIONS

GENERAL

Transmitting frequency range:

160m	1.8 - 2.0MHz
80m	3.5 - 4.0MHz
40m	7.0 - 7.3MHz
30m	10.1 - 10.15MHz
20m	14.0 - 14.35MHz
17m	18.068 - 18.168MHz
15m	21.0 - 21.45MHz
12m	24.89 - 24.99MHz
10m	28.0-29.7MHz
6m	50.0 - 54.0MHz (for JST-245 only)

Receiving frequency range:

100kHz - 30MHz
30MHz - 54MHz (for JST-245 only)

Type of emission: SSB(LSB/USB), CW, AM (A3H), FM, AFSK

Frequency stability: Within ± 10 ppm 5 to 60min. and within ± 2 ppm one hour after powered on

Frequency increments: 2Hz

Memory capacity: 200 channels

Antenna impedance: 50 ohms nominal (unbalanced)

Antenna tuner matching range: 17 to 150 ohms (1.8 - 28MHz)

Power supply: 100VAC $\pm 10\%$, 50/60Hz

Power consumption: Approx. 120VA for standby/reception
Approx. 900VA for transmission at 150W output

Dimensions: 350W \times 130H \times 305D mm
Weight: Approx. 12kg

Intermediate frequency:

1st IF 70.445MHz
2nd IF 9.455kHz
3rd IF 455kHz
4th IF 97kHz (except for FM)

Sensitivity:

TRANSMITTER

Output power
JST-145DX/245DX: 15 - 150W continuously adjustable

Carrier suppression: 50dB or more

Undesired sideband suppression: 60dB or more (at 1.5kHz modulation)

Intermodulation: 3rd-order -38dB or less

Frequency response: 400 - 2600Hz (within +6dB SSB)

Microphone impedance: 600 ohms

Modulation: SSB, AM, AFSK — Balanced modulation
FM—Reactance modulation

Frequency deviation: ± 5 kHz max. (FM)

	SSB/CW/AFSK	AM	FM
0.1 - 0.5MHz	14dB μ	24dB μ	—
0.5 - 1.6MHz	6dB μ	16dB μ	—
1.6 - 30MHz	-10dB μ	6dB μ	-6dB μ
48 - 54MHz	-10dB μ	6dB μ	-6dB μ

(S/N: 10dB, FM: 12dB SINAD)

Image rejection: 70dB or more

IF rejection: 70dB or more

Selectivity:

	-6dB	-60dB
SSB/CW(W)/AFSK	2.4kHz or more	4kHz or less
FM	12kHz or more	—
AM	6kHz or more	18kHz or less

RIT/XIT variable range: ± 10 kHz

PBS variable range: ± 1 kHz

BWC minimum bandwidth: Approx. 800Hz (with optional BWC unit)

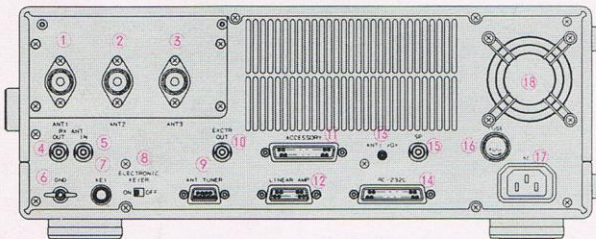
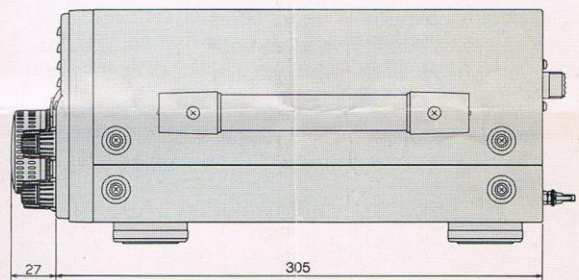
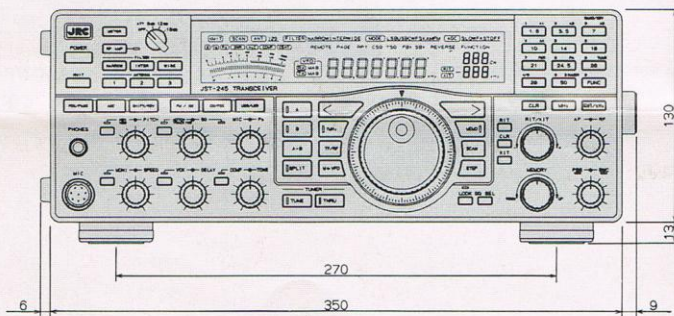
RECEIVER

Receiving system: SSB/CW/AM/AFSK—Quadruple superheterodyne
FM—Triple superheterodyne

Notch filter attenuation: Approx. 40dB

AF output: 1W or more with 4 ohms load at 10% or less distortion

DIMENSIONS



Rear Panel Description

- | | |
|-----------------------------------|--------------------------------|
| ① - ③ Antenna Connectors | ⑪ Accessory Connector |
| ④ RX Antenna Output | ⑫ Linear Amp Control Connector |
| ⑤ RX Antenna Input | ⑬ Anti-VOX Control |
| ⑥ Ground Terminal | ⑭ RS-232C Connector |
| ⑦ Key Jack | ⑮ External Speaker Jack |
| ⑧ Electric Key Switch | ⑯ Fuse |
| ⑨ Antenna Tuner Control Connector | ⑰ AC Power Connector |
| ⑩ Exciter Output Jack | ⑱ Power Supply Cooling Fan |

• Specifications may be subject to change without notice.

For further information, contact:

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