

## Miniature

### Rubidium atomic clock

#### Product profile

TRM60 is a micro intelligent atomic clock, integrating 1 PPS time and 1 PPS output function, and can adapt to the temperature range of -40 to +75°C. This atomic clock has rich performance options for users to choose: the basic model can meet the requirements of most occasions, after 24h, punctuality <1us; users can also choose high performance option, which can replace the imported high index micro atomic clock, frequency stability, noise and temperature characteristics can meet the user needs.

#### Application area



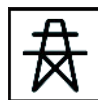
RF Test Equipment



Wireless base station



Autonomous sensor network



Electricity equipment



Telecom equipment



High-performance handheld device



Frequency source

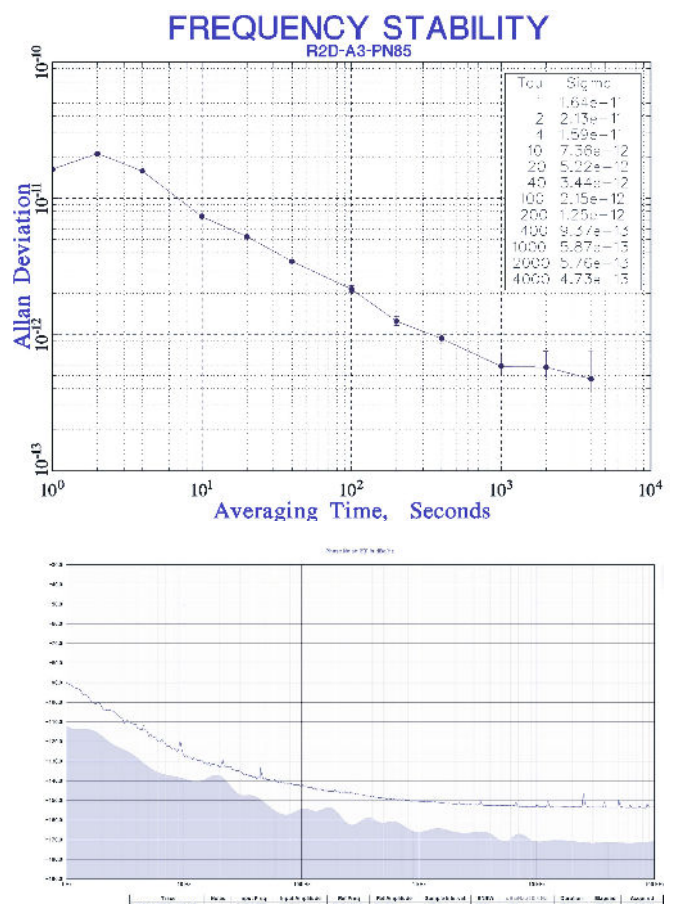


LTE base station

#### Product features

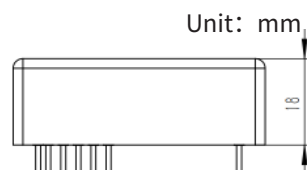
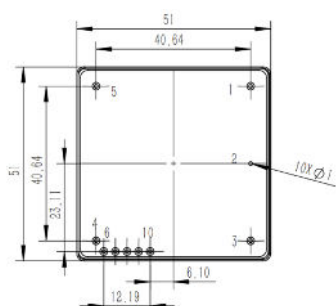
- Small volume 51\*51\*18mm, Compatible with most miniature atomic clocks
- The short-term stability is better than  $3E-11 / 1s$
- Room temperature stable power  $\leq 8W$  (measured 5.5W)
- 1PPS Input and 1PPS Output Functions
- +5V power supply, which can maintain the performance in the range of -40 to +75°C

#### Typical curve



Test Item		Technical Indicators			
Output frequency	Condition	10 MHz, 1-way square wave, 3.3 V CMOS			
Factory accuracy	After calibration	$\leq 5 \times 10^{-11}$			
Frequency control	Voltage pressure control	0~5V, Total range at least $\pm 4 \times 10^{-9}$ , The resolution is better than $1 \times 10^{-11}$			
	Instruction adjustment	Fine adjustment range $> \pm 4 \times 10^{-9}$ , The resolution is better than $1 \times 10^{-12}$ , Coarser calibration range $> \pm 1 \times 10^{-6}$			
Locking time	Indoor temperature	$\leq 5$ min			
Frequency stability		Standard	A5	A3	
	1s	$\leq 1 \times 10^{-10}$	$\leq 5 \times 10^{-11}$	$\leq 3 \times 10^{-11}$	
	10s	$\leq 3 \times 10^{-11}$	$\leq 1.6 \times 10^{-11}$	$\leq 1 \times 10^{-11}$	
	100s	$\leq 1 \times 10^{-11}$	$\leq 5 \times 10^{-12}$	$\leq 3 \times 10^{-12}$	
Phase noise		Standard	PN65	PN85	
	1Hz	/	$\leq -65$ dBc/Hz	$\leq -85$ dBc/Hz	
	10Hz	$\leq -90$ dBc/Hz	$\leq -100$ dBc/Hz	$\leq -120$ dBc/Hz	
	100Hz	$\leq -120$ dBc/Hz	$\leq -130$ dBc/Hz	$\leq -140$ dBc/Hz	
	1kHz	$\leq -140$ dBc/Hz	$\leq -140$ dBc/Hz	$\leq -140$ dBc/Hz	
	10kHz	$\leq -145$ dBc/Hz	$\leq -145$ dBc/Hz	$\leq -145$ dBc/Hz	
Frequency drift rate	/ Day	$\pm 2.5 \times 10^{-11}$	FD10: $\pm 1 \times 10^{-11}$	FD5: $\pm 5 \times 10^{-12}$	FD3: $\pm 3 \times 10^{-12}$
Temperature and Frequency Characteristics	0-70°C	$\leq 7 \times 10^{-10}$	TC50: $\leq 3 \times 10^{-10}$	TC20: $\leq 1 \times 10^{-10}$	TC10: $\leq 5 \times 10^{-11}$
	-40-75°C	$\leq 1 \times 10^{-9}$	$\leq 5 \times 10^{-10}$	$\leq 2 \times 10^{-10}$	$\leq 1 \times 10^{-10}$
Working temperature	Bottom plate temperature	-40°C ~+75°C			
Storage temperature		-55°C ~+100°C			
Power supply	$\pm 4\%$	+5V			
Rate of work	Preheat	$\leq 15$ W( If it is not necessary to adapt to -40° C, it can be reduced )			
	Steady state (+25°C )	$\leq 8$ W (The actual measurement is about 5.5W)			
External Dimension	Body size	51mm×51mm×18mm			
Weight		< 100g			
1PPS input		+3V~+5V TTL, Judder <300ns, Pulse width > 100ns			
1PPS output		Rising edge / falling edge: $\leq 10$ ns, Pulse width: 1ms,			
Taming accuracy	After 24h of synchronization	Taming jet lag: $\pm 50$ ns, Frequency accuracy: $\leq 1 \times 10^{-13}$ @24h, Time-keeping accuracy: $\leq 1$ us@24h			

External Dimension



Pin Definition:

- 1:1 The PPS input
- 2: Case (ground)
- 3:10MHz output
- 4: Power supply ground, signal ground
- 5: Power cathode + 5V
- 6: Lock instructions
- 7:TX(3.3V Level)
- 8:RX(3.3V Level)
- 9:1PPS output
- 10: NC