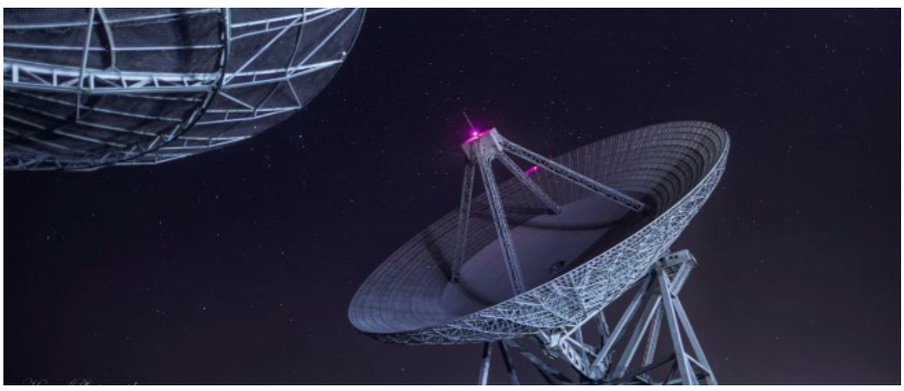
北斗邦泰
BDSTAR TIME

-TRA80



High-performance

Rubidium atomic clock

Product profile

TRA80 is a high-performance and cost-effective rubidium atomic clock, which can obtain core characteristics such as high stability, low phase noise, low aging rate, low temperature coefficient at a reasonable cost, and can accept 1PPS taming and 10MHz calibration, can measure its own frequency and automatically calibrate its own frequency, and can be used in scenarios such as time-frequency measurement standard instruments, aerospace, aircraft tracking and control, communications, astronomy, meteorology, synchronous broadcasting, digital television, single-frequency network system, synchronous acquisition system and so on.

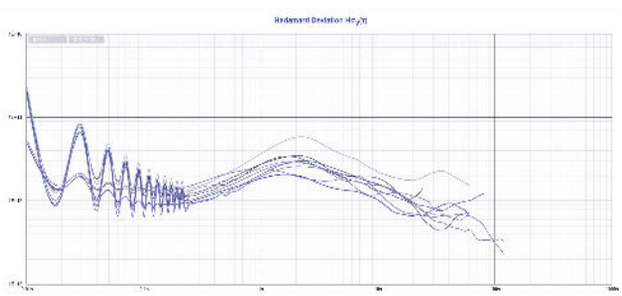
Application area

- Wireless base stations
- Communication
- Aerospace
- Astronomy
- Time-frequency measuring instruments
- Synchronous broadcasting
- Network synchronization
- Atmosphere
- Aircraft tracking and TT&C
- Synchronous acquisition system
- Single-frequency network system
- Digital Television

Product features

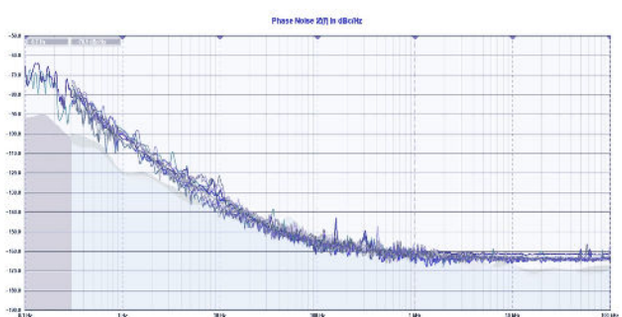
- Operating temperature range -30°C ~+65°C
- The short-term stability is better than the 5E-12/1s
- Room temperature stable power ⩽ 15W
- Cost-effective, low ageing rate, low temperature frequency coefficient
- High frequency stability, with a typical value of 1.5E-12 / 10s
- Low phase noise, typical value-135 dBc / Hz@10Hz
- 1 PPS taming and 10 MHz calibration

Typical curve



Typical value of the frequency stability:

100ms:	1.5×10^{-12}	1s:	2.5×10^{-12}
10s:	1.5×10^{-12}	100s:	4.5×10^{-13}
1000s:	3.0×10^{-13}		



Typical values of the phase noise:

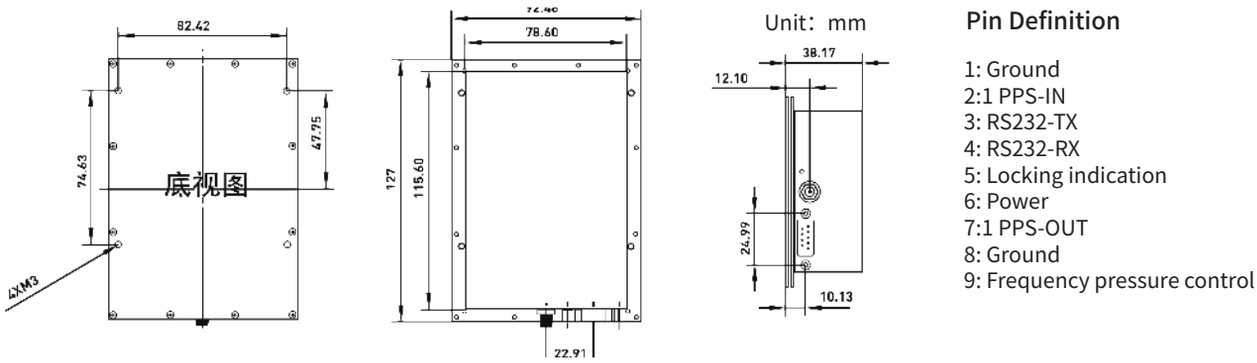
1Hz:	-95dBc/Hz	10Hz:	-135dBc/Hz
100Hz:	-155dBc/Hz	1kHz:	-161dBc/Hz
10kHz:	-162dBc/Hz		

Technical Parameters

-TRA80

Test Item		Technical Indicators			
Output frequency	condition	10 MHz, 1-way sine wave（50Ω, ⩾ 7dBm）			
Factory accuracy		⩽ 5×10^{-11}			
Frequency control	Voltage pressure control	0~5V，with the total range of at least ±1.5×10^{-9}			
	Instruction adjustment	Seamless adjustment range of at least ±1×10^{-6}，Resolution:6.81×10^{-13}			
Locking time	Indoor temperature	⩽ 5min			
Frequency stability	1s	⩽ 5×10^{-12}			
	10s	⩽ 3×10^{-12}			
	100s	⩽ 1×10^{-12}			
Phase noise	1Hz	⩽ -90dBc/Hz			
	10Hz	⩽ -125dBc/Hz			
	100Hz	⩽ -150 dBc/Hz			
	1kHz	⩽ -160 dBc/Hz			
	10kHz	⩽ -160 dBc/Hz			
Frequency drift rate		±2×10^{-12}/Day ±5×10^{-11}/Month	FD10：±1×10^{-12}/Day ±3×10^{-11}/Month	FD5：±5×10^{-13}/Day ±1×10^{-11}/Month	
Frequency reproducibility	Switch 24h	±2×10^{-11}			
Temperature and Frequency Characteristics		⩽ 5×10^{-10}	TC3：⩽ 3×10^{-10}	TC1：⩽ 1×10^{-10}	TC0.5：⩽ 5×10^{-11}
Harmonic And Clutter		harmonic ⩽ -30dBc，clutter ⩽ -80dBc			
Working temperature	Bottom plate temperature	-30°C ~+65°C			
Storage temperature		-40°C ~+85°C			
Power supply	±4%	+12V~+15V or +24V			
Rate of work	Preheat	⩽ 45W			
	Steady state (+25°C)	⩽ 15W			
External Dimension	Body size	116mm×79mm×38mm			
	Bottom plate size	127mm×93mm			
Weight		⩽ 500g			
1PPS input		+3V~+5V TTL，Judder <300ns，Pulse width ＞ 100ns			
1PPS output		Rising edge / Falling edge：⩽ 10ns，Pulse width：1us~999ms，			
Taming accuracy	After 24hof synchronization	Taming jet lag±50ns，Time-keeping accuracy ⩽ 1us@24h，Frequency accuracy ⩽ 1×10^{-12}@24h			

External Dimension



Pin Definition

1: Ground
2:1 PPS-IN
3: RS232-TX
4: RS232-RX
5: Locking indication
6: Power
7:1 PPS-OUT
8: Ground
9: Frequency pressure control