



GTS1 Digital Radiosonde

In operation with GFE (L) 1 Secondary Radar (also named L Band Radar), GTS1 digital radiosonde can measure the atmospheric temperature, pressure, relative humidity, wind direction and wind velocity from ground up to an altitude of 30,000m. In 2001, GTS1 came into use in some upper air stations as the new generation upper air sounding system in China.

Up to now, in China, there are 80 GTS1-L Band Secondary Radar Upper-air Stations.

GROUND EQUIPMENT

The ground installation includes GFE (L) 1 secondary Radar and the computer terminal with the corresponding recording and processing equipments, and also the ground check set JKZ1.

GFE (L) 1 SECONDARY RADAR

The 1680MHz receiver is located in the antenna unit for radar measurement system, so that the loss of UHF in the cable is reduced a lot.

The Radar captures and automatically tracks signals transmitted from a radiosonde attached to a balloon to obtain atmospheric conditions, calculate wind direction and wind velocity while the balloon is being uplifted. It inputs the received data, along with angle data and time signal into the data processing unit for real time data processing.

GROUND CHECK SET JKZ1

Ground checking of GTS1 digital radiosonde is done with the Ground Check Set JKZ1 and the computer terminal. It is used to find out the rejects by comparing with the reference standard and ensuring excellent PTU measurement accuracy.

GTS1 数字探空仪

GTS1 数字探空仪与 GFE (L) 1 型二次雷达（也叫 L 波段二次雷达）相配合使用，可综合观测到地面至 30km 范围内，不同高度的大气温度、压力、相对湿度和风向风速。2001 年开始，GTS1 作为新一代的高空探测系统陆续在中国一些高空站投入使用。

至今为止，在中国，已有 80 个 GTS1-L 波段二次雷达高空站。

地面设备

相关的地面设备包括 GFE (L) 1 型二次雷达、计算机终端记录和处理设备，以及 JKZ1 地面检测箱。

GFE (L) 1 型二次雷达

1680MHz 的接收机位于雷达探测系统的天线单元内部，可大大减少超高频在电缆中的损耗。

雷达捕获和自动跟踪由气球携带的探空仪所发送的信号，在气球缓缓上升的过程中，获取探空仪所处大气环境的气象数据，同时计算风向和风速的情况。它将所接收到的数据连同仰角和方位角的数据以及时间信号一并输入数据处理单元完成实时数据处理工作。

JKZ1 地面检测箱

GTS1 数字探空仪的地面检测是通过 JKZ1 地面检测箱和计算机处理终端共同完成的。通过与标准器的数据比较，剔除超差探空仪，以保证 PTU 的探测精度。

METEOROLOGICAL SENSORS

气象传感器

Temperature	White rod thermistor
温度	白色柱状热敏电阻
Range	+50℃ ~ -90℃
Accuracy (standard deviation)	
+50℃ ~ -80℃	0.2℃
-80℃ ~ -90℃	0.3℃
Resolution	0.1℃
Humidity	Carbon-film lamellar hygistor
湿度	碳膜薄片状湿敏电阻
Range	0%RH ~ 100%RH
Accuracy (standard deviation)	
15%RH ~ 95%RH	
T ≥ -25℃	5%RH
T < -25℃	10%RH
Resolution	1%RH
Pressure	Silicon electric-bridge pressure sensor
气压	硅电桥压力传感器
Range	1060hPa ~ 5hPa
Accuracy (standard deviation)	
1050hPa ~ 500hPa	2hPa
500hPa ~ 5hPa	1hPa
Resolution	0.1hPa
Measurement cycle for PTU sensors	1.2sec

DIMENSIONS AND WEIGHT

尺寸和重量

Dimensions(l×b×h)	190×90×245mm
Weight (battery-activated)	≤400g

BATTERY

电池

Water-activated battery	
注水镁电池	±12.5V ~ ±13.5V
Operation time	≥100min

TELEMETRY

发射机

Transmitter type	Analog
Carrier center frequency (f_0)	1676.5MHz ± 3MHz
Frequency range	1673.5MHz ~ 1679.5MHz
Output power	≥400mW
Modulation mode	AM
Quench frequency	800kHz ± 15kHz
Subcarrier frequency	32.7kHz ± 0.5kHz
Antenna gain	≥1dB
Receiving sensitivity	≤20 μ W/m
Transmission rate	1200Baud
Transmission cycle	≤1.5sec
Sounding range	200km
Sounding altitude	Up to 30km

CALIBRATION

校准

Factory calibration	Stored in floppy disk
Ground check	Prior launch



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