



IC-730

HF ALL BAND SSB CW AM TRANSCEIVER





The IC-730 — Compact, high-performance HF transceivers from ICOM

HF hamming — the window to the world. Try it once and you may never go back. Try it with the IC-730 and we're sure you'll stay to enjoy HF operation with these compact transceivers — transceivers into which our engineers built the features and high performance needed to match today's tough requirements and make HF operation more pleasurable than you ever imagined.



HF ALL BAND SSB CW AM TRANSCEIVER

IC-730



The IC-730 has everything you need to really enjoy HF operation, in an extremely compact, rugged transceiver.

COMPACT

94(H) × 241(W) × 275(D) mm will fit into most mobile operations (compact car, airplane, boat, or suitcase).

AFFORDABLE

Priced right to meet your budget as your main HF rig or as a second rig for mobile/portable operation.

CONVENIENT

- Unique tuning speed selection for quick and precise QSY choice of 1 kHz, 100 Hz or 10 Hz tuning.
- Electronic dial lock, deactivates tuning knob for lock on, stay on frequency operation.
- One memory per band, for storage of your favorite frequencies on each band.
- Dual VFO system built in standard at no extra cost.

FULL FEATURED

- 200W PEP input—powerful punch on SSB/CW (40W out on AM).
- Receiver preamp built in.
- Noise blanker (selectable time constant) standard.
- VOX built in.
- Large RIT knob for easy mobile operation.
- Amateur band coverage 10-80M including the new WARC bands.
- Speech processor—built in.
- IF shift slide tuning standard (pass band tuning optional).
- Fully solid state for lower current drain.
- Automatic protection circuit for finals under high SWR conditions.
- Digital readout.
- Receives WWV.
- Selectable AGC.
- Up/Down tuning from optional microphone.

ALL BAND, ALL MODE, ALL SOLID STATE

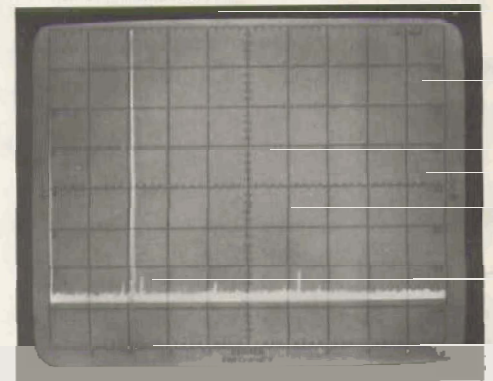
The IC-730 covers all the amateur HF bands from 3.5 MHz to 28 MHz, including the three new bands of 10 MHz, 18 MHz and 24 MHz. It offers not only SSB, but also AM and CW. All of the circuits in the IC-730, including the driver and final power stages, are completely solid state, and provide about 100 watts output. In addition, the low-pass filters switched by the BAND switch and the band-pass filters selected by an electronic signal from the CPU make a no-tune-up system.

OUTSTANDING RECEIVER PERFORMANCE

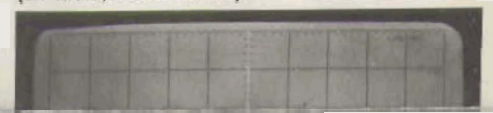
The IC-730 employs the ICOM DFM (Direct Feed Mixer) system and up-conversion system to improve a high receiver performance. The ICOM DFM system is a system in which the incoming signals are directly fed to the first mixer, and the mixer is a high level Double Balanced Mixer developed by ICOM.

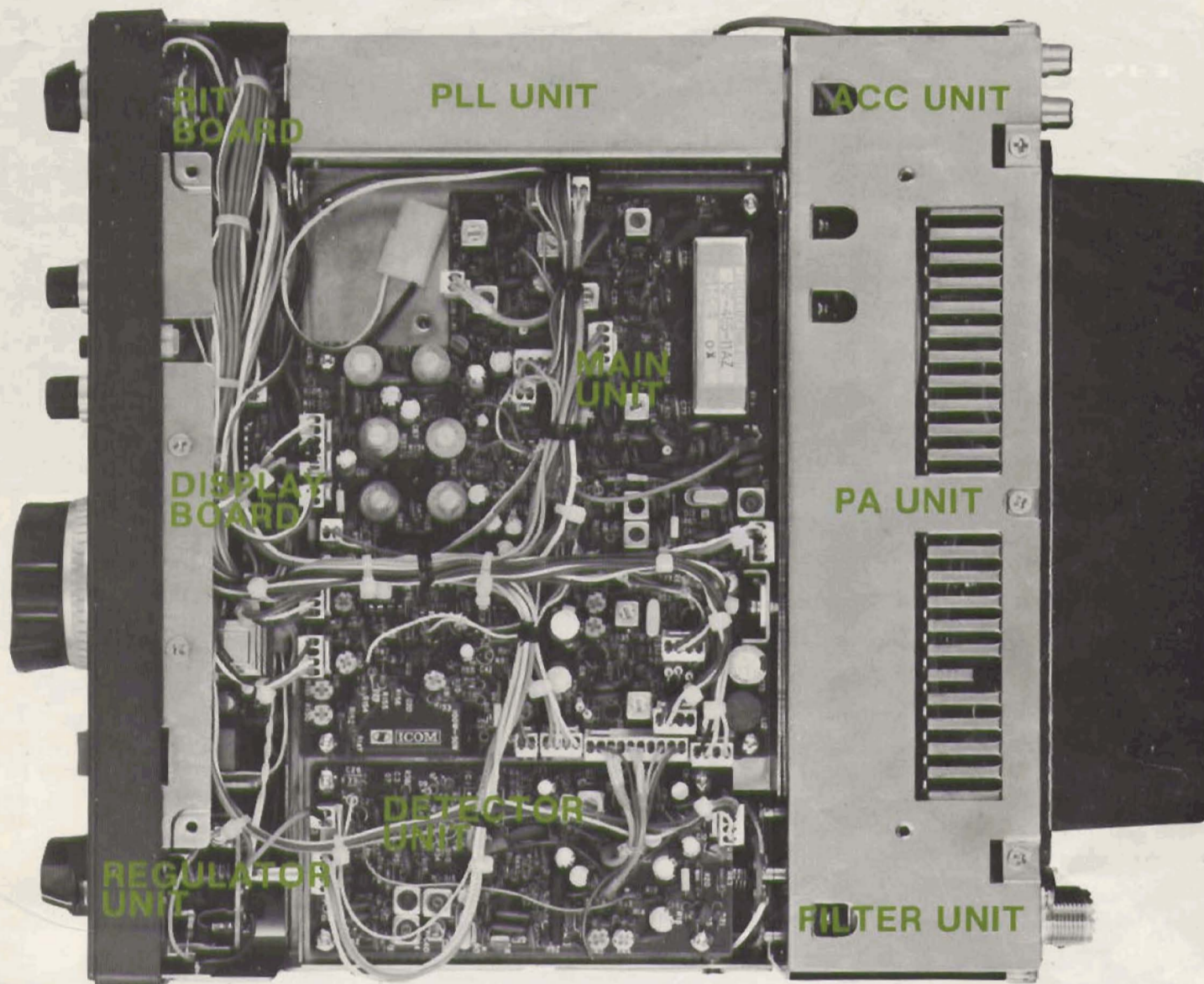
The up-conversion system uses a high side IF, i.e., 39.7315 MHz, and high performance third overtone crystal filters provide excellent image and IF

Transmission harmonic characteristic
(21 MHz, 10 MHz/Div)



Transmission spurious characteristic
(21 MHz, 500 kHz/Div)





FREQUENCY CONVERSION IN IC-730

Basically, IC-730 adopts a double conversion system, the first and second intermediate frequencies being 39.7315 and 9.0115 MHz, respectively. If the passband tuning circuit for interference elimination is taken into account, frequency conversion is in four steps, the third and fourth intermediate frequencies being 455 kHz and 9.0115 MHz, respectively. Unlike a circuit in which the first local oscillation frequency is fixed, the circuit is designed so that the first and second

oscillation frequencies can vary. In particular, IC-730 adopts up-conversion, meaning that the first intermediate frequency is set higher than the transmission and reception frequencies, thereby assuring high spurious rejection.

The first and second local oscillation frequencies are created by the microcomputer in the logic unit and the PLL unit controlled by the frequency data from the microcomputer and the D/A conversion voltage.

PLL UNIT

This unit is composed of a mixed down type Phase-Locked Loop and a high speed 1/10 divider. The local oscillator of the PLL consists of a 13.66 MHz crystal oscillator and two stage triplers, and puts out a 123 MHz signal.

The VCO oscillates 132~139 MHz, and is mixed with the 123 MHz local oscillator signal, and mixed down to 9~16 MHz. This signal is fed to a programmable divider in the PLL IC and divided to 10 kHz and compared with 10 kHz reference frequency which is divided from 9 MHz crystal oscillator, and locked up to the reference frequency. The programmable divider is controlled by the frequency data from the CPU.

The VCO output is fed to the 1/10 divider and the resulting 13.2~13.9 MHz signal with 1 kHz steps, and sent to the PREMIX

PREMIX UNIT

The 13.2~13.9 MHz signal from the PLL unit, is fed to a mixer with a local oscillator frequency which is selected by the BAND switch, and the mixer puts out the respective 1st local oscillator frequency. This output signal is fed to the BPF unit to suppress spurious signals.

The local oscillator frequency (X) can be calculated as follows:

$$X \text{ (MHz)} = 39.7315 \text{ MHz} - (\text{low edge frequency of the band}) \text{ MHz} - 13.2 \text{ MHz}$$

PREMIX UNIT

MIX BPF UNIT
BPF BUFF

These advanced devices and system give higher spurious response rejection ratio, higher sensitivity and wider dynamic range.

PASSBAND SHIFT CONTROL

The IC-730 has a built-in passband shift system that allows you to continuously adjust the center frequency of the IF passband. By moving the control, you can eliminate interference from a nearby signal, thus providing clear reception. It can also be used as a tone control.

When the optional crystal filter FL-30 is installed, this system acts as a passband tuning system that allows you to continuously adjust the passband up to 800 Hz from the upper or lower side in SSB and CW. It gives more performance to eliminate interference.

VARIOUS STEPS DUAL DIGITAL VFO

The dual digital VFO consists of a digital Phase-Locked-Loop by which the microcomputer control system is controlled, and a pre-mixing circuit.

Three tuning frequency resolutions of 10 Hz, 100 Hz and 1 kHz steps are selectable with the TUNING RATE switches.

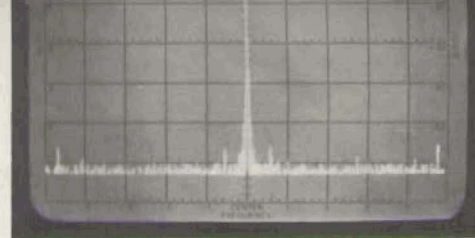
Two separate VFO's can be used independently in the NORMAL (NOR) operation, and any desired in-band frequencies split transmit/receive in the SPLIT (SPT) operation.

MEMORY CHANNELS

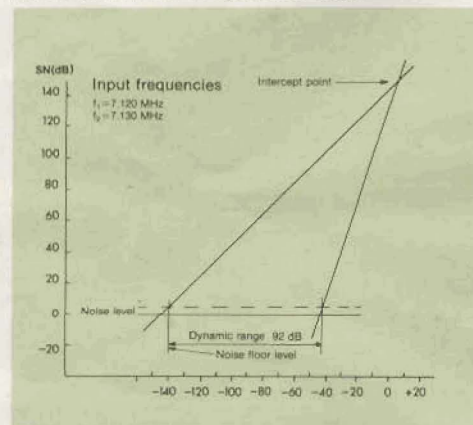
The IC-730 has a frequency memory for each band. Any in-band frequency of the VFO A can be stored into the memory, and it can be recalled at any time.

ADDITIONAL CIRCUITS

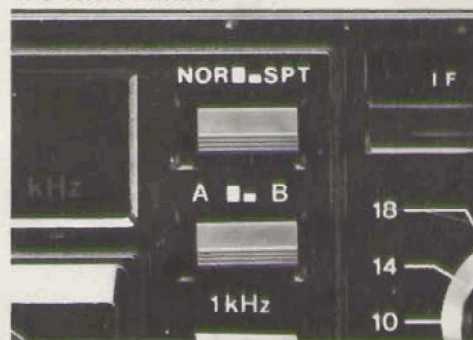
The IC-730 has a built-in noise blanker, VOX, CW monitor, APC, SWR detector, and many other circuits for your convenience.



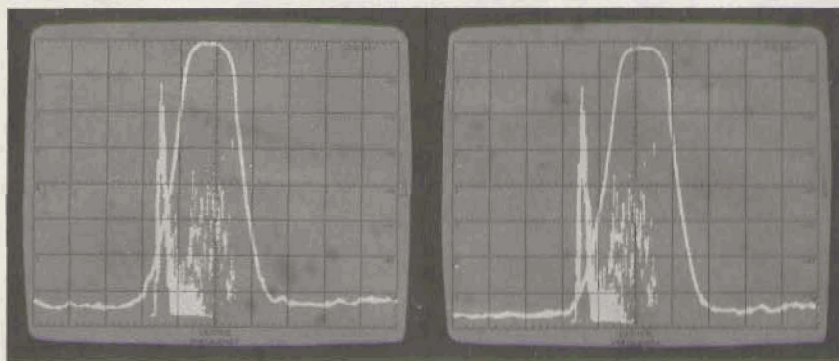
Intercept point and dynamic range



VFO select switches



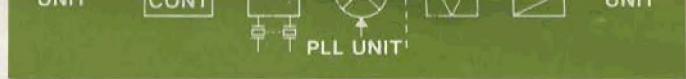
Eliminating interference using the Passband Shift Control



Go HF mobile, base, field

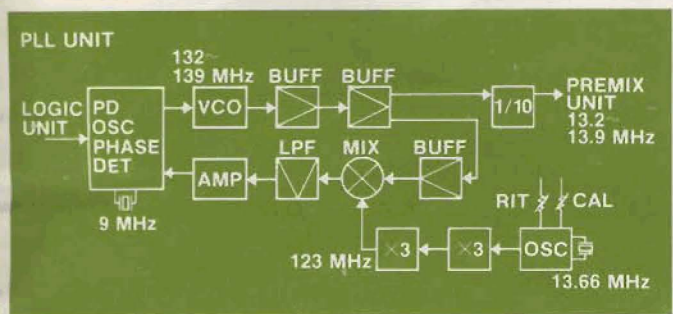
ICOM's go-anywhere rig for

The local oscillator is a VXO (Variable Crystal Oscillator), and its frequency is varied a few kHz by the RIT control and the FREQUENCY SET control for calibration.

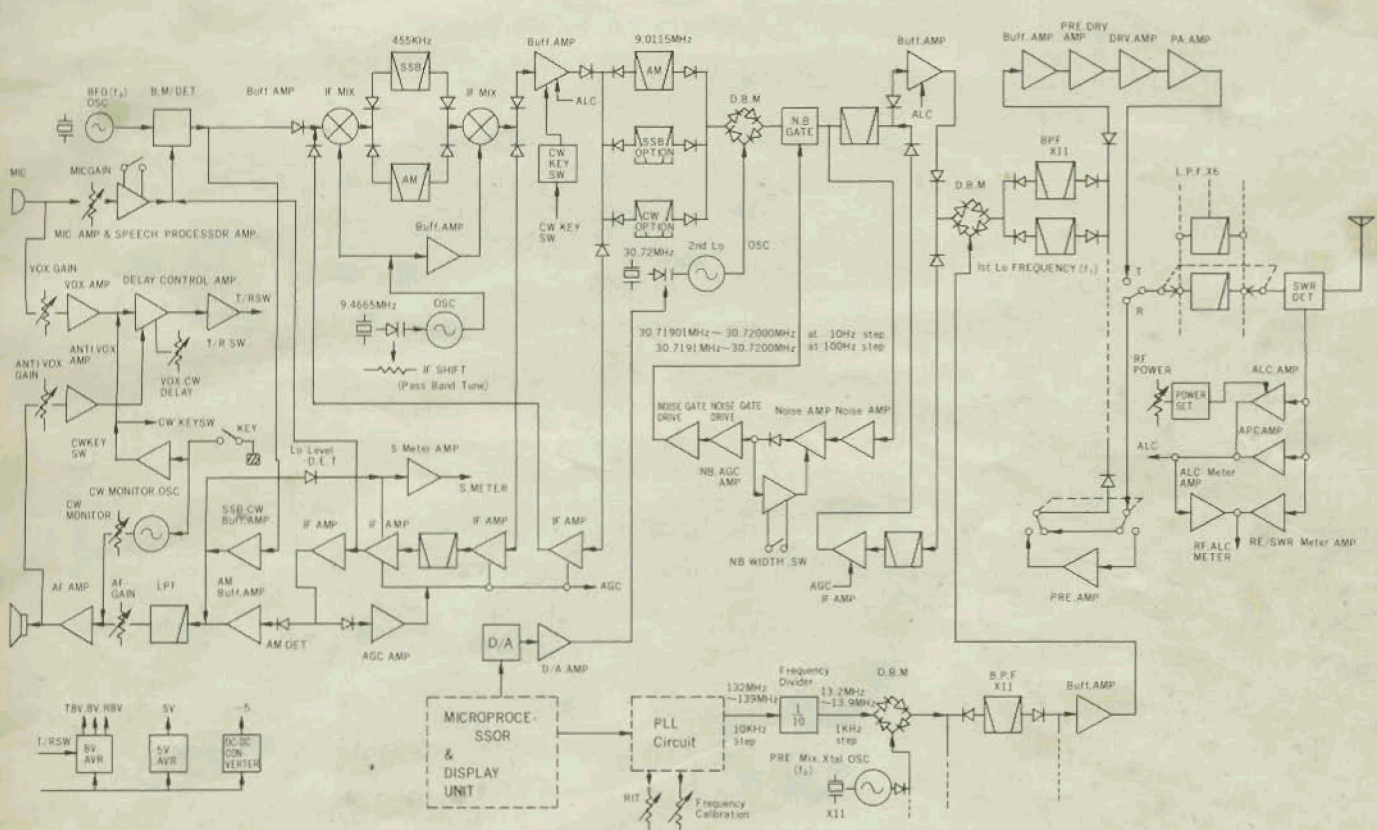


SECOND LOCAL OSCILLATOR

The 2nd local oscillator is a VXO (Variable Crystal Oscillator), and its frequency is varied 30.71901~30.72000 MHz in 10 Hz steps, and 30.7191~30.7200 MHz in 100 Hz steps by the output signals of the CPU through the D/A converter.



Block diagram



MODE	(KHz)
USB	9,013,0
AM CW(T)	9,011,5
CW	9,010,8
LSB	9,010,0

BAND	MHz	BAND	MHz
3.5	43,2315	24.5	64,2315
7.0	46,7315	28.0	67,7315
10.0	49,7315	28.5	68,2315
14.0	53,7315	29.0	68,7315
18.0	57,7315	29.5	69,2315
21.0	60,7315		

BAND	(MHz)	BAND	(MHz)
3.5	29,9315	24.5	50,9315
7.0	33,4315	28.0	54,4315
10.0	36,4315	28.5	54,9315
14.0	40,4315	29.0	55,4315
18.0	44,4315	29.5	55,9315
21.0	47,4315		

field day portable with
 for everyone's pocketbook

SPECIFICATIONS

GENERAL

Number of semiconductors:

Transistors	71	FET	15
IC (including CPU)	25	Diodes	212

Frequency coverage:

3.5 MHz~ 4.0 MHz
7.0 MHz~ 7.3 MHz
10.0 MHz~10.5 MHz (Receive only)
14.0 MHz~14.35 MHz
18.0 MHz~18.5 MHz (Receive only)
21.0 MHz~21.45 MHz
24.5 MHz~25.0 MHz (Receive only)
28.0 MHz~29.7 MHz

Frequency control:

CPU based 10 Hz step premixed synthesizer.
Independent transmit-receive frequency available on same band.

Frequency readout: 6 digit 100 Hz readout

Frequency stability:

Less than 500 Hz after switch on 1 min to 60 mins, and less than 100 Hz after 1 hour. Less than 1 kHz in the range of -10°C to +60°C.

Power supply requirements:

DC 13.8V ±15% negative ground current drain 20A max. (at 200W input)

AC power supply is available for AC operation.

Antenna impedance: 50Ω unbalanced

Weight: 6.4 kg

Dimensions: 94(H) × 241(W) × 275(D) mm

TRANSMITTER

RF Power:

SSB (A ₁ J)	200 Watts PEP input
CW (A ₁)	200 Watts input
Continuously adjustable output power	10 Watts~Max.
AM (A ₃)	40 Watts output
Continuously adjustable output power	10 Watts~40 Watts

Emission mode:

A ₁ J	SSB (upper sideband and lower sideband)
A ₁	CW
A ₃	AM

Harmonic output:

More than 50 dB below peak power output

Spurious output:

More than 50 dB below peak power output

Carrier suppression:

More than 50 dB below peak power output

Unwanted sideband:

More than 55 dB down at 1000 Hz AF input

Microphone:

Impedance	1300Ω
Input level	120 mV typical
Dynamic or electret condenser microphone with preamplifier	

RECEIVER

Receiving system:

Quadruple conversion superheterodyne with continuous passband shift control

Receiving mode:

A₁, A₁J (USB, LSB), A₃

IF frequencies:

1st	39.7315 MHz
2nd	9.0115 MHz
3rd	455 kHz
4th	9.0115 MHz

with continuous passband shift control

Sensitivity:

SSB, CW	Less than 0.3 μV for 10 dB S+N/N
AM	Less than 0.6 μV for 10 dB S+N/N

Selectivity:

SSB, CW	2.4 kHz at -6 dB
	4.8 kHz at -60 dB
AM	6.0 kHz at -6 dB
	18.0 kHz at -60 dB
CW-N	(when optional crystal filter installed)
	600 Hz at -6 dB
	1.5 kHz at -60 dB
	(when optional AF filter installed)
	150 Hz at -6 dB
	1100 Hz at -40 dB

Spurious response rejection ratio:

More than 60 dB

Audio output:

More than 2 Watts

Audio output impedance: 8Ω

ACCESSORIES



IC-PS15
IC-SP3
IC-AT500

AC power supply -175
External speaker -59
HF automatic antenna tuner (500W) -595
(IC-AT100; 100W version is available.) -480



IC-2KL
IC-2KLPS

500W HF all band linear amplifier
Attendant power supply for IC-2KL



IC-HP1
IC-SM5
BC-10A
IC-HM10

Headphones
Desk microphone (electret condenser type)
Memory backup AC power supply
Scanning Microphone -249

IC-MB5
FL-45
FL-30
IC-EX195
IC-EX202

Mobile mounting bracket
CW narrow crystal filter
SSB Passband tune crystal filter
Marker unit for freq. calibration
LDA unit for auto band switching

IC-EX203
IC-EX205
FL-44
IC-AH1

CW audio filter 150 Hz/6 dB
TRV unit for transverter switching
455 kHz SSB crystal filter
3.5~28 MHz mobile antenna



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- All stated specifications are approximate and subject to change without notice or obligation.
- All ICOM radios significantly exceed FCC regulation limiting spurious emissions.

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