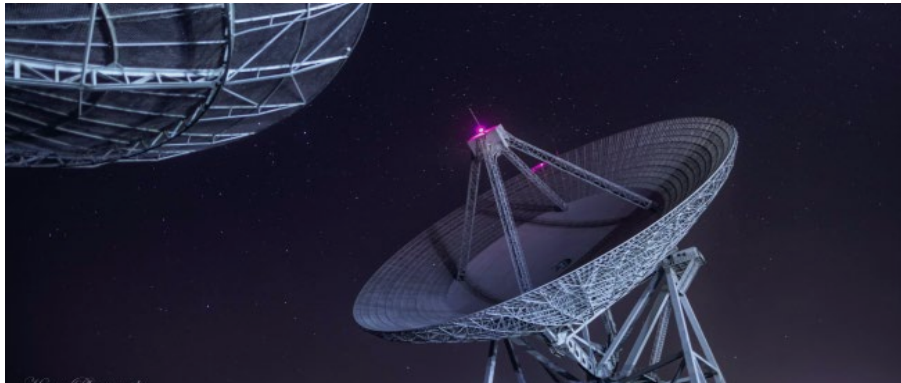




High-performance

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

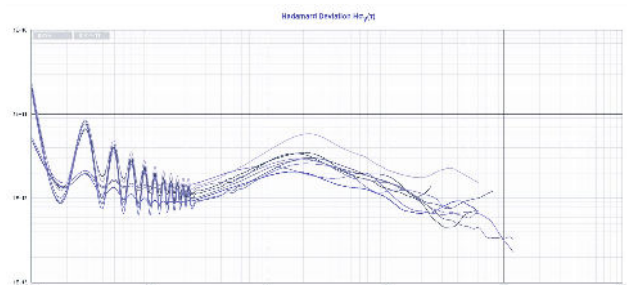


Digital
Television

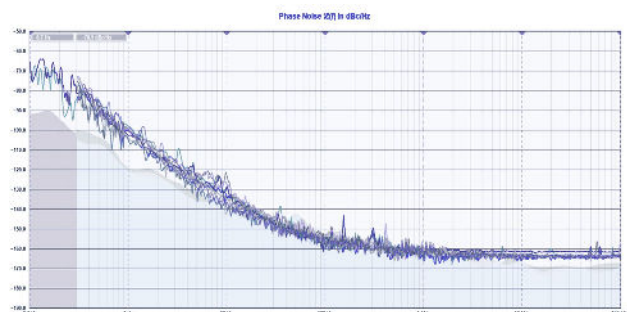
Product features

- Operating temperature range -30°C ~+65°C
- The short-term stability is better than the 5E-12/1s
- Room temperature stable power $\leq 15W$
- 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



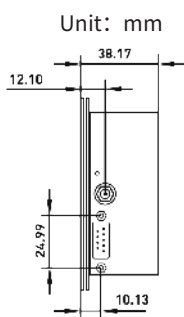
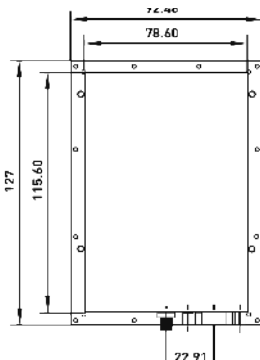
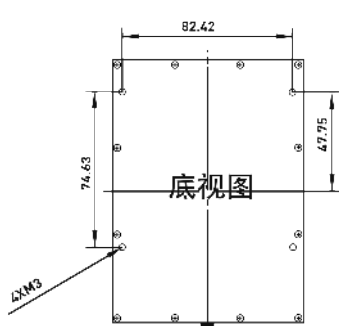
Typical value of the frequency stability:	100ms:	1.5×10^{-12}	1s:	2.5×10^{-12}
	10s:	1.5×10^{-12}	100s:	4.5×10^{-13}
	1000s:	3.0×10^{-13}		



Typical values of the phase noise:	1Hz:	-95dBc/Hz	10Hz:	-135dBc/Hz
	100Hz:	-155dBc/Hz	1kHz:	-161dBc/Hz
	10kHz:	-162dBc/Hz		

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℃ ~+65℃			
Storage temperature		-40℃ ~+85℃			
Power supply	±4%	+12V~+15V or +24V			
Rate of work	Preheat	≤ 45W			
	Steady state (+25℃)	≤ 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



- Unit: mm
- 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